

CURRICULUM VITAE**PERSONAL
INFORMATION***Name***MARIANO CADONI***Date of birth**Nationality**Address**Telephone**E-mail**Position*

FULL PROFESSOR

PROFILE*Brief description*

Main topics of research activity

- o Supersymmetry and supergravity
- o Nonlinear sigma models
- o String theory
- o Black holes solutions in string theory
- o Cosmological solutions in string theory
- o Gravity in two and three dimensions
- o AdS/CFT correspondence
- o Statistical and entanglement entropy of black holes
- o Black Branes
- o Analogue black holes
- o Black holes physics
- o Mathematical modelling of DNA
- o Physics of solitons
- o Condensed matter/gravity holographic correspondence
- o Dark matter search
- o Emergent gravity models
- o Galactic Dynamics
- o Cosmology
- o Mathematical modelling of epidemics

WORK EXPERIENCE

June 1982 – September 1985

Teacher of mathematics and physics at high schools

September 1989 – January
1993

Teacher of mathematics and physics at high schools

January 1993 - April 2002

Assistant professor (Ricercatore) of Theoretical Physics, Department of
Physics, University of Cagliari

April 2002-December 2019

Associate professor of Theoretical Physics at the Department of
Physics of the University of Cagliari

December 2019 - to date

Full professor of Theoretical Physics at the Department of Physics of
the University of Cagliari

EDUCATION

November 1977-June 1982

Undergraduate physics course, Cagliari University

October 1985- June 1989

PhD course in Theoretical Physics, Institute for Theoretical Physics, University of Heidelberg (Germany)

SKILLS

Summary list of work skills held

- Leadership in research groups
- Teamwork and interpersonal skills

LANGUAGES

English Language (very good)

German Language (very good)

French Language (sufficient)

ACADEMIC ACTIVITY

Conferences, Workshops and Seminars

Invited Speaker at about 20 international conferences

Direction or participation in the activities of a research group at national or international level

Local coordinator of INFN research programs (Iniziativa specifiche): INFN-TO06, INFN-TO11, INFN-TV12, INFN-STEFI

- Participant to PRIN 1998, PRIN 2001 and PRIN 2003

Participant to the DARKSIDE collaboration for the dark matter direct search

Participant to the ESF network HOLOGRAV

Participant to the European COST CANTATA

Participant to the EINSTEIN TELESCOPE Network

Scientific coordinator of the project LARPET (development of a PET operating with liquid argon)

Participation in committees of scientific journals

Acts as referee of several scientific journals, Phys. Rev. Lett., Phys. Rev D, Phys. Lett. B, Class. Quantum Grav., Phys. Lett. A, Found. of Physics etc.

PUBLICATIONS

Author of about 150 articles published in international Physical journals with referees

Author of about 30 articles published in proceedings of conferences

- Editor of 4 proceedings of conferences

Cagliari November 25th 2025

MARIANO CADONI

Curriculum Vitae - Francesco Murgia

Studi compiuti, titoli di studio e accademici conseguiti

- **Abilitazione scientifica nazionale**

Nel 2014 ha conseguito l'abilitazione scientifica nazionale per l'accesso al ruolo dei professori universitari, sia di II fascia (prof. associato) che di I fascia (prof. ordinario) per il settore concorsuale 02/A2 - Fisica delle interazioni fondamentali.

- **Dottorato di ricerca in Fisica**

Conseguito nel 1992 presso l'Università degli Studi di Torino. Titolo della dissertazione di dottorato: *Decadimenti esclusivi del charmonio in quantocromodinamica perturbativa*; Relatore: prof. M. Anselmino, Università di Torino.

- **Laurea in Fisica vecchio ordinamento**

Conseguita il 2 Dicembre 1985 presso l'Università degli Studi di Cagliari, con la votazione di 110/110 e lode. Titolo della tesi di laurea: *Studio dell'interazione antinucleone-nucleo con potenziali di tipo Saxon-Woods*; Relatore: prof. Piero Quarati, Politecnico di Torino.

- **Diploma di perito industriale per l'elettrotecnica**

Conseguito nel 1980 presso l'Istituto Tecnico Industriale "G. Marconi" di Cagliari, con la votazione di 60/60.

Esperienze lavorative e di ricerca

- **Da Aprile 2019 a tutt'oggi**

Dipendente di ruolo a tempo indeterminato con il profilo di primo ricercatore, II livello professionale, presso la sezione di Cagliari dell'INFN.

- **Da Gennaio 1992 a Marzo 2019**

Dipendente di ruolo a tempo indeterminato con il profilo di ricercatore, III livello professionale, presso la sezione di Cagliari dell'INFN.

- **Visite brevi per collaborazione scientifica**

DESY-Zeuthen (1996) - Collaborazione HERMES; Lulea University, Svezia (1998) - Prof. S. Fredriksson; Free University, Amsterdam (2000) - Prof. P.J. Mulders.

- **Giugno - Luglio 1993 e Giugno 1996**

Visite presso il College de France di Parigi per collaborazione scientifica con i proff. P. Kessler, J. Parisi su produzione di glueballs e mesoni in collisioni adroniche e fotone-fotone

- **Maggio - Giugno 1991**

Visita presso il Birkbeck College di Londra per collaborazione scientifica con il prof. E. Leader su temi di fisica dello spin.

- **Novembre 1989 - Settembre 1992**

Dottorato di ricerca in Fisica, svolto presso le Università di Cagliari e Torino.

- **Settembre - Novembre 1989**

Docente di matematica e fisica presso istituti tecnici professionali di Cagliari.

- **Luglio 1986 - Giugno 1988**

Borsista post-laurea dell'Istituto Nazionale di Fisica Nucleare presso la Sezione di Torino,

Gruppo Collegato di Cagliari.

- **Settembre 1982 - Luglio 1983**

Supplente annuale come tecnico di laboratorio presso istituti tecnici industriali e professionali di Cagliari.

- **Maggio 1981 - Aprile 1982**

Servizio militare di leva nell'Aeronautica Militare.

Attività di coordinamento e di servizio

- **2024-2026**

Responsabile Nazionale del progetto di ricerca (IS) della CSN4 NINPHA per il triennio 2024-2026.

- **2012-2023**

Responsabile Locale del progetto di ricerca (IS) della CSN4 NINPHA.

- **Maggio 2001 - Maggio 2007 e Luglio 2015 - Luglio 2019**

Membro della commissione scientifica nazionale IV dell'INFN in qualità di coordinatore del gruppo IV della sezione di Cagliari.

- **Da Novembre 2015 a tutt'oggi**

Membro del Gruppo di Lavoro sulla Valutazione (GLV) dell'INFN per la CSN4; dal 2022 coordinatore del gruppo del GLV della CSN4.

- **Da Ottobre 2024 a tutt'oggi**

Membro del Collegio di Dottorato in Fisica dell'Università di Cagliari.

- **2023-2024**

Membro del Theory Review Panel Teorico del Department of Energy (DOE) Statunitense per la valutazione dei progetti di ricerca di Fisica Nucleare e Adronica presentati per l'anno fiscale 2024.

- **da Maggio 2022 a tutt'oggi**

Responsabile Scientifico per i seminari della sezione INFN di Cagliari.

- **Gennaio 2024**

Membro della commissione valutatrice per l'esame finale del Dottorato di Ricerca in Fisica dell'Università degli Studi di Pavia.

- **Dicembre 2023**

Revisore per due progetti di ricerca teorici dell'area 02-Scienze Fisiche per il programma per giovani ricercatori "Rita Levi Montalcini".

- **Ottobre 2023**

Revisore scientifico per la National Research and Development Agency (ANID) Cilena per la "2024 Regular Fondecyt National Projects Competition" per il progetto "Exploring QCD: from factorization to phenomenology".

- **Ottobre 2022**

Revisore scientifico per la "Cyclone Calls su high performance computing" del Cyprus Institute (Cipro), per un progetto di ricerca sullo studio tramite la QCD su reticolo delle funzioni di distribuzione partoniche transverse momentum dependent.

- **2018**

Referee della tesi di dottorato in Fisica di F. Delcarro, dottorando del dipartimento di Fisica dell'Università di Pavia.

- **Maggio 1993 - Maggio 1999**

Rappresentante locale del personale ricercatore della sezione di Cagliari dell'INFN.

- **Attività di revisore di articoli scientifici**

Referee per Physical Review Letters, Physical Review D, Physical Review C, Journal of High Energy Physics, Physics Letters B, Journal of Physics G, e altre riviste.

Nominato nel 2019 Outstanding Referee della American Physical Society per la sua attività come revisore anonimo.

- **Organizzazione di conferenze o scuole internazionali**

- Membro dell’International Advisory Committee dell’International Workshop on Transverse Polarization Phenomena in Hard Processes (TRANSVERSITY 2017, 2022, 2024).

- Membro del Comitato scientifico delle edizioni 2023 e 2025 della conferenza “Theoretical Nuclear Physics in Italy”, TNPI 2023 e 2025.

- Membro del comitato organizzatore delle edizioni 2019, 2021, 2023, 2025 del “Sardinian Workshop on Spin”.

- Membro del comitato organizzatore dell’International Workshop on Diffraction in High-Energy Physics, (DIFFRACTION 2004 e 2010).

- Membro del comitato organizzatore della scuola avanzata 12th HANUC Lecture Week on Hadron Physics “The Nucleon Structure”, Torino, Italia, 23-27 Marzo 2009.

- Membro del comitato organizzatore del 3rd International Workshop on Transverse Polarization Phenomena in Hard Processes (TRANSVERSITY 2011), Veli Losinj, Croazia, 29 Agosto - 2 Settembre 2011.

- Presidente del comitato organizzatore del 4th International Workshop on Transverse Polarization Phenomena in Hard Processes (TRANSVERSITY 2014), Chia (Cagliari), Italia, 9-13 Giugno 2014.

- **Dal 2016 a tutt’oggi**

Membro dell’Institutional Board dell’Electron Ion Collider User Group (EICUG).

- **Attività editoriale**

(Co)Editore degli atti della conferenza TRANSVERSITY 2014, EPJ Web of Conf. **85** (2015), U. D’Alesio and F. Murgia (Eds.)

- **Attività di valutatore**

Membro dell’albo di esperti scientifici REPRIZE del MIUR per la sezione Ricerca di Base.

- **2011 - 2013**

Membro della Commissione locale della Sezione INFN di Cagliari per il conferimento di assegni di ricerca INFN.

- **2016 - 2019**

Membro della Commissione di Ascolto per i seminari di fine anno dei dottorandi del XXXI ciclo del dottorato in Fisica dell’Università degli Studi di Cagliari.

Attività di divulgazione e formazione

- **Partecipazione a eventi di terza missione**

- Dal 2016 a tutt’oggi membro del Comitato Scientifico del Premio Asimov per l’editoria scientifica divulgativa (asimov.gssi.it).

- Da novembre 2021 a tutt’oggi tutor per la sezione di Cagliari per le attività del progetto Lab2Go.

- **Attività di formazione scientifica¹**

¹Tutta l’attività didattica di formazione scientifica sottoelencata è stata svolta a titolo completamente gratuito nell’ambito della convenzione stipulata tra l’Istituto Nazionale di Fisica Nucleare e l’Università di Cagliari.

A partire dall'anno accademico 1999/2000 a tutt'oggi ha svolto quasi continuamente attività didattica per la laurea V.O. e magistrale del corso di laurea in Fisica dell'Università di Cagliari. In particolare:

– Ha svolto corsi di: Teorie quantistiche; Fisica nucleare; Fisica teorica; Meccanica quantistica avanzata; Teorie di gauge; Teoria quantistica dei campi.

E' stato relatore o correlatore di diverse tesi di Laurea triennale, 11 tesi di Laurea V.O. o Magistrale, e di 3 tesi di Dottorato, su argomenti di fenomenologia della fisica delle particelle elementari.

E' stato responsabile per l'attività di ricerca di due borsisti post-doc e di tre assegnisti di ricerca, su tematiche riguardanti la fenomenologia della fisica delle particelle elementari.

Attività di ricerca scientifica – Breve Riassunto

L'attività di ricerca svolta dallo scrivente ha riguardato e riguarda in generale la fenomenologia adronica, sia nell'ambito della fisica nucleare ad energie intermedie (dal 1986 al 1991 circa) che, prevalentemente, nell'ambito della fisica adronica e delle particelle elementari ad energie medio-alte con metodi di cromodinamica quantistica perturbativa (dal 1990 a tutt'oggi).

In tale contesto, egli si è principalmente occupato di:

- Effetti di spin e polarizzazione, moto intrinseco partonico e struttura tridimensionale del nucleone nel DIS inclusivo e semi-inclusivo, nelle collisioni e^+e^- , nella produzione inclusiva di adroni, di fotoni e del charmonio in collisioni adroniche e nel processo Drell-Yan;
- Decadimenti esclusivi di stati legati di quark massivi (Charmonio e Bottomonio);
- Produzione di glueballs e mesoni in collisioni adroniche e fotone-fotone.

E' autore di più di 80 lavori su riviste internazionali con arbitro e di oltre 80 contributi a conferenze internazionali, dei quali circa 30 presentati personalmente.

Ha collaborato e collabora a vari studi di fattibilità e gruppi di lavoro per la proposta di nuovi esperimenti dedicati (anche) alla fisica dello spin nei processi adronici.

E' membro della componente teorica della collaborazione PAX (Polarized Antiprotons eXperiments), del proposal LHCSpin al CERN e dell'Institutional Board dell'Electron Ion Collider User Group.

Ha partecipato e partecipa, anche come responsabile di unità locale, a diversi network di ricerca, sia nazionali (progetti PRIN e INFN) che internazionali (network europei quali HadronPhysics1,2,3, HadronPhysicsHorizon).

A titolo indicativo, a tutt'oggi gli 85 lavori pubblicati su rivista hanno ricevuto sul database di riferimento del settore, INSPIRE-HEP, più di 7.000 citazioni, con una media di 79 citazioni per lavoro, 1 contributo con più di 500 citazioni, 6 lavori con più di 250 citazioni, 10 lavori con più di 100 citazioni, 18 lavori con più di 50 citazioni ed un indice h di Hirsch pari a 38.

Cagliari, 25 Novembre 2025

Mariafelicia De Laurentis

Current Position

from **Professor in Astronomy and Astrophysics**, *Dipartimento di Fisica E. Pancini, Università degli Studi di Napoli*
19-02-2018 "*Federico II*", Italy [[Unina](#)]

from **Project Scientist**, for the [Event Horizon Telescope Collaboration \(EHT\)](#)
01-03-2025

Previous Employment History

In the most recent stages of my career, I served as a Professor of Theoretical Physics at the Tomsk State Pedagogical University in the Russian Federation, where I engaged in advancing the field of theoretical physics through research and education. Subsequently, I was a Visiting Professor at Goethe University in Frankfurt, Germany. During my tenure at Goethe University, I actively participated in the Event Horizon Telescope (EHT) collaboration and the BlackHoleCam project. This project was a concerted effort focused on the imaging and study of black holes through the application of Very Long Baseline Interferometry (VLBI) techniques, significantly enhancing the institution's research capabilities in astrophysical phenomena.

Records, roles and special mentions

In May 2022, Expert Panelist at [Press conference](#) at ESO Headquarters, Garching on groundbreaking Milky Way results from the Event Horizon Telescope Collaboration Nominated by a panel of peers to represent the European contribution to the theory component of the Event Horizon Telescope project as a leading authority on gravitational physics and co-led of [SgrA* paper VI: Testing black hole metric](#) In 2014 I got the National Italian Scientific Qualification for Associate Professor in Theoretical Physics, and in 2017 for Associate and Full Professor in Astronomy, Astrophysics, Physics of Earth and Planets. In 2013 I got a Research Fellow at Kobayashi-Maskawa Institute for the Origin of Particles and the Universe, Nagoya (Japan).

Scientific Activity

The scientific activity is essentially devoted to Relativistic Astrophysics, Cosmology and Physics of Gravitational Interaction in their theoretical and phenomenological aspects. In particular, the research interests are: Extended Theories of Gravity and their astrophysical applications; Black holes and compact objects in Astrophysics; Gravitational waves; Exact solutions in Cosmology; Symmetries and Conservation Laws in Relativistic Field Theories.

I have authored a total of 320 scientific publications in prestigious academic journals. Many of these papers have provided important and long-lasting contributions to our understanding of Theories of Gravity. Among these, I co-authored an outstanding review paper, which has garnered over 3141 citations ([Physics Report, 509,167 \(2011\)](#)). Such a paper is considered a cornerstone for people working in Extended Gravity Theory, which is one of the most active and exciting fields of research in theoretical gravitational physics. Furthermore, I have also written a book on [General Relativity](#), contributing to the broader academic and educational discourse in the field.

One of the most notable achievements in my career is my contribution to the Event Horizon Telescope (EHT) project, particularly the groundbreaking work on the supermassive black hole at the center of our galaxy, SgrA*. I played a critical role in this research, especially as the coordinator of the sixth paper in the series ([SgrA* paper VI: Testing black hole metric](#)), which provided the first-ever image of SgrA*. Published in *The Astrophysical Journal Letters* in 2022, this work has been recognized globally as a historic milestone in astrophysics. The findings not only captured the public's imagination but also offered crucial empirical evidence supporting the predictions of General Relativity under extreme conditions.

In addition to the SgrA* research, I was also involved in the earlier EHT project that produced the first-ever image of a black hole, specifically the supermassive black hole in the galaxy M87, published in *The Astrophysical Journal Letters* in 2019. This image marked a watershed moment in our understanding of black holes and confirmed many theoretical predictions that had been long debated within the scientific community.

Publications record is here: [INSPIRE](#)

Total number of citations: 123,864

h index: 113

Scientific talks

I have given 94 talks, including 2 Lectiones Magistralis, 10 Colloquia at prestigious international institutions, 4 plenary sessions, 8 keynote speeches, and 70 invited talks at various international and national conferences. Among these, I have shared my research at some of the most respected venues worldwide. Some notable international venues I recently presented include the University of Bremen, Goethe University in Frankfurt, the University of Oldenburg in Germany, and the Tomsk State Pedagogical University in Russia. Additionally, I have delivered keynotes at significant scientific gatherings such as the "Fundamental Physics at the Galactic Centre Workshop" in Porto, Portugal, the "Modified Gravity and Cosmology" conference in Barcelona, Spain, and the "Cosmology and the Quantum Vacuum" conference in Segovia, Spain.

Moreover, I have been invited to speak at the Institute for Advanced Study in Princeton, USA, and have presented my work at the National Astronomical Observatory of Rio de Janeiro in Brazil. These international engagements have allowed me to share my insights on topics ranging from black hole physics to alternative theories of gravity, contributing to the global discourse on these critical research areas.

Education

I earned my PhD from the Politecnico di Torino, presenting a dissertation entitled "Extended Gravity and Invariance Principles: Theories and Probes." This work garnered the "Quality Award" for the best PhD thesis, recognizing my significant contributions and publications in the field. Additionally, I obtained my degree in Physics from the University of Naples Federico II, where my thesis focused on the "Study of Gravitational Waveforms Models Emitted by the Coalescence of Compact Binary Systems."

Fund raising

2023 **Co-Investigator for Italian Ministry Research Grant PRIN 2022**

Dissecting super-massive black holes physics in space and time with the Event Horizon Telescope and ALMA [~\$230,000]

2018-2019 **Co-Investigator for FAPESP - Fundação de Amparo à Pesquisa do Estado de São Paulo**

Estrelas de Gauss-Bonnet[~\$225,000]

2018 **Co-Investigator for Italian Ministry Research Grant PRIN 2018**

The new frontier of Multi-Messenger Astrophysics: follow-up of electromagnetic transient counterparts of gravitational wave sources [~\$127,000]

2018 **Principal Investigator for Russian Ministry Research Grant 2018**

Black Holes beyond Einstein [~\$300,000]

2016 **Principal Investigator for Russian Ministry Research Grant 2016**

Modified gravity in stellar astrophysics and the evolution of the late-time universe [~\$220,000].

2014 **Principal Investigator for Russian Ministry Research Grant 2014**

Modified gravity in stellar astrophysics and the evolution of the late-time universe [~\$196,000].

Awards

Throughout my career in science, I have received several awards that recognized my efforts in both national and international contexts. Notably, I was a co-recipient of the [Einstein 2020 Medal](#), which was a significant acknowledgement of my involvement in the collaborative achievement of capturing the first image of a black hole. This work also led to receiving the [2020 Breakthrough Prize](#) in Fundamental Physics, marking a notable moment in my career for contributing to advancements in astrophysics. Furthermore, my contributions to the field of general relativity and alternative theories of gravity, especially in the context of relativistic astrophysics, were recognized with the [Sigrav Prize](#) by the Italian Society of Gravitational Physics. This accolade was particularly meaningful as, at that time, it acknowledged my efforts to deepen the understanding of gravitational physics, an area currently of large interest for the scientific community.

Teaching

I have taught a variety of subjects at different levels. These range from more basic courses (such as General Physics I and II) to more advanced or specifically oriented ones (such as General Relativity, Advanced General Relativity, Cosmology, and Relativistic Astrophysics). My current focus is on graduate-level courses in Relativistic Astrophysics and Multimessenger Astrophysics for students of physics and astrophysics, as well as basic courses for aerospace engineers. Additionally, I contribute to specialized PhD programs and educational activities in Summer and Winter Schools, aiming to cultivate a deep understanding of physics among students at various stages of their academic careers.

Supervision of students

Since 2009, I have been in charge of overseeing 18 master's students, 11 bachelor students, and 5 PhD students.

PhD students

Master students

Scientific appointments

I have been actively involved as a scientific and local organizer for numerous national and international conferences, workshops, and schools. I possess extensive experience in organizing events for the Italian Society of General Relativity and Gravitation (SIGRAV), where I currently serve as Vice President and have previously been a board member [\[website\]](#).

I also held the position of Erasmus Head of the Physics Department from 2019 to 2022.

Starting in 2024, I am an Associate Editor for [General Relativity and Gravitation](#) (Springer Nature).

During the period of 2016 to 2021, I served as a member of the Managing Committee for Germany and held the position of Coordinator for Working Group 2 (Relativistic Effects) for COST Action CA15117, known as the Cosmology and Astrophysics Network for Theoretical Advances and Training Actions (CANTATA) [\[website\]](#) .

Since 2006, I have been part of the TEONGRAV (Theory of Gravitational Wave Sources), QGSKY (Quantum Universe), and ET (Einstein Telescope) groups at the Istituto Nazionale di Fisica Nucleare (INFN), where I am currently leading the TEONGRAV group in Naples.

Additionally, I have been a member of the [Event Horizon Telescope Consortium \(EHT\)](#) since 2015, where I now serve as the Deputy Project Scientist. Previously, I served as a member of the Scientific Council and as the coordinator for the Gravitational Physics Input Working Group. I was also a member of the [Black Hole Cam Group](#) since 2014.

Since 2018, I have been a member of the [Einstein Telescope Collaboration \(ET\)](#), chairing the Election, Voting, and Membership Committee. I have also been involved with [LISA ASTRO-BLACK ITALY](#), the [High Energy Rapid Modular Ensemble of Satellites \(Hermes\)](#), and Theseus since 2018 and 2016, respectively.

In addition, I have been a reviewer for the Alexander von Humboldt Foundation's Sofja Kovalevskaja Award since 2018, a referee for the Polish Ministry of Science and Higher Education since 2016, and a reviewer for Reprise—the Register of Expert Peer Reviewers for Italian Scientific Evaluation—and the European Research Council (ERC) since 2015. Starting in 2024, I will also be a reviewer for the European Cooperation in Science and Technology (COST).

Since 2015, I have been a member of the Editorial Board of the International Journal of Geometric Methods in Modern Physics by World Scientific. I have also been a referee for various prestigious journals, including The Astrophysical Journal (IOPscience), Astronomy Astrophysics (EDP Sciences), Reports on Progress in Physics (IOPscience), Physics Letters B (Elsevier), Classical and Quantum Gravity (IOPscience), General Relativity and Gravitation (Springer), Monthly Notices of the Royal Astronomical Society (Wiley), The European Physical Journal C (Springer), and Physical Review D (APS) since 2009.

Organization of Conferences, Workshops, and Schools

- (06-05) - 08 - Member of Scientific Committee of the Event Horizon Telescope Special Session, International Astronomical Union 2024 (IAU) General Assembly, Cape Town, South Africa [\[website\]](#)
- (01-05) - 07 - Co-chair of Scientific Committee of the Special Session SS3 (Black holes and relativistic jets at the highest spatial resolution: new results and future prospects of the Event Horizon Telescope and mm-VLBI), of the European Astronomical Society, Padova, (Italy) [\[website\]](#)
- (19-23) - 02 - Member of Scientific Committee of 18th Iberian Cosmology Meeting, Salamanca, (Spain) [\[website\]](#) 2024
- (19-23) - 02 - Member of Scientific Committee of SIGRAV International School 2024. Measuring Gravity, Vietri sul Mare Salerno, 2024 (Italy) [\[website\]](#)
- (19-21) - 12 - Chair of Scientific and Local Organizing Committee of the Annual TEONGRAV meeting, Naples, (Italy) [\[website\]](#) 2023
- (15-18) - 12 - Member of Scientific Committee of Fundamental Physics at the Galactic Centre Workshop, Porto, Portugal, 2023 [\[website\]](#)
- (11-15) - 12 - Member of Scientific Committee of EHT winter Collaboration Meeting 2023, [\[website\]](#) 2023
- (04-08) - 09 - Member of Scientific Committee of XXV-SIGRAV Conference (Italian Society of General Relativity and Gravitation) 2023 Trieste, (Italy).[\[website\]](#).
- (26-30) - 06 - Member of Scientific Committee of EHT Collaboration Meeting Summer 2023, Taichung, (Taiwan)[\[website\]](#) 2023
- (13-17) - 02 - Member of Scientific Committee of SIGRAV International School 2023. Applied Quantum Gravity, Vietri sul Mare 2023 Salerno, (Italy) [\[website\]](#)
- (07-09) - 09 - Member of Scientific Committee of XXIII-SIGRAV Conference (Italian Society of Gravitational Physics) Urbino, 2021 (Italy).[\[website\]](#).

- (01-05) - 02 - Member of Scientific Committee of SIGRAV International School 2021. Gravity of Compact Astrophysical Objects and Gravitational Waves, Vietri sul Mare Salerno, (Italy) [\[website\]](#)
- 2020 - present Member of Scientific Committee for the candidacy of Castellammare di Stabia (NA) (Italy) as Capital of Culture 2022, [\[website\]](#).
- (07-14) - 12 - Member of Scientific Committee of 2020EHT Collaboration Meeting (Event Horizon Telescope) 2020
- (03-07) - 02 - Member of Scientific Committee of SIGRAV International School 2020. Gravity: General Relativity and beyond. 2020 Astrophysics, Cosmology and Gravitational waves Vietri sul Mare Salerno, (Italy) [\[website\]](#)
- (02-07) - 12 - Member of Scientific Committee of 2019EHT Collaboration Meeting (Event Horizon Telescope) Hilo, Hawaii, USA 2019
- 2018 Member of Scientific and Local Committee of XXII-SIGRAV Conference (Italian Society of Gravitational Physics) Santa Margherita di Pula, Cagliari (Italy).[\[website\]](#)
- 2018 Chairmann of session AT1 - Extended Theories of Gravity and Quantum Cosmology at 15th Marcel Grossmann Meeting, Rome Italy [\[website\]](#)
- 2018 Member of Scientific and Local Committee of Second Siberian Cosmology Days 2018, Tomsk, (Russian Federation). [\[website\]](#)
- 2017 Member of Scientific and Local Committee of second Working Group meeting, second Core Group meeting and third Management Committee Meeting of COST Action CA15117 "Cosmology and Astrophysics Network for Theoretical Advances and Training Actions (CANTATA)", Frankfurt, Germany. [\[website\]](#)
- 2017 Member of Scientific Committee of First CANTATA Summer School, "LCDM and Beyond: Cosmology Tools in Theory and in Practice", Corfú (Greece) [\[website\]](#).
- 2017 Member of Scientific Committee of Workshop, Aggregation-Diffusion PDEs: Variational Principles, Non-locality and Systems, Anacapri (Italy) [\[website\]](#).
- 2016 Member of Scientific Committee of Lake Como School of advances studies, Brave New Worlds, understanding the planets of other stars, Como (Italy)[\[website\]](#) .
- 2016 Member of Scientific and Local Committee "First Meeting Cantata Cost Action", [\[website\]](#)
- 2016 Member of Scientific and Local Committee of XXII-SIGRAV Conference (Italian Society of Gravitational Physics) Cefalú, (Italy) [\[website\]](#).
- 2016 Member of Scientific and Local Committee of Siberian Cosmology Days 2016, Tomsk, (Russian Federation). [\[website\]](#)
- 2015 Member of Scientific and Local Committee of Siberian Cosmology Days 2015, Tomsk, (Russian Federation). [\[website\]](#)
- 2014 Member of Scientific and Local Committee of XXI-SIGRAV Conference (Italian Society of Gravitational Physics) Alessandria, (Italy). [\[website\]](#)
- 2014 Session chair, Gravitational Waves, XX-Conferenza: "Problemi Attuali di Fisica Teorica", Vietri Sul Mare, (Italy).
- 2013 Member of Local Committee of "Dark Side of the Universe 2013" IX International Workshop (DSU2013), Sissa, Trieste, (Italy). [\[website\]](#)
- 2012 Member of Local Committee of XX-SIGRAV Conference (Italian Society of Gravitational Physics) Osservatorio Astronomico di Capodimonte, Napoli, (Italy)[\[website\]](#).
- 2010 Session chair, PhD Workshop, Dipartimento di Scienze Fisiche, Università degli Studi di Napoli "Federico II", Napoli, (Italy).
- 2009 Member of Scientific Organizing Committee of SIGRAV-INFN Cosmology School "Coarse-Grained Cosmology", Istituto di Fisica Teorica Galileo Galilei, Firenze, (Italy) [\[website\]](#).
- 2009 Session chair, SIGRAV-INFN Cosmology School "Coarse-Grained Cosmology, Istituto di Fisica Teorica Galileo Galilei, Firenze, (Italy).

Research Stages

Since 2006, I have spent many research periods abroad (Japan, Brazil, Spain, Germany, Greece, France, Russia, USA) and in Italy, opening new and fruitful collaborations.

Outreach and dissemination

My commitment to science communication extends far beyond research and teaching. From 2018 to 2020, I served as the INFN Outreach Manager and represented the Naples section in the Third Mission Coordination Committee. In addition, I am a member of the F2-Cultura Committee at the University of Naples Federico II, where I actively contribute to organizing cultural events that engage both the academic community and the broader public.

Throughout my career, I have been dedicated to sharing my research and the broader implications of science with diverse audiences.

My work has been featured in prominent Italian newspapers as well as in major European newspapers and American scientific magazines. These platforms have provided valuable opportunities to discuss the significance of my research and its relevance to some of the most pressing scientific questions of our time.

In addition to written media, I have participated in various podcasts and video productions aimed at making complex scientific concepts more accessible. Notable among these are [Le eccellenti della Campania: 6 storie di donne di successo](#), a video series celebrating successful women in Campania, and [La Teoria di tutte](#) a documentary series produced by LaEffe. I also contributed to [Dante in Puglia](#), a cultural video project that intertwines literary history with scientific exploration and [Progetto Tornanza: una foto che ti cambia la vita](#).

Moreover, I have appeared on several national Italian television programs, where I have had the opportunity to discuss astrophysics, black holes, and cosmology with a broad and diverse audience [\[video\]](#) or [\[video\]](#). These television appearances have been instrumental in making advanced scientific topics accessible to the general public, sparking curiosity and interest in the wonders of the universe. My dedication to public engagement also includes delivering public talks and lectures, where I share the latest findings in astrophysics, the groundbreaking work of the Event Horizon Telescope, and the exploration of black holes. These events are particularly rewarding, as they allow me to interact directly with audiences of all ages, fostering a deeper understanding of the universe and the scientific efforts to explore its mysteries.

Through these varied outreach efforts, I aim to create meaningful connections between the scientific community and the public, nurturing a shared curiosity and appreciation for the cosmos.

Dichiarazione sostitutiva di certificazioni
(Art. 46, D.P.R. 28 dicembre 2000 n. 445)
Dichiarazione sostitutiva dell'atto di notorietà
(da sottoscrivere davanti all'impiegato addetto o da presentare
o spedire con la fotocopia di un documento di identità)
(Art. 47, D.P.R. 28 dicembre 2000 n. 445)

Curriculum vitae e studiorum di Marcello Lissia aggiornato al 22 luglio 2025

I. Studi e titoli

- **Luglio 1989: Ph. D. in Physics.**
Massachusetts Institute of Technology, Cambridge, MA
Tesi: "Quarks and Hadronic Structure".
(Riconosciuto equipollente al titolo di dottore di ricerca dell'ordinamento universitario italiano con decreto del Ministro dell'Università e della Ricerca Scientifica e Tecnologica n. 168 del 19/2/1992).
- **Luglio 1984: Laurea in fisica con lode.**
Università degli studi di Cagliari
Tesi: "Interazione di un monopolo magnetico con la materia".
- **Luglio 1980: Maturità classica con 60/60.**
Liceo Classico "Siotto Pintor", Cagliari

II. Attività ed esperienza scientifica

- **Ricercatore livello II** dell'Istituto Nazionale di Fisica Nucleare (I.N.F.N.): dal 1 gennaio **2009** a **oggi**.
- **Ricercatore livello III** dell'I.N.F.N.: da dicembre **1988** al 31 dicembre **2008** (in ruolo da giugno 1991).
- **Research Assistant** al Center for Theoretical Physics del MIT, Cambridge, MA, USA, da giugno **1996** a dicembre **1998**.
- È autore di più di 110 articoli scientifici su riviste internazionali. In particolare ha pubblicato 2 Physics Reports (**IF=20.3**), 5 Physical Review Letters (**IF=9**), 14 Physical Review D (**IF=4.7**), 4 Nuclear Physics B (**IF=4.6**), 1 Astronomy & Astrophysics (**IF=4.3**), 11 Physics Letters B (**IF=4.2**), 3 Astroparticle Physics (**IF=3.5**), 2 Nuclear Physics A (**IF=3.1**), 4 Physical Review E (**IF=2.5**), principalmente su argomenti di **fisica astro-particellare, con enfasi sui neutrini**, e di fisica adronica, in particolare su sistemi a temperatura finita. Inoltre si occupa di **rivelazione diretta di materia oscura** e di fisica multidisciplinare. Gli articoli nel complesso hanno più di 3000 citazioni con un **parametro di Hirsch $h = 27$** (dati da web of science).
- Svolge attività di arbitro (**referee**) per diverse riviste scientifiche tra le quali Phys. Rev. Lett., Phys. Rev. D, Phys. Rev. E, Astroparticle Physics e Physica A.

- **Collabora** ed ha collaborato con le seguenti istituzioni: M.I.T. (Boston), I.N.T. e University (Seattle), J. Hopkins University (Baltimora), JNRN (Dubna), Università di Ferrara, Gran Sasso Science Institute (GSSI), Università di Napoli Federico II, SNOLAB (Canada), Lab. Nazionali del Gran Sasso e Politecnico di Torino.
- Partecipa alle collaborazioni sperimentali DarkSide e DEAP.

III. Coordinamento, organizzazione ed incarichi INFN

- Coordinatore del Gruppo IV della Sezione di Cagliari da aprile **1995** a maggio **2001** e da aprile **2007** al **2015**: 16 persone afferenti al Gruppo.
- Responsabile locale dell'iniziativa specifica FA21/FA51/TASP (Fisica astro-particellare) dal **1995** al **2015**: 8 persone coinvolte nell'iniziativa.
- Componente della Commissione Calcolo e Reti dell'Istituto da gennaio **2001** a luglio **2006**.
- Rappresentante del personale con profilo di ricercatore da maggio **1993** a maggio **1996**, da maggio **1999** a maggio **2005** e da maggio **2015** a maggio **2019**.

IV. Didattica

- Ha tenuto **34 corsi istituzionali** e **4 cicli di lezioni** dal **1989** ad **oggi** per il corso di laurea in Fisica dell'**Università degli Studi di Cagliari** nei SSD FIS/02 e FIS/04: 27 volte è stato nominato Professore a contratto (per "*Meccanica Quantistica II*", "*Introduzione alla fisica delle stelle*" e "*Metodi computazionali in fisica teorica*" del vecchio ordinamento, per "*Fisica Astronucleare*" della laurea specialistica e per "*Introduzione alla Fisica Computazionale*" della laurea triennale), quattro volte ha contribuito ai corsi di Fisica Nucleare, con il ciclo di lezioni "*Introduzione alla fisica delle stelle*", ed di Istituzioni di Fisica Teorica, con un ciclo di lezioni "*Introduzione alla relatività*".
- È stato relatore di **8 tesi di laurea** e **2 tesi di dottorato** in Fisica dell'**Università degli Studi di Cagliari** dal **1991** ad **oggi** su argomenti di fisica nucleare e fisica astroparticellare e materia oscura.
- Teaching Assistant al Phys. Dept. del MIT (Cambridge, MA) da settembre **1985** a maggio **1986** per i corsi "*Electromagnetism*" e "*Introductory Nuclear Physics*".

Riccardo Murgia

COSMOLOGIST & SCIENCE COMMUNICATOR

Assistant Professor (RTT), Physics Department, University of Cagliari (UniCa)
Sardinia (IT)

Scientific interests

- Interplay among astrophysical observations, (astro-)particle physics models, and cosmology
- Gravitational wave and multi-messenger astronomy as a cosmological tool
- Model-independent cosmology with Machine Learning methods
- Multi-probe constraints on the nature of dark matter and dark energy
- Cosmological structure formation on non-linear scales with N-Body hydrodynamic simulations
- Inclusive didactics and creative science communication

Fellowships

- 2024 – Associate member of INFN-TEONGRAV (National Institute for Nuclear Physics) *Cagliari (IT)*
- 2022 – 2025 Member of the European Consortium for Astroparticle Theory (EuCAPT)
- 2021 – Member of the Cosmology Division of the Einstein Telescope Observational Science Board
- 2022 – 2024 Research Assistant Professor (RTDa) at GSSI (Gran Sasso Science Institute) *L'Aquila (IT)*
- 2022 – 2024 Associate member of INFN-TEONGRAV (National Institute for Nuclear Physics) *L'Aquila (IT)*
- 2019 – 2022 CNRS/IN2P3 Post-Doctoral Fellowship at LUPM (Laboratoire Univers et Particules Montpellier) *Montpellier (FR)*
- 2019 – 2022 Affiliated member of the IN2P3/PACT (Particles, Astroparticles, Cosmology: Theory) Team *Montpellier (FR)*
- 2019 – Associate member of the GW Working Group of the SKA collaboration
- 2019 Affiliated member of IFPU (Institute for Fundamental Physics of the Universe) *Trieste (IT)*
- 2016 – 2019 Associate member of INFN-INDARK (National Institute for Nuclear Physics) *Trieste (IT)*
- 2018 Erasmus+ Traineeship at TTK-RWTH Aachen University *Aachen (GER)*
- 2015 Associate member of INFN (National Institute for Nuclear Physics) *Turin (IT)*

Awards

- 2022 **Marie Skłodowska-Curie Action Seal of Excellence (for the high quality project proposal in a highly competitive evaluation project)** – awarded by the European Commission
- 2022 **Habilitation for professorship in Italian universities** – sector 02/A2 (Theoretical Physics of Fundamental Interactions)
- 2016 **Alfredo Molinari Award (for the best theoretical physics master thesis discussed in Turin in 2015)** – awarded by INFN Torino
- 2008, 2012 **Awards of Merit** – awarded by Regione Autonoma della Sardegna

Professional activities

- 2024 – **Co-organizer** of a Research & Outreach Exchange Program in support of the Sardinian candidate site for Einstein Telescope, involving GSSI, INFN-Cagliari, GSSI and INAF-OAC
- 2019 – **Co-founder and President** of *IDeAS*, a cultural association promoting (inter)national scientific & artistic events in Sardinia
- 2019 – **Referee** for *Monthly Notices of the Royal Astronomical Society*, *Physical Review D*, *Physical Review Letters*
- 2016 – 2018 **Organizer** of the Monday Cosmology Digest, the SISSA weekly Journal Club on Cosmology
- 2016 – 2018 **Member** of the SISSA Astrophysics & Cosmology Webmaster Team

Teaching

2023 –	Physics Lecturer (60 hours), Bachelor Students in Pharmaceutical Biotechnologies and Environmental Sciences	GSSI L'Aquila
2023 –	Multi-Probe Cosmology Lecturer (12 hours), PhD Students in Astroparticle Physics	GSSI L'Aquila
2023 –	Cosmology Lecturer (24 hours), PhD & Master Students in Physics	Cagliari University

Student Mentorship

Università degli Studi di Cagliari

2025 –

Università degli Studi di Cagliari

2025 –

Gran Sasso Science Institute

2024 –

Università degli Studi di Cagliari

2024

Gran Sasso Science Institute

2023 –

Gran Sasso Science Institute

2022 – 2025

Università degli Studi di Cagliari

2021

Conference, Workshop & School organization

2024	ModIC24 - IFPU Focus Week workshop on model-independent cosmology with multi-messenger data Co-organizer and convener	Trieste (IT)
2024	10th GSSI Astroparticle Physics Scientific Fair Co-organizer, convener and speaker	L'Aquila (IT)
2023	9th GSSI Astroparticle Physics Scientific Fair Co-organizer and convener	L'Aquila (IT)
2018, 2019	1st & 2nd IDeAS Summer School (dedicated to late High School and early Bachelor students) Co-founder, co-organizer, convener and speaker	Cagliari (IT)
2017	ASTRO-TS Collaboration with the Local Organizing Committee	Trieste (IT)
2017	8th Young Researcher Meeting Collaboration with the Local Organizing Committee	Cagliari (IT)
2015	TAUP 2015 - XIV International Conference on Topics in Astroparticle and Underground Physics Collaboration with the Local Organizing Committee	Turin (IT)

Visited Institutes

2024	Università degli Studi di Cagliari – Dipartimento di Fisica (<i>from March to May</i>)	Cagliari (IT)
2023	Università degli Studi di Cagliari – Dipartimento di Fisica (<i>from April to June</i>)	Cagliari (IT)
2021	Università degli Studi di Cagliari – Dipartimento di Fisica (<i>from June to September</i>)	Cagliari (IT)
2018	RWTH Aachen University – Institute of Theoretical Physics and Cosmology (TTK) (<i>from April to July</i>)	Aachen (GER)

Education & Training

SISSA - International School for Advanced Studies

PH.D. IN ASTROPHYSICS & COSMOLOGY

- Thesis title: Constraining Dark Matter properties with the Inter-Galactic Medium and other probes
- Thesis score: *cum laude*
- Thesis advisor: Prof. Matteo Viel (SISSA, IFPU, INFN and INAF Trieste)

Trieste (IT)

2015 – 2019

Università degli Studi di Torino

MASTER DEGREE IN PHYSICS, THEORETICAL CURRICULUM

- Thesis title: Bounds on the coupling between Dark Matter and Dark Energy from CMB data
- Thesis score: 110/110 *cum laude*
- Thesis advisors: Prof. Nicolao Fornengo and Dr. Stefano Gariazzo (Università degli Studi di Torino and INFN Torino)

Turin (IT)

2012 – 2015

Università degli Studi di Cagliari

BACHELOR DEGREE IN PHYSICS

- Thesis title: Il paradosso EPR e il teorema di Bell (The EPR paradox and Bell's theorem)
- Thesis score: 108/110
- Thesis advisor: Prof. Mariano Cadoni (Università degli Studi di Cagliari and INFN Cagliari)

Cagliari (IT)

2008 – 2012

Skills

Languages	Sardinian (<i>native</i>), Italian (<i>native</i>), English (<i>fluent</i>), Spanish (<i>intermediate</i>), French (<i>basic</i>)
Programming	Python (<i>advanced</i>), C/C++ (<i>basic</i>), Fortran (<i>basic</i>)
Scientific software	class, camb, 2LPTic, GADGET, emcee, GetDist, MontePython, Cobaya, GWFish, CosmoMC, Mathematica
Miscellaneous	\LaTeX , Microsoft Office, Libreoffice, HTML (<i>basic</i>), Bash scripting (<i>basic</i>)

Academic References

Dr. Vivian Poulin

LUPM, CNRS & MONTPELLIER UNIVERSITY (FR)

Prof. Matteo Viel

SISSA, IFPU, INFN & INAF – TRIESTE (IT)

Prof. Julien Lesgourgues

TTK – RWTH AACHEN UNIVERSITY (GER)

Prof. Marica Branchesi

GSSI, INAF & INFN – L'AQUILA (IT)

Prof. Nicolao Fornengo

UNIVERSITY & INFN – TORINO (IT)

Prof. Mariano Cadoni

UNIVERSITY & INFN – CAGLIARI (IT)

Seminars, Talks & Webinars

Invited:

06/2023	Università degli Studi di Cagliari – Probing Cosmology with Gravitational Waves and Structure Formation data	<i>Cagliari (IT)</i>
12/2022	Università degli Studi di Cagliari – Probing cosmology with gravitational wave and structure formation data	<i>Cagliari (IT)</i>
12/2022	SISSA – Hitchhiker’s Guide to Cosmological Concordance	<i>Trieste (IT)</i>
12/2021	Gran Sasso Science Institute – Hitchhiker’s Guide to Cosmological Concordance	<i>L’Aquila (IT)</i>
04/2021	Università degli Studi di Cagliari – Hitchhiker’s Guide to Cosmological Concordance (<i>webinar</i>)	<i>Cagliari (IT)</i>
11/2020	Università degli Studi di Milano – Early Dark Energy in light of Large Scale Structure and the CMB lensing anomalies (<i>webinar</i>)	<i>Milano (IT)</i>
06/2020	News from the Dark Ep. 5 – Probing new physics with the IGM and other cosmological surveys (<i>webinar</i>)	<i>Strasbourg (FRA)</i>
04/2020	Max Planck Institute for Physics – Cosmological bounds on “non-cold” dark matter (<i>webinar</i>)	<i>Munich (GER)</i>
06/2019	Università degli Studi di Torino – A path through the forest: constraining the nature of dark matter with Lyman- α observations	<i>Turin (IT)</i>
05/2019	News from the Dark Ep. 4 – Lyman- α forest constraints on dark matter	<i>Montpellier (FR)</i>
03/2017	Università degli Studi di Cagliari – Dark matter at small scales: a general approach	<i>Cagliari (IT)</i>
05/2016	Università degli Studi di Cagliari – Constraints on the coupling between dark energy and dark matter from CMB data	<i>Cagliari (IT)</i>

Contributed:

09/2024	1st TEONGRAV international workshop – Quasi-local masses and cosmological coupling of astrophysical compact objects	<i>Roma (IT)</i>
12/2020	PONT 2020 – Early Dark Energy in light of Large Scale Structure and the CMB lensing anomalies (<i>webinar</i>)	<i>Avignon (FR)</i>
03/2020	3rd EDSU World Summit – Constraining Dark Matter properties with the Inter-Galactic Medium and other probes	<i>Guadeloupe (FR)</i>
07/2019	EPS-HEP Conference 2019 – A general framework for modeling the small-scale power in non-standard cosmologies	<i>Ghent (BEL)</i>
04/2019	IFAE 2019 – A general framework for modeling the small-scale power in non-standard cosmologies	<i>Naples (IT)</i>
04/2019	UniVersum III – A general framework for modeling the small-scale power in non-standard cosmologies	<i>Milan (IT)</i>
12/2018	The quest for new physics – A general framework for modeling the small-scale power in non-standard cosmologies	<i>Valencia (SPA)</i>
07/2018	From Dark Energy to Bright Synergies – A general approach for testing “non-cold” dark matter at small cosmological scales	<i>Sexten (IT)</i>
09/2017	ASTRO-TS – A general approach for testing “non-cold” dark matter at small cosmological scales	<i>Trieste (IT)</i>
05/2017	8th Young Researcher Meeting – “Non-cold” dark matter at small scales: a general approach	<i>Cagliari (IT)</i>
04/2017	UniVersum – Dark matter at small scales: a general approach	<i>Turin (IT)</i>
04/2016	7th Young Researcher Meeting – Constraints on the coupling between dark energy and dark matter from CMB data	<i>Turin (IT)</i>

Informal:

11/2019	2nd GaDaMa Informal Meeting – Constraining Dark Matter properties with the Inter-Galactic Medium and other probes	<i>Montpellier (FR)</i>
05/2018	RWTH Aachen University – A general approach for testing “non-cold” dark matter scenarios with structure formation data	<i>Aachen (GER)</i>

Outreach

2023 –	Corresponding author of the Chapter “The Dark Universe: Something New Exists But We Do Not Know Its Nature” in the book “New Challenges and Opportunities in Physics Education” (Challenges in Physics Education Series, Springer, 2023)	<i>Sardinia</i>
2023 –	Author and performer of “Scièntzia in Sardu LIVE” plurilingual theatre monologue on cultural diversity and the social impact of international science	<i>Sardinia</i>
2023	Co-organizer of the first Edition of “Cuatru Cuartus de Scièntzia” a series of 4 plurilingual hybrid (live + online streaming) events between art and science	<i>Sardinia</i>
2023	Co-organizer of the first Edition of “Scièntzia in Biddu” plurilingual outreach event held on the occasion of the first Einstein Telescope Symposium	<i>Sardinia</i>
2022 –	@thesardinian_cosmologist short videos distributed on various social media channels to communicate science in Sardinian language	<i>remotely</i>
2022	Member of the Scientific Committee and Speaker for the 1st edition of the GRAVITASFest an outreach festival on science and philosophy, organized by INFN	<i>Cagliari (IT)</i>
2021 – 2022	Member of the Scientific Committee and Speaker for “Nuovi Dialoghi sui Massimi Sistemi” a series of online seminars on science and philosophy, organized by INFN	<i>remotely</i>
2018 – 2019	Author and performer of <i>CosmiCollage</i>, a science communication theatre show performed, e.g., at Sharper – European Researchers’ Night, Cagliari FestivalScienza, Transistor Theatre Festival	<i>Sardinia</i>
2018	Collaboration with the artist Livia Mateias, within the international project “Our Nature, Art and Science Residency” organized by Scientifica & SISSA	<i>Trieste (IT)</i>
2017 –	Ideator, co-founder and organizer of <i>IDEAS – Incontri di Divulgazione e Astrofisica in Sardegna</i> a project aimed to communicate science through lectures and workshops, as well as through artistic performances	<i>Sardinia</i>
2016 –	Invited seminars in High Schools – “Un viaggio di 13 miliardi di anni: la teoria del Big Bang e il Modello Cosmologico Standard” (“A 13 billion year journey: the Big Bang theory and the Standard Cosmological Model”)	<i>Sardinia (IT)</i>
2016 – 2019	SISSA 4 Schools & Science 4 Schools events Guide at the cosmology exposition “La storia dell’Universo a colpo d’occhio” (“The history of the Universe at a glance”)	<i>Trieste (IT)</i>
2018	Participant to a course on <i>Theatre and Science</i> organized by SISSA and directed by Diana Hobel	<i>Trieste (IT)</i>
2018	Co-organizer and speaker for a public debate during the <i>SISSA Student Day</i>, dedicated to High School students “La scienza e’ democratica?” (“Is science democratic?”)	<i>Trieste (IT)</i>
2017	Participant to <i>Science Dialogues, Training Course in Creative Science Communication</i> held by the SISSA Medialab	<i>Trieste (IT)</i>

Curriculum vitae of Lazzaro Claudia

Research interests:

- gravitational waves searches
- multimessenger astrophysics
- data analysis methodology

Education

- **Phd:** May 2007 – April 2011 PhD at Eidgenössische Technische Hochschule Zurich, IPP (Institute for Particle Physics), PhD thesis: “Reconstruction of the muon tracks in the OPERA experiment and first results on the light collection in the ArDM experiment”, supervisor Prof. Andre' Rubbia. Defense 5/7/2012
- **Master Degree:** September 2000-October 2006: Graduation (Laurea) in Physics (final mark awarded 110/110) at University of Padova. Thesis (in italian) title: “Analysis of first events from OPERA experiment”, supervisors: Prof. Riccardo Brugnera, Dr. Stefano Dusini.

Current position

- 1/07/2024-now RTT (Ricercatore a Tempo Determinato - Tenure Track); Univeristà degli Studi di Cagliari

Prevoius positions:

- 1/07/2019-30/06/2022: Researcher (RtdA) Università degli Studi di Padova (Associazione INFN, 'Incarico di Ricerca scientifica', since 2019)
- 1/03/2019-30/06/2019 Gran Sasso Science Institute: Visiting scientist
- 1/09/2018-31/12/2018 Borsa di Studio, Università degli Studi di Padova
- 1/3/2018-31/08/2018 Postdoc at INFN (Sezione di Padova), assegnista di ricerca
- 1/3/2016-28/2/2018 VESF-EGO (Virgo Ego Scientific Forum) fellowship grant, title: “The LIGO-Virgo all-sky survey for gravitational wave transient”. Host Institution: INFN (Sezione di Padova), assegnista di ricerca
- 1/9/2015-28/2/2016 Postdoc at INFN (Sezione di Padova), assegnista di ricerca
- 1/3/2015-31/8/2015 Postdoc Fellowship at Center for Relativistic Astrophysics and School of Physics - Georgia Institute of Technology USA
- 1/9/2014-28/2/2015 Postdoc Fellowship at Umass-Amherst (University of Massachusetts) USA (affiliated to Georgia Tech since January 2015)
- 1/8/2013-31/7/2014, 8/6/2012-7/6/2013, 8/6/2011-7/6/2012 Postdoc Fellowship at INFN (Sezione di Padova), assegnista di ricerca

Member of Scientific Collaborations:

2013-now Virgo Collaboration

2014-2015 LIGO collaboration

2011-2015 Rare noise Collaboration

2007-2012 OPERA collaboration

2009-2011 ArDM Collaboration

Tasks/duties in collaboration:

01/02/2025 - now Responsabile Locale Gruppo Virgo di Cagliari

2020 - 30/06/22: co-chair of the sub group “Long duration unmodeled Gravitational Waves (GW) search” in Burst group, LIGO Virgo KAGRA Collaboration (LVK)

2017- 30/06/22: responsible of cWB all sky un-modeled search for long duration GW signals (LVK)

2020: member of LVK Data Release Policy Committee

2018 – 2020: co-chair of the Source Characterization sub-group of the burst search group of the LIGO Virgo Collaboration (LVC)

Teaching:

- 2024-2025: Università degli Studi di Cagliari, Physics Laboratory, di Fisica , Departement of Math (I semester -72h)
- 2019-2022: Università degli studi di Padova, Medical Physics course (I semester, 60h lectures), Corso di Laurea Odontoiatria e Protesi dentaria, Dipartimento di Neuroscienze. Responsible of the course in academic years: 2019/2020, 2020/2021, 2021/2022.
- 2017-2018: Università degli studi di Padova, Ingegneria Gestionale e Meccanica/Meccatronica, Physics 2, II semester, laboratory assistance (tutoring)
- 2007-2011: Five semesters as teaching assistant (tutor of exercise session) of Physics I and Physics II at Eidgenössische Technische Hochschule Zurich.

Tutor and Supervisor

- 2 PhD Students (Università di Trento)
- 3 Master Students (Università degli Studi di Padova and Università di Trento)
- 2 Bachelor Students (università degli Stud di Padova, Università degli Studi di Cagliari)

Attendance to International Conferences: participation in 18 international conferences, 18 presented talks

List of participation in last five years:

- **TAUP 21**, Virtual Conference, 26 August- 3 September, 2021
talk: “Search for unmodeled long duration gravitational waves for Advanced LIGO and Advanced Virgo's third observing run”
- **ICNFP 2021**, Virtual Conference, 23 August – 2 September, 2021
Invited talk: “Gravitational-wave results from the last LIGO-Virgo observational run”
- **EPS 2021**, Virtual Conference, 26-30 July, 2021
talk: “Gravitational-wave results from the last LIGO-Virgo observational run”
- **Marcell Grossman 2021**, Virtual Conference, 5-10 July, 2021

talk: "Methods and results on the search for gravitational wave signals in the post-merger phase after binary black hole coalescences."

- **2020 Statistical Methods for the Detection, Classification, and Inference of Relativistic Objects**, Virtual conference: Novembre 16 - 20, 2020

talk: "GW transient un-modeled searches and characterization of the waveform signal using cWB"

- **2020 EFT methods from Bound States to Binary systems**, Virtual conference Universita' degli Studi di Padova 28 -30 Ottobre 2020

talk:"Gravitational waves astronomy with LIGO and Virgo interferometers"

Conferences Organization:

- **Grass 2022: Gravitational-waves Science&technology Symposium**
Padova, <https://agenda.infn.it/event/30681/> , LOC member
- **Grass 2018: Gravitational-waves Science&technology Symposium**
Padova, <https://agenda.infn.it/conferenceDisplay.py?confId=14869>, LOC member

Outreach & Masterclass

- Partecipazione alla Notte dei ricercatori (2018-2022);
- 07/05/2016 organizer and speaker of "La rivelazione delle onde gravitazionali" Auditorium del Centro San Gaetano, Padova.
- 30/04/2016 organizer of "Il nostro Universo. Incontro per famiglie e bambini delle scuole primarie". Palazzo Moroni Padova
- 14/04/2016 Palazzo del Bo. Università degli Studi di Padova. Seminar: "Le rughe dell'Universo. La scoperta delle onde gravitazionali"

Prizes

- Special Breakthrough prize in Fundamental Physics 2016 awarded for detection of gravitational waves 100 after Albert Einstein prediction, assigned to LIGO founders and LIGO-Virgo Collaboration.
- Award of "Padovani Eccellenti" title in 2017

Computer skills:

- Linux and Windows operating systems
- good level C++, good level BASH scripting, good level Python
- ROOT and GEANT4
- Condor (parallel programming), HTML

Research activity synopsis

2013-now, LIGO - Virgo

Since August 2013 I'm involved in the LIGO-Virgo Collaboration (LVC), working on the analysis of gravitational wave observations targeting transient signals from all-sky directions. The search for generic transients with minimal assumption (generic burst approach) has the distinctive feature to be robust against uncertainties in the gravitational waves (GW) models, and it covers the widest range of detectable astrophysics source. The coherent Wave Burst (cWB) pipeline[1] has been developed to perform the burst (all sky) analysis with minimal assumption.

Since 2013 I'm involved in different unmodeled GW transient all sky searches using cWB and in the development of this algorithm. These unmodeled searches, are listed in the highest priority data analysis activities of LVC, and include searches for short and long duration transient signals, and search for compact binaries coalescences (CBC) signals without using templates. These include many tasks: event trigger generation, background assessment with larger statistics, confidence and detection efficiency estimation, event parameters reconstruction. To prepare for the future observational data-taking of second-generation interferometers (Advanced LIGO and Advanced Virgo), the cWB algorithm was significantly enhanced by incorporating machine learning algorithms to improve the distinction between signals and noise. I have contributed to implement and test new developments and to set up configurations of the pipeline[2].

Contribution to different GW unmodeled searches

During the first data taking (O1) of the Advanced detector Era, LIGO detected the first two GW events [2][3]; in particular cWB [1] detected the first signal within three minutes since its arrival time at the earth. I was involved in the analysis of the statistical confidence of the candidate events, the estimation of the detection efficiency [3].

During the second data taking (O2), on 17 august 2017 the Advanced LIGO and Advanced Virgo interferometers made the first observation of a binary neutron stars (BNSs) inspiral GW170817 [4]. Dedicated search for signal due to the post merger (PM) phase of the BNS coalescence originating GW170817, have been performed and reported in [6]. I was responsible for the search of PM signal, both short and long duration transient, without assumption using cWB algorithm; moreover and I was member of the paper writing team of LVC for publication [5].

Different astrophysical phenomena are foreseen to emit GW transient signals with long duration, these include fallback accretion, accretion disk instabilities and many others; the theoretical predictions for those signals cover a wide range of morphologies, whose models are only poorly known or not available. Therefore, burst unmodeled searches are the most suitable discovery tools. Since 2018 I was responsible for all sky unmodeled search for GW signals with duration since few sec up to hundreds sec (long), using cWB, and since June 2021 I was the co-chair of the sub-group "long duration unmodeled GW searches" of LVK Collaboration. I performed the

analysis and I was member of the joint paper writing team of LVC and LVK for both O2 and O3 data taking. Both publication have been published [6] [7].

I have contributed also to the all-sky search for short duration bursts for the first three data takings of the LIGO Virgo interferometers network [8][9]. Furthermore for the last data taking (O3) I have contributed to the analysis in the low frequency (LF) band and I led the analysis of the networks formed by the LIGO Hanford and Virgo, and the threefold LIGO-Virgo network in LF frequency range. Results of this analysis has been reported in [10].

I'm actually contributed to the all-sky search for short and intermediate duration bursts, for the O4 data taking, publications of the LVK collaboration are in progress.

Moreover I contributed to make cWB2G pipeline compliant to run on the Open Science Grid (OSG), allowing access to distributed high throughput computing.

Characterization of the GW waveform signal

A very general reconstruction and estimation of the transient gravitational wave features, i.e. not based on prior knowledge of the waveform models, is useful to catch unexpected characteristics of the signal. It complements the analyses based on parametrized models of CBC signals. In 2019-2020 I was co-chairs of the Source Characterization sub-group of the burst search group in the LVC; this group carried out the analysis and the reconstruction of the GW signals due to binary black holes (BBH) coalescences detected in the first two LVC data takings without using templates. I have contributed to analyze, to collect and discuss these studies reported in section VI of the LVC publication [11]. Moreover I have contributed to the development of a specific methodology based on cWB, that aims for measure the consistency between unmodeled cWB reconstructions and theoretical expected waveform for compact binary coalescences. This methodology and its results have been reported in [12].

I have also contributed to the development of tools to characterize features of GW signals:

- new method to search for possible low energetic signal with unknown morphologies features in the post merger phase of the gravitational wave signal from BBH coalescences, such as echoes. This methodologies has been applied to the BBH events within the public catalog GWTC-3. Search results, including upper limits on the amplitude of GW echoes and detection performance have been reported in [13]
- a minimally-modeled method to search for the higher multipoles in addition to the dominant multipole in the GW signal in BBH mergers. The method is based on the cWB algorithm and it has been applied on GW190814 [14] and GW190412 detections, it is reported in [15].
- studies of detection and reconstruction capability of the cWB pipeline under the presence of more than one signal due to compact binary coalescences in the data. This study considered overlapping signals, testing cWB capability identifying both signals correctly. Results have been reported in [17]6

- tool to improve detection capability and to characterize the post merger phase of the neutron star binary coalescence (PMNS). This represents one of the target of GW astronomy in the future when it will profit of the expected increased sensitivity in high frequency range in third generation interferometer network. I was co-ad-visor of a bachelor, a master and PhD thesis on this topics. Results have been reported in [17].

Task in LVC collaboration

Among many duties in the collaboration I was part of review team for different LVC publications; furthermore I was member in 2020 of the LIGO-Virgo-KAGRA Data Release Policy Committee, appointed to discuss possible open data policy.

2011-2014, Rare Noise

RareNoise aimed at studying the non-equilibrium phenomena focusing on the effect of temperature gradients; it investigated the statistical properties of thermal noise of mechanical oscillators in non equilibrium steady states. In this project I contributed to develop the analysis software and data taking software. The data analysis software has been developed to study the statistical properties of the position fluctuations of the oscillator, and to investigate the dependence of the statistical observables (mainly mean energy of the oscillation mode) in different experimental conditions. In [18][19] the results of the analysis for data taken in the period 11/2011-5/2012 have been reported.

2007-2011, OPERA.

OPERA was long baseline neutrino experiment designed to observe the ν_μ to ν_τ oscillations in the direct appearance mode. It was a hybrid experiment formed by electronic detectors and nuclear emulsions. The electronic detector data analysis was the first step in the OPERA's data analysis, and it is used to reconstruct charged particle tracks, to select the muon's track. Main purpose of the PhD thesis was the optimization of the muon track pattern reconstruction and on the optimization of the Kalman filter applied to the particle track in the electronic detector. In particular I studied the efficiency of Kalman filter procedure, using MC technique, focusing on the momentum reconstructed resolution of the track and on the track vertex position reconstruction. The Phd thesis includes the analysis of the electronic detector data taken during the years 2008-2010, reporting the muon momentum spectrum measured in this period and the agreement with the MC expectations. The full analysis of the OPERA electronic detector has been reported by the collaboration in [20].

2009-2011, ArDM

During the PhD, I was involved in the ArDM experiment; it was a prototype for a next generation WIMP detector measuring both the scintillation light and the ionization charge from nuclear recoils

My contribution was initially focused on the simulation of the particle interaction with argon and on the propagation and collection light in the detector. During this period the first calibration ArDM data taking took place the result this test and the MC-data comparison has been reported in publication [21].

List of cited publications:

- [1] S. Klimenko et al. , Phys.Rev. D93 (2016) 042004 ; arXiv:1511.05999
- [2] Marek J. Szczepańczyk, F. Salemi et al. ; Phys. Rev. D107, 062002
DOI:<https://doi.org/10.1103/PhysRevD.107.062002>
- [3] LIGO Scientific and Virgo Collaborations, PhysRevLett.116.061102 , arXiv:1602.03837
- [4] LIGO Scientific Collaboration and Virgo Collaboration, Phys. Rev. Lett. 119, 161101;
arXiv:1710.05832
- [5] LIGO Scientific and Virgo Collaboration, ApJL, 851:L16 (2017) arXiv:1710.09320
- [6] LIGO Scientific and Virgo Collaboration, Phys. Rev. D 99, 104033; arXiv:1903.12015
- [7] LIGO Scientific and Virgo and KAGRA Collaboration, Phys. Rev. D 104, 102001 (2021),
arXiv:2107.13796
- [8] LIGO Scientific and Virgo Collaboration, Phys. Rev. D 100, 024017 (2019) arXiv:1905.03457
- [9] LIGO Scientific, Virgo and KAGRA Collaboration, Phys. Rev. D 104, 122004 (2021),
arXiv:2107.0370
- [10] Szczepańczyk, M. J. and Salemi, F. et al.; Phys. Rev. D 107, 062002, arXiv:2210.01754[gr-qc]
- [11] LIGO Scientific and Virgo Collaboration, Phys. Rev. X9,031040 arXiv:1811.12907
- [12] F. Salemi, E. Milotti, G. A. Prodi, G. Vedovato, C. Lazzaro, S. Tiwari, S. Vinciguerra, M. Drago, and S. Klimenko; Phys. Rev. D 100, 042003, arXiv:1905.09269 [gr-qc]
- [13] A. Miani, C. Lazzaro, G. A. Prodi, S, Tiwari, M. Drago, E. Milotti, G. Vedovato;
Phys. Rev. D 108, 064018 <https://doi.org/10.48550/arXiv.2302.12158>
- [14] LIGO Scientific, Virgo and KAGRA Collaboration, Astrophys. J. Lett. 896, L44 (2020) ,
arXiv:2006.12611
- [15] G Vedovato et al. , Classical and Quantum Gravity 39.4 (2022)
- [16] P. Relton, A. Virtuoso, S. Bini, V. Raymond, I. Harry, M. Drago, C. Lazzaro, A. Miani, S. Tiwari; Phys. Rev. D 106, 104045, arXiv:2208.00261 [gr-qc]
- [17] M.C. Tringali, A. Puecher, C. Lazzaro, R. Ciolfi, M. Drago, B. Gioacomazzo, G. vedovato. G.A. Prodi.
Classical and Quantum Gravity, Volume 40, Number 22; DOI 10.1088/1361-6382/acfc0d ;
arXiv:2304.12831 [gr-qc]

- [18] Conti L., De Gregorio P., Karapetyan G., Lazzaro C., Pegoraro M., Bonaldi M. and Rondoni L. *J. Stat. Mech.* (2013) P12003.
- [19] Conti L., Lazzaro C.; Karapetyan G., Bonaldi M., Pegoraro M., Thakur R., De Gregorio P., Rondoni L. *Phys. Rev. E* 90, (2014), 032119
- [20] OPERA Collaboration; *New J.Phys.* 13(2011) 053051; arXiv:1102.1882.
- [21] ArDM Collaboration; *JINST* 5 (2010) P11003; arXiv:1009.3641v2

Cagliari 27/11/25

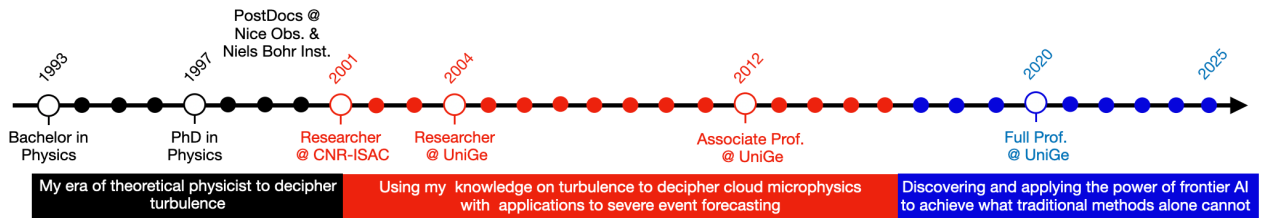
Curriculum Vitae and Track Record

November 2025

Personal Information

Born in _____, [Scopus Author ID: 7004593510](#)

Professional Address: Department of Civil, Chemical and Environmental Engineering (DICCA), University of Genova (Italy) and INFN (National Institute for Nuclear Physics), Genova Section (Italy).



e-mail:

Education

July 1997 PhD in Physics, with **top marks**, Physics Dept., *Genova Univ.*. Subject: turbulent transport. June 1993 Master degree in Physics, with **top marks**, Physics Dept., *Genova Univ.*. Subject: closures.

Current Positions

2023 – Present Full professor of Physics of the Earth System, DICCA, *University of Genova* (Italy).
 2006 – Present Research contract from the *National Institute for Nuclear Physics* (INFN), Italy.

Previous Permanent Positions (no visiting)

Jan 2020 – Apr 2023 Full professor of Fluid Dynamics, DICCA, *University of Genova* (Italy).
 Jan 2012 – Dec 2019 Associate professor of Fluid Dynamics, DICCA, *University of Genova* (Italy).
 Jan 2004 – Dec 2011 Researcher in Theoretical Physics, Physics Dept., *University of Genova* (Italy).
 Jan 2001 – Dec 2003 Researcher at the *Institute of Atmospheric Sciences and Climate* (CNR-ISAC).

RESEARCH ACHIEVEMENTS

Short summary of major research achievements – creativity, innovation & cross-disciplinary

The **first phase** of my career (**black box**) saw my background as a theoretical physicist being put to the test against the **most significant challenges** of the time related to **turbulence**. I contributed to the ‘90s **revolution** of scalar turbulence in relation to the ‘Intermittency problem’ and the issue of ‘universality’ [Fr98, Fr99, Ce00, Ce01, An00, Ce04, La99, Ce02]. During that period, I also made **fundamental contributions** to the field of anomalous transport. The concept of strong anomalous diffusion, introduced in [Ca99], has become a standard in the field. My contributions to Rayleigh-Taylor turbulence were recently crystallized in two review (invited) papers, one in *Ann. Rev. Fluid Mech.* [Bo17] and one in *Physics of Fluids* [Ma17].

The **second phase** of my career (**red box**) capitalizes on my **groundbreaking research on turbulence** to understand both the microphysics processes in **clouds**, where the results I presented in [Ce05] became a new paradigm of warm-cloud genesis, and to analyze the impact of microphysics schemes on extreme precipitation [Ca15, Fe20b, Ri21, Fe21]. Demonstrating the **originality** and **multidisciplinary** nature of my **research**, I showed in [Ro20, Ro21] how the microphysical models I used in warm clouds identify turbulence as the key ingredient in the airborne transmission of virus-containing droplets in **SARS-CoV-2** outbreaks, with enormous practical and conceptual consequences.

The **third phase** of my career (**blue box**) addresses the **frustrations** born in the second phase: while my studies highlighted the necessity of **high resolution** to capture intense and localized meteorological phenomena, this need **clashes** with **unsustainable computational demands**. Necessity and feasibility are currently at odds. This sparked my curiosity to explore **frontier AI** techniques to achieve resolutions that are currently unthinkable with traditional methods. Results I presented in [Ca23, La23, Ca22b, Ca22c] showed that the interplay between deterministic weather models and AI-based strategies can lead to a **tremendous added value** in forecasting observables of environmental interest, including **extreme events** [Ca24].

Driven by **curiosity**, the **leitmotif** of my **career**, I have also engaged in applied research with remarkable results. Two notable examples include **energy harvesting**, where I **pioneered a new way** to extract energy from elastically-anchored flapping wings [Bo12, Or13, O117, Bo17b, O119], and **met-ocean studies**, where I generated the first climatic projections for the joint wind-wave energy resource by 2100 in the Mediterranean Sea [Lo21].

Ten cross-disciplinary publications - last 10 years (not necessarily the most cited)

- [1] M. Cavaiola, F. Cassola, D. Sacchetti, F. Ferrari, **A. Mazzino**, *Hybrid AI-enhanced lightning flash prediction in the medium-range forecast horizon*, Nat. Communications 15, 1188 (2024). **T. cited: 16**
This is a pioneering paper I inspired, which demonstrates that traditional methods combined with AI have an unprecedented ability to accurately predict extreme weather events.
- [2] S. Brizzolara, M.E. Rosti, S. Olivieri, L. Brandt, M. Holzner and **A. Mazzino**, *Fiber Tracking Velocimetry for Two-Point Statistics of Turbulence*, Phys. Rev. X 11, 031060 (2021). **Times cited: 15**
This work that I inspired is already revolutionizing the way two-point properties of turbulence in fluids are measured. Measurements that were once impossible are now possible.
- [3] **A. Mazzino** and M.E. Rosti, *Unraveling the Secrets of Turbulence in a Fluid Puff*, Phys. Rev. Lett. 127, 094501 (2021). **Times cited: 15**
The fine structure of turbulence in a fluid puff no longer holds any secrets. This work, which I inspired and largely conducted in its theoretical part, promises fundamental impacts on the study of turbulent transport.
- [4] M. E. Rosti, S. Olivieri, M. Cavaiola, A. Seminara and **A. Mazzino**, *Fluid dynamics of COVID-19 airborne infection suggests urgent data for a scientific design of social distancing*, Sci. Rep. 10, 22426 (2020). **Times cited: 82**
This work that I inspired is an example of how creativity and originality of thought can produce unexpected groundbreaking results: from my understanding of the microphysical processes in warm clouds, we have provided crucial answers to the triggering mechanisms of the COVID-19 pandemic.
- [5] F. Ferrari, G. Besio, F. Cassola and **A. Mazzino**, *Optimized wind and wave energy resource assessment and offshore exploitability in the Mediterranean Sea*, Energy 190, 116447 (2020). **Times cited: 61**
To fully harness the power of renewable energy, groundbreaking modeling approaches are essential. This visionary work, inspired by my insights, is rapidly becoming a cornerstone in the green industry.
- [6] M. E. Rosti, A. A. Banaei, L. Brandt and **A. Mazzino**, *Flexible Fiber Reveals the Two-Point Statistical Properties of Turbulence*, Phys. Rev. Lett. 121, 044501 (2018). **Times cited: 45**
No one imagined that by tracking a fiber in a turbulent flow, it would be possible to measure the flow two-point statistical properties. From a visionary idea emerged a revolutionary technique for Lagrangian turbulence measurements, achieving what was once deemed impossible.
- [7] G. Boffetta and **A. Mazzino**, *Incompressible Rayleigh-Taylor turbulence*, Ann. Rev. Fluid Mech. 49 119-143 (2017) (**invited paper**). **Times cited: 126**
Twenty years of my career devoted to unraveling the mysteries of fluid turbulence have been crystallized in this prestigious invited review paper.
- [8] G. Besio, L. Mentaschi and **A. Mazzino**, *Wave energy resource assessment in the Mediterranean Sea on the basis of a 35-year hindcast*, Energy 94, 50-63 (2016) (**top 1% 2016 highly cited paper**). **Times cited: 143**
Earlier studies suggested that the Mediterranean had no future as an energy reserve. However, by leveraging cutting-edge modeling strategies and my unwavering vision to challenge assumptions, we have decisively disproven those previous theories.
- [9] F. Cassola, F. Ferrari and **A. Mazzino**, *Numerical simulations of Mediterranean heavy precipitation events with the WRF model: A verification exercise using different approaches*, Atmos. Res. 164-165, 210-225 (2015). **Times cited: 97**
This endeavor, which I inspired, has been a source of immense frustration for me: I experienced firsthand that achieving accurate forecasts of severe, localized events demands ultra-high resolutions, which are, unfortunately, prohibitively expensive computationally.
- [10] L. Mentaschi, G. Besio, F. Cassola and **A. Mazzino**, *Performance evaluation of Wavewatch III in the Mediterranean Sea*, Ocean Modelling 90, 82-94 (2015). **Times cited: 180**
The atmosphere has always ignited my passion. Yet, it is the wind that drives the currents and sculpts the ocean waves. Inspired by this profound connection, I have driven this groundbreaking work, showcasing how accurate wind forecasts lay the essential groundwork for accurate wave field predictions.

Scientific productivity bibliometric indices

Number of published papers: more than **180** (1 Ann. Rev. Fluid Mech., 2 Nature Communication, 2 PNAS, 2 PRX, 13 Phys. Rev. Lett., 19 Phys. Rev. E, 16 J. Fluid Mech., 11 Phys. Fluids, 5 Atmos. Res., among others)
Hirsch-index: **H = 45** (Google Scholar); **M-index = 1.6** = H/(# of years after PhD)
i10-index = 118 # publications with more than 10 cit. (Google Scholar); *Citations*: **6560** (Google Scholar)

PEER RECOGNITION

Acquisition of funds through peer review – most relevant of the last 10 years (only closed projects)

- PI of the project “MINIERA” (175 k€, June 2020 – November 2023, funded by bank foundation CdS).
Theory, experiments and simulations led to a breakthrough: a new centimeter-scale aero-elastic device was created to efficiently harness energy from wind.
- PI of the “HI-FI SIM Covid19 FISR Project” (55 k€, December 2020 – May 2021, funded by the Italian Ministry of Education, Universities and Research.)
Leveraging my profound expertise in cloud microphysics, I delivered pivotal insights into the triggering mechanisms of the COVID-19 pandemic, unveiling key answers where others saw only uncertainty.
- WP leader of the EU Interreg Proj. “Sicomar Plus” (Local Ass.: 275 k€, June 2018 – May 2021).
I played a pivotal role in the project by harnessing cutting-edge weather and marine modeling techniques to tackle critical issues related to maritime navigation safety, setting new standards for the field.
- WP leader of the EU project AERNOSTRUM - a project financed by the European program for territorial Cooperation MED (Local assignment: 215 k€, May 2020- April 2023).
My extensive expertise in turbulence and weather modeling has been leveraged to engineer cutting-edge dispersion models, revolutionizing the study of environmental impacts.
- Action Leader (SP6-WP1-A5 and SP1-WP1-A3) and WP leader (SP3-WP4-A3_UO-GE) of the Italian Flagship Project RITMARE 2012-2016, funded by the Italian Ministry of Education, Universities and Research (initial assignment to WP + Action: 1 M€).
The atmosphere and the ocean are inextricably intertwined: I have secured prestigious funding to unveil the secrets of this captivating interplay, advancing our understanding of their dynamic relationship.
- PI of the R&D project PRIN 2012-2015 on energy harvesting in laminar flows, funded by the Italian Ministry of Education, Universities and Research, for a total of 158 k€.
Beyond my extensive work on turbulence, cloud microphysics, and weather models, I have also secured funding to pioneer the development of a groundbreaking microdevice that harnesses energy from environmental vibrations, including those triggered by the wind via aero-elastic instabilities.

Fellowships and Awards

- Jan 2000 – Jan 2001 National Institute for the Physics of Matter (INFN) award for *Outstanding young researchers in Theoretical Physics* (one-year fellowship).
- Jan 1998 – Jan 1999 Henri Poincaré research fellowship, CNRS-Observatoire de Nice, France.
- Jan 2017 – Present Ranked among the *Top Italian Scientists* in the Engineering sector.
(https://topitalianscientists.org/tis/47733/Andrea_Mazzino_-_Top_Italian_Scientist_in_Engineering)

Memberships of Scientific Societies

- 2004 – Present Member of the INFN Research Network “FIELDTURB” on turbulence research.
- 2004 – 2018 Member of the inter-University Italian Consortium CINFAI (Genova Section).
- 2012 – Present Founding Member of the Acad. Start-up PM_TEN, a spinoff of the Genova Univ. (IT).
- 2010 – 2018 Member of COST Act. MP1305 “Flowing Matter” & MP0806 “Particles in turbulence”.

Institutional Responsibilities

- 2005 – Present Member of the PhD Committee (Physics and Engineering), *University of Genova* (Italy).
- 2004 – Present Member of Committees for the evaluation of PhD Thesis (Physics and Engineering) at Univ. of Roma “La Sapienza”, Torino, Trieste (Italy), Bordeaux, Grenoble (France).
- 2021 – Present Member of the Genova Univ. Research Committee, *University of Genova* (Italy).
- 2004 – Present Member of Committees (more than 10 in the last 10 years) for the selection of post-doc candidates and researchers at the *University of Genova* (Italy) and abroad.

Commissions of Trust, including peer reviewing and evaluation activities

- 2023 – Present President of the Commission for the National Scientific Qualification (ASN)
(sector: Astronomy, Astrophysics, Earth and Planetary Physics)
- 2018 – Present Coordinator of the Research Committee of my Department (DICCA, Univ. of Genova).
- 2007 – Present Review panel member of the *French National Research Agency* and *Israel Sci. Found.*
- 2012 – Present Review panel member of the *Italian Ministry of Education, Universities and Research.*
- 2007 – 2018 Governing board member of the inter-University consortium CINFAI.
- 2012 – Present Director of the INFN Genova Section of the Research Network “FIELDTURB”.
- 2015 – 2020 Ed. board of the peer-reviewed international journal “Meccanica” - Managing Editor.

Other Peer Reviewing Activities

Peer-reviewed journals: PNAS, Phys. Rev. Lett., Phys. Rev. E, Europhys. Lett., Physica D, J. Fluid Mech. Phys. Fluids, New J. Phys., Meccanica, Appl. Energy, J. Atmos. Sci., J. Stat. Mech., J. Fluid Struct.

Funding Ag.: French Nat. Res. Ag., Israel Sci. Found. and Italian Ministry of Edu., Univ. and Res.

Most relevant 10 invited presentations (last 10 years)

- 2025 *Turbulent diffusion and effective transport: a multiscale perspective*, Lecturer at the International Summer School/Workshop on Complex Surface (Biomimetic Microstructures/Coatings) Flows, Beijing Institute of Technology (Zhuhai), Guangdong, China, 30 June – 5 July 2025.
- 2024 *Overcoming Richardson's law: fiber-based measurements for assessing the multi-point statistics of turbulence*, “American Geophysical Union 2024, session ID#: NG42A-02, Geophysical Fluid Dynamics”, Washington, D.C. 9-13 December 2024, USA.
- 2023 *Using slender objects for sensing flow properties*, “Complex Particles in Turbulent Flow”, EUROMECH Colloquium 628, May 3-5, Nice, France.
- 2020 *Tracking an assembly of rigid fibers to reconstruct the velocity strain tensor*, “Complex Lagrangian Problems of Particles in Flows”, (ICTS-TIFR), September 7-11, Bangalore, India.
- 2020 *Fiber Image Velocimetry*, “1st BICTAM-CISM Symposium on Dispersed Multiphase Flows”, Tsinghua University (Beijing), March 4-6, Beijing, China.
- 2018 *Mineral dust aerosols transported in the western Mediterranean*, “Mathematics for Atmospheric-Biospheric Science Workshop”, September 26-28, Hyytiälä, Finland.
- 2017 *Fluttering instability for energy generation at milliWatt scales*, “Mathematics for Atmospheric-Biospheric Science Workshop”, November 20-24, Levi, Finland.
- 2016 *Energy harvesting by flapping foils*, “Nonequilibrium Statistical Mechanics and Turbulence”, CECAM, September 8-10, Rome, Italy.
- 2015 *Rayleigh-Taylor Turbulence*, “European Turbulence Conference (ETC15)”, August 25-28, Delft, The Netherlands.
- 2015 *Eddy-diffusivity in turbulent transport*, COST Action MP1305: WG2 workshop “Lagrangian transport: from complex flows to complex fluids”, 7 - 9 March, Lecce, Italy.

Most relevant organization of meetings (last 10 years)

Adv. Comm. VIII International Conference “Models in Quantum Field Theory” (MQFT-2025), 6-10 October 2025, Saint Petersburg (Russia).

Sci. Comm. “9th International Conference on Meteorology and Climatology of the Mediterranean”, 22-24 May 2023, Genova (Italy).

Org. Comm. of the EuroMech Coll. “Complex particles in turbulent flow”, 3-5 May 2023, Nice (France)

Org. Comm. “Perspective in Turbulence”, 8-9 September 2022, Turin (Italy)

Org. Comm. “Lagrangian day”, 9-10 December 2019, Genova (Italy).

Org. Comm. “European Turbulence Conference (ETC17)”, September 2019, Torino (Italy).

Org. Comm. “OpenFoam Introductory Training”, Winter and Summer sections, 2017, Genova (Italy).

ADDITIONAL INFORMATION

Supervision of students and postdoc fellowships

2007 – Present **15 PhD** in Physics, Geophysics and Engineering (two of which in *cotutelle* with the University of Nice, France), Physics Department and DICCA, Genova Univ. (IT).

1998 – Present **30 Master Students** in Physics and Engineering, Genova Univ. (IT).

2007 – Present **11 post-docs** in Physics and Mechanical/Environmental Engineering, Genova Univ. (IT).

Major international collaborations

AtMath Collaboration, Climate-change; MALGA Center, AI and applications; M. Holzner, 3D experiments of fibers in turbulence, ETH-Zurich (CH); L. Brandt and S. Bagheri, complex fluids, KTH-Stockholm (SE); A. Pringle, spore dispersal in the atmosphere, Wisconsin-Madison Univ. (US); H. Kellay, fiber dispersion in turbulence, Univ. of Bordeaux (FR); M. Rosti, state-of-the art DNS in turbulence, Okinawa Institute of Sci. and Tech. (JP); P. Muratore-Ginanneschi, Statistics and AI in fluid flows, Univ. of Helsinki (FI), G. Falkovich, cloud microphysics, Weizmann Inst. of Sci., Rehovot (IL); D. Vincenzi, theoretical models of complex fluids, Univ. of Nice (FR).

Major contributions to the early careers of excellent researchers – Scientific Leadership

Last ten years, I have been supervising 8 PhD thesis and 10 master's degree thesis. I significantly contributed to shape the career of 10 my former students, now internationally established: Dr. Dario Vincenzi is Researcher at CNRS (FR); Prof. Giovanni Ghigliotti is Assistant Professor at Grenoble Univ. (FR); Dr. Laura Cimoli is Research Associate at Scripps Institution of Oceanography (US); Dr. Alessandro Orchini is PI in thermoacoustic at TU Berlin (DE); Dr. Lara Vozella is a lead science writer; Agnese Seminara is full professor of Fluid Dynamics from 2021 in my group at DICCA; Alberto Puliafito is Associate Professor in Turin; Stefano Olivieri is assistant professor of Fluid Dynamics from 2024 in my group at DICCA.

FORMATO EUROPEO PER IL CURRICULUM VITAE

Informazioni Personali

Nome e Cognome Alessandra Sabina Lanotte
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GoogleScholar

ESPERIENZA LAVORATIVA

01/01/2023 - oggi **Dirigente di Ricerca** in Fisica del Consiglio Nazionale delle Ricerche.
18/11/2019 **Primo Ricercatore** in Fisica del Consiglio Nazionale delle Ricerche.
12/12/2018 **Ricercatrice** presso l'Istituto di Nanotecnologia (CNR - NANOTEC),
Lecce.
12/2001 - 12/2018 **Ricercatrice** in Fisica del Consiglio Nazionale delle Ricerche, presso l'Istituto
di Scienze dell'Atmosfera e del Clima (CNR - ISAC), Lecce.
04/2000-12/2001 **Post-doc INFM** sull'argomento *Turbolenza Anisotropa*,
presso l' Unita' di Ricerca INFM- Tor Vergata e Dipartimento di Fisica,
Universita' di Roma Tor Vergata. Responsabile Scientifico: Luca Biferale.
Contratto INFM.

TEMI DI RICERCA

Turbolenza, Fisica non lineare, Fluidodinamica classica e quantistica, HPC.

ISTRUZIONE E FORMAZIONE

2012-2021 **Abilitazione Scientifica Nazionale 2012** a Professore di II Fascia per i
settori concorsuali: 02/A2 Fisica Teorica delle Interazioni Fondamentali;
02/B2 Fisica Teorica della Materia; 02/C1 Astronomia, Astrofisica, Fisica
della Terra e dei Pianeti.
17/12/1999 **Esame di Dottorato in Fisica.** Titolo della tesi: *Anisotropie et struc-*
tures dans le transport turbulent. Menzione: *Très honorable avec félicitations*
du jury (Massimo dei voti con lode). Supervisor: Massimo Vergassola e
Uriel Frisch.
10/1996 – 12/1999 Dottorato di Ricerca in Fisica dell'Università Sophia Antipolis di Nizza,
svolto presso il Laboratoire Cassini, Observatoire de la Côte D'Azur,
CNRS-OCA.
14/07/1995 **Esame di Laurea in Fisica** con indirizzo Teorico con votazione 110/110
presso Università La Sapienza di Roma.
Relatori: Roberto Benzi e Giorgio Parisi. Titolo della tesi: *Turbolenza nei*
fluidi viscoelastici.
10/1988 – 07/1995 Corso di Laurea in Fisica, Università La Sapienza, Roma.

CONGEDI

2017	17 Giugno - 17 Novembre 2017, Astensione obbligatoria dal lavoro per maternita'.
2014	2 Marzo - 1 Giugno 2014, Astensione obbligatoria dal lavoro per maternita'.

PUBBLICAZIONI

63 articoli pubblicati su riviste internazionali ISI con referee, **23** articoli in atti di convegni, **14** tra pubblicazioni su libri, reports di progetto, dispense, **1** articolo di divulgazione scientifica, **1** tesi di dottorato, **1** tesi di laurea.

H index **35** GoogleScholar

ATTIVITA' DIDATTICA

09/2025	Docente del minicorso "Breakup of particles in turbulence" (6 ore), International Summer School CISM (Udine).
A.A. 2023–24	Docente del Corso di " Sistemi Dinamici ," C.d.L. Magistrale in Matematica, SSD MAT/07, Dipartimento di Matematica e Fisica, Unisalento. (9 CFU, 63 ore)
07/2023	Docente del minicorso Breakup of small particles in turbulent flows (2 ore), Summer School 100 years of turbulent cascades Universita' de la Cote d'Azur (FR).
A.A. 2022–23	Docente del Corso di " Sistemi Dinamici ," C.d.L. Magistrale in Matematica, SSD MAT/07, Dipartimento di Matematica e Fisica, Unisalento. (9 CFU, 64 ore)
A.A. 2011–12	Docente del Corso di " Fisica dei Sistemi Dinamici ," C.d.L. Triennale in Fisica, SSD FIS/06, Università di Roma "Tor Vergata". (6 CFU, 48 ore). Consiglio di Facolta' del 28.09.2011.
A.A. 2009–10	Docente del Corso di " Fisica dei Sistemi Dinamici ," C.d.L. Specialistica in Fisica, SSD FIS/02, Università di Roma "Tor Vergata". (8 CFU, 64 ore).
A.A. 2008–09	Docente del Corso di " Fisica dei Sistemi Dinamici ," C.d.L. Triennale in Fisica, SSD FIS/02, Università di Roma "Tor Vergata". (6 CFU, 48 ore).
09/2008	Docente del minicorso <i>Condensazione di gocce in turbolenza omogenea ed isotropa</i> (2 ore), per i corsi della Scuola Estiva di Alta Specializzazione : <i>Dynamics of Inertial Particles: From Ocean and Atmosphere to Planets</i> (Dresda, Germania).
A.A. 2007–08	Docente del Corso di " Fisica dei Sistemi Complessi ," C.d.L. Triennale in Fisica, SSD FIS/02, Università di Roma "Tor Vergata". (6 CFU, 48 ore).
21/08/ 2007	Docente del minicorso <i>Turbolenza bidimensionale</i> (2 ore) per i corsi della Scuola Estiva di Alta Specializzazione: <i>Small-scale turbulence : Theory, Phenomenology and Applications</i> " (Cargese, Francia). http://gdr-turbulence.pmmh.espci.fr/Cargese/cargese-turbulence.html
A.A. 2000 –01	Docente delle Esercitazioni al Corso di " Fisica Generale I " per Chimici, presso il Dip. di Chimica dell'Università La Sapienza, Roma (24 ore).

ALTRE ESPERIENZE PROFESSIONALI

2013- oggi	Responsabile locale presso la Sezione INFN di Lecce dell'Iniziativa Specifica FIELDTURB.
2025-2027	Associate Editor della rivista <i>European journal of Mechanics/B Fluids</i> (Elsevier).
2021-2024	Deputy Editor della rivista <i>Europhysics Letters</i> , European Physical Society (01-04/2024 Editor in Chief ad interim).
2018 - 2021	Co-Editor della rivista <i>Europhysics Letters</i> , European Physical Society.
2016 - 2018	Associate Editor della rivista <i>Physics of Fluids</i> , American Institute of Physics Publishing.
2008 – 2012	Membro del Managing Committee per l'Italia della Action COST MP0806 "Particles in Turbulence". Prot. n 0002835 del 16/12/2008.
2006 - 2015	Responsabile del Modulo <i>Turbolenza fluidodinamica</i> presso il Dipartimento CNR "Materiali e Dispositivi". Modulo MD.P02.003.003 del PDGP 2006 e successivi.
03/2006- oggi	Associazione all'Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Lecce Gruppo IV "Fisica Teorica", come Ricercatore di altro Ente.
2000 –2004	Associazione all'Istituto Nazionale di Fisica della Materia (INFM), Sezione di Roma, Tor Vergata.

SOGGIORNI/VISITING PERIODS

11/2025	Visiting scientist presso CNRS-IRPHE (Marsiglia, Francia).
11/2015	Visiting scientist presso il National Center for Atmospheric Research, Boulder (Colorado, USA).
03/2012	Visiting scientist su invito presso il Kavli Institute for Theoretical Physics China (KITPC), Università di Pechino, (Cina). Program "New Trends in Turbulence".
05/2011	Visiting scientist su invito presso il Kavli Institute for Theoretical Physics (KITP), University of California Santa Barbara, UCSB, (California, USA). Program "The Nature of Turbulence".
06/2008	Visiting scientist su invito presso il Kavli Institute for Theoretical Physics (KITP), University of California Santa Barbara, UCSB, (California, USA). Program "Physics of Climate Change"
11/2005	Visiting scientist presso l'Istitut Non Lineaire de Nice - CNRS, Nizza (Francia).
11/2003	Visiting scientist presso il National Center for Atmospheric Research, Boulder (Colorado, USA).
12/2002 – 01/2003	Visiting scientist su invito presso l'Observatoire de la Côte d'Azur- CNRS, Nizza (Francia).
12/1999 –04/2000	Attività di Ricerca presso l'Observatoire de la Côte d'Azur-CNRS, Nizza, (Francia).

REFEREE/GUEST EDITOR

Journal Editor	2025 Editor del Volume Speciale <i>Complex Flows and Complex Fluids</i> , <i>Europhysics Letters</i> . Co-Editors: Luca Biferale, Massimo Cencini e Adriano Barra.
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2021 Editor del Volume Speciale *Turbulent Regimes in Bose-Einstein Condensates*, Europhysics Letters. Co-Editors: Alberto Bramati e Iacopo Carusotto.

2017 Editor del Volume Speciale *Two Dimensional Turbulence*, Physics of Fluids. Guest Editors : Gregory Falkovich, Guido Boffetta e Michael Shats.

2015 Curatore del Volume Speciale *Multi-scale phenomena in complex flows and flowing matter* su European Physical Journal E. Co-Editors: Massimo Cencini, Luca Biferale e Mauro Sbragaglia.

2007 Curatore del Volume Speciale *Lagrangian Dynamics*. Journ. Turb. **8**, Issue: 35, 1–2 (2007). Co-Editors: Luca Biferale e Federico Toschi.

Journal Referee

American Institute of Physics: Physics of Fluids, dal 2009

American Meteorological Society: Journal of Atmospheric Sciences, dal 2006

American Physical Society: Physical Review E, Physical Review Letters dal 2005

Cambridge University Press: Journal of Fluid Mechanics dal 2007

Elsevier: Physica D dal 2003, Physics Letters A dal 2016, European Journal of Mechanics / B Fluids dal 2016

Taylor & Francis: Journal of Turbulence dal 2012, Geophysical and Astrophysical Fluid Dynamics dal 2005

Il Nuovo Cimento B dal 2010

Journal Computational Physics dal 2012

Non-linear Processes in Geophysics dal 2013

Europhysics Letters dal 2012

International Journal of Chemical Engineering dal 2014

Science dal 2017

Projects Referee

Referee MIUR per VQR Valutazione Qualita' della Ricerca 2015-2019, 2021.

Valutatore Progetti National Science Foundation (USA) Settembre 2021

Valutatore Progetti Agence Nationale de la recherche (Francia) Aprile- Maggio 2021

Valutatore Progetti MUR- FISR 2020

Valutatore Progetti dello Swedish Research Council- Mechanical Engineering Panel June-September 2019

Valutatore Progetti dello Swedish Research Council- Mechanical Engineering Panel June-September 2018

Valutatore Progetti Europei HPC PRACE 2017

Valutatore Progetti dello Swedish Research Council- Mechanical Engineering Panel June-September 2017

Valutatore Progetti dello Swedish Research Council- Mechanical Engineering Panel June-September 2016

Referee MIUR per VQR Valutazione Qualita' della Ricerca 2011-2014, 2016.

ESF European Science Foundation dal 27/03/2008

CINECA ISCRA dal 2011

Research Grant Council of Hong Kong dal 2012

CAPACITA' E COMPETENZE PERSONALI

MADRELINGUA	Italiano
ALTRE LINGUE	Inglese. Lettura: eccellente; scrittura: eccellente; orale: eccellente;
ALTRE LINGUE	Francese. Lettura: eccellente; scrittura: buono; orale: buono;
ALTRE LINGUE	Spagnolo. Lettura: buono; scrittura: buono; orale: buono;

LISTA DELLE PUBBLICAZIONI

RIVISTE INTERNAZIONALI CON REFEREE

- 63 R Panico, G Ciliberto, GI Martone, T Congy, D Ballarini, AS Lanotte, N. Pavloff, Topological pathways to two-dimensional quantum turbulence *Physical Review Research* 7 (2), L022063 (2025).
- 62 T Li, AS Lanotte, M Bucciotti, F Bonaccorso, L Biferale Multi-scale reconstruction of turbulent rotating flows with generative diffusion models *Atmosphere* 15 (1), 60 (2024).
- 61 R Panico, AS Lanotte, D Trypogeorgos, G Gigli, M De Giorgi, D Sanvitto et al. Conformal invariance of 2D quantum turbulence in an exciton?polariton fluid of light *Applied Physics Reviews* 10 (4) (2023).
- 60 G Frungieri, MU Baebler, L Biferale, AS Lanotte, *Heavy and light inertial particle aggregates in homogeneous isotropic turbulence: A study on breakup and stress statistics*, *Computers and Fluids*, 105944 (2023).
- 59 R Panico et al., *Onset of vortex clustering and inverse energy cascade in dissipative quantum fluids*, *Nature Photonics* 17 (5), 451-456 9 (2023).
- 58 L Vasquez Giuliano et al., *Response of shear activated nanotherapeutic particles in a clot obstructed blood vessel by CFD DEM simulations*, *The Canadian Journal of Chemical Engineering* 100 (12), 3562-3574 10 (2022).
- 57 R Panico et. al, *Kinematics and rotation of a vortex lattice in a polariton fluid*, *Il nuovo cimento C* 45 (6), 1-4 (2022).
- 56 R. Panico, G. Macorini, L. Dominici, A. Gianfrate, A. Fieramosca, M. De Giorgi, G. Gigli, D. Sanvitto, A. S. Lanotte, and D. Ballarini, *Dynamics of a vortex lattice in an expanding polariton quantum fluid*, *Phys. Rev. Lett.* **127** (4), 047401 (2021).
- 55 D. G. Suarez-Forero, F. Riminucci, V. Ardizzone, N. Karpowicz, E. Maggiolini, G. Macorini, G. Ierario, F. Todisco, M. De Giorgi, L. Dominici, D. Ballarini, K. West, L. Pfeiffer, G. Gigli, A.S. Lanotte, D. Sanvitto, *Enhancement of Parametric Effects in Polariton Waveguides Induced by Dipolar Interactions*, *Phys. Rev. Lett.* **126** (13), 137401 (2021).
- 54 M. Bucciotti, A. Bhatnagar, L. Biferale, A. S. Lanotte, S. S. Ray, *Lagrangian Statistics for Navier-Stokes Turbulence under Fourier-mode reduction: Fractal and Homogeneous Decimations*, *New J. Phys.* **18**, 113047 (2016).
- 53 L. Biferale, F. Bonaccorso, I. M. Mazzitelli, M. A. T. van Hinsberg, A. S. Lanotte, S. Musacchio, P. Perlekar, F. Toschi, *Coherent structures and extreme events in rotating multiphase turbulent flows*, *Phys. Rev. X* **6**, 041036 (2016).
- 52 A.S. Lanotte, S. K. Malapaka, L. Biferale, *On the vortex dynamics in Fractal Fourier turbulence*, *Eur. Phys. J. E* **39**, 49 (2016).
- 51 A.S. Lanotte, R. Corrado, L. Palatella, C. Pizzigalli, I. Schipa and R. Santoleri, *Effects of Vertical Shear in Modelling Horizontal Oceanic Dispersion*, *Ocean Sciences* **12**, 207-216(2016).
- 50 A.S. Lanotte, R. Benzi, S. K. Malapaka, F. Toschi, L. Biferale, *Turbulence on a Fractal Fourier set*, *Phys. Rev. Letters* **115**, 264502 (2015).
- 49 F. Falcini, L. Palatella, A. Cutitta, B. Buongiorno Nardelli, G. Lacorata, A. S. Lanotte, B. Patti, and R. Santoleri, *The Role of Hydrodynamic Processes on Anchovy Eggs and Larvae Distribution in the Sicily Channel: A Case Study for the 2004 Data Set*, *PLoS ONE* **10**(4): e0123213 (2015).
- 48 M. U. Bäbler, L. Biferale, U. Feudel, K. Guseva, A.S. Lanotte, C. Marchioli, F. Picano, G. Sardina, A. Soldati, F. Toschi, *Numerical simulations of aggregate breakup in bounded and unbounded turbulent flows*, *J. Fluid Mech.* **766**, 104–128 (2015).

- 47 L. Biferale, A. S. Lanotte, R. Scatamacchia and F. Toschi
Intermittency in the relative separations of tracers and of heavy particles in turbulent flows, J. Fluid Mech. **757**, 550 (2014).
- 46 I. M. Mazzitelli, F. Toschi and A. S. Lanotte
An accurate and efficient Lagrangian sub-grid model, Phys. Fluids **26**, 095101 (2014).
- 45 J. De Bona, A. S. Lanotte and M. Vanni
Internal stresses and breakup of rigid aggregates in homogeneous and isotropic turbulence, J. Fluid Mech. **755** 365–396 (2014).
- 44 V. Malvestuto, S. Ascoli and A. S. Lanotte
The hysteresis cycle of concentration in a solution droplet under changing humidity, EPJAP **eFirst** (2014).
- 43 I. M. Mazzitelli, F. Fornarelli, A. S. Lanotte and P. Oresta
Pair and multi-particle dispersion in numerical simulations of convective boundary layer turbulence, Phys. Fluids **26**, 055110 (2014); <http://dx.doi.org/10.1063/1.4878318>.
- 42 I. M. Mazzitelli, M. Cassol, M. M. Miglietta, U. Rizza, A. M. Sempreviva, and A. S. Lanotte,
The Role of Subsidence in a Weakly Unstable Marine Boundary Layer: a case study, Nonlin. Processes Geophys., **21**, 489-501 (2014).
- 41 L. Palatella, F. Bignami, F. Falcini, G. Lacorata, A. S. Lanotte, and R. Santoleri,
Lagrangian simulations and inter-annual variability of anchovy eggs and larvae dispersal in the Central Mediterranean, J. Geophys. Res. Oceans **119**, 1306–1323 (2014).
- 40 A. S. Lanotte, L. Biferale, G. Boffetta, and F. Toschi,
A new assessment of the second order moment of Lagrangian velocity increments in turbulence, J. Turbulence, **14** (7) (2013).
- 39 A.S. Lanotte and I. Mazzitelli,
Scalar turbulence in convective boundary layers with different entrainment fluxes, Journ. Atmos. Sci. **70**, 248-265 (2013).
- 38 G. Falkovich, H. Xu, A. Pumir, E. Bodenschatz, L. Biferale, G. Boffetta, A.S. Lanotte, F. Toschi,
On Lagrangian Single Particle Statistics, Phys. Fluids **4**, Issue 5 (2012).
- 37 M. U. Bäbler, L. Biferale, A.S. Lanotte,
Break-up of small aggregates driven by turbulent hydrodynamical stress, Phys Review E **85**, 025301 (2012).
- 36 I. Mazzitelli and A.S. Lanotte,
Active and passive scalar statistics in turbulent atmospheric convection, Physica D, **241**, 251-259 (2012).
- 35 J. Bec, L. Biferale, M. Cencini, A.S. Lanotte, F. Toschi,
Spatial and velocity statistics of inertial particles in turbulent flows, J. Phys.: Conf. Ser. **333** 012003 (2011).
- 34 A.S. Lanotte, J. Bec, L. Biferale, M. Cencini, and F. Toschi,
About the scaling properties of relative velocity between heavy particles in turbulence, J. Phys.: Conf. Ser. **318**, 052010 (2011).
- 33 J. Bec, L. Biferale, M. Cencini, A.S. Lanotte, and F. Toschi,
Intermittency in the velocity distribution of heavy particles in turbulence, Journ. Fluid Mech. **646**, 527–536 (2010).
- 32 J. Bec, L. Biferale, A.S. Lanotte, A. Scagliarini and F. Toschi,
Turbulent pair dispersion of inertial particles, Journ. Fluid Mech. **645**, 497–528 (2010).
- 31 A.S. Lanotte, A. Seminara and F. Toschi,
Cloud droplet growth by condensation in homogeneous isotropic turbulence, Journ. Atmos. Sci. **66**, 1685–1697 (2009).

- 30 L. Biferale, E. Bodenschatz, M. Cencini, A.S. Lanotte, N.T. Ouellette, F. Toschi, and H. Xu, *Lagrangian Structure Functions in Turbulence: A Quantitative Comparison between Experiment and Direct Numerical Simulation*, Phys. Fluids **20**, 065103 (2008).
- 29 L. Biferale, A.S. Lanotte, and F. Toschi, *Statistical behaviour of isotropic and anisotropic fluctuations in homogeneous turbulence*, Physica D**237**, 1969–1975 (2008).
- 28 A. Arneodo, R. Benzi, J. Berg, L. Biferale, E. Bodenschatz, A. Busse, E. Calzavarini, B. Castaing, M. Cencini, L. Chevillard, R. T. Fisher, R. Grauer, H. Homann, D. Lamb, A.S. Lanotte, E. Leveque, B. Luethi, J. Mann, N. Mordant, W.-C. Mueller, S. Ott, N. T. Ouellette, J.-F. Pinton, S. B. Pope, S. G. Roux, F. Toschi, H. Xu, and P. K. Yeung, *Universal Intermittent Properties of Particle Trajectories in Highly Turbulent Flows*, Phys. Rev. Lett. **100**, 254504 (2008).
- 27 M. Antonelli, A. Lanotte, and A. Mazzino, *Anisotropies and universality of buoyancy-dominated turbulent fluctuations: a large-eddy simulation study*, Journ. Atmos. Sci. **64** 2642–2656 (2007).
- 26 A.S. Lanotte, F. Toschi, and L. Biferale, *Foreword to Lagrangian Dynamics Special Issue*, Journ. Turb. **8**, Issue: 35, 1–2 (2007).
- 25 J. Bec, L. Biferale, M. Cencini, A. Lanotte, S. Musacchio, and F. Toschi, *Heavy Particle Concentration in Turbulence at Dissipative and Inertial Scales*, Phys. Rev. Lett. **98**, 084502 (2007).
- 24 J. Bec, L. Biferale, G. Boffetta, A. Celani, M. Cencini, A. Lanotte, S. Musacchio and F. Toschi, *Acceleration statistics of heavy particles in turbulence*, J. Fluid Mech. **550**, 348-359 (2006).
- 23 M. Cencini, J. Bec, L. Biferale, G. Boffetta, A. Celani, A. Lanotte, S. Musacchio and F. Toschi, *Dynamics and statistics of heavy particles in turbulent flows*, J. Turb. **7** 1-16 (2006). Online Journal.
- 22 J. Bec, L. Biferale, M. Cencini, A. Lanotte, and F. Toschi, *Effects of vortex filaments on the velocity of tracers and heavy particles in turbulence*, Phys. Fluids **18** 81702 (2006).
- 21 L. Biferale, G. Boffetta, A. Celani, A. Lanotte and F. Toschi, *Lagrangian statistics of fully developed turbulence*, J. Turb. **7**, 6, 1-12 (2006). Online Journal.
- 20 F. Toschi, L. Biferale, G. Boffetta, A. Celani, B.J. Devenish, and A. Lanotte, *Acceleration and vortex filaments in turbulence*, J. Turb. **15**, 6 (2005). Online Journal.
- 19 L. Biferale, G. Boffetta, A. Celani, B.J. Devenish, A. Lanotte and F. Toschi, *Lagrangian statistics of particle pairs in homogeneous isotropic turbulence*, Phys. Fluids **17**, 115101 (2005).
- 18 L. Biferale, G. Boffetta, A. Celani, B.J. Devenish, A. Lanotte and F. Toschi, *Multiparticle dispersion in fully developed turbulence*, Phys. Fluids **17**, 111701 (2005).
- 17 L. Biferale, G. Boffetta, A. Celani, A. Lanotte, and F. Toschi, *Particle trapping in three-dimensional fully developed turbulence*, Phys. Fluids **17**, 021701 (2005).
- 16 L. Biferale, M. Cencini, A. S. Lanotte, M. Sbragaglia, and F. Toschi, *Anomalous scaling and universality in hydrodynamic systems with power-law forcing*, New J. Phys. **6**, 37, 16pp (2004).
- 15 L. Biferale, A. S. Lanotte, and F. Toschi, *Effects of forcing in three dimensional turbulence*, Phys. Rev. Lett. **92**, 094503 (2004).

- 14 L. Biferale, G. Boffetta, A. Celani, B. Devenish, A. Lanotte, and F. Toschi,
Multifractal statistics of Lagrangian velocity and acceleration in turbulence,
Phys. Rev. Lett. **93**, 064502 (2004).
- 13 L. Biferale, I. Daumont, A. Lanotte, and F. Toschi,
Theoretical and Numerical study of highly anisotropic turbulent flows,
European J. Mech./B-Fluids, **23**, issue 3, 401-414 (2004).
- 12 L. Biferale, E. Calzavarini, AS Lanotte, F. Toschi, and R. Tripiccion, *Universality of anisotropic turbulence*, Physica A : Stat. Mech. **338**, 194 (2004).
- 11 L. Biferale, M. Cencini, A. S. Lanotte, and D. Vergni,
Inverse velocity statistics in two dimensional turbulence,
Physics of Fluids, **15**, 1012-1020 (2003).
- 10 L. Biferale, G. Boffetta, A. Celani, A. Lanotte, F. Toschi, and M. Vergassola,
The decay of anisotropic turbulence,
Physics of Fluids, **15**, 2105-2112 (2003).
- 9 L. Biferale, I. Daumont, A. Lanotte, and F. Toschi,
Anomalous and dimensional scaling in anisotropic turbulence
Phys. Rev. E, **66**, 056306-056309 (2002).
- 8 A. Celani, A. Lanotte, A. Mazzino and M. Vergassola,
Fronts in passive scalar turbulence, Phys. of Fluids, **13**, 1768-1783 (2001).
- 7 L. Biferale, M. Cencini, A. Lanotte, D. Vergni and A. Vulpiani,
Inverse statistics of smooth signals: the case of two dimensional turbulence ,
Phys. Rev. Lett, **87**, 124501-124504 (2001).
- 6 N.V. Antonov, A. Lanotte and A. Mazzino,
Persistence of small-scale anisotropies and anomalous scaling in a model of magnetohydrodynamic turbulence,
Phys. Rev. E, **61**, 6586-6611 (2000).
- 5 A. Celani, A. Lanotte, A. Mazzino and M. Vergassola,
Universality and saturation of intermittency in passive scalar turbulence
Phys. Rev. Lett. **84**, 2385-2389 (2000).
- 4 A. Lanotte and A. Mazzino,
Anisotropic non-perturbative zero modes for passively advected magnetic fields,
Phys. Rev. E **60**, R3483-R3486 (1999).
- 3 L. Biferale, I. Daumont, T. Dombre, and A. Lanotte,
Coherent structures in random shell models for passive scalar advection,
Phys. Rev. E **60**, R6299-R6302 (1999).
- 2 A. Lanotte, A. Noullez, M. Vergassola, and A. Wirth,
Large-scale dynamo by negative magnetic eddy diffusivities,
Geophys. Astrophys. Fluid Dynamics **91**, 131-146 (1999).
- 1 A. Celani, A. Lanotte, and A. Mazzino,
Passive scalar intermittency in compressible flow,
Phys. Rev. E **60**, R1138-R1141 (1999).

PERSONAL INFORMATIONName: **BOFFETTA Guido****EDUCATION**

- 1992 PhD in Physics, "*The Inverse Scattering Transform Method applied to the analysis of experimental data*", University of Torino, Italy
 1988 Master degree in Physics, 110/110 *cum laude*, University of Torino, Italy

CURRENT POSITION

- 2011 - present Full Professor, Dept. of Physics, University of Torino, Italy
 2004 - present Associate member, National Institute for Nuclear Physics, Torino, Italy

PREVIOUS POSITIONS

- 2014 - 2020 Associate member, Institute of Atmospheric Sciences and Climate, CNR
 2002 - 2011 Associate Professor, Dept. of Physics, University of Turin
 1993 - 2002 Researcher, Dept. of Physics, University of Turin

SCIENTIFIC VISITS, FELLOWSHIPS AND AWARDS

- 2024 Visiting Professor at CAPES/UFRJ, *Federal University of Rio de Janeiro* (Brasil)
 2022 - 2023 Visiting Scholar at the Okinawa Institute of Science and Technology (OIST, Japan)
 2020 Fellow of the European Mechanics Society (Euromech)
 2018 Visiting Scientist at the *Weizmann Institute of Science*, Rehovot (Israel)
 2011 Visiting Professor at the *Universite de Nice - Sophia Antipolis*, Nice (France)
 2009 Visiting scientist at the *Institute for dynamics and selforganization*, Max Planck Institute, Goettingen (Germany)
 2007 – 2008 Fulbright Research Scholar at *Center for Nonlinear Studies*, Los Alamos Laboratory (USA)
 2006 Fulbright Research Scholar, US-Italy Fulbright Commission
 2003 and 2004 Visiting scientist *Complex system group*, University of Marburg (Germany)
 2000 Visiting scientist at *Fluid dynamics laboratory*, Tech. Univ. of Eindhoven (Netherlands)
 1992 Visiting scientist at the *Laboratoire de Meteorologie Dynamique*, ENS, Paris (France)

KEY NUMBERS

Number of published papers: more than **150**
 Hirsch-index: **h=57**, i10-index=**132** (Google Scholar)
 Total citations = **11800**

ORGANISATION OF SCIENTIFIC MEETINGS

- 2025 National Scientific Committee member of *StatPhys29*, Florence (Italy)
 2025 Local committee member, *Complex Flows and Complex Fluids*, Roma (Italy)
 2019 Chair, *17th European Turbulence Conference*, Torino (Italy)
 2016 Co-organizer, Lorentz Center workshop *Microorganisms in Turbulent Flows*, Leiden (NL)
 2014 Co-organizer, NORDITA/CECAM workshop *Active Fluids: new Challenges from Experiments to HPC*, Mariehamn (Finland)
 2007 Co-organizer, Seminaire Transalpin de Physique *Dynamics and Statistics in Complex Systems*, Torino (Italy)
 2005 Co-organizer, International conference *Stirring and mixing*, Torino (Italy)
 2003 Co-organizer, Summer school *Transport, Reaction and Propagation in Fluids*, ICTP, Trieste (Italy)

INSTITUTIONAL RESPONSIBILITIES

- 2024 - Vice-director of the Department of Physics, University of Torino
 2021 - 2024 Chairman of the *Laurea Magistrale in Fisica dei Sistemi Complessi*, University of Torino
 2016 - 2021 Member and co-chair of the *European Turbulence Conference Committee* of EuroMech

- 2015 - 2022 Member of the PhD School Board, Politecnico of Torino (Italy)
2013 - 2017 Director, *Doctoral School of Sciences and Innovative Technologies*, University of Torino (Italy)
2011 - 2014 Member of the GEV 2 (Physics) of the Italian VQR-ANVUR
2008 - 2013 Director, *Graduate School in Physics and Astrophysics*, University of Torino (Italy)
2007 - 2012 Member of the Scientific Committee of the Museum of Natural Science of Torino (Italy)
2006 - 2008 Italian director of the French-Swiss-Italian School *Seminaire Transalpin de Physique*
2005 - 2016 Member of the Scientific Committee of the French-Italian Summer School *Fundamental processes in geophysical fluid dynamics and the climate system*

REVIEWER AND EDITORIAL BOARD

2019- Associate Editor of *Physical Review Fluids*, American Physical Society

2019-2024 Member of the Editorial Board of *Entropy*

2016-2019 Member of the Editorial Board of *Physical Review Fluids*, American Physical Society

2014-2015 Member of the Editorial Advisory Board of *Physics of Fluids*

Reviewer for: Science, Phys. Rev. Lett. and Phys. Rev., Europhys. Lett., Physica D, J. Fluid Mech., Phys. Fluids, J. Turbulence, New J. Phys., Phys. Lett. A, Eur. Phys. J. B, J. Stat. Mech., Geophys. Res. Lett., J. Rheol.

Funding agencies: Reviewer for National Science Foundation (USA), DFG (Germany), ANR (France), US-Israel Binational Science Foundation, Israel Science Foundation, MIUR (Italy), Fondecyt (Chile)

Stefania De Curtis

Istituto Nazionale di Fisica Nucleare - Sezione di Firenze
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Biography

After my undergraduate studies at the University of Florence, I moved to Trieste for my Ph.D at the International School of Advanced Studies (SISSA). I spent several periods as Visiting Scientist at the Theory Division of the Physics Department of the Geneva University, first with a “Fondazione A. Della Riccia” grant, after with the support of the Swiss National Science Foundation. I won a national secondary school professorship competition for Mathematics and Physics. I got an INFN fellowship just before the permanent position as a researcher of the INFN Florence Unit. I presently live and work in Florence as a Research Director (“Dirigente di Ricerca”) of the Florence INFN Unit. I’ve a contract of association with CERN as VISC (Visiting Scientist) and I’m Professor on contract of the Florence University from 2005. Starting from December 1st, 2019, till January 15, 2025 I’ve been the Director of the INFN National Center for Advanced Studies “The Galileo Galilei Institute for Theoretical Physics (GGI)”

I got the “**Abilitazione Scientifica Nazionale**” DD 222 20/7/2012 - sector A2/02 (Fisica Teorica delle Interazioni Fondamentali) Prima Fascia - valid from January 8, 2014 to January 8, 2025

Education

- ▶ **1972 - 1977** Liceo Scientifico “Leonardo da Vinci”, Firenze, Italy. Scientific Lyceum Diploma
- ▶ **April 1983** B.S. in Physics. Florence University, IT (110/110, summa cum laude). Thesis: Study of the Dynamical Breaking of the Chiral Symmetry with the Effective Action method. Advisor R. Casalbuoni
- ▶ **October 1987** Ph.D. in Physics (Elementary Particle), SISSA Trieste, Thesis: "Dynamical symmetry breaking in QCD and quark masses" Supervisor R. Casalbuoni

Professional Experience

- ▶ **1983 - 1985** Ph.D Fellow, SISSA Trieste
- ▶ **1984** “Fondazione A. Della Riccia” grant at the Theory Division of the Physics Dept. of Geneva University
- ▶ **1985 - 1987** Professor in the Secondary School teaching Mathematics and Physics
- ▶ **1987 - 1988** INFN grant (competition 971/86)
- ▶ **1988 - 2002** Researcher INFN Firenze (competition 973/86)
- ▶ **2000 - 2007** Professor on contract teaching “Physics Foundations” , “Physics Didactics” and “Physics Laboratory” at the Faculty of Education Science of the Florence University
- ▶ **2002 - 2018** First Researcher INFN Firenze (competition 8680/2001)
- ▶ **2005 - present** Professor on contract teaching “Quantum Field Theory” at the Physics Department of the Florence University
- ▶ **2018 - present** Research Director (Dirigente di Ricerca) INFN Firenze (competition 18012/2016)
- ▶ **2019 - present** Director of the INFN National Center for Advanced Studies “The Galileo Galilei Institute for Theoretical Physics (GGI)”

Teaching and Outreach Activities

- ▶ **1995 - 1996** Course of “Theoretical Physics“ for the XI Cycle of Physics Doctorate of the Florence University
- ▶ **1998 - 1999** Integrative Course of “Foundation of Theoretical Physics” for the “Corso di Laurea in Fisica” Florence University
- ▶ **1999 - 2000** Course of “Theory of the Fundamental Interactions“ for the XV Cycle of the Physics Doctorate of the Florence University
- ▶ **2000 - 2007** Courses of “Physics Foundations” , “Physics Didactics” and “Physics Laboratory” for the “Corso di Laurea in Scienze della Formazione Primaria” at the Faculty of Education Science of the Florence University
- ▶ **2001 - 2002** Course of “Field Theory, Functional Methods and Renormalisation” for the XVII Cycle of the Physics Doctorate of the Florence University
- ▶ **2002 - 2003** Course of “Elementary Particle Physics“ for the “Corso di Laurea in Fisica” Florence University
- ▶ **2003 - 2004** Integrative Course of “Elementary Particle Physics“ on “Recent aspects in theoretical physics of elementary particles” for the “Corso di Laurea in Fisica” Florence University
- ▶ **2003 - 2004** and **2006 - 2007** Course of “Non-abelian gauge theories, perturbative calculations”, for the XIX and XXII Cycles of the Physics Doctorate of the Florence University
- ▶ **2007 - 2008** Course of “Strong Interactions: Theory and Phenomenology”, for the XXIV Cycle of the Physics Doctorate of the Florence University
- ▶ **2005 - present** Course of “Field Theory” for the “Corso di Laurea Magistrale in Fisica e Astronomia” Florence University
- ▶ I’ve been the advisor of several thesis at the Florence University for the degree in Educational Science, and for the Master and Ph.D degrees in Physics. Here are the last ones: Andrea Tesi (Analysis of an electroweak model with composite Higgs - 2011), Daniele Barducci (Phenomenological analysis of a minimal model with composite Higgs - 2011), Juri Fiaschi (One-loop corrections to the S parameter in an electroweak theory with extended symmetry - 2012), Elena Vigiani (Non minimal terms in models with Higgs Goldstone Boson - 2013), Carlotta Sacco (Dipoles in models with Higgs Goldstone Boson- 2014) , Fabio Berti (The Higgs Boson as a partially composite particle - 2017), Francesco Ciumei (Composite Higgs Model with UV completion - 2017), Simone Blasi (Non-minimal Higgs sector beyond the Standard Model - 2017), Alessandro Agugliaro (Composite Higgs: Theory and Phenomenology - 2019), Andrea Guiggiani (CP-violation and baryogenesis from a non-minimal composite Higgs model - Master 2020) and Andrea Guiggiani (Bubble Dynamics at the Electroweak Scale - PhD 2024)
- ▶ I’ve been member of several international grant-review panels and Ph.D. juries. Here is the most recent: appointed by the Presidents of Lyon 1 University, and the University of Johannesburg as reviewer for the PhD defence of Lara Mason on March, 4, 2022;
- ▶ **2021 - present** Panelist in several round tables or discussions in outreach events. Here are some examples: [Ago Modena Fabbriche Culturali](#): Il quanto tecnologico, April 22, 2022; [Higgs 2022](#): Public Round Table: Esplorando l’Universo 10 anni con il Bosone di Higgs, Pisa Nov. 9, 2022; [Festival delle Scienze: Anatomia di una scoperta](#). Dialogo in musica dal Bosone di Higgs all’Universo Oscuro, Rome Nov. 26, 2022.
- ▶ **2022 - present** Member of “100 Esperte - Osservatorio di Pavia” <http://www.100esperte.it>. A project born in 2016 from an idea of the [Osservatorio di Pavia](#) and the association [GiULiA](#) women journalists, in collaboration with the [Fondazione Bracco](#). It is a database with more than 100

women experts in various fields, available for interviews and in-depth analysis on news events or current issues.

Professional Activities (Coordination, Organization and Leadership)

- ▶ **1994 - 1997** INFN Florence Researchers' Representative
- ▶ **1998 - 2005** National PI (Responsabile Nazionale) of the INFN-CSN4 project “FI21- Dynamical Breaking of the Electroweak Symmetry and Physics Beyond the Standard Model”
- ▶ **2000 - 2006** INFN Coordinator of the Theory Group of the Florence Unit (Scientific and Financial coordination of more than 40 researchers)
- ▶ **2000-2006** Referee of the CSN4 (INFN Scientific Committee for Theoretical Physics) for “Elementary Particle Phenomenology”
- ▶ **2003** Member of the panel for the INFN Competition 9726/2003 (First Researcher positions)
- ▶ **2004-2010** Reviewer of the ANVUR - VQR evaluation process
- ▶ **2005 - 2019** Local PI (Responsabile Locale) of the INFN-CSN4 project “PD21 (HEPCube)- High Energy Particle Physics Phenomenology” for the Florence node
- ▶ **2005 - present** Professor on contract teaching “Quantum Field Theory II” at the Physics and Astronomy Department of the Florence University
- ▶ **2005 - 2017** Member of the Local Organizing Committee of the “Galileo Galilei Institute for Theoretical Physics” <https://www.ggi.infn.it>
- ▶ **2006 - present** Promoter of the Working Group “Phenomenology at Linear and other Future Colliders”, Organizer of several workshops and editor of the proceedings: “[ILC Physics in Florence](#)”, Florence (2007), “LC08:e+e- Physics at the TeV Scale”, Frascati (2008), “LC09: e+e- Physics at the TeV scale and the Dark Matter Connection”, Perugia, 2009; “LC10: New Physics: complementarities between direct and indirect searches”, Frascati 2010, “LC11 Workshop: Understanding QCD at linear colliders in searching for old and new physics”, ECT* Trento, 2011; “LC13: Exploring QCD from the infrared regime to heavy flavour scales at B-factories, the LHC and a Linear Collider”, ECT* Trento (2013); “Physics Prospects for Linear and other Future Colliders after the Discovery of the Higgs (LFC15)”, ECT* Trento (2015); “Old and New Strong Interactions from LHC to Future Colliders (LFC17)”, ECT* Trento (2017) ; “LFC19: Strong dynamics for physics within and beyond the Standard Model at LHC and Future Colliders”, ECT* Trento (2019), [LFC22: Strong Interactions from QCD to new strong dynamics at LHC and Future Colliders](#)”, ECT* Trento (2022)
- ▶ **2007 - present** Member of the Scientific Board for the Doctorate in Physics and Astronomy of the Florence University
- ▶ **2007 - present** Member of the International Organizing Committee of the Johns Hopkins University (JHU) Workshops. They meet annually, and rotate among participating universities. The purpose of each workshop is to discuss outstanding issues in particle theory, ranging from mathematical physics to cosmology. In 2018 the JHU workshop “Beyond Standard Model: Where do we go from here?” was organised at the Galileo Galilei Institute in Florence, while the 43rd edition was hosted by the Kavli Institute for the Physics and Mathematics of the Universe (Kavli IPMU) of the University of Tokyo
- ▶ **2010** Member of the panel for the INFN Competition 13708/2010 (Researcher positions)
- ▶ **2010 - present** INFN Delegate for the “Conferenza Regionale per la Ricerca e l’Innovazione” (Decreto del Presidente della Giunta della Regione Toscana n. 210 del 16/11/2010)

- ▶ **2012 - 2019** INFN Coordinator of the Theory Group of the Florence Unit (Scientific and Financial coordination of more than 45 researchers)
- ▶ **2012 - present** Scientific co-Director of the Journal "[Il Colle di Galileo](#)" - Firenze University Press Editor
- ▶ **2012** Member of the Scientific Organizing Committee of the GGI workshop "Understanding the TeV Scale through LHC Data, Dark Matter and other experiments".
- ▶ **2013** Member of the Scientific Organizing Committee of the GGI workshop "Beyond the Standard Model after the first run of the LHC"
- ▶ **2013 - 2019** Coordinator of the GGI Ph.D Schools <https://www.ggi.infn.it/schools.html> and Organizer of the GGI Ph.D Schools "GGI Lectures on the Theory of Fundamental Interactions"
- ▶ **2014 - 2019** Referee for the CSN4 for "Linea 2: Elementary Particle Phenomenology"
- ▶ **2014 - present** Expert for the evaluation of SIR-MUR projects (art.53 D.Lgs 165/01)
- ▶ **2015 - present** Referee for JHEP
- ▶ **2016** Member of the panel for the INFN Competition 18226/2016 (Researcher positions)
- ▶ **2017 - 2024** Italian Representative Member to the Plenary European Committee for Future Accelerators (ECFA)
- ▶ **2017 - 2025** Member of the Center Council of the National INFN Center for Advanced Studies "The Galileo Galilei Institute for Theoretical Physics"
- ▶ **2019 - present** Member of the Scientific Committee of the "Galileo Galilei Institute for Theoretical Physics"
- ▶ **Dec. 2019 - Jan. 2025** Director of the INFN National Center for Advanced Studies "The Galileo Galilei Institute for Theoretical Physics (GGI)"
- ▶ **2020 - present** President of the INFN panel for the pre-evaluation of the Cern Fellowships
- ▶ **2020 - present** Member of the International Scientific Advisory Committee (SAC) of the "Instituto de Física de Partículas y del Cosmos" ([IPARCOS-UCM](#)) of Universidad Complutense de Madrid. IPARCOS-UCM is a newly created research institute aiming at promoting the research in the areas of Particle and Nuclear Physics, Astrophysics and Cosmology, and Instrumentation. The SAC works together with the Council and the Scientific Strategy Committee in the evaluation and design of the research activity of the Institute. The duties of the SAC members include the collaboration in the elaboration of the IPARCOS-UCM annual research report.

My Research

I'm carrying out research on a wide variety of subjects in particle physics theory. The study of elementary particle physics is at an important juncture. The Standard Model (SM) has proven to be a remarkably successful description of essentially all experimental phenomena. Still, there are significant gaps in our knowledge of the universe. For example, we still do not know the origin of dark matter or dark energy, we do not know the source of the electroweak spontaneous symmetry breaking (EWSB), which is responsible for the origin of mass, and we have not found the source of CP violation that is responsible for the dominance of matter over antimatter. There are good reasons to believe that the mechanism of symmetry breaking as described by the SM is unlikely to be correct or complete. The theory has unstable high energy behaviour and such pathologies are an indication of new phenomena at larger mass scales. These open questions have been motivating the majority of my research.

The main topic which has been present in a large part of my scientific activity is the dynamical symmetry breaking phenomenon both in strong and electroweak interactions.

Concerning the former, I gave important contributions to the study, based on functional techniques, of the dynamical chiral symmetry breaking in QCD-like theories (2). The generalisation to finite temperature and chemical potential of the composite operator formalism, allowed to study the chiral phase diagram of QCD-like theories with the evidence of a tricritical point which is a signal of metastable phases (4). Further analysis carried out with different techniques confirmed the presence of this "critical end point", which we highlighted for the first time and is still of great interest both for theorists and for experimentalists. Remarkably, recent results from the NA49 experiment at CERN are in agreement with our prediction.

Concerning instead the EW interactions, the final goal is to address the open questions of the SM such as the EWSB mechanism and the related hierarchy problem. Having long worked on the construction of effective models where the EWSB is realised through a dynamical mechanism alternative to the standard Higgs one (1,6,8), I was able to give, in the last years, substantial contributions to the construction of composite Higgs models (10,12) but also to the analysis of their phenomenological implications (11).

The discovery of the Higgs particle in 2012, is not the end of the elementary particle puzzle, but, instead, it may open the way to several questions: is it a fundamental scalar? Is it the only one responsible for the EWSB and the mass generation? Is it unique, or a part of an extended Higgs sector? Is it the portal of an "hidden" dynamics? If the answer to this last question is affirmative, then one can explore the possibility of a composite Higgs particle, possibly a pseudo-Nambu Goldstone boson (pNGB) associated to the breaking of a global symmetry; a "new pion" which could offer a solution to the hierarchy problem. One of the first concrete and calculable model for a pNGB Higgs was proposed in (10).

My work is relevant for collider-based and non-accelerator searches for new physics. I have considerable intellectual overlap and interactions with my colleagues in experimental particle physics. I have been interested on the phenomenological manifestations of new physics phenomena in the high energy particle physics experiments. With an emphasis on the Higgs sector, the LHC is performing tests of the SM and of its extensions. By exploring the TeV scale, the LHC could discover any "natural" scenario of EWSB (the one of a pNGB Higgs for example, which is theoretically well motivated) or exclude it and confirm the SM. Independently of the result, clarifying this point will be a very important legacy of the LHC and will change our perspective on the physics of fundamental interactions.

Recently the study of the composite dynamics in the early universe has captured my attention, in particular the occurrence of a strong first-order EW phase transition, which can trigger baryogenesis in composite Higgs models (13,15). Another interesting aspect of this scenario is the generation of gravitational wave signatures that could be observed at future space-based interferometers.

I'm author of ~ 110 published papers, ~ 30 contributions to conferences, ~ 35 workshop contributions with h -index=39 related to the published papers.

The complete list of my publications can be found at <http://inspirehep.net> by searching in authors "de curtis,s".

Main Papers

1. R.Casalbuoni, S.De Curtis, D.Dominici and R.Gatto, *Physical implications of possible $J = 1$ bound states from strong Higgs*, Nucl. Phys. B282, 235 (1987)
2. A.Barducci, R.Casalbuoni, S.De Curtis, D.Dominici and R.Gatto, *Dynamical chiral symmetry breaking in QCD and determination of quark masses*, Phys. Rev. D38, 238 (1988)
3. R.Casalbuoni, S.De Curtis, D.Dominici, F.Feruglio and R.Gatto, *Non-linear Realization of Supersymmetry Algebra From Supersymmetric Constraint*, Phys. Lett. B220, 569 (1989)

4. A.Barducci, R.Casalbuoni, S.De Curtis, R.Gatto and G.Pettini, *Chiral phase transition in QCD for finite temperature and density*, Phys. Rev. D41, 1610 (1990)
5. G.Altarelli, R.Casalbuoni, S.De Curtis, N.Di Bartolomeo, F.Feruglio and R.Gatto, *Improved bounds on extended gauge models from new LEP data*, Phys. Lett. B263, 459 (1991)
6. R.Casalbuoni, A.Deandrea, S.De Curtis, D.Dominici, R.Gatto and M.Grazzini, *Low energy strong electroweak sector with decoupling*, Phys. Rev. D53, 5201 (1996)
7. R.Casalbuoni, S.De Curtis, D.Dominici and R.Gatto, *SM Kaluza-Klein Excitations and Electroweak Precision Tests*, Phys. Lett. B462, 48 (1999)
8. R.Casalbuoni, S.De Curtis and D.Dominici, *Moose models with vanishing S parameter*, Phys. Rev. D 70, (2004)
9. G.Cacciapaglia, A.Deandrea and S.De Curtis, *Nearby resonances beyond the Breit-Wigner approximation*, Phys. Lett. B682, 43 (2009)
10. S.De Curtis, M.Redi and A.Tesi, *The 4D Composite Higgs*, JHEP 1204, 042 (2012)
11. D.Barducci, S.De Curtis, S.Moretti and G.M.Pruna, *Top pair production at a future e+e- machine in a composite Higgs scenario*, JHEP 1508, 127 (2015)
12. A.Agugliaro, O.Antipin, D.Becciolini, S.De Curtis and M.Redi, *UV complete composite Higgs models*, Phys.Rev.D 95 no. 3, 035019 (2017)
13. S.De Curtis, L.Delle Rose and G.Panico, *Composite Dynamics in the Early Universe*, JHEP 1912, 149 (2019)
14. F.Bishara, S.De Curtis, L.Delle Rose, P.Englert, C.Grojean, M.Montull, G.Panico, and A.Rossia, *Precision from the diphoton Zh channel at FCC-hh*, JHEP 04, 154 (2021)
15. S.De Curtis, L.Delle Rose, A.Guiggiani, A.G.Muior and G.Panico, *Bubble Wall Dynamics at the Electroweak Phase Transition*, JHEP 2022, 163 (2022)

The Galileo Galilei Institute for Theoretical Physics (GGI)

I've been the Director of the [Galileo Galilei Institute](#) (GGI). My mandate started on December 1st, 2019 till January 15, 2025. The GGI was founded in 2005 by a partnership between the INFN and the University of Florence. The GGI has been one of the first European Institutes devoted to organizing long-term scientific programs (called GGI workshops) in theoretical physics in its broadest sense. Its goal is to attract the most active researchers from institutions worldwide to foster discussions and collaborations that may lead to new insights and significant scientific progress. Nowadays, it is one of the leading institutions organizing programs and schools in theoretical physics. On average, the GGI runs three workshops per year, of about 6-8 weeks each, with related conferences and training or focus weeks. In addition, five Ph.D. schools are organized yearly on different domains of theoretical physics: string theory, theory of fundamental interactions, statistical field theory, nuclear and hadronic physics, and astroparticle physics. Each school lasts 2-3 weeks, covering basic and advanced topics and favouring interactions between lecturers and students.

The following data can help appreciate the success of the Institute. During its almost eighteen years of activity, the GGI has run 54 programs, 77 conferences, and 44 schools with topics ranging from high-energy physics to cosmology, from condensed matter and statistical mechanics to astroparticle physics, from string theory and mathematical physics to machine learning and quantum computation. The number of participants has been around 100 per program, which results in a total of 300 researchers per year. Considering conferences and schools, the participation has reached 800 people per year. The GGI has a [YouTube channel](#) collecting videos of most activities, particularly lectures and seminars held at the Institute. This collection offers an extensive set of courses on a wide range of research topics in theoretical physics, available to researchers worldwide.

The success of the GGI in promoting interactions among scientists is also testified by the large number of publications originating from collaborations started during the programs (see the list of [preprints](#) on the GGI website). The GGI also favours the visibility of early-stage researchers by promoting short conferences and [series of lectures](#) mainly led by young scientists.

During the COVID pandemic, I had the idea to establish the [GGI Tea Breaks' seminars](#), a series of web-based colloquia covering a broad spectrum of arguments in theoretical physics. This initiative has been highly successful and much appreciated by the international physics community at large. The videos of these colloquia are getting thousands of visualizations on the YouTube channel.

Riccardo Torre

Curriculum vitae et studiorum

Personal information

Name: Riccardo Torre

Address:

Date of Birth:

Place of Birth:

Nationality:

Family Status:

Children:

E-mail:

Work contacts

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Education and research positions

2020 (January) - present

Senior researcher (Primo ricercatore - II livello) of INFN, Sezione di Genova, Italy

2017 (June) - 2019 (December)

Junior researcher (Ricercatore - III livello) of INFN, Sezione di Genova, Italy

2017 (October) - 2020 (September)

COFUND Fellowship, CERN Theoretical Physics Department, Geneva, Switzerland (on leave of absence from INFN)

2015 (September) - 2017 (May)

Postdoc at École Polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland

2015 (July - August)

Visitor, CERN Theory Division, Geneva, Switzerland

2012 (November) - 2015 (August)

Postdoc at University of Padova, Italy

Two years funded by Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste, Italy through the [DaMeSyFla](#) ERC Grant

One year funded by University of Padova, Italy

2014 (July - August)

Visitor, CERN Theory Division, Geneva, Switzerland

2011 (October) - 2012 (October)

Postdoc, Instituto de Física Teórica UAM/CSIC, Madrid, Spain

2011 (May - June)

Visitor, École Polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland

Inviting scientist: [Prof. Riccardo Rattazzi](#)

2011 (April)

Visitor, CERN Theory Division, Geneva, Switzerland

Inviting scientist: [Prof. Christophe Grojean](#)

2011 (January - March and July - August)

Marie Curie Fellowship (5 months LHCPHenoNet Grant), Universität Zürich, Zurich, Switzerland

Project manager: [Prof. Thomas Gehrmann](#)

2010 (September - December)

Marie Curie Fellowship (3 months UNILHC Grant), CERN Theory Division, Geneva, Switzerland

Project manager: [Prof. Christophe Grojean](#)

Supervisor: [Prof. Michelangelo L. Mangano](#)

2008 - 2011 (defended 27 September 2011)

Ph.D. in Physics, University of Pisa, Italy

Supervisor: [Prof. Riccardo Barbieri](#)

Thesis examiner: [Prof. Alessandro Strumia](#)

Thesis: Signals of composite particles at the LHC

2005 - 2007 (defended 27 September 2007)

Master Degree in Physics, University of Genova, Italy

Supervisor: [Prof. Giovanni Ridolfi](#)

Grade: 110/110

Thesis: Divergenze infrarosse in teorie di Gauge (Infrared divergences in gauge theories)

2001 - 2005 (defended 23 February 2005)

Bachelor Degree in Physics, University of Genova, Italy

Supervisor: [Prof. Carlo M. Becchi](#)

Grade: 98/110

Thesis: Indeterminazione e squeezing (Uncertainty and Squeezing)

2001

High School Diploma

School: Liceo Scientifico annesso al Convitto Nazionale C. Colombo, Genova, Italy

Grade: 79/100

Research

Ph.D. Thesis

1. R. Torre, *Signals of composite particles at the LHC*, Ph.D. Thesis, [[arXiv:1110.3906](#) [\[hep-ph\]](#)].

Journal Articles [[Inspire](#)]

1. S. Grossi, M. Letizia, and R. Torre, *Refereeing the referees: evaluating two-sample tests for validating generators in precision sciences*, *Mach.Learn.Sci.Tech.* **6** (2025) **1**, 015052 [[arXiv:2409.16336](#) [\[stat.ML\]](#)].
2. M.J. Baker, T. Martonhelyi, A. Thamm, and R. Torre, *A Simplified Model for Heavy Vector Singlets for the LHC and Future Colliders*, submitted to *JHEP* [[arXiv:2407.11117](#) [\[hep-ph\]](#)].
3. S. Grossi and R. Torre, *More variables or more bins? Impact on the EFT interpretation of Drell-Yan measurements*, *Eur. Phys. J. C* **84** (2024) 713 [[arXiv:2404.10569](#) [\[hep-ph\]](#)].
4. H. Reyes-Gonzalez and R. Torre, *The NFLikelihood: an unsupervised DNNLikelihood from Normalizing Flows*, *SciPost Phys.* **7** (2024) 048 [[arXiv:2309.09743](#) [\[stat.ML\]](#)].
5. A. Coccaro, M. Letizia, H. Reyes-Gonzalez and R. Torre, *Comparison of Affine and Rational Quadratic Spline Coupling and Autoregressive Flows through Robust Statistical Tests*, *Symmetry* **16** (2024) 942 [[arXiv:2302.12024](#) [\[stat.ML\]](#)].
6. M.J. Baker, T. Martonhelyi, A. Thamm and R. Torre, *The Role of Vector Boson Fusion in the Production of Heavy Vector Triplets at the LHC and HL-LHC*, *JHEP* **11** (2022) 066 [[arXiv:2207.05091](#) [\[hep-ph\]](#)].
7. K. Cranmer et al, *Publishing statistical models: Getting the most out of particle physics experiments*, *SciPost Phys.* **12** (2022) 037 [[arXiv:2109.04981](#) [\[hep-ph\]](#)].
8. R. Ricci, R. Torre and A. Wulzer, *On the W&Y interpretation of high-energy Drell-Yan measurements*, *JHEP* **02** (2021) 144, [[arXiv:2008.12978](#) [\[hep-ph\]](#)].
9. **LHC Reinterpretation Forum** Collaboration, *Reinterpretation of LHC Results for New Physics: Status and Recommendations after Run 2*, *SciPost Phys.* **9** (2020) 2 [[arXiv:2003.07868](#) [\[hep-ph\]](#)].

10. A. Coccaro, M. Pierini, L. Silvestrini and R. Torre, *The DNNLikelihood: enhancing likelihood distribution with Deep Learning*, *Eur. Phys. J. C* **80** (2020) 664 [[arXiv:1911.03305](#) [[hep-ph](#)]].
11. J. Serra, S. Stelzl, R. Torre and A. Weiler, *Hypercharged Naturalness*, *JHEP* **10** (2019) 060 [[arXiv:1905.02203](#) [[hep-ph](#)]].
12. A. Strumia and R. Torre, *Biblioranking Fundamental Physics*, *Journal of Infometrics* **13**(2) (2018) [[arXiv:1803.10713](#) [[cs.DL](#)]].
13. G. Giudice, Y. Kats, M. McCullough, R. Torre and A. Urbano, *Clockwork / Linear Dilaton: Structure and Phenomenology*, *JHEP* **06** (2018) 009 [[arXiv:1711.08437](#) [[hep-ph](#)]].
14. J. Serra and R. Torre, *Neutral naturalness from the brother-Higgs model*, *Phys. Rev. D* **97** (2018) 035017 [[arXiv:1709.05399](#) [[hep-ph](#)]].
15. G. D'Amico, M. Nardecchia, P. Panci, F. Sannino, A. Strumia, R. Torre and A. Urbano, *Flavour anomalies after the R_{K^*} measurement*, *JHEP* **09** (2017) 010 [[arXiv:1704.05438](#) [[hep-ph](#)]].
16. R. Contino, D. Greco, R. Mahbubani, R. Rattazzi, R. Torre, *Precision Tests and Fine Tuning in Twin Higgs Models*, *Phys. Rev. D* **96** (2017) 095036 [[arXiv:1702.00797](#) [[hep-ph](#)]].
17. M. Farina, G. Panico, D. Pappadopulo, J. T. Ruderman, R. Torre, A. Wulzer, *Energy helps accuracy: electroweak precision tests at hadron colliders*, *Phys. Lett. B* **772** (2017) 201-215 [[arXiv:1609.08157](#) [[hep-ph](#)]].
18. ATLAS Collaboration, *Searches for heavy diboson resonances in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector*, *JHEP* **09** (2016) 173 [[arXiv:1606.04833](#) [[hep-ph](#)]].
19. R. Franceschini, G. F. Giudice, J. F. Kamenik, M. McCullough, F. Riva, A. Strumia, R. Torre, *Digamma, what next?*, *JHEP* **07** (2016) 150 [[arXiv:1604.06446](#) [[hep-ph](#)]].
20. C. Petersson and R. Torre, *The 750 GeV diphoton excess from the goldstino superpartner*, *Phys. Rev. Lett.* **116** (2016) 151804 [[arXiv:1512.05333](#) [[hep-ph](#)]].
21. R. Franceschini, G. F. Giudice, J. F. Kamenik, M. McCullough, A. Pomarol, R. Rattazzi, M. Redi, F. Riva, A. Strumia, R. Torre, *What is the gamma gamma resonance at 750 GeV?*, *JHEP* **03** (2016) 144 [[arXiv:1512.04933](#) [[hep-ph](#)]].
22. C. Petersson and R. Torre, *ATLAS diboson excess from low scale supersymmetry breaking*, *JHEP* **01** (2016) 099 [[arXiv:1508.05632](#) [[hep-ph](#)]].
23. A. Thamm, R. Torre and A. Wulzer, *A composite Heavy Vector Triplet in the ATLAS di-boson excess*, *Phys. Rev. Lett.* **115** (2015) 221802 [[arXiv:1506.08688](#) [[hep-ph](#)]].
24. G. Ferretti, R. Franceschini, C. Petersson and R. Torre, *Spot the stop with a b-tag*, *Phys. Rev. Lett.* **114** (2015) 201801 [[arXiv:1502.01721](#) [[hep-ph](#)]].
25. A. Thamm, R. Torre and A. Wulzer, *Future tests of Higgs compositeness: direct vs indirect*, *JHEP* **07** (2015) 100 [[arXiv:1502.01701](#) [[hep-ph](#)]].
26. B. Bellazzini, L. Martucci and R. Torre, *Symmetries, Sum Rules and Constraints on Effective Field Theories*, *JHEP* **09** (2014) 100 [[arXiv:1405.2960](#) [[hep-ph](#)]].
27. D. Pappadopulo, A. Thamm, R. Torre and A. Wulzer, *Heavy Vector Triplets: Bridging Theory and Data*, *JHEP* **09** (2014) 060 [[arXiv:1402.4431](#) [[hep-ph](#)]].

28. E. Dudas, C. Petersson and R. Torre, *Collider signatures of low scale supersymmetry breaking: A Snowmass 2013 White Paper, Community Summer Study 2013: Snowmass on the Mississippi* (2013) [[arXiv:1309.1179 \[hep-ph\]](#)].
29. M. Montull, F. Riva, E. Salvioni and R. Torre, *Higgs Couplings in Composite Models*, *Phys. Rev. D* **88** (2013) 095006 [[arXiv:1308.0559 \[hep-ph\]](#)].
30. D. Pappadopulo, A. Thamm and R. Torre, *A minimally tuned composite Higgs model from an extra dimension*, *JHEP* **07** (2013) 058 [[arXiv:1212.3622 \[hep-ph\]](#)].
31. R. Franceschini and R. Torre, *RPV stops bump off the background*, *Eur. Phys. J. C* **73** (2013) 2422 [[arXiv:1212.3622 \[hep-ph\]](#)].
32. C. Petersson, A. Romagnoni and R. Torre, *Liberating Higgs couplings in supersymmetry*, *Phys. Rev. D* **87** (2013) 013008 [[arXiv:1211.2114 \[hep-ph\]](#)].
33. B. Bellazzini, C. Petersson and R. Torre, *Photophilic Higgs from sgoldstino mixing*, *Phys. Rev. D* **86** (2012) 033016 [[arXiv:1207.0803 \[hep-ph\]](#)].
34. C. Petersson, A. Romagnoni and R. Torre, *Higgs decay with monophoton + \cancel{E}_T signature from low scale supersymmetry breaking*, *JHEP* **10** (2012) 016 [[arXiv:1203.4563 \[hep-ph\]](#)].
35. D. Pappadopulo and R. Torre, *Strong, weak and flavor scalar triplets for the CDF Wjj anomaly*, *Eur. Phys. J. C* **72** (2012) 2049 [[arXiv:1111.2729](#)].
36. C. Grojean, E. Salvioni and R. Torre, *A weakly constrained W' at the early LHC*, *JHEP* **07** (2011) 002 [[arXiv:1103.2761](#)].
37. R. Barbieri and R. Torre, *Signals of single particle production at the earliest LHC*, *Phys. Lett. B* **695** (2011) 259-263 [[arXiv:1008.5302](#)].
38. A. E. Carcamo and R. Torre, *A “composite” scalar-vector system at the LHC*, *Nucl. Phys. B* **841** (2010) 188-204 [[arXiv:1005.3809](#)].
39. R. Barbieri, S. Rychkov and R. Torre, *Signals of composite electroweak-neutral Dark Matter: LHC/Direct Detection interplay*, *Phys. Lett. B* **688** (2010) 212-215 [[arXiv:1001.3149](#)].
40. R. Barbieri, A. E. Carcamo, G. Corcella, R. Torre and E. Trincherini, *Composite Vectors at the Large Hadron Collider*, *JHEP* **03** (2010) 068 [[arXiv:0911.1942](#)].

Monographs and reports [[Inspire](#)]

* As Editor/Convener.

† As Contributor.

As member of the MuCoL Collaboration and of the [International Muon Collider Collaboration](#).

** As member of the [CEPC Study Group](#) †† Come membro della [FCC Collaboration](#)

1. 2025 - # The Muon Collider, [arXiv:2504.21417 \[physics.acc-ph\]](#).
2. 2025 - †† Future Circular Collider Feasibility Study Report: Volume 1, Physics, Experiments, Detectors, [arXiv:2025.00272 \[physics.acc-ph\]](#).
3. 2025 - †† Future Circular Collider Feasibility Study Report: Volume 2, Accelerator, Technical Infrastructure and Safety, [arXiv:2025.00274 \[physics.acc-ph\]](#).

4. 2025 - ^{††} Future Circular Collider Feasibility Study Report: Volume 3, Civil Engineering, Implementation and Sustainability, [arXiv:2025.00273](#) [[physics.acc-ph](#)].
5. 2024 - [#] MuCol Milestone Report No. 5: Preliminary Parameters, [arXiv:2411.02966](#) [[physics.acc-ph](#)].
6. 2023 - ^{**} CEPC Technical Design Report – Accelerator (v2), [arXiv:2312.14363](#) [[physics.acc-ph](#)].
7. 2023 - [†] Towards a Muon Collider, *Eur. Phys. J. C* **83** (2023) 9, (Erratum, *Eur. Phys. J. C* **83** (2023) 9) [[arXiv:2303.08533](#) [[physics.acc-ph](#)]].
8. 2022 - [#] Simulated Detector Performance at the Muon Collider, 2022 Snowmass Summer Study, [arXiv:2203.07964](#) [[hep-ex](#)].
9. 2022 - [#] A Muon Collider Facility for Physics Discovery, 2022 Snowmass Summer Study, [arXiv:2203.08033](#) [[physics.acc-ph](#)].
10. 2022 - [#] Promising Technologies and R&D Directions for the Future Muon Collider Detectors, 2022 Snowmass Summer Study, [arXiv:2203.07224](#) [[physics.ins-det](#)].
11. 2022 - [†] Muon Collider Physics Summary, 2022 Snowmass Summer Study, [arXiv:2203.07256](#) [[hep-ph](#)].
12. 2022 - [#] The physics case of a 3 TeV muon collider stage, 2022 Snowmass Summer Study, [arXiv:2203.07261](#) [[hep-ex](#)].
13. 2020 - [†] Report on the ECFA Early-Career Researchers Debate on the 2020 European Strategy Update for Particle Physics, [arXiv:2002.02837](#) [[hep-ex](#)].
14. 2019 - [†] FCC Collaboration, *Future Circular Collider Conceptual Design Report*
 - Vol. 1 Physics opportunities, *Eur. Phys. J. C* **79** (2019) 6 [[Inspire](#)]
 - Vol. 2 The Lepton Collider (FCC-ee), *Eur. Phys. J. ST* **228** (2019) 2 [[Inspire](#)]
 - Vol. 3 The Hadron Collider (FCC-hh), *Eur. Phys. J. ST* **228** (2019) 4 [[Inspire](#)]
 - Vol. 4 The High-Energy LHC (HE-LHC), *Eur. Phys. J. ST* **228** (2019) 5 [[Inspire](#)]
15. 2019 - Report of the Workshop on Physics at HL-LHC, and perspectives on HE-LHC, *CERN Yellow Rep. Monogr.* **7** (2019) [[Inspire](#)]
 - [†]Working Group 2, Conveners: C. Cepeda, S. Gori, P. Ilten, M. Kado, F. Riva, Contributors: R. Abdul Khalek et al., *Higgs Physics at the HL-LHC and HE-LHC*, [arXiv:1902.00134](#) [[hep-ph](#)].
 - [†]Working Group 3, Conveners: X. Cid Vidal, M. D’Onofrio, P.J. Fox, R. Torre, K. Ulmer, Contributors: A. Aboubrahim et al., *Beyond the Standard Model Physics at the HL-LHC and HE-LHC*, [arXiv:1812.07831](#) [[hep-ph](#)].
 - ^{*}Working Group 4, C, Conveners: A. Cerri, V.V. Gligorov, S. Malvezzi, J. M. Camalich, J. Zupan, Contributors: S. Akar et al., *Opportunities in Flavour Physics at the HL-LHC and HE-LHC*, [arXiv:1812.07638](#) [[hep-ph](#)].
16. 2017 - ^{*}Editors: T. Golling, M. Hance, P. Harris, M. L. Mangano, M. McCullough, F. Moortgat, P. Schwaller, R. Torre, Contributors: P. Agrawal et al., *Physics at a 100 TeV pp collider: beyond the Standard Model phenomena*, *CERN Yellow Report* (2017) **3**, 441-634, [arXiv:1606.00947](#) [[hep-ph](#)].

Proceedings [*Inspire*]

1. H. Reyes-Gonzalez and R. Torre, *Testing the boundaries: Normalizing Flows for higher dimensional data sets*, 20th International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT 2021), *J.Phys.Conf.Ser.* **2438** (2023) 1, 012155 [[arXiv:2202.09188](#) [*stat.ML*]].
2. Editors G. Brooijmans, A. Buckley, S. Caron, A. Falkowski, B. Fuks, A. Gilbert, W. J. Murray, M. Nardecchia, J. M. No, R. Torre, T. You and G. Zevi Della Porta, *Les Houches 2019 Physics at TeV Colliders: New Physics Working Group Report*, *Les Houches Workshop Series - Physics at TeV Colliders* (2019), [[arXiv:2002.12220](#) [*hep-ph*]].
3. P. Rossi, A. Strumia and R. Torre, *Bibliometrics for collaboration works*, 17th International Conference on Scientometrics and Infometrics (2019), [[arXiv:1902.01693](#) [*cs.DL*]].
4. R. Torre, *Clockwork / Linear Dilaton: Structure and Phenomenology*, 53rd Rencontres de Moriond - EW 2018, [[arXiv:1806.04483](#) [*hep-ph*]].
5. A. Andreazza et al., *What Next: White Paper of the INFN-CSN1*, *Frascati Phys. Ser.* **60** (2015) 1-302.
6. G. Ferretti, R. Franceschini, C. Petersson and R. Torre, *Light stop squarks and b-tagging*, (2015) [arXiv:1506.00604](#) [*hep-ph*], to appear in the Proceedings of the Corfu Summer Institute 2014 “School and Workshops on Elementary Particle Physics and Gravity”, Corfu, Greece.
7. R. Contino, D. Greco, C. Grojean, D. Liu, D. Pappadopulo, A. Thamm, R. Torre and A. Wulzer, *Benchmark Models for Spin-1 Resonances in Composite Higgs Theories*, *Les Houches 2013: Physics at TeV Colliders: New Physics Working Group Report*, [[arXiv:1405.1617](#) [*hep-ph*]].
8. R. Torre, *An isosinglet W' at the LHC: updated bounds from direct searches*, *PoS CORFU2011* (2011) 036 Proceedings of the “11th Hellenic School and Workshops on Elementary Particle Physics and Gravity”, Corfu, Greece, 4 - 18 September 2011 [[arXiv:1204.4364](#) [*hep-ph*]].
9. R. Torre, *Limits on leptophobic W' after 1 fb^{-1} of LHC data: a lesson on parton level simulations*, Proceedings of the “23rd Rencontres de Blois”, Château Royal de Blois, France, 29 May - 3 June 2011 [[arXiv:1109.0890](#) [*hep-ph*]].
10. R. Torre, *Narrow resonances at the early LHC*, *Fortsch. Phys.* **59** (2011) 1031-1035, Proceedings of the “10th Hellenic School and Workshops on Elementary Particle Physics and Gravity”, Corfu, Greece, 29 August - 19 September 2010 [[arXiv:1103.2883](#) [*hep-ph*]].
11. R. Torre, *Associated scalar-vector production at the LHC within an effective Lagrangian approach*, *Nuovo Cim.* **C6** (2010), Proceedings of the “IFAE2010”, Roma, Italy, 7-9 April 2010, [[arXiv:1005.4801](#) [*hep-ph*]].

Attended Schools, Conferences and Workshops (including talks)

1. *Corfu2025 Workshop on Future Accelerators*, Corfù, Grecia, 27 Aprile - 04 Maggio 2025.
Presentazione su invito: *Physics Motivations for Future Colliders - A theorist's perspective*, 28 Aprile 2025 [[Slides](#)] [[pdf](#)].
2. *8th FCC Physics Workshop*, CERN, Ginevra, Svizzera, 13-17 Gennaio 2025.
Presentazione su invito: *Heavy Vectors Future Colliders*, 28 Novembre 2024 [[Slides](#)] [[pdf](#)].
3. *1st ai-infn advanced hackathon*, Padova, Italy, 26-28 Novembre 2024.
Presentazione su invito: *Generative models: their evaluation and their limitations*, 28 Novembre 2024 [[Slides](#)] [[pdf](#)].

4. *About some future directions in fundamental physics*, Pisa, Italy, 09 Novembre 2024.
Presentazione su invito: *From Higgless models to Transformers: Breaking the cut-offs in Physics and Machine Learning*, 09 Novembre 2024 [Slides] [pdf].
5. *AI gies MAD²*, IFT UAM/CSIC, Madrid, Spagna, 14-16 Ottobre 2024.
Presentazione su invito: *Generative models: their evaluation and their limitations*, 14 Ottobre 2024 [Slides] [pdf].
6. *Workshop on High Luminosity LHC and Hadron Colliders*, Laboratori Nazionali di Frascati, Roma, Italy, 01-04 Ottobre 2024.
7. *Corfu2024 Workshop on Standard Model and Beyond*, Corfù, Grecia, 25 Agosto - 4 Settembre 2024.
Presentazione su invito: *Highlights from the Corfu Future Accelerators Workshop*, 01 Settembre 2024 [Slides] [pdf].
8. *Corfu2024 Workshop on Future Accelerators*, Corfù, Grecia, 19-26 Maggio 2024.
Membro del Comitato organizzatore.
9. *Introduction to Leonardo HPC cluster, for users and developers*, Cineca site, Roma, Italy, 20 Febbraio 2024.
10. *6th Inter-experiment Machine Learning Workshop*, CERN, Ginevra, Svizzera, 29 Gennaio - 02 Febbraio 2024.
11. *CMS Exotics Workshop*, Roma, Italy, 29 Novembre 2023.
Presentazione su invito: *Beyond the Usual: What's so "Exotic" in New Physics?*, 29 Novembre 2023 [ppt] [pdf].
12. *Corfu2023 Workshop on Standard Model and Beyond*, Corfu, Greece, 27 August - 07 September 2023.
Invited talk: *BSM perspectives on Future Colliders*, 05 September 2023 [ppt] [pdf].
13. *Corfu2023 Workshop on Future Accelerators*, Corfu, Greece, 23-29 April 2023.
Invited talk: *Beyond SM phenomena at future accelerators*, 25 April 2023 [ppt] [pdf].
14. *AI@INFN - Artificial Intelligence at INFN*, Bologna, Italy, 2-3 May 2022.
Invited talk: *Learning Likelihoods*, 3 May 2022 [ppt] [pdf].
15. *Nordita Workshop: Is There Still Room for Naturalness?*, Stockholm, Sweden, 19-29 April 2022.
Invited talk: *The legacy of HL-LHC for the high energy precision program*, 27 April 2022 [ppt] [pdf].
16. *International Workshop on Future Linear Colliders, LCWS2021*, Online conference, 15-18 March 2021.
Invited (remote) talk (parallel session): *High pT observables impact on global fit (aka Energy helps accuracy)*, 17 March 2021 [ppt] [pdf].
17. *2020 International Workshop on the High Energy CEPC*, Shanghai, China, 26-28 October 2020.
Invited (remote) talk: *Machine Learning Deep Neural Networks and experimental likelihoods*, 26 October 2020 [ppt] [pdf].
18. *4th ATLAS Machine Learning Workshop*, CERN, Geneva, Switzerland, 11-15 November 2019.
Invited talk: *The DNNLikelihood framework*, 11 November 2019 [ppt] [pdf].

19. *Top 2019*, Beijing, China, 22-27 September 2019.
Invited plenary talk: *Over the Top*, 26 September 2019 [[ppt](#)] [[pdf](#)].
20. Convener of the *Les Houches Workshop Series - Physics at TeV Colliders (2019)*, Les Houches, France, 10-28 June 2019.
Summary of the “Beyond the Standard Model” working group: *Highlights from the BSM session*, 28 June 2019 [[ppt](#)] [[pdf](#)].
Summary of the “Machine Learning” working group: *Highlights from the ML session*, 28 June 2019 [[ppt](#)] [[pdf](#)].
21. *XIV Workshop ATLAS Italy*, Genova, Italy, 22-24 May 2019.
Invited talk: *What measurements and searches a theorist would appreciate from next LHC round(s)*, 23 May 2019 [[ppt](#)] [[pdf](#)].
22. *Machine Learning INFN course*, Camogli, Italy, 20-22 May 2019.
23. *CMS Italy Meeting 2018*, Genova, Italy, 14-16 November 2018.
Invited talk: *BSM searches through reinterpretation of measurements*, 16 November 2018 [[ppt](#)] [[pdf](#)].
24. Co-organizer of the *Meeting of WG3 of the Workshop on the physics of HL-LHC, and perspectives at HE-LHC*, CERN, Switzerland, 29 October 2018.
WG3 Summary talk: *WG3 status report*, 29 October 2018 [[ppt](#)] [[pdf](#)].
25. *ATLAS SM Workshop 2018*, London, UK, 05-07 September 2018.
Invited talk: *BSM physics and reinterpretation of measurements*, 06 September 2018 [[ppt](#)] [[pdf](#)].
26. *ICHEP 2018*, Seoul, Republic of Korea, 04-11 July 2018.
Parallel talk: *BSM Future Colliders*, 07 July 2018 [[ppt](#)] [[pdf](#)].
27. Co-organizer of the *Plenary meeting of the Workshop on the physics of HL-LHC, and perspectives at HE-LHC*, CERN, Switzerland, 18-20 June 2018.
WG3 Summary talk: *WG3: towards the YR*, 20 June 2018 [[ppt](#)] [[pdf](#)].
28. *FCC Week 2018*, Amsterdam, Netherlands, 09-13 April 2018.
Invited talk: *Search for BSM phenomena - Part 2*, 11 April 2018 [[ppt](#)] [[pdf](#)].
29. *Rencontres de Moriond (Electroweak)*, La Thuile, Italy, 10-17 March 2018.
Invited talk: *Clockwork/Linear Dilaton: Structure and phenomenology*, 16 March 2018 [[ppt](#)] [[pdf](#)].
30. *CERN Theory Group Retreat 2017*, Les Houches, France, 15-17 November 2017.
Invited talk: *HEP Theory Community and CERN TH*, 15 November 2017 [[ppt](#)] [[pdf](#)].
31. *Workshop on the physics of HL-LHC, and perspectives at HE-LHC*, CERN, Switzerland, 30 October - 1 November 2017.
Co-convenor of the BSM Working Group (WG3). Plenary talk: *WG3: BSM@HL-LHC&HE-LHC*, 30 October 2017 [[ppt](#)] [[pdf](#)].
32. *LHCP 2017*, Shanghai, China, 15-20 May 2017.
Invited talk (parallel session): *EW precision tests from Drell Yan at LHC*, 17 May 2017 [[ppt](#)] [[pdf](#)].

33. [DaMeSyFla in the Higgs Era](#), SISSA, Trieste, Italy, 15-17 March 2017.
Invited talk: *Energy helps Accuracy: Precision at Hadron Colliders*, 16 March 2017 [[ppt](#)] [[pdf](#)].
34. [1st FCC Physics Workshop](#), CERN, Switzerland, 16-20 January 2017.
35. [Sinergia Meeting](#), ETH Zürich, Switzerland, 21 December 2016.
Invited talk: *Energy helps Accuracy: Precision at Hadron Colliders*, 21 December 2016 [[ppt](#)] [[pdf](#)].
36. [GDR TeraScale](#), LPNHE/LPTHE, Paris, France, 23-25 November 2016.
Invited talk: *Energy helps Accuracy: Precision at Hadron Colliders*, 23 November 2016 [[key](#)] [[pdf](#)].
37. [A First Glance Beyond the Energy Frontier](#), ICTP, Trieste, Italy, 5-9 September 2016.
Invited talk: *Status of Composite Twin Higgs*, 06 September 2016 [[key](#)] [[pdf](#)].
38. [Charting the Unknown: interpreting LHC data from the energy frontier](#), CERN, Switzerland, 25 July - 12 August 2016.
39. [SWHEPPS 2016: Strategy Workshop on High-Energy Particle Physics in Switzerland](#), Seminarohotel am Aegerisee, Unterägeri, Switzerland, 07-09 June 2016.
Invited talk: *The fate of the $F(750)$* , 07 June 2016 [[key](#)] [[pdf](#)].
40. [KITP Program: New Accelerators for the 21st Century](#), KITP, UCSB, Santa Barbara, USA, 31 May - 5 June 2016.
41. [IFAE 2016](#), Genova, Italy, 30 March - 01 April 2016.
Invited talk: *Have we observed new physics at the LHC?*, 30 March 2016 [[key](#)] [[pdf](#)].
42. [ATLAS CERN Group Meeting](#), CERN, Switzerland, 12 February 2016.
Invited talk: *The $X(750000)$* , 12 February 2016 [[key](#)] [[pdf](#)].
43. [CMS Week](#), CERN, Switzerland, 8 February 2016.
Invited talk: *The $X(750000)$* , 8 February 2016 [[key](#)] [[pdf](#)].
44. [ATLAS Run-II 13TeV Vgamma Resonance Search weekly Meeting](#), CERN, Switzerland, 8 October 2015.
Invited talk: *Scalar Singlet Simplified Model*, 8 October 2015 [[pdf](#)].
45. [FCC-hh BSM group informal meeting](#), CERN, Switzerland, 5 October 2015.
Invited talk: *Signatures beyond benchmark models*, 5 October 2015 [[key](#)] [[pdf](#)].
46. [ATLAS Run 2 Exotics Diboson Resonance Combination Weekly](#), CERN, Switzerland, 1 October 2015.
Invited talk: *On the combination of diboson searches*, 1 October 2015 [[pdf](#)].
47. [The 3rd Annual Large Hadron Collider Physics Conference \(LHCP 2015\)](#), St. Petersburg, Russia, 31 August - 5 September 2015.
Invited talk: *Resonance interpretations of the ATLAS diboson excess*, 1 September 2015 [[key](#)] [[pdf](#)].
48. [ATLAS Diboson/Multilepton Subgroup Meeting](#), CERN, Switzerland, 22 July 2015.
Invited talk: *Heavy Vector Triplet and Singlets*, 22 July 2015 [[pdf](#)].
49. [CERN-CKC TH Institute on Neutral Naturalness](#), CERN, Switzerland, 23-26 April 2015.
Invited talk: *The Exceptional Twin Higgs (aka charged naturalness)*, 24 April 2015 [[key](#)] [[pdf](#)].

50. *Higgs & BSM at 100 TeV*, CERN, Switzerland, 11-13 March 2015.
Invited talk: *High mass resonances: reach and detector requirements*, 12 March 2015 [[key](#)] [[pdf](#)].
51. *Meeting on FCC-hh*, University of Padova, 27 February 2015.
Invited talk: *Physics Opportunities at the FCC*, 27 February 2015 [[key](#)] [[pdf](#)].
52. *FCC-hh BSM group, workplan discussion*, CERN, Switzerland, 30 October 2014.
Invited talk: *Resonances at 100 TeV: dileptons vs dijets*, 30 October 2014 [[key](#)] [[pdf](#)].
53. *ATLAS Exotics - Diboson/Multilepton*, CERN, Switzerland, 28 January 2015.
Invited talk (Vidyo): *Bridging Heavy Vector Singlets*, 28 January 2015 [[key](#)] [[pdf](#)].
54. *HEFT2014 - Higgs Effective Field Theories*, IFT UAM/CSIC, Madrid, 28-30 September 2014.
55. *The 2nd NPKE Workshop - "Physics from Run 2 of the LHC"*, Jeju, Republic of Korea, 14-19 September 2014.
Invited talk: *Large \cancel{E}_T without Δm : closing the light stop window*, 15 September 2014 [[key](#)] [[pdf](#)].
56. *ATLAS Exotics Plenary Meeting*, CERN, Switzerland, 5 September 2014.
Invited talk (Vidyo): *Resonances searches: The vector interpretation*, 5 September 2014 [[key](#)] [[pdf](#)].
57. *Going On After the LHC8 (GOAL) Workshop*, IFT-UNESP, São Paulo, Brazil, 11-15 August 2014.
Invited talk: *Heavy vectors at the LHC and beyond*, 13 August 2014 [[key](#)] [[pdf](#)].
58. *1st Future Hadron Collider Workshop*, CERN, Switzerland, 26-28 May 2014.
Invited talk: *Production of vector resonances at 14 and 100 TeV*, 28 May 2014 [[key](#)] [[pdf](#)].
59. *Benasque Workshop "After the discovery: Hunting for a non-standard Higgs sector"*, Centro de Ciencia "Pedro Pascual", Benasque, Spain, 13-17 April 2014.
Invited talk: *Universal sum rules for effective field theories*, 17 April 2014 [[key](#)] [[pdf](#)].
60. *IFAE 2014 - Incontri di Fisica delle Alte Energie*, Gran Sasso Science Institute - Laboratori Nazionali del Gran Sasso, L'Aquila, 9-11 April 2014.
Invited talk: *The Higgs, the SM and Beyond*, 9 April 2014 [[key](#)] [[pdf](#)].
61. *What Next*, Angelicum, Roma, 7-8 April 2014.
62. *BSM physics opportunities at 100 TeV*, CERN, Switzerland, 10-11 February 2014.
63. *A Passion for Particles - A conference in honour of Riccardo Barbieri*, Scuola Normale Superiore, Pisa, 19-20 December 2013.
64. *DaMeSyFla Mid-term Meeting*, GGI, Florence, 16-18 December 2013.
Talk: *Heavy vector triplets: bridging theory to data*, 16 December 2013 [[key](#)] [[pdf](#)].
65. *LHCPhenoNet Annual Meeting*, CERN, Switzerland, 2-5 December 2013.
Talk: *Light RPV stops hiding in the LHC data*, 5 December 2013 [[key](#)] [[pdf](#)].
66. *The 3rd KIAS Workshop on Particle Physics and Cosmology*, Seoul, Republic of Korea, 11-15 November 2013.
Talk: *Composite Higgs Status*, 14 November 2013 [[key](#)] [[pdf](#)].

67. *Solvay Workshop on “Exploring Higher Energy Physics”*, Brussels, Belgium, 3-6 November 2013.
Invited talk: *Composite Higgs Status*, 4 November 2013 [[key](#)] [[pdf](#)].
68. *HEFT2013 - Higgs Effective Field Theories*, CERN, Switzerland, 9-11 October 2013.
69. *13th Hellenic School and Workshops on Elementary Particle Physics and Gravity*, Corfu, Greece, 31 August - 11 September 2013.
Talk: *Discovering light stops in RPV SUSY*, 5 September 2013 [[key](#)] [[pdf](#)].
70. *Prospects in Theoretical Physics*, School of Natural Sciences, Institute for Advances Study, Princeton, NJ, USA, 15-26 July 2013.
71. *GGI Workshop - Beyond the Standard Model after the first run of the LHC*, GGI, Florence, Italy, 20 May - 17 July 2013.
Invited talk: *Discovering light stops in RPV SUSY*, 28 June 2013 [[key](#)] [[pdf](#)].
72. *Planck 2013*, Bonn, Germany, 20-24 May 2013.
Talk: *Light RPV stops hiding in the LHC data*, 21 May 2013 [[key](#)] [[pdf](#)].
73. *LHCPhenoNet Meeting*, Buenos Aires, Argentina, 23-26 April 2013.
Talk: *A minimally tuned composite Higgs from an extra dimension*, 25 April 2013 [[key](#)] [[pdf](#)].
74. *DaMeSyFla Meeting*, Padova, 11-12 April 2013.
Talk: *A minimally tuned composite Higgs from an extra dimension*, 12 April 2013 [[key](#)] [[pdf](#)].
75. *Particle Physics in the LHC Era*, Zürich Phenomenology Workshop, Zürich, Switzerland, 7-9 January 2013.
76. *TH Summer Institute on BSM Physics*, CERN, Switzerland, 18-29 June 2012.
77. *Planck 2012*, Warsaw, Poland, 28 May - 1 June 2012.
Talk: *Gamma + MET Higgs decay from low scale SUSY breaking*, 29 May 2012 [[key](#)] [[pdf](#)].
78. *LHCPhenoNet Annual Meeting*, Lumley Castle, Durham, 19-22 March 2012.
Talk: *Higgs decay with γ + MET from low scale SUSY breaking*, 21 March 2012 [[key](#)] [[pdf](#)].
79. *School and Workshop on Strongly Coupled Physics Beyond the Standard Model*, Trieste, Italy, 16-27 January 2012.
80. *11th Hellenic School and Workshops on Elementary Particle Physics and Gravity*, Corfu, Greece, 4-18 September 2011.
Talk: *An isosinglet W' at the early LHC*, 5 September 2011 [[key](#)] [[pdf](#)].
81. *23rd Rencontres de Blois - Particle Physics and Cosmology*, Château Royal de Blois, France, 29 May - 3 June 2011.
Invited talk: *Simplified Models/Effective theory for resonances: an application to a weakly constrained W'* , 1 June 2011 [[key](#)] [[pdf](#)].
82. *Kick-off meeting of the LHCPhenoNet Initial Training Network*, Valencia, Spain, 31 January - 4 February 2011.
Talk: *Resonances at the Early LHC*, 3 February 2011 [[pdf](#)].

83. *Workshop on Heavy particles at the LHC*, Zurich Phenomenology Workshop, Zürich, 5-7 January 2011.
84. *Characterization of new physics at the LHC II*, CERN, Switzerland, 5-6 November 2010.
Talk: *Signals of new particle resonant production with early LHC data*, 5 November 2010 [[pdf](#)].
85. *10th Hellenic School and Workshops on Elementary Particle Physics and Gravity*, Corfu, Greece, 29 August - 12 September 2010.
Talk: *Signals of single particle production at the earliest LHC*, 4 September 2010 [[pdf](#)].
86. *Planck 2010*, CERN, Switzerland, 31 May - 4 June 2010.
Talk: *Composite scalars and vectors at the LHC*, 2 June 2010 [[pdf](#)].
87. *IFAE2010 - Incontri di Fisica delle Alte Energie*, “Sapienza” University, Rome, 7-9 April 2010.
Talk: *A “composite” scalar-vector system at the LHC*, 7 April 2010 [[pdf](#)].
88. *Indirect Searches for New Physics at the time of LHC*, GGI, Arcetri (Florence), Italy, 22-24 March 2010.
89. *7th MCnet Meeting*, CERN, Switzerland, 12-14 January 2010.
Talk: *Composite vectors at the LHC with CalHEP*, 14 January 2010 [[pdf](#)].
90. *The Search for New States and Forces of Nature*, GGI, Arcetri (Florence), Italy, 26-30 October 2009.
91. *9th Hellenic School and Workshops on Elementary Particle Physics and Gravity*, Corfu, Greece, 30 August - 13 September 2009.
92. *Workshop on Theoretical Physics 2009*, Sestri Levante (Genova), Italy, 8-10 June 2009.
Talk: *Production of heavy vector resonances at the LHC*, 8 June 2009 [[pdf](#)].
93. *Workshop on Theoretical Physics 2008*, Sestri Levante (Genova), Italy, 4-6 June 2008.
94. *Parma International School of Theoretical Physics - SNFT07*, Parma, Italy, 3-8 September 2009.

Seminars

1. *Machine Learning Deep Neural Networks and experimental likelihoods*, LCSL Seminars Series (DIMA-DIBRIS-MALGA University of Genova), Virtual Seminar, 21 May 2021 [[ppt](#)] [[pdf](#)].
2. *The legacy of HL-LHC for the Standard Model EFT*, Genova Theory Seminars, Virtual seminar, 19 May 2021 [[ppt](#)] [[pdf](#)].
3. *The legacy of HL-LHC for the Standard Model EFT*, Joint INFN-UNIMI-UNIMIB Pheno Seminar Series, Virtual seminar, 18 May 2021 [[ppt](#)] [[pdf](#)].
4. *5D Linear Dilaton: Structure and Phenomenology*, Scuola Normale Superiore, Pisa, Italy, 7 December 2017 [[ppt](#)] [[pdf](#)].
5. *Twins and Brothers of the Higgs*, Ljubljana, Slovenia, 23 November 2017 [[ppt](#)] [[pdf](#)].
6. *Status of Composite Twin Higgs*, LPTHE, Paris, France, 22 November 2016 [[key](#)] [[pdf](#)].
7. *The Exceptional Twin Higgs*, ICTP, Trieste, Italy, 20 April 2015 [[key](#)] [[pdf](#)].
8. *Physics Opportunities at Future Colliders*, University of Genova, Italy, 1 April 2015 [[key](#)] [[pdf](#)].
9. *Is the Higgs we are observing a Composite Higgs?*, University of Genova, 30 May 2013 [[key](#)] [[pdf](#)].

10. *A minimally tuned composite Higgs from an extra dimension*, IFAE, Barcelona, Spain, 19 April 2013 [[key](#)] [[pdf](#)].
11. *A minimally tuned composite Higgs from an extra dimension*, Scuola Normale Superiore, Pisa, Italy, 20 March 2013 [[key](#)] [[pdf](#)].
12. *Photophilic Higgs and beyond from low scale SUSY breaking*, Blackboard seminar (Pheno Coffee), University of Padova, 19 February 2013.
13. *Is a strong sector for EWSB still plausible*, IFT UAM/CSIC, Madrid, Spain, 22 October 2012 [[key](#)] [[pdf](#)].
14. *Higgs decay with γ + MET from low scale SUSY breaking*, University of Granada, Physics Department, 1 March 2012 [[key](#)] [[pdf](#)].
15. *An iso-singlet W' at the early LHC*, University of Zürich, Physics Department, 24 March 2011 [[key](#)] [[pdf](#)].
16. *A composite scalar-vector system in a strongly interacting EWSB*, Blackboard Seminar - The BSM Forum, CERN, Switzerland, 7 October 2010 [[indico](#)].
17. *A strong electro-weak symmetry breaking at the LHC*, University of Genova, 18 March 2010 [[pdf](#)].
18. *Composite vectors at the Large Hadron Collider (Ph.D. Pre-Thesis)*, Pisa, 14 December 2009 [[pdf](#)].
19. *Production of heavy vector resonances at the LHC*, Convegno Informale di Fisica Teorica, Sestri Levante (Genova), 8 June 2009 [[pdf](#)].

Collaboration with experiments

From 2014 to 2016 I have been a [Short Term Associate \(STA\)](#) (together with Dr. Andrea Thamm) to the ATLAS Collaboration to actively participate in analyses for the search of resonances in the di-bosons channels with the 8 and 13 TeV datasets, and to the combination of the limits from searches in different final states. This collaboration led to the publication: ATLAS Collaboration, *Searches for heavy diboson resonances in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector*, *JHEP* **09** (2016) 173 [[arXiv:1606.04833](#) [[hep-ph](#)]] of which I am a co-author. I am still collaborating with the ATLAS and CMS groups that work on resonance searches and their interpretation within the HVT framework that I proposed in D. Pappadopulo, A. Thamm, R. Torre and A. Wulzer, *Heavy Vector Triplets: Bridging Theory and Data*, *JHEP* **09** (2014) 060 [[arXiv:1402.4431](#) [[hep-ph](#)]].

I developed several tools to support the model independent interpretation of searches for heavy vector resonances at the LHC (available at this [HEP Tools](#)), where, in particular, I have exploited the new Computable Document Format (CDF) interface introduced by Wolfram Research.

I contributed to the theoretical interpretation of the search for resonances in the $W\gamma$ and $Z\gamma$ final states inspired by R. Barbieri and R. Torre, *Signals of single particle production at the earliest LHC*, *Phys. Lett. B* **695** (2011) 259-263 [[arXiv:1008.5302](#) [[hep-ph](#)]].

I have contributed, with the generation of Monte Carlo simulations and support in the theoretical interpretation, to collider searches for a Higgs decay into a single isolated photon and missing transverse energy inspired by C. Petersson, A. Romagnoni and R. Torre, *Higgs decay with monophoton + \cancel{E}_T signature from low scale supersymmetry breaking*, *JHEP* **10** (2012) 016 [[arXiv:1203.4563](#) [[hep-ph](#)]].

Complete list of LHC experimental analyses (ATLAS, CMS, and LHCb) influenced by my publications: [[Inspire](#)].

Teaching

University teaching

Teaching Professor (master course), [Metodi di Machine Learning per la fisica](#) (Machine Learning methods for physics), Second Semester A.Y. 2024/2025, University of Genova, Genova, Italy.
Other responsables: Dr. [Andrea Coccaro](#) and Prof. [Francesco Armando di Bello](#).

Teaching Professor (master course), [Teoria delle Interazioni Fondamentali](#) (Theory of Fundamental Interactions), First Semester A.Y. 2023/2024, University of Genova, Genova, Italy.
Other responsables: Prof. [Carla Biggio](#).

Teaching Professor (master course), [Metodi di Machine Learning per la fisica](#) (Machine Learning methods for physics), Second Semester A.Y. 2023/2024, University of Genova, Genova, Italy.
Other responsables: Dr. [Andrea Coccaro](#) and Prof. [Francesco Armando di Bello](#).

Teaching Professor (master course), [Teoria delle Interazioni Fondamentali](#) (Theory of Fundamental Interactions), First Semester A.Y. 2023/2024, University of Genova, Genova, Italy.
Other responsables: Prof. [Giovanni Ridolfi](#) and Prof. [Simone Marzani](#).

Teaching Assistant (master course), Reading course “Quantum Field Theory at work” (TP IV-II), Summer Semester A.Y. 2016/2017, EPFL, Lausanne, Switzerland.
Course responsables: Prof. [Riccardo Rattazzi](#) and Prof. [João Penedones](#).

Teaching Assistant (master course), Reading course “Symmetries in Quantum Mechanics and Particle Physics” (TP IV-I), Winter Semester A.Y. 2016/2017, EPFL, Lausanne, Switzerland.
Course responsible: Prof. [Riccardo Rattazzi](#).

Teaching Assistant (master course), Reading course “Quantum Field Theory at work” (TP IV-II), Summer Semester A.Y. 2015/2016, EPFL, Lausanne, Switzerland.
Course responsible: Prof. [Riccardo Rattazzi](#).

Teaching Assistant (master course), Reading course “Symmetries in Quantum Mechanics and Particle Physics” (TP IV-I), Winter Semester A.Y. 2015/2016, EPFL, Lausanne, Switzerland.
Course responsible: Prof. [Riccardo Rattazzi](#).

Teaching Assistant (bachelor course), [Fisica a III A](#) (Relativistic and Analytical Mechanics), Academic Year 2008/2009, University of Pisa, Italy.
Course responsible: Prof. [Paolo Rossi](#).

Teaching at international programs and schools

1. [First EWSB Spring School](#), Maratea, Italy, 15-21 April 2018.

Lectures: *Introduction to EWSB*, 16/17 April 2018 [[Lecture 1 \(pdf\)](#)], [[Lecture 2 \(pdf\)](#)], [[Lecture 3 \(pdf\)](#)].

Students

Grants, awards, and qualifications

2018

Italian National Scientific Abilitation: qualified for the role of Full Professor for the sector FIS 02/A2 - FISICA TEORICA DELLE INTERAZIONI FONDAMENTALI (from 13/07/2018 to 13/07/2024)

2018

Italian National Scientific Abilitation: qualified for the role of Associate Professor for the sector FIS 02/A2 - FISICA TEORICA DELLE INTERAZIONI FONDAMENTALI (from 13/07/2018 to 13/07/2024)

2018

MALHEPHYCA (MACHINE Learning High Energy PHYSics Classification Algorithms)

Grant of 20K euros assigned on a review basis from INFN for a project on applications of machine learning techniques to high energy physics.

2017

Marie Skłodowska Curie Fellowship as part of the EU-funded project: COFUNDING OF THE CERN FELLOWSHIP PROGRAMME 2014 (COFUND-FP-CERN-2014)

Organisation and coordination

2024-present

National Responsible of the INFN Theory Project [PML4HEP](#) (Precision Machine Learning for High Energy Physics), with nodes in Genova, Milan, and Rome.

2024-present

Co-organizer of the international workshop “Corfu Workshop on Future Accelerators” which takes place every year, in Spring, at the Corfu Summer Institute (editions: [2024](#), [2025](#)).

2023-present

Coordinator of the theory group (Group IV) of INFN Genova (about 50 people).

2020-present

Responsible of purchases for the theory group (Group IV) of INFN Genova.

2020-2023: one of the seven coordinators of the [Inter-experimental Machine Learning Working Group](#), which coordinates the Machine Learning activities at CERN. I participated to the organization of several one-day mini-workshops and of the yearly [4th Inter-experiment Machine Learning Workshop](#), which took place online and hosted more than 300 participants.

2020-2022

Co-organizer of the [GGI Tea Breaks](#), online seminars (during the Covid period) of GGI in Florence.

2020-2021

Since the beginning of the COVID-19 pandemics (March 2020) I contributed to the organization of the online seminar series [On-line "Newton 1665" seminars - phenomenolog, theory, astro, cosmo](#).

2017-2020

Co-organizer of the prestigious international school "[GGI Lectures on the Theory of Fundamental Interactions](#)" which takes place every year, in the month of January, at the Galileo Galilei Institute in Florence (editions [2018](#), [2019](#), [2020](#), [2021](#)).

2019 Nominated representative of the CERN theory group in the [ECFA Early-Career Researcher Panel](#) and co-author of the *Report on the ECFA Early-Career Researchers Debate on the 2020 European Strategy Update for Particle Physics*, [arXiv:2002.02837 \[hep-ex\]](#).

2019 Convener of the BSM session of the Les Houches Workshop [Physics at TeV Colliders](#): I participated to the organization of the June 2019 Workshop in Les Houches, coordinated the BSM studies, participated to the session on tools and Machine Learning applications to High Energy Physics, contributed, as editor, to the preparation of the proceedings, and took the summary talks for both the BSM session and the Machine Learning session.

2018-2019

Co-organizer of the theory seminar series "BSM Forum" of the CERN TH Department.

2017-2019 Co-convener of the BSM Working Group (WG₃) of the CERN "[Workshop on the physics of HL-LHC, and perspectives at HE-LHC](#)". The workshop aims at delivering an input for the next update of the European Strategy for Particle Physics, that will start in 2019.

I coordinate the BSM Working Group, including more than 150 researchers from more than 100 international institutes, and the studies and the editing of the CERN Yellow Report, that is under completion. I co-organized several working group meetings, and plenary meetings, at CERN and in other locations, contributing to the setup of the corresponding Indico pages. I gave several talks including summaries of physics results and status reports of the WG activity.

2015-2017

Organizer of the particle theory seminars in the ITP LPTP Department of EPFL in the academic years 2015/2016 and 2016/2017.

2014-2016

Convener and editor of the CERN Yellow Report *Physics at a 100 TeV pp collider: beyond the Standard Model phenomena*, [CERN Yellow Report \(2017\) no.3, 441-634](#), in the context of the preliminary study for the [FCC-hh CERN program](#). The report has been realized to provide inputs for the next update of the European Strategy for Particle Physics (2019).

I coordinated the BSM Working Group, including more than 100 researchers from about 70 international institutes, and the studies and the editing of the CERN Yellow Report. I co-organized several working group meetings, and plenary meetings, at CERN and in other locations, contributing to the setup of the corresponding Indico pages. I gave several talks including summaries of physics results and status reports of the WG activity.

2013-2015

Organizer of the particle theory seminars in the Physics Department of University of Padova in the academic year 2014/2015.

2013

Co-organizer of the *DaMeSyFla Mid-term Meeting*, GGI, Florence, 16-18 December 2013 and responsible of the corresponding Indico page.

2013

Co-organizer of the *DaMeSyFla Meeting*, Padova, 11-12 April 2013.

Collaboration with scientific journals

Editor

Member of the Editorial Board of *Symmetry* since 2021.

Member of the Editorial Board of the *International Journal of High Energy Physics (IJHEP)* since 2018.

Referee

Referee for *Advances in High Energy Physics* since 2017.

Referee for *Physical Review D (PRD)* since 2016.

Referee for *Physical Review Letters (PRL)* since 2016.

Referee for *Modern Physics Letters A (MPLA)* since 2015.

Referee for *Physics Letters B (PLB)* since 2015.

Referee for *Scientometrics (SCIM)* dal 2019.

Referee for *The European Physical Journal C (EPJC)* since 2013.

Referee for *Journal of High Energy Physics (JHEP)* since 2013.

Outreach

2022 -

Da Galileo a Higgs: un viaggio lungo 400 anni (From Galileo to Higgs: a 400 years long trip), high school lecture in the context of high school students stage of University of Genova, Italy, 08-02-2022, 24-01-2023, and 23-01-2024 [[pdf](#)]

2025

Scienza. Intelligenza Artificiale. Arte., lecture for high school students for the project “Art & Science 2025”, Genova, Italy, 22 April 2025 [[Slides](#)].

2025

AI and the Future of Scientific Exploration, lecture at the “PhD Day - Corso di Dottorato in Scienze della Terra e dell’Ambiente”, University of Pavia, Pavia, Italy, 21 February 2025 [[Slides](#)].

2025

Dall’Infinitamente Piccolo all’Infinitamente Intelligente: Particelle e Intelligenza Artificiale, high school lecture in the context of high school students stage of University of Genova, Italy, 29-01-2025 [[Slides](#)].

2024

Dall’Infinitamente Piccolo all’Infinitamente Intelligente: Particelle e Intelligenza Artificiale, high school lecture in the context of the “S.A.R.O.” event at Liceo Da Vigo - Nicoloso da Recco, Genova, Italy, 19 December 2024 [[Slides](#)].

2024

L'Intelligenza Artificiale al servizio della scienza, public lecture at the “Feltival della comunicazione di Camogli”, Camogli, Genova, Italy, 15 Settembre 2024 [[Slides](#)].

2024

L'Intelligenza Artificiale al servizio della scienza, public lecture at the event “Pint of Science 2024”, Genova, Italy, 14 May 2024 [[Slides](#)].

2023

L'Intelligenza Artificiale e la Nuova Frontiera della Ricerca Scientifica, public lecture for the european researchers night “Sharper Night 2023”, Genova, Italy, 29 September 2023.

2019

The Standard Model and Beyond, lecture to Bergen (Norway) students in visit at CERN, CERN, Switzerland, 13 November 2019 [[pdf](#)].

2018

The Standard Model and Beyond, lecture to Bergen (Norway) students in visit at CERN, CERN, Switzerland, 15 November 2018 [[pdf](#)].

2017

Il Modello Standard e Oltre (The Standard Model and Beyond), high school lecture in the context of high school students stage of University of Genova, Genova, 06 December 2017 [[pdf](#)].

2015

Da Galileo a Higgs: un viaggio lungo 400 anni (From Galileo to Higgs: a 400 years long trip), high school lecture in the context of the Masterclass project for high school students of University of Padova, “Liceo L. Stefanini”, Venezia-Mestre, 12 February 2015 [[pdf](#)].

General research interests

My general research interests are in the fields of Phenomenology of Electroweak and Strong Interactions in the Standard Model and Beyond, Quantum Field Theory, Dark Matter, Cosmology, Perturbative QCD, Monte Carlo event generators and High Energy Physics Calculations and Tools. My research interests also expand towards data science, statistics, data analysis, and machine learning applications to high energy physics and to statistical data analysis in general.

Reference scientists

Prof. Riccardo Barbieri
Full Professor of Theoretical Physics
Scuola Normale Superiore of Pisa, Italy

Prof. Riccardo Rattazzi
Full Professor of Theoretical Physics EPFL
SB ITP LPTP, Lausanne, Switzerland+41

Prof. Gian F. Giudice
Senior Staff Scientist
CERN TH Division, Geneva, Switzerland

Prof. Michelangelo L. Mangano
Senior Staff Scientist
CERN TH Division, Geneva, Switzerland

Prof. Andrea Wulzer
Associate Professor of Theoretical Physics
IFAE, Barcelona, Spain

Prof. Fabio Zwirner
Full Professor of Theoretical Physics
University of Padova, Italy

Prof. Giovanni Ridolfi
Full Professor of Theoretical Physics
University of Genova, Italy

Prof. Carlo M. Becchi
Emeritus Professor of Theoretical Physics
University of Genova, Italy

Simone Marzani

Curriculum Vitae

Academic Positions

- 2020–to date **Associate Professor**, *Università di Genova*, Genoa, Italy.
- 2017–2020 **Assistant Professor**, *Università di Genova*, Genoa, Italy.
- 2015–2017 **Assistant Professor**, *University at Buffalo, The State University of New York*, Buffalo, NY.
- 2014–2015 **Research Associate**, *Massachusetts Institute of Technology*, Cambridge, MA.
- 2011–2014 **Research Associate**, *Institute for Particle Physics Phenomenology, Durham University*, Durham, England.
- 2008–2011 **Research Associate**, *University of Manchester*, Manchester, England.

Education

- 2005–2008 **PhD in Theoretical Particle Physics**, *University of Edinburgh*, Edinburgh, Scotland.
- 2000–2005 **Masters Degree in Physics**, *Università degli Studi di Milano*, Milano, Italy.
- 1995–2000 **High School**, *Liceo Scientifico Statale Vittorio Veneto*, Milano, Italy.

Additional Training

- 2007 **CTEQ Summer School on QCD Analysis and Phenomenology**, Madison, WI.
- 2006 **36th British Universities Summer School in Theoretical Elementary Particle Physics**, Edinburgh, Scotland.
- 2006 **XI Frascati Bruno Touschek Spring School**, LNF, Frascati, Italy.

Languages

- Italian: native
- Spanish: basic
- English: fluent
- French: basic

Professional Activities

Grants and Awards

- 2024 "BOOsting Discoveries of New Interactions – BOODINI" (PNRR ICSC Spoke 2 Cascade Grant).
 - "Probing the Standard Model with Beauty and Charm" (Royal Society International Exchanges).
- 2023 Supervisor of MSCA postdoctoral fellowship.
- 2020 Durham IPPP Visiting Academics (DIVA) fellowship.
- 2019 "Using jets to challenge the Standard Model of particle physics" (Università di Genova *Curiosity Driven* grant).
- 2018 "Resum(e) the path to discovery" (Royal Society International Exchanges).
 - 2018 European Physical Journal Distinguished Referee Award.
- 2017 Fondo di Finanziamento delle Attività Base di Ricerca (MIUR).
 - UUP Professional Development Award.
- 2016 "All-Order Precision for LHC Phenomenology" (US National Science Foundation PHY-1619867).
 - UUP Professional Development Award.
- 2014 LHC Theory Initiative Research Fellowship (US National Science Foundation).
- 2005 Scottish Universities' Physics Alliance Studentship.

Memberships

- 2024–2027 Associate of the Higgs Centre for Theoretical Physics, University of Edinburgh.
- 2023–2025 ATLAS Short Term Associate.
- 2022–to date CERN Visiting Scientist (10%).
- 2018–2024 Affiliate of the Higgs Centre for Theoretical Physics, University of Edinburgh.
- 2017–to date Associate of Istituto Nazionale di Fisica Nucleare (INFN).
- 2015–2017 Member of the American Physical Society.
- 2014–2017 Associate Member of the Pittsburgh Particle physics, Astrophysics and Cosmology Center (PITT PACC).
- 2009–2014 Member of Institute of Physics.

Institutional roles

- 2024–to date Member of the International Advisory Committee for the BOOST conference series (Chair in 2024-2025).
 - 2024–2027 Member of the Physics Department Council.
 - 2024–2026 Member of the University Technical-Scientific Committee.
- 2024–to date Member of the selection committees for university fixed-term researchers.
- 2024–to date PI for INFN SPIF (Precision Studies of Fundamental Interactions) national project.

- 2021–to date Deputy Coordinator of Physics Undergraduate and Masters Teaching
- 2021–2023 Member of the selection committee for "Assegni di Ricerca" at INFN Sezione di Genova.
- 2021–2023 Genova local coordinator for INFN SPIF (Precision Studies of Fundamental Interactions) national project.
- 2020–2024 Member of the Physics Masters Thesis Committee.
- 2020–2021 Member of the Civil and Environmental Engineering Thesis Committee.
- 2018–2021 Secretary of Physics Undergraduate and Masters Teaching.
- 2018–2021 Member of the Physics Department Research Committee.

Organisation of Workshops and Conferences

- 2024 Main Organiser of *BOOST 2024*, Genova, Italy
 - Organiser of the IPPP workshop *Flavoured Jets at the LHC*, Durham, England.
- 2023 Organiser of the Higgs Centre workshop *Heavy Flavours at high p_T* , Edinburgh, Scotland.
 - Organiser of the *First Lund Jet Plane Institute*, CERN Geneva, Switzerland.
 - Convener of *Physics at TeV Colliders* workshop, Les Houches, France.
 - Convener of the QCD Physics track at *Large Hadron Collider Physics Conference, LHCP 2023*, Belgrade, Serbia.
- 2021 Organiser of the CERN workshop *Jets and their substructure from LHC data*, remote workshop.
- 2019 Organiser of the Higgs Centre workshop *Towards accuracy at small- x* , Edinburgh, Scotland.
 - Convener of *Jets, Substructure and Resummation*, QCD@LHC 2019, Buffalo NY.
 - Convener of *Physics at TeV Colliders* workshop, Les Houches, France.
- 2018 Organiser of the mini-workshop *High Accuracy Resummation & Parton Showers*, Genova, Italy.
 - Convener of Frontiera Energia at *IFAE 2018*, Milano Bicocca, Italy
- 2017 Organiser of *BOOST 2017*, Buffalo, NY.
- 2016 Organiser of *Loopfest XV*, Buffalo, NY.
 - Convener of the QCD session at the Standard Model at the LHC 2016 workshop, Pittsburgh, PA.
- 2015 Organiser of *Workshop on QCD factorization*, Buffalo, NY.
 - Convener of the Electro-Weak, Higgs Beyond the Standard Model Working Group at the XXIII International Workshop on Deep Inelastic Scattering and Related Subjects, Dallas Texas.
- 2009–2011 Organiser of the Particle Physics Group Seminars in Manchester.
 - 2009 Organiser of *Mini-Workshop on Techniques for Eikonal Calculations*, Manchester, England.

Peer-reviews

- 2024 Proposal reviewer for Khalifa University and Polish National Science Centre.
- 2024 Proposal reviewer for the UK Royal Society.
- 2017-to date Proposal reviewer for the US National Science Foundation.
- 2017-to date Proposal reviewer for the Netherlands Organisation for Scientific Research.
- 2012-to date Referee for *Physical Review Letters*, *Physical Review D*, *Journal of High Energy Physics*, *Physics Letters B*, *Nuclear Physics B* and *European Physical Journal C*.

Research Stays

- 2025 Brookhaven National Lab "EIC Theory Institute", Upton, NY, USA (1 week).
- 2024 MIAPbP workshop "EFT and multi-loop methods for advancing precision in collider and gravitational wave physics", Munich, Germany (10 days).
- 2023 Galileo Galilei Institute workshop "Theory Challenges in the Precision Era of the Large Hadron Collider", Florence, Italy (3 weeks).
 - ESI Program on Quantum Field Theory at the Frontiers of the Strong Interaction, Vienna, Austria (1 week).
 - DAMTP, Cambridge University (1 week).
 - Physics Department, Oxford University (1 week).
- 2022 Physics Department, Oxford University (1 week).
- 2018 DESY Theorist of the Month, Hamburg, Germany (1 week).
- 2017 MIAPP workshop "Automated, Resummed and Effective: Precision Computations for the LHC and Beyond", Munich, Germany (2 weeks).
- 2016 KITP workshop LHC Run II and the Precision Frontier, Santa Barbara, CA (1 month).
IPhT Saclay, France (1 week).
- 2015 CERN, Switzerland (10 days).
Oxford University, England (1 week).
- 2014 IPhT Saclay, France (2 weeks).
Georg-August-Universität Göttingen, Germany (1 week).
- 2013 ESI Program on Jets and Quantum Fields for LHC and Future Colliders, Vienna, Austria (2 weeks).
- 2012 Visitor at CERN, Switzerland (1 week).
- 2009 Visitor at Bergische Universität Wuppertal, Germany (1 week).

Academic Experience

Mentoring and Supervision of Postdocs

- 2025–2027
- 2024–2026

2020–2022

2020–2021

2019–2022

2015–2017

Mentoring and Supervision of PhD students

2024–2027

2021–2024

2019–2023

2019–2023

2018–2021

2017–2020

2016–2020

Mentoring and Supervision of Masters students

2025–2026

2024–2025

2023–2024

2022–2023

2021–2022

2020–2021

2019–2020

2018–2019

2017–2018

2016–2017

Lectures

2025/2026 Fisica Quantistica (Università di Genova);
Teoria delle Interazioni Fondamentali (Università di Genova).

2024/2025 Fisica Quantistica (Università di Genova);
Elettrodinamica Quantistica (Università di Genova).
QCD and Collider Physics (Università di Genova).

2023/2024 Fisica Quantistica (Università di Genova);
Elettrodinamica Quantistica (Università di Genova).
Teoria delle Interazioni Fondamentali (Università di Genova).
QCD and Collider Physics (Università di Genova).

- 2022/2023 Fisica Quantistica (Università di Genova);
Elettrodinamica Quantistica (Università di Genova).
- 2021/2022 Fisica Generale A (Università di Genova);
Fisica Quantistica B (Università di Genova);
Elettrodinamica Quantistica (Università di Genova).
- 2020/2021 Fisica Generale A (Università di Genova);
Fisica Quantistica B (Università di Genova);
Elettrodinamica Quantistica (Università di Genova).
- 2019/2020 Fisica Generale A (Università di Genova);
Fisica delle Particelle Elementari (Università di Genova).
Teorie di Gauge (Università di Genova).
- 2018/2019 Fisica Generale A (Università di Genova);
Fisica delle Particelle Elementari I (Università di Genova).
- 2017/2018 Fisica Generale A (Università di Genova);
Fisica Nucleare, delle Particelle e Astrofisica II (Università di Genova).
- 2016/2017 Quantum Field Theory (University at Buffalo);
General Physics I (University at Buffalo).
- 2015/2016 Elementary Particle Physics (University at Buffalo).
2012 Resummation in Action (Durham University).

Schools

- 2024 CTEQ summer school: *Jets*.
- 2022 Galileo Galilei Institute Lectures on the Theory of Fundamental Interactions: *QCD and collider physics*.
- 2019 QCD Master Class 2019: *Jet physics*.
- 2018 Sangam@HRI: *Jets and their structure*.
- 2014 MCnet Summer School: *Boosted-Particle Techniques*.

Tutorials

- 2011–2014 Tutor for undergraduate courses at Durham University.
- 2009–2011 Tutor for undergraduate courses at Manchester University.
- 2006–2008 Tutor for undergraduate courses at Edinburgh University.
- 2009–2010 Tutor for 39th and 40th British Universities Summer School in Theoretical Elementary Particle Physics.
- 2000-2005 Private tutor in Maths, Physics and English for high school pupils.

Outreach Activities

Activities with schools and with the general public

- 2024 Co-organiser of the photography exhibition *Beyond the Visible*, by Enrico Sacchetti, at Palazzo Ducale, Genova.
- 2024 - to CERN International Masterclass.
date
- 2009-2012 Activities as STEM (Science, Technology, Engineering and Mathematics) Ambassador, e.g. motivational days in high-schools and SciBar in Greater Manchester area.
- 2010 Organiser of the weekly Physics Club at Whalley Range High School, Manchester.
- 2009-2010 Particle Physics Masterclass: introduction to particle physics for A-level students.
- 2005 Scientific animator at the Science and Technology Museum *Leonardo da Vinci* in Milano, Italy.

Books and Contributions to Volumes

Title *Instrumentation and Techniques in High Energy Physics*
Chapter *Jets at Collider*
Editor Don Lincoln
Publisher World Scientific (2024).

Title *50 years of Quantum Chromodynamics*
Contribution *Analytic Resummation*
Authors Franz Gross, Eberhard Klempt, *et al.*
Publisher European Physical Journal C (2023).

Title *Looking inside jets: an introduction to jet substructure and boosted-object phenomenology.*
Authors Simone Marzani, Gregory Soyez, and Michael Spannowsky.
Publisher Springer Lecture Notes in Physics (2019).

PhD Thesis (2008)

Title *High Energy Resummation in Quantum Chromo-Dynamics.*
Supervisors Prof. Richard D. Ball and Dr. Thomas Binoth.

Masters Thesis (2005)

Title *The BFKL kernel at next-to-next-to leading order.*
Supervisors Prof. Stefano Forte and Dr. Alessandro Vicini.

Journal Publications

The Authors' list in high-energy physics is usually alphabetical. Rare exceptions to this rule imply a significant contribution from the first Author(s).

- 2025 – A. Behring, *et al.*, *Flavoured jet algorithms: a comparative study*, JHEP **02** (2025), 046, [arXiv: 2506.13449 [hep-ph]].
- 2024 – A. Ghira, L. Mai, and S. Marzani, *Bridging massive and massless schemes for soft gluon resummation in heavy-flavour production*, Eur. Phys. J. C **85** (2025) no.294 [arXiv:2412.13261 [hep-ph]].
 - P. K. Dhani, O. Fedkevich, A. Ghira, S. Marzani, and G. Soyez, *Heavy Flavour Jet Substructure*, JHEP **09** (2025), 149, [arXiv:2410.05415 [hep-ph]].
 - M. Cacciari, A. Ghira, S. Marzani, and G. Ridolfi *An improved description of charm fragmentation data*, Eur. Phys. J. C **84** (2024) no.889 [arXiv:2406.04173 [hep-ph]].
- 2023 – S. Caletti, A. Ghira, and S. Marzani, *On heavy-flavour jets with Soft Drop*, Eur. Phys. J. C **84** (2024) no.212 [arXiv:2312.11623 [hep-ph]].
 - A. Ghira, S. Marzani and G. Ridolfi, *A consistent resummation of mass and soft logarithms in processes with heavy flavours*, JHEP **11** (2023), 120, [arXiv:2309.06139 [hep-ph]].
- 2022 – D. Gaggero, A. Ghira, S. Marzani and G. Ridolfi, *Soft logarithms in processes with heavy quarks*, JHEP **09** (2022), 58, [arXiv:2207.13567 [hep-ph]].
 - S. Caletti, A. J. Larkoski, S. Marzani and D. Reichelt, *A Fragmentation Approach to Jet Flavor*, JHEP **10** (2022),158, arXiv:2205.01117 [hep-ph].
 - S. Caletti, A. J. Larkoski, S. Marzani and D. Reichelt, *Practical Jet Flavour Through NNLO*, Eur. Phys. J. C **82** (2022) no.7, 632 [arXiv:2205.01109 [hep-ph]].
 - O. Fedkevych, C. K. Khosa, S. Marzani, and F. Sforza, *Identification of b-jets using QCD-inspired observables*, Phys. Rev. D **107** (2023) 034032, arXiv:2202.05082 [hep-ph]
- 2021 – L. Cavallini, A. Coccaro, C. K. Khosa, G. Manco, S. Marzani, F. Parodi, D. Rebutti, A. Rescia, and G. Stagnitto, *Tagging the Higgs boson decay to bottom quarks with colour-sensitive observables and the Lund jet plane*, Eur. Phys. J. C **82** (2022) no.5, 493 [arXiv:2112.09650 [hep-ph]].
 - D. Reichelt, S. Caletti, O. Fedkevych, S. Marzani, S. Schumann, and G. Soyez, *Phenomenology of jet angularities at the LHC*, JHEP **03** (2022), 131, arXiv:2112.09545 [hep-ph].
 - S. Caletti, O. Fedkevych, S. Marzani and D. Reichelt, *Tagging the initial-state gluon*, Eur. Phys. J. C **81** (2021) no.9, 844 [arXiv:2108.10024 [hep-ph]].
 - C. K. Khosa and S. Marzani, *Higgs boson tagging with the Lund jet plane*, Phys. Rev. D **104** (2021) no.5, 055043 [arXiv:2105.03989 [hep-ph]].

- S. Caletti, O. Fedkevych, S. Marzani, D. Reichelt, S. Schumann, G. Soyez and V. Theeuwes, *Jet Angularities in Z +jet production at the LHC*, JHEP **07** (2021) 76, arXiv:2104.06920 [hep-ph].
- 2020 – A. Kasieczka, S. Marzani, G. Soyez, and G. Stagnitto, *Towards Machine Learning Analytics for Jet Substructure*, JHEP **09** (2020) 195, arXiv:2007.04319 [hep-ph].
- G. Buckley, G. Callea, A. J. Larkoski, and S. Marzani, *An Optimal Observable for Color Singlet Identification*, SciPost Phys. 9, 026 (2020) arXiv:2006.10480 [hep-ph].
- 2019 – A. J. Larkoski, S. Marzani and C. Wu, *Safe Use of Jet Pull*, JHEP **01** (2020) 104, arXiv:1911.05090 [hep-ph].
- S. Marzani, D. Reichelt, S. Schumann, G. Soyez and V. Theeuwes, *Fitting the Strong Coupling Constant with Soft-Drop Thrust*, JHEP **11** (2019) 179, arXiv:1906.10504 [hep-ph].
- A. J. Larkoski, S. Marzani and C. Wu, *Theory Predictions for the Pull Angle*, Phys. Rev. D **99** (Rapid Com.) (2019) 091502, arXiv:1903.02275 [hep-ph].
- 2018 – M. Bonvini, and S. Marzani, *Four-loop splitting functions at small x* , JHEP **06** (2018) 145, arXiv:1805.06460 [hep-ph].
- J. Baron, S. Marzani and V. Theeuwes, *Soft-Drop Thrust*, JHEP **08** (2018) 105, arXiv:1803.04719 [hep-ph].
- M. Bonvini and S. Marzani, *Double resummation for Higgs production*, Phys. Rev. Lett. **120** (2018) 202003, arXiv:1802.07758 [hep-ph].
- 2017 – S. Marzani, L. Schunk, and G. Soyez, *The jet mass distribution after Soft Drop*, Eur. Phys. J. C **78** (2018) 2, 96, arXiv:1712.05105 [hep-ph].
- R. D. Ball, V. Bertone, M. Bonvini, S. Marzani, J. Rojo, and L. Rottoli, *Parton distributions with small- x resummation: evidence for BFKL dynamics in HERA data*, Eur. Phys. J. C **78** (2018) no.4, 321, arXiv:1710.05935 [hep-ph].
- M. Bonvini, S. Marzani, and C. Muselli, *Towards parton distribution functions with small- x resummation: HELL 2.0*, JHEP **12** (2017) 117, arXiv:1708.07510 [hep-ph].
- A. Tripathee, W. Xue, A. Larkoski, S. Marzani, and J. Thaler, *Jet Substructure Studies with CMS Open Data*, Phys. Rev. D. **96** (2017) no.7, 074003 (Editors' Suggestion), arXiv:1704.05842 [hep-ph].
- A. Larkoski, S. Marzani, J. Thaler, A. Tripathee and W. Xue, *Exposing the QCD Splitting Function with CMS Open Data*, Phys. Rev. Lett. **119** (2017) 132003 (Editors' Suggestion), arXiv:1704.05066 [hep-ph].
- S. Marzani, L. Schunk and G. Soyez, *A study of jet mass distributions with grooming*, JHEP **07** (2017) 132, arXiv:1704.02210 [hep-ph].
- 2016 – S. Marzani, and V. Theeuwes, *Vector boson production in joint resummation*, JHEP **02** (2017) 127, arXiv:1612.01432

- M. Bonvini, S. Marzani, and T. Peraro, *Small- x resummation from HELL*, Eur. Phys. J. C **76** (2016) 11, 597, arXiv:1607.02153 [hep-ph].
- F. Caola, S. Forte, S. Marzani, C. Muselli, and G. Vita, *The Higgs transverse momentum spectrum with finite quark masses beyond leading order*, JHEP **08** (2016) 150, arXiv:1606.04100 [hep-ph].
- M. Bonvini, S. Marzani, C. Muselli, and L. Rottoli, *On the Higgs cross section at N^3LO+N^3LL and its uncertainty*, JHEP **08** (2016) 105, arXiv:1603.08000 [hep-ph].
- J. Dolen, P. Harris, S. Marzani, S. Rappoccio, N. Tran, *Thinking outside the ROCs: Designing Decorrelated Taggers (DDT) for jet substructure*, JHEP **05** (2016) 156, arXiv:1603.00027 [hep-ph].
- 2015 – S. Marzani, *Combining Q_T and small- x resummations*, Phys. Rev. D **93** (2016) 054047, arXiv:1511.06039 [hep-ph].
- W. Beenakker, C. Borschensky, M. Krämer, A. Kulesza, E. Laenen, S. Marzani and J. Rojo, *$NLO+NLL$ squark and gluino production cross-sections with threshold-improved parton distributions*, Eur. Phys. J. C **76** (2016) 2, 53, arXiv:1510.00375 [hep-ph].
- M. Bonvini, S. Marzani, J. Rojo, L. Rottoli, M. Ubiali, R. D. Ball, V. Bertone, S. Carrazza, and Nathan P. Hartland. *Parton distributions with threshold resummation*, JHEP **1509** (2015) 191, arXiv:1507.01006 [hep-ph].
- G. Luisoni and S. Marzani, *QCD Resummation for hadronic final-states*, J. Phys. G **42** (2015) 103101 (Topical Review), arXiv:1505.04084 [hep-ph].
- C. Muselli, M. Bonvini, S. Forte, S. Marzani and G. Ridolfi, *Top Quark Pair Production beyond NNLO*, JHEP **1508** (2015) 076, arXiv:1505.02006 [hep-ph].
- A. J. Larkoski, S. Marzani and J. Thaler, *Sudakov Safety in perturbative QCD*, Phys. Rev. D **91** (Rapid Com.) (2015) 111501, arXiv:1502.01719 [hep-ph].
- 2014 – E. Gerwick, S. Hoeche, S. Marzani and S. Schumann, *Soft evolution of multi-jet final states*, JHEP **1502** (2015) 106, arXiv:1411.7325 [hep-ph].
- M. Bonvini and S. Marzani, *Resummed Higgs cross section at N^3LL* , JHEP **1409** (2014) 007, arXiv:1405.3654 [hep-ph].
- M. Bonvini, R. D. Ball, S. Forte, S. Marzani and G. Ridolfi, *Updated Higgs cross section at approximate N^3LO* , J. Phys. G **41** (2014) 095002, arXiv:1404.3204 [hep-ph].
- A. J. Larkoski, S. Marzani, G. Soyez and J. Thaler, *Soft Drop*, JHEP **1405** (2014) 146, arXiv:1402.2657 [hep-ph].
- 2013 – A. Ferroglia, S. Marzani, B. D. Pecjak and L. L. Yang, *Boosted top production: factorization and resummation for single-particle inclusive distributions*, JHEP **1401** (2014) 028, arXiv:1310.3836 [hep-ph].
- M. Dasgupta, A. Fregoso, S. Marzani and A. Powling, *Jet substructure with analytical methods*, Eur. Phys. J. C **73** 11 (2013) 2623, arXiv:1307.0013[hep-ph].

- M. Dasgupta, A. Fregoso, S. Marzani and G. P. Salam, *Towards an understanding of jet substructure*, JHEP **1309** (2013) 029, arXiv:1307.0007[hep-ph].
- R. D. Ball, M. Bonvini, S. Forte, S. Marzani and G. Ridolfi, *Higgs production in gluon fusion beyond NNLO*, Nucl. Phys. B **874** (2013) 746, arXiv:1303.3590 [hep-ph].
- 2012 – S. Marzani, *Phenomenology of electro-weak bosons at hadron colliders with novel variables*, Mod. Phys. Lett. A, Vol. 27, No. 26 (2012) arXiv:1207.4279 [hep-ph].
- M. Dasgupta, K. Khelifa-Kerfa, S. Marzani and M. Spannowsky, *On jet mass distributions in Z +jet and dijet processes at the LHC*, JHEP **1210** (2012) 126, arXiv:1207.1640 [hep-ph].
- A. Banfi, M. Dasgupta, S. Marzani and L. Tomlinson, *Predictions for Drell-Yan ϕ^* and Q_T observables at the LHC*, Phys. Lett. B **715** (2012) 152, arXiv:1205.4760 [hep-ph].
- 2011 – A. Banfi, M. Dasgupta, S. Marzani and L. Tomlinson, *Probing the low transverse momentum domain of Z production with novel variables*, JHEP **1201** (2012) 044, arXiv:1110.4009 [hep-ph].
- R. M. D. Delgado, J. R. Forshaw, S. Marzani and M. H. Seymour, *The dijet cross section with a jet veto*, JHEP **1108** (2011) 157, arXiv:1107.2084 [hep-ph].
- A. Banfi, M. Dasgupta and S. Marzani, *QCD predictions for new variables to study dilepton transverse momenta at hadron colliders*, Phys. Lett. B **701** (2011) 75, arXiv:1102.3594 [hep-ph].
- F. Caola and S. Marzani, *Finite fermion mass effects in pseudoscalar Higgs production via gluon-gluon fusion*, Phys. Lett. B **698** (2011) 275, arXiv:1101.3975 [hep-ph].
- 2010 – F. Caola, S. Forte and S. Marzani, *Small x resummation of rapidity distributions: the case of Higgs production*, Nucl. Phys. B **846** (2011) 167, arXiv:1010.2743 [hep-ph].
- A. Banfi, M. Dasgupta, K. Khelifa-Kerfa and S. Marzani, *Non-global logarithms and jet algorithms in high- p_T jet shapes*, JHEP **1008** (2010) 064, arXiv:1004.3483 [hep-ph].
- 2009 – R. V. Harlander, H. Mantler, S. Marzani and K. J. Ozeren, *Higgs production in gluon fusion at next-to-next-to-leading order QCD for finite top mass*, Eur. Phys. J. C **66** (2010) 359, arXiv:0912.2104 [hep-ph].
- J. Forshaw, J. Keates and S. Marzani, *Jet vetoing at the LHC*, JHEP **0907** (2009) 023, arXiv:0905.1350 [hep-ph].
- 2008 – S. Marzani and R. D. Ball, *High Energy Resummation of Drell-Yan Processes*, Nucl. Phys. B **814** (2009) 246, arXiv:0812.3602 [hep-ph].
- S. Marzani, R. D. Ball, V. Del Duca, S. Forte and A. Vicini, *Higgs production via gluon-gluon fusion with finite top mass beyond next-to-leading order*, Nucl. Phys. B **800** (2008) 127, arXiv:0801.2544 [hep-ph].
- 2007 – S. Marzani, R. D. Ball, P. Falgari and S. Forte, *BFKL at Next-to-Next-to-Leading Order*, Nucl. Phys. B **783** (2007) 143, arXiv:0704.2404 [hep-ph].

Reports and Conference Proceedings

- 2024 – J. Andersen, *et al.*, *Les Houches 2023: Physics at TeV Colliders: Standard Model Working Group Report*, arXiv:2406.00708 [hep-ph].
- 2022 – D. d’Enterria, *et al.*, *The strong coupling constant: State of the art and the decade ahead*, Contribution to 2022 Snowmass Summer Study, arXiv:2203.08271 [hep-ph].
- 2020 – S. Amoroso *et al.*, *Les Houches 2019: Physics at TeV Colliders: Standard Model Working Group Report*, arXiv:2003.01700 [hep-ph].
- 2019 – M. Cepeda *et al.*, *Higgs Physics at the HL-LHC and HE-LHC*, arXiv:1902.00134 [hep-ph].
- 2018 – J. Bendavid *et al.*, *Les Houches 2017: Physics at TeV Colliders Standard Model Working Group Report*, arXiv:1803.07977 [hep-ph].
- 2016 – D. de Florian *et al.* [The LHC Higgs Cross Section Working Group Collaboration], *Handbook of LHC Higgs Cross Sections: 4. Deciphering the Nature of the Higgs Sector*, arXiv:1610.07922 [hep-ph].
- 2015 – D. Adams, A. Arce, L. Asquith, M. Backovic, T. Barillari, P. Berta, D. Bertolini and A. Buckley *et al.*, *Towards an Understanding of the Correlations in Jet Substructure*, Eur. Phys. J. **C 75** (2015) 9, 409 arXiv:1504.00679 [hep-ph]. *Report of BOOST 2013, hosted by the University of Arizona, 12-16 August 2013.*
- 2013 – M. Dasgupta, S. Marzani and G. P. Salam, *QCD calculations for jet substructure*, PoS RADCOR **2013** (2014) 047 [Nuovo Cim. C **037** (2014) 02, 131], arXiv:1311.6514 [hep-ph]. *Talk presented at various conferences including ESI Program on Jets and QFT, Boost 2013, QCD@LHC 2013 and Radcor 2013.*
 - A. Altheimer, A. Arce, L. Asquith, J. Backus Mayes, E. Bergeaas Kuutmann, J. Berger, D. Bjergaard and L. Bryngemark *et al.*, *Boosted objects and jet substructure at the LHC*, arXiv:1311.2708 [hep-ex]. Eur. Phys. J. **C 74** (2014) 3, 2792 *Report of BOOST 2012, held at IFIC Valencia, 23rd-27th of July 2012.*
 - S. Marzani, *Q_T and ϕ^* observables in Drell-Yan processes*, EPJ Web Conf. **49** (2013) 14007, *Prepared for Hadron Collider Physics Symposium 2012, Kyoto, Japan 12-16 November 2012.*
- 2012 – S. Marzani, *Probing colour flow with jet vetoes*, arXiv:1205.6808 [hep-ph], *Prepared for XX International Workshop on Deep Inelastic Scattering and Related Subjects (DIS 2012), Bonn, Germany, 26-30 March 2012.*
- 2011 – S. Marzani, A. Banfi, M. Dasgupta and L. Tomlinson, *Accurate QCD predictions for new variables to study dilepton transverse momentum*, arXiv:1106.6294 [hep-ph], *Prepared for XIX International Workshop on Deep Inelastic Scattering and Related Subjects (DIS 2011), Newport News, Virginia, USA 11-15 April 2011.*

- S. Marzani, F. Caola and S. Forte, *High energy resummation for rapidity distributions*, arXiv:1106.6297 [hep-ph], *Prepared for XIX International Workshop on Deep Inelastic Scattering and Related Subjects (DIS 2011), Newport News, Virginia, USA 11-15 April 2011*.
- 2010 – S. Marzani, *High-energy resummation at the LHC: the case of Drell-Yan processes*, Nucl. Phys. Proc. Suppl. **205–206** (2010) 25–30, arXiv:1006.2314 [hep-ph].
 - M. Deile *et al*, *13th International Conference on Elastic and Diffractive Scattering (Blois Workshop) - Moving Forward into the LHC Era*, arXiv:1002.3527 [hep-ph].
 - R. Harlander, H. Mantler, S. Marzani and K. Ozeren, *Higgs production in gluon fusion at NNLO for finite top quark mass*, arXiv:1001.2971 [hep-ph].
 - M. Campanelli *et al*, *Proceedings of the workshop Standard Model at the LHC, University College London 30 March - 1 April 2009*, arXiv:1001.1287 [hep-ph].
- 2009 – S. Marzani and R. D. Ball, *Drell-Yan processes in the high-energy limit*, arXiv:0906.4729 [hep-ph].
 - S. Marzani, J. Forshaw and J. Keates, *Gaps between jets and soft gluon resummation*, arXiv:0906.2418 [hep-ph].
- 2008 – S. Marzani, R. D. Ball, V. del Duca, S. Forte and A. Vicini, *Finite top mass effects in Higgs boson production at high energy*, *Prepared for 16th International Workshop on Deep Inelastic Scattering and Related Subjects (DIS 2008), London, England, 7-11 Apr 2008*.
 - S. Marzani, R. D. Ball, P. Falgari and S. Forte, *Approximate BFKL kernel from DGLAP anomalous dimension*, *Prepared for 16th International Workshop on Deep Inelastic Scattering and Related Subjects (DIS 2008), London, England, 7-11 Apr 2008*.
 - S. Marzani, R. D. Ball, V. Del Duca, S. Forte and A. Vicini, *Finite-top-mass effects in NNLO Higgs production*, Nucl. Phys. Proc. Suppl. **186** (2009) 98 [arXiv:0809.4934 [hep-ph]].
- 2007 – J. Bartels *et al*, *12th International Conference on Elastic and Diffractive Scattering (Blois Workshop) - Forward Physics and QCD*, arXiv:0712.3633 [hep-ph].

Talks in Conferences and Workshops

Invited Plenary Talks

- 2025 – Parton Shower and Resummation 2025, July 14th - July 18th 2025, CERN, Switzerland. Talk: *Recent developments in jet substructure calculations*.
- 2024 – ATLAS-CMS Flavour Tagging workshop, September 9th - September 13th 2024, Genoa, Italy. Talk: *Flavour labelling: a theory perspective*.
- 2023 – Galileo Galilei Institute conference "Theory Challenges in the Precision Era of the Large Hadron Collider", August 28th - September 1st 2023, Florence, Italy. Talk: *Heavy flavours at high p_T* .

- ESI Program on Quantum Field Theory at the Frontiers of the Strong Interaction, July 31st - August 4th 2023, Vienna, Austria. Talk: *A consistent resummation of mass and soft logarithms in processes with heavy flavour.*
- 2022 – LFC22: Strong interactions from QCD to new strong dynamics at LHC and Future Colliders. August 29th - September 2nd 2022, ECT* Trento, Italy. Talk: *Future Challenges and Opportunities for QCD at Colliders.*
- CMS JetMET workshop. April 11th - 13th 2022, Galileo Galilei Institute, Florence Italy. Talk: *Jet Physics for Run-3.*
- Alphas 2022: workshop on precision measurement of the QCD coupling constant. January 31st - February 24th 2022, ECT* Trento, Italy. Talk: *α_s from groomed event shapes.*
- 2020 – BOOST 2020. July 20th - July 24th 2020, online webinars. Talk: *Theory Advances.*
- 2019 – 15th Vienna Central European Seminar on Particle Physics and Quantum Field Theory. November 28th - November 29th 2019, TU Wien, Austria Talk: *Jet substructure.*
- Higgs Couplings 2019, September 30th - October 4th 2019, University of Oxford, UK. Talk: *Jet substructure for Higgs physics.*
- Interpreting the LHC Run 2 Data and Beyond, May 27th - May 31st 2019, ICTP Trieste, Italy. Talk: *Jet substructure at the LHC and beyond.*
- ATLAS $H \rightarrow bb$ workshop. May 14th - May 17th 2019, Genoa, Italy Talk: *$H \rightarrow bb$ and jet substructure: a theorist's perspective on jet substructure.*
- Standard Model at the LHC 2019. April 23th - April 26th 2019, Zurich, Switzerland. Talk: *Jet substructure theory.*
- 2018 – QCD@LHC 2018. August 27th - August 31st 2018, Dresden, Germany. Talk: *Jet substructure and H/V/top tagging.*
- Particleface meeting. February 26th - February 27th 2018, Valencia, Spain. Talk: *Measuring jet substructure.*
- 2017 – Monte Carlo for Beyond Standard Model physics (MC4BSM) 2017. May 11th - May 13th 2017, SLAC, CA, USA Talk: *Dissecting Jets.*
- 2016 – Advances in QCD. October 26th - October 28th 2016, Argonne National Lab, IL, USA. Talk: *Resummation in PDFs.*
- Multi-Boson Interactions 2016. August 24th - August 26th 2016, Madison, WI, USA. Talk: *Jet substructure.*
- BOOST 2016. July 18th - July 22nd 2016, Zurich, Switzerland. Talk: *Theory summary.*
- Stress-testing the Standard Model at the LHC. May 23rd - May 27th 2016, Santa Barbara, CA, USA. Talk: *Resummation for precision.*
- Standard Model at LHC 2016 May 3rd - May 6th 2016, Pittsburgh, PA, USA. Summary Talk: *QCD Outlook.*

- 2015 – XXIII International Workshop on Deep Inelastic Scattering and Related Subjects, April 27th - May 1st 2015, Dallas, TX, USA. Summary Talk: *Electro-Weak, Higgs & BSM Working Group*.
- 2014 – QCD and Beyond at Colliders, November 13th-14th 2014, Pittsburgh Particle Physics, Astrophysics, Cosmology Center, PA, USA. Talk: *Soft Drop*.
 - HeavyBos 2014, August 24th-26th 2014, University of Glasgow, Scotland. Talk: *Jet masses & substructure: a theory viewpoint*.
 - BOOST 2014, August 18th-22nd 2014, University College London, England. Talk: *Soft Drop*.
 - Standard Model at LHC 2014, April 8th- April 11th 2014, Madrid, Spain. Review Talk: *QCD Resummation*.
- 2013 – Institute of Physics Half Day Meeting on Jet Substructure for Monte Carlo Tuning, October 15th 2013, Glasgow, Scotland. Invited Talk: *Analytic calculations for jet substructure*.
 - BOOST 2013, August 12th- August 16th 2013, Flagstaff, AZ, USA. Talk: *Pruning and mass-drop with analytical methods*.
 - Resummation and Parton Showers 2013, July 15th- July 17th 2013, Durham, England. Talk: *QCD resummation for jet substructure observables*.
 - ESI Program on Jets and Quantum Fields for LHC and Future Colliders, July 1st- August 3rd 2013, Vienna, Austria. Invited Talk: *Jet substructure*.
 - Using jet substructure, April 23rd-26th 2013, Eugene, USA. Talk: *Jet substructure: back to basics*.
- 2012 – BOOST 2012, July 23rd-27th 2012, Valencia, Spain. Talk: *QCD resummation of jet masses*.
 - Forward Physics at the LHC 2010, December 12th -13th 2010, Manchester, England. Talk: *Resummation of jet cross-sections and distributions*.
- 2010 – Strings and QCD, November 16th-19th 2010, Cagliari, Italy. Lecture: *Deep Inelastic Scattering at small x* , Seminar: *Small- x resummation for LHC phenomenology* .
 - Loops and Legs in Quantum Field Theory 2010, April 25th -30th 2010, Wörlitz, Germany. Talk: *High-energy resummation of Drell-Yan processes*.
- 2009 – Forward Physics at the LHC 2009, December 12th -14th 2009, Manchester, England. Talk: *Gaps between jets at the LHC*.
 - 13th International Conference on Elastic and Diffractive Scattering, June 29th - July 3rd 2009, CERN Geneva, Switzerland. Talk: *Soft gluon resummation for gaps between jets*.

Other Talks (both plenary and parallel)

- 2025 – BOOST 2025. July 28th - August 1st 2025, Providence, RI, USA. Talk: *Flavour jets: a comparative study.*
- 2022 – BOOST 2022. August 15th - 19th 2022, Hamburg, Germany. Talk: *New Flavours of Jet Flavor.*
- 2019 – QCD@LHC 2019. July 15th - July 19th 2019, Buffalo NY, USA. Talk: *Jet Pull.*
- 2018 – QCD@LHC 2018. August 27th - August 31st 2018, Dresden, Germany. Talk: *Double resummation for Higgs production.*
 - Electrons for the LHC - LHeC/FCCh and Perle Workshop, June 27th-29th 2018, Orsay, France Talk: *On the impact of small- x resummation* (remote).
- 2016 – Milan Christmas meeting 2016, December 21st-22nd 2016, Milan, Italy. Talk: *Towards parton fits with resummation.*
- 2015 – Milan Christmas meeting 2015, December 21st-22nd 2015, Milan, Italy. Talk: *Jet physics at the LHC.*
- 2014 – Loopfest XIII: Radiative Corrections for the LHC and Future Colliders, June 18th-20th 2014, New York City, USA. Plenary Talk: *News from jet substructure: soft drop.*
- 2013 – RADCOR 2013 - 11th International Symposium on Radiative Corrections, September 22nd- September 27th 2013, Lumley Castle, County Durham, England. Plenary Talk: *Perturbative calculations for jet substructure.*
 - QCD@LHC 2013, September 2nd- September 6th 2013, DESY Hamburg, Germany. Invited Talk: *QCD resummation for jet substructure observables.*
- 2012 – Hadron Collider Physics Symposium 2012, November 12th-16th 2012, Kyoto, Japan. Invited Talk: *ϕ^* and Q_T observables in Drell-Yan.*
 - XX International Workshop on Deep Inelastic Scattering and Related Subjects, March 26th - 30th 2012, Bonn, Germany. Talks: *Probing colour-flow with jet vetoes*, and *QCD resummation for jet-mass distributions.*
 - LHCphenonet Meeting 2012, March 19th-22nd 2012, Lumley Castle, County Durham, England. Talk: *The low- Q_T domain of the Z boson.*
- 2011 – QCD@LHC 2011, August 22nd-26th 2011, St. Andrews, Scotland. Invited Talk: *Colour flow in hard scattering processes.*
 - XIX International Workshop on Deep Inelastic Scattering and Related Subjects, April 11th - 15th 2011, Newport News, VA, USA. Talks: *QCD resummation for new variables to study dilepton transverse momentum*, and *High-energy resummation of rapidity distributions*, and *The dijet cross-section with a jet veto.*
- 2010 – Soft Gluons and New Physics, November 1st -2nd 2010, Manchester, England. Talk: *Soft gluon radiation in LHC jet shapes.*

- LoopFest IX: Radiative Corrections for the LHC and Lepton Colliders, June 21st -23rd 2010, Stony Brook, NY, USA. Plenary Talk: *Finite top mass effects in NNLO Higgs production*.
- 2009 – Mini-Workshop on Techniques for Eikonal Calculations, November 4th - 6th 2009, Manchester, England. Talk: *Coulomb gluons in gaps between jets*.
- Institute on Parton Shower and Resummation, May 2009, DESY Hamburg, Germany. Invited Contributions: *Soft gluon resummation*, and *Drell-Yan processes in the high-energy limit*.
- Collider Physics 2009: Joint Argonne & IIT Theory Institute, May 18th -22th 2009, Chicago, IL, USA. Talk: *Gaps between jets at the LHC*.
- XVII International Workshop on Deep Inelastic Scattering and Related Subjects, April 26th - 30th 2009, Madrid, Spain. Talks: *Drell-Yan processes in the high-energy limit*, and *Gaps-between-jets and soft gluon resummation*.
- Annual conference of the High Energy Particle Physics group of the Institute of Physics, April 6th -8th 2009, Oxford, England. Talk: *Gaps between jets*.
- Standard Model Discoveries with early LHC data, March 30th - April 1st 2009, University College London, England. Talk: *Gaps between jets at the LHC*.
- 2008 – QCD 08 14th International QCD Conference, July 7th - 12th 2008, Montpellier, France. Talk: *Finite-top-mass effects in NNLO Higgs production*.
- 4th Workshop on the implications of HERA for LHC physics, May 26th - 30th 2008, CERN Geneva, Switzerland. Talk: *Finite-mass corrections to NNLO Higgs production*.
- XVI International Workshop on Deep Inelastic Scattering and Related Subjects, April 7th - 11th 2008, University College London, England. Talks: *Finite top mass effects in Higgs production at high energy*, and *Approximate BFKL kernel from DGLAP anomalous dimension*.
- 2007 – 12th International Conference on Elastic and Diffractive Scattering, May 22nd - 25th 2007, DESY Hamburg, Germany. Talk: *BFKL at NNLO*.

Invited Seminars and Colloquia

- 2024 – *Heavy Flavour Jet Substructure*, QCD Seminar, November 18th 2024, CERN, Switzerland.
- *Heavy Flavour Jet Substructure*, TUM & MPP, October 15th 2024, Munich, Germany.
- *Heavy Flavours at High p_T* , Sapienza Università di Roma, May 27th 2024, Roma, Italy.
- 2023 – *Heavy Flavours at High p_T* , University of Glasgow, November 27th 2023, Glasgow, Scotland.
- *Jets for LHC Run 3*, University of Oxford, February 2nd 2023, Oxford, England.
- 2022 – *Jets for LHC Run 3*, CERN, November 11th 2022, Geneva, Switzerland.
- *Jets for LHC Run 3*, Università di Torino, November 4th 2022, Torino, Italy.

- 2020 – *Think harder, think deeper: new ideas in jet physics*, June 15th 2020, Universität Siegen, Germany.
- *Think harder, think deeper: new ideas in jet physics*, May 28th 2020, KIT Karlsruhe, Germany.
- 2019 – *Jets for the LHC and beyond*, May 23rd 2019, Technische Universität München, Munich, Germany.
- *Ideas and tools in jet physics*, March 20th 2019, Department of Mathematics, Univerisità Genova, Genoa, Italy.
- *Jets for the LHC and beyond*, February 5th 2019, Univerisità Roma III, Rome, Italy.
- *Jets for the LHC and beyond*, January 15th 2019, University of Cambridge, Cambridge, England.
- 2018 – *QCD@small-x*, November 14th 2018, DESY Hamburg, Germany.
- *All-orders calculations for PDFs determination*, October 10th 2018, Milano, Italy.
- *Dissecting jets*, Albert-Ludwigs-Universität Freiburg, April 25th 2018, Freiburg, Germany.
- *All-orders calculations for PDFs determination*, Universität Wien, April 13th 2018, Vienna, Austria.
- *Dissecting jets*, Università di Torino, March 22nd 2018, Torino, Italy.
- *All-orders calculations for PDFs determination*, January 15th 2018, DESY Hamburg, Germany.
- 2017 – *Dissecting jets*, University of Cambridge, November 3rd 2017, Cambridge, England.
- *Dissecting jets*, Nikhef, September 7th 2017, Amsterdam, The Netherlands.
- *Dissecting jets*, ETH June 26th 2017, Zurich, Switzerland.
- *Looking inside jets*, University of Edinburgh January 9th 2017, Edinburgh, Scotland.
- 2016 – *Looking inside jets*, Università degli Studi di Genova, December 20th 2016 Genoa, Italy.
- *Jet substructure: from phenomenology to theory and back*, Cornell University, March 16th 2016 Ithaca, NY, USA.
- 2015 – *Jets for LHC Run II*, Michigan State University, September 29th 2015 East Lansing, MI, USA.
- *Jet physics at LHC Run II*, New York City College of Technology, March 19th 2015 New York, NY, USA.
- *Jet physics at LHC Run II*, Argonne National Laboratory, February 25th 2015 Lemont, IL, USA.
- *Jet physics at LHC Run II*, University of Chicago, February 23rd 2015 Chicago, IL, USA.
- *Jet substructure: a QCD viewpoint*, University of Oxford, January 15th 2015 Oxford, England.

- 2014
- *Jet substructure: a QCD viewpoint*, State University of New York at Stony Brook, November 6th 2014 Stony Brook, NY, USA.
 - *The Higgs cross-section from analyticity*, Brookhaven National Laboratory, November 5th 2014 Brookhaven, NY, USA.
 - *Jet substructure: a QCD viewpoint*, SLAC National Laboratory, October 17th 2014 Menlo Park, CA, USA.
 - *Jet substructure: a QCD viewpoint*, Lawrence Berkeley National Laboratory, October 15th 2014 Berkeley, CA, USA.
 - *Perturbative QCD calculations for jet substructure*, University of Sussex, June 2nd 2014 Brighton, England.
 - *Perturbative QCD calculations for jet substructure*, Università degli Studi di Milano, March 27th 2014 Milano, Italy
 - *Exploring fundamental physics at the LHC*, State University of New York at Buffalo, February 27th 2014 Buffalo, USA.
- 2013
- *An analytical understanding of jet substructure*, Institute de Physique Théorique, November 20th 2013 Saclay, France.
 - *An analytical understanding of jet substructure*, Nikhef, November 7th 2013 Amsterdam, The Netherlands.
 - *Jets and their properties*, KIT, November 6th 2013 Karlsruhe, Germany.
 - *An analytical understanding of jet substructure*, Max-Planck-Institut fuer Physik, October 28th 2013 Munich, Germany.
 - *QCD calculations for jet substructure*, Georg-August-Universität Göttingen, June 14th 2013 Göttingen, Germany.
 - *The Higgs cross section beyond NNLO from analyticity*, ETH & Universität Zürich, May 28th 2013 Zurich, Switzerland.
 - *Perturbative QCD calculations for jet substructure*, Massachusetts Institute of Technology, May 1st 2013 Cambridge, MA, USA.
 - *Perturbative QCD calculations for jet substructure*, John Hopkins University, April 30th 2013 Baltimore, MD, USA.
 - *Perturbative QCD calculations for jet physics*, LPTHE Paris, February 15th 2013 Paris, France.
 - *Perturbative QCD calculations for jet physics*, LAPTh Annecy, February 14th 2013 Annecy, France.
- 2012
- *Dilepton transverse momentum distribution variables at the Tevatron and the LHC*, University of Edinburgh, March 7th 2012 Edinburgh, Scotland.
- 2011
- *Dilepton transverse momentum distributions at hadron colliders*, University of Cambridge, November 10th 2011 Cambridge, England.
 - *Dilepton transverse momentum distributions at hadron colliders*, Università degli Studi di Torino, October 25th 2011 Turin, Italy.

- *New variables to study the transverse momentum spectrum of the Z boson at hadron colliders*, RWTH Aachen University, June 16th 2011, Aachen, Germany.
- *QCD resummation for jet physics at the LHC*, University of Maryland, April 5th 2011, College Park, MD, USA.
- *QCD resummation for new variables to study dilepton transverse momentum*, DØ Electro-Weak Working Group, March 28th 2011.
- 2010 – *Finite fermion mass effects in NNLO Higgs production*, Paul Scherrer Institut, December 14th 2010, Villigen, Switzerland.
- *Theory and phenomenology of Gaps between Jets at the LHC*, University of Oxford, June 3rd 2010 Oxford, England.
- *Gaps between jets at the LHC*, University of Cambridge, February 4th 2010 Cambridge, England.
- 2009 – *High energy resummation in QCD*, Bergische Universität Wuppertal, December 3rd 2009 Wuppertal, Germany.
- *High energy resummation in QCD*, University of Southampton, November 20th 2009 Southampton, England.
- *Finite top-mass effects in Higgs production*, University of Liverpool, October 21st 2009 Liverpool, England.
- *Particle Physics in the LHC era*, Qinghai Normal University, July 19th 2009 Xining, China.
- *Soft gluon resummation in gaps between jets*, Università degli Studi di Milano, May 7th 2009 Milan, Italy.
- 2008 – *Higgs boson production via gluon-gluon fusion in k_t -factorisation*, University of Manchester, August 30th 2008, Manchester, England,
- 2006 – *Small- x physics*, University of Edinburgh, November 27th 2006, Edinburgh, Scotland.

CURRICULUM VITAE

PERSONAL DATA

Name: Gennaro Corcella

Languages: Italian (mother tongue), English (excellent), French (very good), Spanish (very good), German (basic).

ACADEMIC CAREER

July 1995: Master ("Laurea") Degree in Physics, University of Bari.

Thesis title: "Simmetria CPT nel Sistema dei Mesoni B" ("CPT Symmetry in the B-Meson System"), in Italian.

November 1995 - October 1999: Graduate student at the University of Milano, Italy.

February 2000: Ph.D. Degree in Physics, University of Milano.

Thesis title: "Parton Showers in High Energy Physics".

November 1999 - October 2001: Postdoctoral Research Associate, University of Rochester, NY, U. S. A.

November 2001 - November 2003: Postdoctoral Research Associate, Max-Planck-Institut für Physik, Werner-Heisenberg-Institut, München, Germany.

December 2003 - November 2005: Postdoctoral Fellow, CERN, Department of Physics, Theory Division, Genève, Switzerland.

December 2005 - September 2007: Postdoctoral Research Associate, University of Rome 'La Sapienza', Italy.

January 2008 - December 2010: Research Associate at Scuola Normale Superiore, Pisa, supported by a Junior Grant of the Enrico Fermi Centre, project 'New Physics Signals and Standard Model Backgrounds at the LHC'.

January 2011 - April 2019 : Permanent Staff Member at INFN ('Ricercatore', 3rd level Researcher, equivalent to a University Assistant Professor), Laboratori Nazionali di Frascati, Italy.

April 2019 - Present : Permanent Staff Member at INFN ('Primo Ricercatore', 2nd level Researcher, equivalent to a University Associate Professor), Laboratori Nazionali di Frascati, Italy.

2013-2018: Habilitation as a University Associate Professor of Theoretical Particle Physics (expires automatically after 6 years)

Visiting appointments:

September 1998 - June 1999: Visitor at Rutherford Appleton Laboratory, U. K., Particle Physics Department, Theory Group.

July 1999 - October 1999: Visitor at CERN Theory Division, Geneva, Switzerland.

August 2001: Visitor at Fermilab Theory Division, Batavia, IL, U. S. A.

March 2006: Visitor at UNAM, Mexico City, Mexico, supported by a fellowship of the HELEN (High Energy Physics Latinamerican-European Network) project.

August 2007 - September 2007: Visitor at the University of Buenos Aires, Argentina, supported by a fellowship of the HELEN (High Energy Physics Latinamerican-European Network) project.

October 2007 - December 2007: Visitor at CERN, Theory Division, Geneva, Switzerland.

Conference and Workshop talks:

"Tests of CPT in the B Meson System", Italian Conference on Theoretical Physics, Como, Italy, June 1997.

"Gluon Radiation in Top Decays", ECFA/DESY Linear Collider Workshop (top quark working group), Frascati, Italy, November 1998;

"Simulation of Gluon Radiation in Top Production and Decay", Workshop on Standard Model Physics (and more) at the LHC (top quark working group), CERN, Geneva, Switzerland, January 1999.

"Radiative Corrections to Monte Carlo Simulations of Drell-Yan Processes", Workshop on Standard Model Physics (and more) at the LHC (QCD working group), CERN, Geneva, Switzerland, January 1999.

"Matrix Element Corrections to Top Decays and Impact on Jet Activity at the LHC", Workshop on Standard Model Physics (and more) at the LHC (top quark working group), CERN, Geneva, Switzerland, April 1999.

"Parton Shower Simulations in High Energy Physics", Graduate Student Symposium, Oxford, U. K., May 1999.

"Gluon Radiation in Vector Boson Production at Hadron Colliders", UK Phenomenology Workshop on Collider Physics (QCD working group), Durham, U. K., September 1999.

"Issues on the Top Mass Reconstruction" UK Phenomenology Workshop on Collider Physics, (QCD working group), Durham, U. K., September 1999.

"Parton Showers in Vector Boson Production", Workshop on Standard Model Physics (and more) at the LHC (QCD working group), CERN, Geneva, Switzerland, October 1999..

“Parton Showering in Top Production and Decay”, Berkeley 2000, Linear Collider Workshop (top quark working group), Berkeley, CA, March 2000.

“Gluon Radiation in Vector Boson Production”, Pheno 2000 Symposium, Madison, WI, U. S. A., April 2000.

“Vector Bosons at Hadron Colliders: Parton Showers and Resummations” MRST Meeting, Rochester, NY, U. S. A., May 2000.

“Studies on the Top Mass Reconstruction at the Linear Collider” Linear Collider Workshop (top quark working group), Columbus, OH, U. S. A., August 2000.

“Top Mass Reconstruction at the LHC”, DPF 2000, Columbus, OH, U. S. A., August 2000.

“Monte Carlo Studies of Top Production and Decay”, Linear Collider Workshop - LCSW2000, Fermilab, October 2000.

“HERWIG for Top Physics”, Thinkshop ², Fermilab, November 2000.

”Matrix-element Corrections to HERWIG”, Monte Carlo Generator Physics for Run II at the Tevatron, Fermilab, April 2001.

”Challenges in QCD Event Generators”, Second Young-Researchers QCD-Network Meeting, Parma, Italy, February 2002.

”Top Decay and Bottom Fragmentation in NLO QCD”, Recontres de Moriond, Les Arcs, France, March 2002.

”Resummation in Top Quark Decay”, Workshop on Tev-Scale Physics, Cambridge, U. K., July 2002.

”Challenges in Heavy Quark Fragmentation”, Max-Planck-Institut Young Scientists’ Workshop 2002, Ringberg Castle, Germany, July 2002.

”Bottom Quark Mass Determination”, QCD 03, Montpellier, France, July 2003.

”Bottom Quark Mass Determination from Low- n Sum Rules”, CERN Phenomenology Club, March 2004.

”Matching HERWIG Parton Showers and Exact Matrix Elements”, HERA and the LHC Workshop (multi-jet final states and energy flows working group), CERN, March 2004.

”Bottom Quark Fragmentation in Top Quark Decay”, Incontri di Fisica delle Alte Energie, Torino, Italy, April 2004.

”Bottom Quark Mass Determination from Relativistic Sum Rules”, Incontri di Fisica delle Alte Energie, Torino, Italy, April 2004.

”Bottom Quark Fragmentation in Top Decay”, QFTHEP 2004, Peterhof, S. Petersburg, Russia, June 2004.

”Impact of Soft Resummation on Structure Functions” (parton distribution functions working group), HERA and the LHC Workshop, CERN, October 2004.

”Resummed Parton Distributions from Neutrino Data” (parton distribution functions working group), HERA and the LHC Workshop, CERN, January 2005.

”Bottom Fragmentation in $H \rightarrow b\bar{b}$ Events”, Incontri di Fisica delle Alte Energie, Catania, March 2005.

”Impact of large- x Resummation on parton distributions”, DIS05, Madison, WI, April 2005.

”Summary talk of the Heavy Flavour Working Group”, DIS05, Madison, WI, May 2005.

“Bottom Fragmentation in Higgs and Top Decay”, Workshop “Physics at TeV Colliders”, Les Houches, France, May 2005.

“Soft-resummation effects on parton densities”, CERN Phenomenology Club, August 2005.

“Bottom Quark Fragmentation in Top Quark Decay”, TOP 2006, Coimbra, Portugal, January 2006.

“Soft Resummation Corrections to Parton Distributions”, Diffraction 2006, Adamantas, Milos, Greece, Settembre 2006.

“Comparing Tuned Event Generators and Resummed Calculations for Bottom Quark Fragmentation”, Monte Carlo Workshop MCWS, Laboratori Nazionali di Frascati, Italy, October 2006.

“Studies of QCD and Top Quark Physics at the Linear Collider”, Linear Collider Workshop, Laboratori Nazionali di Frascati, Italy, October 2006.

“Monte Carlo generators for present and future colliders”, Journal Club, Laboratori Nazionali di Frascati, Italy, March 2007.

“Parton showers and resummations for non-global QCD observables”, HERA and the LHC Workshop, DESY, Hamburg, Germany, March 2007.

”Monte Carlo Generators for Top Physics at the LHC”, V Workshop Italiano sulla Fisica pp a LHC, Perugia, Italy, January 2008.

”Heavy-Quark Fragmentation with an Effective Coupling Constant”, Workshop on Parton Fragmentation Processes in the Vacuum and in the Medium, ECT*, Trento, Italy, February 2008.

”Standard Model and New Physics: summary talk”, IFAE, Bologna, March 2008.

”Bottom quark fragmentation and impact on the uncertainty on the top mass reconstruction”, workshop ”Top quark physics: from the Tevatron to the LHC”, CERN, June 2009.

“Heavy-quark Fragmentation”, International School of Subnuclear Physics, Erice, Italy, September 2009.

“Towards Q-HERWIG: an angular-ordered parton shower generator for jet quenching”, Brookhaven National Laboratory, TECHQM workshop, December 2009 (via videoconference).

“Parton showers with medium-modified splitting functions”, DIS 2010, Firenze, April 2010.

“Heavy Flavours in DIS and Hadron Colliders: Theory Summary”, DIS 2010, Firenze, April 2010.

“Theoretical issues in top mass reconstruction at hadron colliders”, TOP 2010, 3rd International Workshop on Top Quark Physics, Bruges, June 2010.

“Summary of the Open Heavy Flavour Working Group”, Quarkonium 2010, Palaiseau, France, July 2010.

“Parton showers with medium-modified splitting functions”, Institute on “The first heavy ion collisions at the LHC”, CERN, August 2010.

”Progress in medium-modified parton showers”, Spring Institute, Laboratori Nazionali di Frascati, Italy, March 2011.

“ Z' production in an extended MSSM”, DIS2012, Bonn, Germany, March 2012.

“ Z' production at the LHC in an extended MSSM”, Rencontres de Blois, Blois, France, May 2012.

“Supersymmetric contributions to Z' decays”, Bari Theory Christmas Workshop, Bari, December 2012.

“Searching for supersymmetry in Z' decays”, LHCP 2013, Barcelona, Spain, May 2013.

“Bottom fragmentation in top decays and impact on the top mass reconstruction”, Top Quark Working Group Plenary Meeting, CERN, November 2013.

“Bottom fragmentation in top decays and impact on the top mass reconstruction”, Bari Theory Christmas Workshop, Bari, December 2013.

“Hadronization systematics and top-quark mass”, Top Quark Working Group Plenary Meeting, CERN, May 2014.

“Bottom fragmentation in top decays and impact on the top mass measurement”, QCD@work, Giovinazzo (BA), June 2014.

“Large-x resummation and impact on parton densities”, HiX2014, November 2014, Laboratori Nazionali di Frascati, Italy.

“Perspectives in top quark and electroweak precision physics”, What Next mid-term meeting, Laboratori Nazionali di Frascati, April 2015.

“Summary of LNF workshop on the top-quark mass”, Top Quark Working Group Plenary Meeting, CERN, May 2015.

“Searching for supersymmetry in Z' decays at the LHC”, PLANCK 2015, Ioannina, Greece, May 2015.

“Interpretation of the top-quark mass measurements: a theory overview”, TOP 2015, Ischia, Italy, September 2015.

“Precision measurements of the top mass: theory vs experiment” FCC-ee Mini-Workshop ‘Physics Behind Precision’, CERN, February 2016.

“Searching for Supersymmetry and Dark Matter in Z' decays at LHC”, DM 2016, Santander, Spain, June 2016.

“Challenges in Heavy-Quark Fragmentation”, Workshop on Parton Radiation and Fragmentation from LHC to FCC- ee , CERN, November 2016.

“Interpretation of the top-quark mass results”, DIS 2017, Birmingham, UK, April 2017.

“Supersymmetric signals in Z' decays”, DIS 2017, Birmingham, UK, April 2017.

“Supersymmetric signals in Z' decays”, Spring Institute, Laboratori Nazionali di Frascati, May 2017.

“Top-quark mass determination at LHC: a theory overview”, EPS-HEP, Venice, July 2017.

“Supersymmetric signals in Z' decays at the LHC”, EPS-HEP, Venice, July 2017.

“The top-quark mass: uncertainties due to b -quark fragmentation”, QCD@LHC, Debrecen, Ungheria, September 2017.

“Non-standard heavy vector bosons at the LHC”, QCD@LHC, Debrecen, Ungheria, September 2017.

“ Z' bosons in supersymmetric and leptophobic scenarios”, HL/HE-LHC Workshop, CERN, June 2018.

“Bileptons at LHC”, SUSY 2018, Barcelona, Spain, July 2018.

“The top-quark mass: uncertainties due to bottom fragmentation”, SUSY 2018, Barcelona, Spain, July 2018.

“Loopholes in Z' searches: exploring supersymmetry and leptophobia”, SUSY 2018, Barcellona, Spain, July 2018.

Seminar Talks:

”QCD Event Generators”, University of Bari, Italy, November 1999.

”Matrix Element Corrections to Parton Shower Simulations”, Michigan State University, East Lansing, MI, U. S. A., December 1999.

”Matrix Element Corrections to Parton Shower Simulations”, University of Rochester, NY, U. S. A., January 2000.

”Matrix Element Corrections to Parton Shower Simulations”: Rutherford Appleton Laboratory, U. K., February 2000.

”Matrix Element Corrections to Parton Shower Simulations”, University of Edinburgh, U. K., October 2000.

”Matrix Element Corrections to Parton Shower Simulations”, University of Manchester, U. K., October 2000.

”Recent Progresses in the Physics of QCD Event Generators”, University of Pavia, Italy, October 2000.

”Monte Carlo Parton Showers for High Energy Colliders”, University of Michigan, Ann Arbor, MI, U. S. A., March 2001.

”Theory and Simulation of Multiple Radiation in QCD”, University of Bari, Italy, May 2001.

”Challenges in the Physics of QCD Event Generators”, Fermilab, August 2001.

”Physics of QCD Event Generators”, Colloquium at Max-Planck-Institut für Physik, München, Germany, January 2002.

”Bottom Fragmentation in Top Quark Decay”, University of Milano–Bicocca, Italy, February 2002.

”QCD Analysis of Bottom Fragmentation in Top Decay”, University of Cambridge, U. K., May 2002.

”QCD Analysis of Bottom Fragmentation in Top Decay”, University of Manchester, U. K., May 2002.

”Fragmentation Functions and B-Hadron Production in Top Quark Decay”, University of Bari, Italy, July 2002.

”Heavy Quark Fragmentation and B-Hadron Production in Top Quark Decay”, Max-Planck-Institut für Physik, München, Germany, November 2002.

”Physics of QCD event generators”, University of Lecce, Italy, January 2003.

”Fragmentation functions and B-Hadron production in Top Quark Decay”, University of Lecce, Italy, January 2003.

”Top Quark Decay and Bottom Quark Fragmentation”, University of Uppsala, Sweden, March 2003.

”Matrix-element corrections to Monte Carlo parton showers”, University of Uppsala, Sweden, March 2003.

”Top Quark Decay and Bottom Quark Fragmentation”, University of Lund, Sweden, March 2003.

”Matrix-element corrections to Monte Carlo parton showers”, University of Lund, Sweden, March 2003.

”Precise QCD Calculations for Charged Current Deep Inelastic Scattering”, University of Milano–Bicocca, Italy, October 2003.

”Precise QCD Calculations for Charged Current Deep Inelastic Scattering”, Max-Planck-Institut für Physik, München, Germany, November 2003.

“Soft and Collinear Resummation from Top Decay to Deep Inelastic Scattering”, CERN, March 2004.

“Radiative Corrections to Deep Inelastic Scattering Processes”, University of Bari, Italy, March 2004.

“Soft and Collinear Resummation from Top Decay to Deep Inelastic Scattering”, University of Florence, Italy, May 2004.

“Event Generators and Matrix Element Corrections”, University of Pisa, May 2004.

“Matrix Element Corrections to Parton Shower Simulations”, Moscow State University, Moscow, Russia, June 2004.

“Progresses in Heavy Quark Fragmentation”, University of Milano–Bicocca, Italy, October 2004.

“Event Generators and Matrix Element Corrections”, University of Trento, January 2005.

“Progress in Heavy-Quark Fragmentation and Soft Resummation”, University of Rome ‘La Sapienza’, June 2005.

“Monte Carlo Generators for High Energy Colliders”, University of Rome ‘La Sapienza’, Italy, February 2006.

“Monte Carlo Generators for High Energy Colliders”, UNAM, Mexico City, March 2006.

“Monte Carlo Generators for High Energy Colliders”, CINVESTAV, Mexico City, March 2006.

“Monte Carlo Generators for High Energy Colliders”, University of Padua, October 2006.

“Monte Carlo Generators for High Energy Colliders”, University of Pavia, December 2006.

“Monte Carlo Generators for High Energy Colliders”, Scuola Normale Superiore, Pisa, January 2007.

“Monte Carlo Generators for High Energy Colliders”, Università della Calabria, Arcavacata di Rende (CS), February 2007.

“Monte Carlo Generators for the LHC”, University of Buenos Aires, Argentina, August 2007.

“Challenges in Heavy Quark Fragmentation”, University of la Plata, Argentina, August 2007.

“New Physics Signals and Standard Model Backgrounds at the LHC”, Centro Enrico Fermi, Rome, Italy, September 2007.

”Simplified Models for New Physics Searches at the LHC”, Scuola Normale Superiore, Pisa, Italy, November 2008.

“Monte Carlo Generators for High Energy Colliders”, University of Ferrara, Italy, May 2009.

“Monte Carlo Generators for the LHC”, Universidad Autonoma de Madrid, Spain, October 2010.

“Challenges in heavy quark fragmentation”, Scuola Normale Superiore, Pisa, Italy, November 2010.

“Parton showers with medium-modified splitting functions”, Laboratori Nazionali di Frascati, Italy, March 2011.

“Towards angular-ordered parton showers for heavy-ion collisions”, Laboratori Nazionali di Frascati, Italy, March 2011.

“Supersymmetric contributions to Z' decays”, University of Louvain-la-Neuve, Belgium, Italy, November 2012.

“Supersymmetric contributions to Z' decays”, University of Bruxelles, Belgium, October 2012.

“Supersymmetric contributions to Z' decays”, CERN, November 2012.

“Bottom fragmentation in top decays and impact on the top mass reconstruction”, University of Barcelona, Spain, December 2013.

“Theoretical uncertainties in the determination of the top mass”, SISSA, Trieste, Italy, September 2014.

“Interpretation of the top mass measurements”, University of Manchester, UK, November 2015.

“The top-quark mass: interpretation of the measurements and theoretical uncertainties”, University of Turin, Italy, February 2016.

“Parton showers and resummation for bottom-quark fragmentation in top decays”, University of Vienna, Austria, April 2016.

“The top-quark mass: interpretation of the measurements and theoretical uncertainties”, University of Rome Tor Vergata, Italy, February 2017.

“Non-standard heavy vector bosons at the LHC”, University of Münster, Germany, October 2017.

Talks to the D0 Collaboration:

I was invited to join meetings of the D0 Collaboration and gave the following presentations:

“Matrix Element Corrections to Parton Showers”, D0 Collaboration Meeting, plenary talk, Fermilab, April 2000. The talk was attended by the CDF Collaboration as well.

“Cards in HERWIG”, meeting of the Monte Carlo event generator working group, Fermilab, November 2000.

Talks to the CDF Collaboration:

I was invited to join meetings of the CDF Collaboration and gave the following presentations:

”The New HERWIG Monte Carlo Event Generator”, meeting of the Supersymmetry working group, Fermilab, August 2001.

”HERWIG Progress Report”, meeting of the QCD working group, Fermilab, August 2001.

“Bottom Quark Fragmentation in Top Quark Events”, CDF-Italia meeting, Trento, March 2004.

Talks to the CMS Collaboration:

I was invited to join meetings of the CMS Collaboration and gave the following presentations:

”Bottom Quark Fragmentation in Higgs decays”, CERN, October 2004.

“Theoretical issues on b -quark fragmentation in top-quark decays”, CERN, April 2013.

Talks to the ATLAS Collaboration:

I was invited to join meetings of the ATLAS Collaboration and gave the following presentations:

“Prospects for top quark phenomenology at the Large Hadron Collider”, ATLAS Italy Meeting, Bologna, January 2014.

”Searching for supersymmetry in Z' decays”, ATLAS SUSY Working Group, May 2015.

“The top-quark mass: exploring the hadronization uncertainties”, ATLAS Top Working Group, February 2018.

Talks to the ALICE Collaboration:

I was invited to join meetings of the ALICE Collaboration and gave the following presentation:

”Towards angular-ordered parton showers for heavy-ion collisions”, Laboratori Nazionali di Frascati, Italy, May 2011.

Supervising activity:

I collaborated with Prof. Lynne H. Orr on the supervision of the research activity of two graduate students at the University of Rochester: Elinor K. Irish and Alexander D. Mitov (currently postdoctoral research associate at SUNY Stony Brook, NY, U. S. A.). Such a work has been published and presented in several workshops and conferences.

In particular, the work with E.K. Irish has been carried out throughout the top-quark working group of the American Linear Collider workshop and published in Refs. [14,16].

The work with A.D. Mitov has been devoted to the topic of heavy-quark fragmentation and soft-gluon resummation. It was published in Refs. [18,20,21,24] and in his Ph.D. thesis ”Applications of perturbative QCD to process with heavy quarks”, hep-ph/0311101.

I collaborated with Dr. Ugo Aglietti on the supervision of Giancarlo Ferrera, currently postdoctoral fellow at the University of Florence, former graduate student at the University of Rome ‘La Sapienza’. The publications [40,41], discussing a model for non-perturbative effects in bottom and charm-quark fragmentation, is part of his Ph.D. thesis ‘Threshold resummation in heavy flavour physics’.

Together with Prof. Riccardo Barbieri, I have been following the Ph.D. thesis work of Antonio Enrique Cárcamo Hernández, currently fourth-year graduate student at Scuola Normale Superiore in Pisa. His thesis will deal with heavy composite-vector production at the Large Hadron Collider in Higgsless models and has led to the publication [53].

I have been involved in the supervision of the Master Thesis of Filippo Sala, undergraduate student at Scuola Normale Superiore, who has been working on Dark Matter interactions into Standard Model particles, and subsequent parton showers and hadronization. The title of his thesis is: ‘Radiative Corrections to Dark Matter Indirect Signals’; the main aspects of this work are discussed in Ref. [58] of the publication list.

I have supervised Francesca Pelosi, Summer Student at the Frascati National Labs, on a project on the searches for Axion-Like Particles (ALPS) at the PADME experiment.

Lecturing activity:

I gave lectures on perturbative QCD at "Max-Planck-Institut Young Scientists Workshop on Hot Topics in Particle and Astroparticle Physics 2003", Ringberg Castle, Germany, July 2003. The course was followed by undergraduate and graduate students from Max-Planck-Institut für Physik, Ludwig-Maximilian-Universität and Technische Universität in Munich.

I lectured on "Monte Carlo tools for the LHC" at the "Italo-Hellenic School of Physics 2005. The Physics of LHC: theoretical tools and experimental challenges", Martignano (Lecce), Italy, June 2005.

I gave a course on "Selected topics in perturbative QCD" at UNAM, Mexico City, March 2006, during my visit associated with the HELEN project.

I lectured on "Physics of QCD event generators" to graduate and undergraduate physics students at the University of Rome Tor Vergata in April 2008.

I taught classes on perturbative QCD to graduate students at Scuola Normale Superiore in Pisa in March 2010.

Referee activity:

I have been a referee for Physics Letters B, European Physical Journal, Physical Review D, Physical Review Letters, JHEP, Canadian Journal of Physics and Nuovo Cimento, Computer Physics Communication.

I have been a reviewer for projects submitted to Fonds Wetenschappelijk Onderzoek (Belgium), Swiss National Foundation, Iran National Science Foundation, Estonian Research Council and for the Evaluation of the Research Quality (VQR) of Italian universities.

Community service:

I was the theory convener at the "Heavy Flavours" session at DIS 2005, 13th International Workshop on Deep Inelastic Scattering, April 2005, Madison, WI, U. S. A.

I was a Discussion Leader at the 2006 European School of High Energy Physics Aronsborg, Sweden, June 2006, organized by CERN (Geneva) and JINR (Dubna).

I have been the convener of the "QCD and top-quark physics" working group of the Italian initiative for the future Linear Collider. The related meetings have so far been: "ILC in Florence", Florence, September 2007; "LC08: e^+e^- Physics at the TeV Scale", Frascati, September 2008; "LC09 - e^+e^- Physics at the TeV Scale and the Dark Matter Connection", Perugia, September 2009; "LC10 - New Physics: complementarities between direct and indirect searches", Frascati, December 2010. -LC11 Workshop - Understanding QCD at linear colliders in searching for old and new physics, ECT*, Trento, Italy, September 2011; -LC13: exploring QCD from the infrared regime to heavy-flavour scales at B-factories, the LHC and a Linear Collider, ECT*, Trento, Italy, September 2013.

I have been an organizer of 'LFC15: physics prospects for Linear and other Future Colliders after the discovery of the Higgs', September 2015, and the Chairman of 'LFC17: Old and New Strong Interactions from LHC to Future Colliders', September 2017, 'LFC19:

Strong Dynamics for Physics within and beyond the Standard Model at LHC and Future Colliders’, September 2019, ‘LFC21: Strong Dynamics for Physics within and beyond the Standard Model at LHC and Future Colliders’ (online workshop), September 2021, all held at ECT*, Trento, Italy.

I co-organized the top quark session at the workshop on pp physics at the LHC in Perugia, January 2008, and the Standard Model and New Physics working group at the “IFAE” conference, Bologna, March 2008.

I was a scientific secretary for the lectures on “Orientifold/Flux String vacua, supersymmetry breaking and Strings at the LHC”, given by Prof. D. Lüst at the International School of Subnuclear Physics, Erice, September 2009.

I have been a member of a few committees to evaluate Master and Ph.D. theses in theoretical particle physics at Scuola Normale Superiore, Pisa, in 2009 and 2010.

I have been a member of the selection committee for the admission to the graduate school in Rome 3 University, October 2020.

I have been the theory convener of the session on “Heavy Flavours in Deep Inelastic Scattering and Hadron Colliders” at the 18th International Workshop On Deep Inelastic Scattering And Related Subjects (DIS 10), Florence, Italy, April 2010.

I have been a convener of the working group on ‘Open heavy flavour (vs hidden)’ at the workshop ‘Quarkonium 2010 - Three days of Quarkonium Production’, which took place at the École Polytechnique in Palaiseau, France, in July 2010.

I have been the Colloquium Organizer at INFN, Laboratori Nazionali di Frascati, 2018-2020.

Publications and contributions to conference proceedings:

- [1] P. Colangelo, G. Corcella and G. Nardulli, " $\Upsilon(4S) \rightarrow B^0 \bar{B}^0 \gamma$ Background at B Factories", hep-ph/9510337, Phys. Rev. D54 (1996) 1212.
- [2] P. Colangelo and G. Corcella, "Investigations on CPT Invariance at B-Factories", hep-ph/9704375, Eur. Phys. J. C1 (1998) 515.
- [3] G. Corcella and M.H. Seymour, "Matrix Element Corrections to Parton Shower Simulations of Heavy Quark Decay", hep-ph/9809451, Phys. Lett. B442 (1998) 417.
- [4] G. Corcella and M.H. Seymour, "Initial State Radiation in Simulations of Vector Boson Production at Hadron Colliders", hep-ph/9908388, Nucl. Phys. B565 (2000) 227.
- [5] G. Corcella and M.H. Seymour, "Simulations of Top Production and Decay at the Linear Collider", hep-ph/9911335, in "2nd ECFA/DESY Study 1998-2001", pp. 265-270.
- [6] G. Corcella, "On the Top Mass Reconstruction Using Leptons", hep-ph/9911477, in Proceedings of UK Phenomenology Workshop on Collider Physics, J. Phys. G26 (2000) 634.
- [7] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6.1 Release Note", hep-ph/9912396.
- [8] G. Corcella and M.H. Seymour, "Vector Boson Transverse Momentum Distributions at the Tevatron", hep-ph/9911536, in Proceedings of UK Phenomenology Workshop on Collider Physics, J. Phys. G26 (2000) 643.
- [9] M. Beneke, G. Corcella et al., "Top Quark Physics", hep-ph/0003033, in Proceedings of the Workshop on Standard Model Physics (and more) at the LHC, edited by G. Altarelli and M.L. Mangano, pp.419-529.
- [10] G. Corcella, M.L. Mangano and M.H. Seymour, "Jet Activity in $t\bar{t}$ Events and Top Mass Reconstruction at Hadron Colliders", hep-ph/0004179, JHEP 0007 (2000) 004.
- [11] S. Catani, G. Corcella et al., "QCD", hep-ph/0005025, in Proceedings of the Workshop on Standard Model Physics (and more) at the LHC, edited by G. Altarelli and M.L. Mangano, pp. 1-115.
- [12] G. Corcella, "Vector Boson Production at Hadron Colliders: Results From HERWIG and Resummed Calculations", hep-ph/0007295, in "Rochester 2000. Theoretical High Energy Physics" Proceedings of MRST Meeting, edited by C.R. Hagen, pp. 190-201.
- [13] G. Corcella, "Top Mass Measurement and Bottom Fragmentation at the LHC", hep-ph/0009320, in Proceedings of DPF 2000 Meeting, Int. J. Mod. Phys. A 16S1A (2001) 372.
- [14] G. Corcella, E.K. Irish and M.H. Seymour, "HERWIG for Top Physics at the Linear Collider", hep-ph/0012319, in "Batavia 2000, Physics and Experiments with Future Linear e^+e^- Colliders", pp. 356-359.
- [15] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6: an Event Generator for Hadron Emission Reactions with Interfering Gluons (Including Supersymmetric Processes)", hep-ph/0011363, JHEP 0101 (2001) 010.
- [16] T. Abe, G. Corcella et al., "Linear Collider Physics Resource Book for Snowmass 2001. Chapter 6: Top Quark Physics", hep-ex/0106057.
- [17] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6.3 Release Note", hep-ph/0107071.

- [18] G. Corcella and A.D. Mitov, "Bottom Quark Fragmentation in Top Quark Decay", hep-ph/0110319, Nucl. Phys. B 623 (2002) 247.
- [19] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6.4 Release Note", hep-ph/0201201.
- [20] G. Corcella and A.D. Mitov, "Top Decay and Bottom Fragmentation in NLO QCD", hep-ph/0205081, in Proceedings of 37th Rencontres de Moriond on QCD and Hadronic Interactions.
- [21] M. Cacciari, G. Corcella and A.D. Mitov, "Soft-Gluon Resummation for Bottom Fragmentation in Top Quark Decay", hep-ph/0209204, JHEP 0212 (2002) 015.
- [22] G. Corcella, I.G. Knowles, G. Marchesini, S. Moretti, K. Odagiri, P. Richardson, M.H. Seymour and B.R. Webber, "HERWIG 6.5 Release Note", hep-ph/0210213.
- [23] G. Corcella and A.H. Hoang, "Uncertainties in the $\overline{\text{MS}}$ Bottom Quark Mass from Relativistic Sum Rules", hep-ph/0212297, Phys. Lett. B 554 (2003) 133.
- [24] G. Corcella and A.D. Mitov, "Soft-Gluon Resummation for Heavy Quark Production in Charged-Current Deep Inelastic Scattering", hep-ph/0308105, Nucl. Phys. B 676 (2004) 346.
- [25] G. Corcella and A.H. Hoang, "Bottom quark mass determination from low n sum rules" hep-ph/0311004, in Nucl. Phys. B (Proc. Suppl.) 133 (2004) 186.
- [26] G. Corcella and S. Moretti, "Matrix-Element Corrections to Parton Shower Simulations for Higgs Hadroproduction", hep-ph/0402146, Phys. Lett. B590 (2004) 249.
- [27] G. Corcella and S. Moretti, "Matrix-Element Corrections to $gg/q\bar{q} \rightarrow H$ in HERWIG", hep-ph/0402149, in "The QCD/SM Working Group: Summary Report", Proceedings of 3rd Les Houches Workshop, Physics at TeV Colliders, Les Houches, France, 26 May - 6 June 2003.
- [28] G. Corcella, "Fragmentation of Bottom Quarks in Top Quark Decay", hep-ph/0409120, in Proceedings of Incontri sulla Fisica delle Alte Energie, Torino, Italia, 14-16 Aprile 2004.
- [29] G. Corcella, "On the Determination of the Bottom Quark Mass from Relativistic Sum Rules", in Proceedings of Incontri sulla Fisica delle Alte Energie, Torino, April 14-16 2004, pag. 313-316.
- [30] G. Corcella, "Fragmentation in $H \rightarrow b\bar{b}$ Processes", hep-ph/0409161, Nucl. Phys. B 705 (2005) 363.
- [31] G. Corcella, "Progress in Bottom-Quark Fragmentation", hep-ph/0502019, in Proceedings of 18th International Workshop on High-Energy Physics and Quantum Field Theory (QFTHEP 2004), St. Petersburg, Russia.
- [32] G. Corcella and L. Magnea, "Soft-gluon resummation effects on parton distributions", hep-ph/0506278, Phys. Rev. D72 (2005) 074017.
- [33] G. Corcella and L. Magnea, "Impact of large- x resummation on parton distribution functions", hep-ph/0507042, in Proceedings of DIS 05, Madison, WI, U. S. A. AIP Conf. Proc. 792 (2005) 303.
- [34] G. Corcella, "Heavy flavours: theory summary", hep-ph/0507043, in Proceedings of DIS 05, Madison, WI, U. S. A., AIP Conf. Proc. 792 (2005) 179.
- [35] G. Corcella and V. Drollinger, "Bottom-quark fragmentation: comparing results from tuned event generators and resummed calculations", hep-ph/0508013, Nucl. Phys. B730 (2005) 82.
- [36] A. Banfi, G. Corcella, M. Dasgupta, Y. Delenda and G.P. Salam, "Resummation",

in “HERA and the LHC - A workshop on the implications of HERA for LHC physics”, Editors A. De Roeck and H. Jung, Geneva 2005, Part III - Working Group 2: Multi-Jet Final States and Energy Flows, Parton Density Function, pag. 274-187. hep-ph/0508096.

[37] G. Altarelli, J. Andersen, R.D. Ball, M. Ciafaloni, D. Colferai, G. Corcella, S. Forte, L. Magnea, A. Sabio Vera, G.P. Salam and A. Staśto, “Resummation”, in “HERA and the LHC - A workshop on the implications of HERA for LHC physics”, Editors A. De Roeck and H. Jung, Geneva 2005, Part II - Working Group 1: Parton Density Functions, pag. 160-180, hep-ph/0511119.

[38] G. Corcella and V. Drollinger, “B-Hadron Production in Top Quark Decay”, hep-ph/0602191, in Proceedings of TOP 2006, Coimbra, Portugal, PoS TOP2006 (2006) 035.

[39] C. Buttar, G. Corcella et al., “Les Houches Physics at TeV Colliders 2005, Standard Model and Higgs working group: Summary report.”, hep-ph/0604120.

[40] U. Aglietti, G. Corcella and G. Ferrera, “Modelling non-perturbative corrections to bottom-quark fragmentation”, hep-ph/0610035, Nucl. Phys. B775 (2007) 162.

[41] A. Banfi, G. Corcella and M. Dasgupta, “Angular ordering and parton showers for non-global QCD observables”, hep-ph/0612282, JHEP 0703 (2007) 050.

[42] G. Corcella and G. Ferrera, “Charm-quark fragmentation with an effective coupling constant”, arXiv:0706.2357 [hep-ph], JHEP 0712 (2007) 050.

[43] S. Albino, G. Corcella et al., “Parton fragmentation in the vacuum and in the medium”, arXiv:0804.2021 [hep-ph], Proceedings of the workshop on “Parton fragmentation in the vacuum and in the medium” ECT*, Trento.

[44] B.S. Acharya, F. Cavallari, G. Corcella, R. Di Sipio and G. Petrucciani, “Monte Carlo generators for top quark physics at the LHC”, arXiv:0804.4122 [hep-ph], Nuovo Cim.123B (2008) 415.

[45] B.S. Acharya, F. Cavallari, G. Corcella, R. Di Sipio and G. Petrucciani, “Commissioning ATLAS and CMS with top quarks”, arXiv:0805.3816 [hep-ex], Nuovo Cim. 123B (2008) 409.

[46] B.S. Acharya, F. Cavallari, G. Corcella, R. Di Sipio and G. Petrucciani, “Rediscovery of the top quark and first measurements”, arXiv:0806.0484 [hep-ex], Nuovo Cim. 123B (2008) 403.

[47] A. Castro and G. Corcella, “Standard Model and New Physics: theoretical and experimental perspectives”, arXiv:0807.3857 [hep-ph], Nuovo Cim. 123B (2008) 749.

[48] G. Corcella and D. Rebutti, “Phenomenology of the Standard Model Higgs Boson at the LHC”, in Proceedings of the Workshop on Monte Carlo’s, Physics and Simulations at the LHC, arXiv:0902.0180 [hep-ph], pp. 121-128.

[49] G. Corcella, ‘Bottom-quark fragmentation: resummations and Monte Carlo simulations’, arXiv:0902.180 [hep-ph], in Proceedings of the Workshop on Monte Carlo’s, Physics and Simulations at the LHC, pp. 103-111.

[50] Z.A. Ajaltouni, G. Corcella et al., “Proceedings of the workshop: HERA and the LHC workshop series on the implications of HERA for LHC physics”, Eds. H. Jung and A. De Roeck, arXiv:0903.3861 [hep-ph].

[51] G. Corcella and F. Mescia, “A phenomenological study of bottom quark fragmentation in top quark decay”, Eur. Phys. J. C65 (2010) 171.

[52] N. Armesto, G. Corcella, L. Cunqueiro and C.A. Salgado, “Angular-ordered parton showers with medium-modified splitting functions”, arXiv:0909.5118 [hep-ph], JHEP 1109

(2009) 122.

[53] R. Barbieri, A. E. Càrcamo Hernández, G. Corcella, R. Torre and E. Trincherini, “Composite vectors at the Large Hadron Collider”, arXiv:0911.1942 [hep-ph], JHEP 1003 (2010) 068.

[54] G. Corcella and K. Lipka, “Heavy Flavours in DIS and Hadron Colliders: Working Group Summary”, arXiv:1008.2281 [hep-ph], PoS DIS2010:016, 2010.

[55] G. Corcella, “Parton showers with medium-modified splitting functions”, arXiv:1008.2634 [hep-ph], PoS DIS2010:102, 2010.

[56] G. Corcella, “Theoretical issues on the top mass reconstruction at hadron colliders”, arXiv:1008.4498 [hep-ph], to be published in *Il Nuovo Cimento*.

[57] Heavy flavour production at the LHC: Theoretical aspects. Z. Conesa del Valle, G. Corcella et al., “Quarkonium production in high energy proton-proton and proton-nucleus collisions”, Nucl. Phys. Proc. Suppl. 214 (2011) 3.

[58] M. Cirelli, G. Corcella, A. Hektorm, G. Hutsi, M. Kadastik, P. Panci, M. Raidal, F. Sala and A. Strumia “PPPC 4 DM ID: A Poor Particle Physicist Cookbook for Dark Matter Indirect Detection”, JCAP 1103 (2011) 051.

[59] Z. Conesa del Valle, G. Corcella, F. Fleuret, E.G. Ferreira, V. Kartvelishvili, B. Kopeliovich, J.P. Lansberg, C. Lourenco, G. Martinez, V. Papadimitriou. H. Satz, E. Scomparin, T. Ullrich, O. Teryaev, R. Vogt and J.X. Wang, ‘Quarkonium production in high energy proton-proton and proton-nucleus collisions’, Nucl. Phys. Proc. Suppl. 214 (2011) 3.

[60] G. Corcella, S. De Curtis, S. Moretti, G. Pancheri, O. Panella and M. Piccolo, ‘LC10 - New Physics: Complementarities between Direct and Indirect Searches’, *Nuovo Cimento* 34C (supplement N.5) 2011.

[61] G. Corcella, ‘ Z' Bosons at the LHC in a Modified MSSM’, arXiv:1206.3062, Proceedings di DIS2012, Bonn, March 2012, DESY-PROC-2012-02/316.

[62] G. Corcella, ‘Supersymmetry in Z' decays’, arXiv:1207.5424, Proceedings di Rencontres de Blois 2012, Blois, May 2012.

[63] F. Borzumati, D. Comelli, G. Corcella, S. De Curtis, S. Moretti, G. Pancheri and O. Panella, Proceedings of LC11 Workshop on ‘Understanding QCD at linear colliders in searching for old and new physics’, Frascati Physic Series 54 (2012) 1.

[64] G. Corcella, ‘ Z' Bosons at the LHC in a Modified MSSM’, arXiv:1206.3062, Proceedings di DIS2012, Bonn, March 2012, DESY-PROC-2012-02/316.

[65] G. Corcella, ‘Supersymmetry in Z' decays’, arXiv:1207.5424, Proceedings di Rencontres de Blois 2012, Blois, May 2012.

[66] G. Corcella, ‘Searching for supersymmetry in Z' decays’, EPJ Web Conf. 60 (2013) 18011.

[67] G. Corcella and S. Gentile, ‘Heavy Neutral Gauge Bosons at the LHC in an Extended MSSM’, Nucl. Phys. B866 (2013) 293.

[68] G. Corcella, “Hadronization systematics and top mass reconstruction”, EPJ Web Conf. 80 (2014) 00019.

[69] G. Corcella, “Phenomenology of supersymmetric Z' decays at the Large Hadron Collider”, Eur.Phys.J. C75 (2015) 264.

[70] G. Corcella, S. Forte et al, “The Standard Model from LHC to future colliders”, Eur.Phys.J. C75 (2015) 554.

[71] G. Corcella, A. Andreazza et al, “ What Next: White Paper of the INFN-CSN1”, Frascati Phys. Ser. 60 (2015) 1.

[72] G. Corcella, “Supersymmetric Z’ decays at the LHC”, PoS (PLANCK2015) (2015) 027.

[73] G. Corcella, “Interpretation of the top-quark mass measurements: a theory overview”, PoS (TOP2015) (2016) 037.

[74] G. Corcella, S. De Curtis, S. Moretti and G. Pancheri, “Physics Prospects for Linear and other Future Colliders after the Discovery of the Higgs (LFC15)”, Frascati Phys.Ser. 61 (2016) pp.1-227.

[75] P. Azzi, G. Corcella et al, “Physics Behind Precision”, Proceedings of FCC-*ee* miniworkshop ‘Physics beyond precision’, e-Print: 1703.01626 [hep-ph].

[76] G. Corcella, C. Corianò, A. Costantini and P. Frampton, “Exploring scalar and vector bileptons at the LHC in a 331 model”. Phys. Lett. B785 (2018) 73.

[77] G. Corcella, “The top-quark mass: challenges in definition and determination”, Front. in Phys. 7 (2019) 54.

[78] G. Corcella, C. Corianò, A. Costantini and P. Frampton, “Non-leptonic decays of bileptons”, e-Print: 2106.14748 [hep-ph], submitted to Phys. Lett. B.

[79] G. Corcella, A. Costantini, M Ghezzi, L. Panizzi, G.M. Pruna and J.Salko, “Vector-like quarks decaying into singly and doubly charged bosons at LHC”, e-Print” 2107.07426 [hep-ph], accepted for publication in JHEP.

Frascati, 17.09.2021

Gennaro Corcella

Dr. Barbara MELE

CURRICULUM VITAE (dicembre 2025)

POSIZIONE ATTUALE

dal 01/01/2021 Dirigente di Ricerca presso INFN, Sezione di Roma

POSIZIONI PREGRESSE

dal 31/12/1990 Ricercatore presso INFN, Sezione di Roma

dal 01/11/1999 Primo Ricercatore presso INFN, Sezione di Roma

FORMAZIONE

1983 – Laurea in Fisica (con Lode), Univ. di Roma La Sapienza, relatore Prof. G. Altarelli

1985 – Diploma di Perfezionamento in Fisica Nucleare e Subnucleare (con Lode) [corso biennale], Univ. di Roma La Sapienza, relatore Prof. G. Altarelli

1988 – Dottorato di Ricerca in Fisica Teorica, Univ. di Roma La Sapienza

In data 08/01/2014, ha ottenuto dal M.I.U.R. l'abilitazione scientifica nazionale alle funzioni di professore universitario di Prima Fascia nel settore 02/A2 - Fisica teorica delle interazioni fondamentali

BORSE POST-DOC

INFN, Sezione di Roma (novembre 1986 - ottobre 1988)

CERN, Ginevra (gennaio 1989 - dicembre 1990)

PREMI E RICONOSCIMENTI PER L'ATTIVITA' SCIENTIFICA

– Premio di operosità scientifica della Società Italiana di Fisica, 1984 (500.000 lire)

– Borsa di studio della Fondazione Angelo Della Riccia, Firenze, 1984 (6.000.000 lire, per visita di cinque mesi al CERN)

– Borsa di studio Bruno Rossi (INFN-MIT), 1995 (supporto per 3 settimane di visita al MIT, USA)

VISITE ESTESE

CERN, Ginevra, 1984 (cinque mesi)

CERN, Ginevra, 1988 (due mesi)

Università di Ginevra, 1991 (due mesi)

CERN, Ginevra, 1992 (due mesi)

CBPF, Rio de Janeiro, 1993 (un mese)

MIT, Cambridge, MA, USA, 1995 (un mese)

CBPF, Rio de Janeiro, 1997 (due settimane)

Università di Hue, Vietnam, 2010 (un mese e mezzo)

**AUTRICE DI 141 PUBBLICAZIONI (DAL 1983 AL 2025) SU INSPIRE
CON CIRCA 15000 CITAZIONI E h_{HEP} INDEX 46**

CAMPI DI RICERCA PRINCIPALI

- Studio teorico delle proprietà fenomenologiche delle teorie di gauge, nell'ambito del modello standard delle interazioni fondamentali e delle sue possibili estensioni.
- Fisica ai collider di alta energia (CERN $p\bar{p}$, HERA, LEP, Tevatron, LHC, HL-LHC, ILC, CLIC, FCC-ee, FCC-pp, CepC, Muon Collider).
- Applicazioni all'Astrofisica dei Raggi Cosmici.

ATTIVITA' IN WORKSHOP E GRUPPI DI LAVORO

Coinvolgimento esteso, anche a livello organizzativo, in workshop organizzati dall'INFN, dal CERN (Ginevra), da DESY (Amburgo), dall'ECFA (il Comitato Europeo per gli Acceleratori Futuri) e dall'ICFA (il Comitato Internazionale per gli Acceleratori Futuri) per lo studio della fisica di interesse per gli acceleratori presenti e futuri.

INCARICHI RICOPERTI NELLE COMMISSIONI NAZIONALI DELL' INFN :

- Osservatore della CSN4 in CSN1 (dal settembre 2016 a oggi)
- Coordinatore Gruppo IV della Sezione di Roma (da marzo a luglio 2003)

AGISCE COME REFEREE PER LE SEGUENTI RIVISTE INTERNAZIONALI :

Journal of High Energy Physics,
Nuclear Physics B, Physics Letters B,
Physical Review Letters, Physical Review D,
Eur.Phys.J. C (Particles and Fields)

ATTIVITA' DI VALUTAZIONE DI PROGETTI INTERNAZIONALI

- Nel 2016-2017, ha agito come revisore per l' Austrian Science Fund (FWF) per la valutazione di un progetto di ricerca sottomesso per un finanziamento di 1.200.000 euro al Programma Internazionale START del FWF.
- Nel 2018 e 2019, è stata incaricata di agire come valutatore per il primo e il secondo bando MARIE-CURIE COFUND "FELLINI" per il reclutamento di ricercatori a tempo determinato presso l'INFN.

SUPERVISOR DEI SEGUENTI RICERCATORI POST-DOC INFN :

**RESPONSABILE DELL' ORGANIZZAZIONE DEI SEMINARI
DEL GRUPPO TEORICO DI ALTE ENERGIE
NEL DIPARTIMENTO DI FISICA DELL' UNIV. DI ROMA LA SAPIENZA (DAL 1991 AL
1998)**

ATTIVITA' DI COLLABORAZIONE CON LE UNIVERSITA' :

In data 08/01/2014, ha ottenuto dal M.I.U.R. l'abilitazione scientifica nazionale alle funzioni di professore universitario di Prima Fascia nel settore 02/A2 - Fisica teorica delle interazioni fondamentali.

a) CORSI PER DOTTORATO DI RICERCA IN FISICA :

- CBPF, Rio de Janeiro, Brasil, Introduction to the Standard Model, 1993
- Univ. La Sapienza, Roma, Fenomenologia delle Particelle Elementari, 1996
- Univ. di Pavia, Estensioni Supersimmetriche del Modello Standard, 1996
- Federal University of Espirito Santo, UFES-Vitoria, Brasil, Physics at LEP2, 1997
- Univ. La Sapienza, Roma, Introduzione alla Supersimmetria, 1997, 1998, 1999
- Univ. Tor Vergata, Roma, Fenomenologia delle particelle elementari, 2000
- Univ. La Sapienza, Roma, Beyond the Standard Model, 2001
- Univ. La Sapienza, Roma, Ricerca del bosone di Higgs e nuova fisica negli acceleratori presenti e futuri, 2002
- Univ. La Sapienza, Roma, Ricerca di SuSy ai colliders, 2003
- Univ. La Sapienza, Roma, Introduzione al Modello Standard e alle sue estensioni supersimmetriche, 2005,2006,2007,2008
- Univ. La Sapienza, Roma e Univ. Roma Tre, LHC e il settore di rottura elettrodebole del Modello Standard, 2009
- Univ. di Pavia, Introduzione alla Supersimmetria, 2010
- Univ. di Pavia, Fisica oltre il Modello Standard a LHC, 2010

b) CORSI PER LAUREA MAGISTRALE :

- Univ. La Sapienza, Roma, contributi specialistici al corso Fisica Nucleare e Subnucleare II, 2007,2008,2009
- Hue University College of Education for the Advanced Physics Program, Vietnam, Introduction to Nuclear and Particle Physics, 2010 (corso di circa 40 ore)

c) E' STATA SUPERVISOR DEL LAVORO DI TESI DI LAUREANDI E DOTTORANDI DELL'UNIV. SAPIENZA DI ROMA

d) HA AGITO COME REFEREE PER TESI DI DOTTORATO IN FISICA IN VARIE UNIVERSITA' E PER TESI DI LAUREA IN FISICA PRESSO L'UNIV. SAPIENZA DI ROMA

e) Ha fatto parte della Commissione giudicatrice per l'esame finale del XV ciclo del corso di Dottorato in Fisica presso l'Univ. di Roma TRE, nella tematica della Fisica Nucleare e Subnucleare e Astrofisica, con nomina del 28-5-2003.

CURRICULUM VITAE

- October 2021 - Now. Associate Professor at the University of Rome & INFN Tor Vergata (ToV).
- October 2018 - September 2021. Assistant Professor (Italian RTDb position) at ToV.
- October 2018 - September 2019. Association to CERN, Switzerland (visiting scientist).
- February 2016 - September 2018. Experienced fellow at CERN.
- September 2012 - January 2016. Research and teaching associate at Instituto de Física Teórica (IFT) and Universidad Autónoma de Madrid (UAM), Spain.
- October 2010 - September 2012. Postdoc at Scuola Normale Superiore (SNS), Pisa, Italy.
- October 2008 - September 2010. Postdoc at the Institut de Física d'Altes Energies (IFAE), Universitat Autònoma de Barcelona, Spain.
- October 2006 - September 2008. Fellow (performing both research and teaching) at the Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. Funded by the Tomalla Foundation.

MASSIMO MANNARELLI

EDUCATION

- 2003 **Ph.D. in Physics**
University of Bari, Italy
Thesis title: Hadronic matter at asymptotic density
Thesis advisor: Prof. Giuseppe NARDULLI
- 1998 **Graduation degree in Physics** 110/110 *cum laude*
University of Bari, Italy
Thesis title: Neural Networks in chaotic regime
Thesis advisors: : Prof. Giuseppe NARDULLI and Dr. Sebastiano STRAMAGLIA

POSITIONS OF RESPONSIBILITY

- 2023 - Local coordinator of the INFN collaboration Neumatt.
Network of Italian theoretical groups aimed to study nuclear matter and compact stars.
- 2019 - Steering Committee of *Incontri Nazionali di Fisica nucleare*
- 2016 - CSQCD International Steering Committee
- 2012 - 2020 Head of the Theory Group of the LNGS (about 25 people, budget about 25 keuro)
- 2012 - 2015 Coordinator of the Centre for Astroparticle Physics (CFA).
Centre hosted by the LNGS to promote research and connections between groups working on dark matter, nuclear physics and neutrino physics.
Budget about 430 keuro to organize lecture series, hire postdocs and promote outreach.
- 2011 - 2015 Scientific secretary of the Scientific Committee of the LNGS.
- 2011 - 2015 Local coordinator of the INFN collaboration CT-51.
Network of italian theoretical groups aimed to study nuclear matter and compact stars.
- 2011 - Co-organizer of the LNGS seminars

GRANTS

- 2014-2017 MIUR-PRIN research grant. Title: Theoretical Astroparticle Physics (participant)
- 2009 INFN-MEC collaboration grant (coordinator of spanish funds)
- 2008 INFN-MEC collaboration grant (coordinator of spanish funds)
- 2005-2007 “Bruno Rossi” Post-doctoral fellowship, INFN-MIT
- 2005-2007 MIT grant funded by U.S. DoE, cooperative research agreement #DF-FC02-94ER40818

MEMBERSHIPS

- Since 2022 member of the ET Div. 6 (nuclear physics)
- Since 2020 member of EuCAPT
- Since 2015 ECT* Associate

LANGUAGE PROFICIENCIES

- Mother tongue: Italian
- Other languages: English (fluent), Spanish (fluent)

CIVILIAN SERVICE

- 1999 - 2000 PhD suspended for about 1 year to work in a WWF natural reserve

EMPLOYMENT HISTORY

2011 -	STAFF INFN RESEARCHER Laboratori Nazionali del Gran Sasso , Assergi (L'Aquila), Italia <i>Main topics:</i> Compact stars and QCD phase diagram; properties of neutrinos; Meson condensation; Gravity analogs. <i>Main collaborators:</i> Prof. Roberto CASALBUONI, Prof. Raoul GATTO, Prof. Joan SOTO, Dr. Cristina MANUEL, Dr. Francesco VISSANI, Prof. Francesco VILLANTE, Prof. Luigi PILO, Prof. Francesca FERLAINO, Dr. Dario GRASSO, Prof. M. Luisa CHIOFALO
2017 -	VISITING PROFESSOR Gran Sasso Science Institute , L'Aquila, Italia
2010 - 2011	POST-DOCTORAL FELLOWSHIP Universitat de Barcelona , Spain <i>Main topics:</i> Application of effective field theories to the study of bound states in the quark-gluon plasma. <i>Main collaborators:</i> Prof. Joan SOTO, Dr. Cristina MANUEL
2007 - 2010	I3P POST-DOCTORAL FELLOWSHIP IEEC-CSIC Universitat Autònoma de Barcelona , Spain <i>Main topics:</i> Collective properties of the QGP, jet quenching and chromodynamic instabilities; shear viscosity of quark matter and ultracold atoms. Gravity analogs. <i>Main collaborators:</i> Dr. Cristina MANUEL, Prof. Krishna RAJAGOPAL, Prof. Michael STRICKLAND, Prof. Paolo CASTORINA.
2005 - 2007	“BRUNO ROSSI” POST-DOCTORAL FELLOWSHIP Centre for Theoretical Physics, Massachusetts Institute of Technology , Cambridge, MA, USA <i>Main topics:</i> Crystalline color superconductors and compact stars. Imbalanced ultracold atoms systems in optical traps. <i>Main collaborators:</i> Prof. Krishna RAJAGOPAL and Dr. Rishi Sharma
2004 - 2005	POST-DOCTORAL FELLOWSHIP Texas A&M , College Station, TX, USA <i>Main topics:</i> Melting of quarkonia in the quark-gluon plasma. Study of v_2 and R_{aa} of hidden charm and open charm states by a T -matrix approach. <i>Main collaborators:</i> Prof. Ralf RAPP, Dr. Vincenzo GRECO, Dr. Hendrik VAN HESS

TEACHING

2017 -	Fundamental physics of compact stars, course for PhD students GSSI, L'Aquila
2012 - 2013	Strong and weak interactions, master course in Physics, L'Aquila University
2011 - 2012	Strong and weak interactions, master course in Physics, L'Aquila University
2000 - 2001	Teaching Assistant for the undergraduate course of Electromagnetism and Optics.

Advisor of several Bachelor students, Master students and PhD students of University of L'Aquila, Pisa and Bari. Currently advising a Master student of University of Pisa and a PhD student of GSSI.

OUTREACH

- Local organizer of the INFN program (PID) for teachers at the LNGS. A one week series of lectures and experimental activities for high school teachers held annually.
- Local organizer of the Lab2go, an INFN program to boost physics in high-schools dedicated to talented students.
- Local organizer of the visits of the international student associations at the LNGS.

CONFERENCE AND SCHOOLS ORGANIZATION

MAY 2022	INFN 2022 (cochair) About 100 participants.
JUNE 2018	CSQCD VII About 100 participants.
MAY 2016	CSQCD V (chair) About 80 participants.
SEPT-OCT 2014	Gran Sasso Summer Institute (member of the LOC) 30 participants.
FEB 2014	CFA Lectures on nuclear astrophysics (member of the LOC) About 40 participants.
OCT 2014	CFA Lectures on Dark Matter (member of the LOC) About 50 participants.
MAY 2011	Workshop on Beyond Three Family Neutrino Oscillations (member of the LOC) About 100 participants.

SUMMARY OF THE SCIENTIFIC ACTIVITY

- About 85 publications on peer reviewed journals. h-index 25.
- About 35 congress presentations.
- About 30 seminars and colloquia in universities and research centres.

SELECTED SCIENTIFIC PUBLICATIONS

1. **“Crystalline color superconductors”**
R. Anglani, R. Casalbuoni, M. Ciminale, N. Ippolito, R. Gatto, M. Mannarelli and M. Ruggieri.
DOI:10.1103/RevModPhys.86.509
Rev. Mod. Phys. **86**, 509 (2014)
2. **“Non-relativistic bound states in a moving thermal bath”**
M. A. Escobedo, J. Soto and M. Mannarelli.
DOI:10.1103/PhysRevD.84.016008
Phys. Rev. D **84**, 016008 (2011)
3. **“Mutual friction in a cold color flavor locked superfluid and r-mode instabilities in compact stars”**
M. Mannarelli, C. Manuel and B. A. Sa’d.
DOI:10.1103/PhysRevLett.101.241101
Phys. Rev. Lett. **101**, 241101 (2008)
4. **“Nonperturbative heavy-quark diffusion in the quark-gluon plasma”**
H. van Hees, M. Mannarelli, V. Greco and R. Rapp.
DOI:10.1103/PhysRevLett.100.192301
Phys. Rev. Lett. **100**, 192301 (2008)
5. **Meissner masses in the gCFL phase of QCD**
R. Casalbuoni, R. Gatto, M. Mannarelli, G. Nardulli and M. Ruggieri.
DOI:10.1016/j.physletb.2004.11.045, 10.1016/j.physletb.2005.04.025
Phys. Lett. B **605**, 362 (2005)

SELECTED PRESENTATIONS IN CONGRESSES

1. **Meson condensation in chiral perturbation theory**
Hot Problems of Strong Interactions, ECT*, Trento, Italy, 2020
2. **Neutron mirror stars**
Particle Physics with Neutrons at the ESS, Stockholm, Sweden, 2018
3. **Superfluid compact stars**

COMPSTAR 2011, Catania, Italy, 2011

4. **The strength of crystalline color superconductors**
Confinement8, Mainz, Germany, 2008
5. **Scattering of Quark-Quasiparticles in the Quark-Gluon Plasma**
Quark Matter 2005 Budapest, Hungary 2005

SELECTED SEMINARS

1. **Extreme States of Nuclear Matter** — IQOQI Quantum Seminar
Austrian Academy of Sciences, Innsbruck, Austria, 2022
2. **QCD condensates** — lecture series
GGI, Firenze, Italy, 2014
3. **The strength of crystalline color superconductors** — colloquium
Perimeter Institute, Waterloo, Canada, 2007
4. **Three-flavor Crystalline Color Superconductivity** — colloquium
Washington University, St.Louis (MO), USA, 2006
5. **Superconductors with asymmetric spin populations** — seminar
Lawrence Berkeley National Laboratory, Berkeley (CA), USA, 2006

REFEREE

Most relevant journals: Physical Review Letters, Physical Review A, Physical Review C, Physical Review D, Physics Letters B, JHEP, Journal of Physics A: Mathematical and Theoretical

RESEARCH INTERESTS IN BRIEF

My main research topics concern the phases of hadronic matter in extreme conditions. During my PhD thesis and during the post-doc at the CTP-MIT, I studied the properties of color superconductors, focusing on the crystalline color superconducting phase: a phase of matter that is at the same time superfluid and rigid, thus akin to the supersolids recently realized in ultracold atom systems. This phase is relevant for explaining giant neutron star glitches and may produce a continuous gravitational wave emission. During the post-doc at the Texas A&M I started studying the properties of the quark gluon plasma, in particular the dissociation properties of heavy mesons as a function of the temperature. By using a Brueckner-type many-body scheme, we have predicted the correct behavior of R_{AA} and v_2 at large transverse momenta. In more recent years I have been studying the meson condensation driven by the isospin or strangeness chemical potentials using chiral perturbation theory. We found a remarkable agreement between chiral perturbation theory and lattice QCD methods. In addition, we have proposed the existence of pion stars and of a new inhomogeneous phase characterized by a spatial modulation of the meson condensate. A very interesting line of research I am currently pushing is that of gravity analogs. By using effective field theory methods it is possible to show that the propagation of low-energy excitations in a fluid maps to the propagation of scalar particles in a curved background. This opens the possibility to test some aspects of general relativity in laboratory. We have realized a novel method, based on kinetic theory, to derive the Hawking temperature. We have as well shown that at the acoustic horizon, the superfluid analog of the black-hole event horizon, the shear viscosity to entropy density ratio saturates the so-called SSB bound.

GIULIA PAGLIAROLI

Curriculum Vitae

SHORT BIO

INFN Research Scientist in “Theoretical Astro-particle Physics” at the Gran Sasso Laboratory since 2021.

2020: Qualified as Full Professor in the field 02/A2 - Theoretical Physics of Fundamental Interactions and as Associate Professor in the field 02/C1 - Astronomy, astrophysics.

PhD in Physics 2009. Expert on Multi-messengers Astronomy with a broad scientific background in theoretical astro-particle physics and data analysis. 115 ISI indexed papers, 12 as first author (of which 2 PRL), H=45 (source Scopus). 7 invited talks and seminars. Supervisor of several PhD students. Winners of two individual research prizes: the SIGRAV prize on 2014 for relevant contribution in astrophysics and cosmology and the SIF Polvani prize for master thesis on 2009. Fields of interest: astroparticle phenomenology and search strategy with a multi-messengers approach. Current Interest: high-energy and low-energy Cosmic Neutrinos, Gravitational Waves, Strange Stars, Core-Collapse Supernovae, Solar Neutrinos.

PROFESSIONAL EXPERIENCE

- **INFN Permanent Researcher** **July 2021-**
- Fixed Term Researcher (RTDA) FIS/02 **Feb 2018- July 2021**
Gran Sasso Science Institute, L’Aquila, Italy
- Post-Doctoral Research Scientist **Dec 2015-Jan 2018**
Gran Sasso Science Institute, L’Aquila, Italy
- Reasearcher (Temporary position art.23 and art.20) **Jun 2013-Nov 2015**
Laboratori Nazionali del Gran Sasso, INFN, L’Aquila, Italy
- Post-Doctoral Research Scientist **2011-2013**
Laboratori Nazionali del Gran Sasso, INFN, L’Aquila, Italy
- Post-Doctoral Research Scientist **2009-2011**
Laboratori Nazionali del Gran Sasso, INFN, L’Aquila, Italy
- Visiting Researcher **Nov-Dec 2009**
Abdus Salam International Centre for Theoretical Physics (ICTP),
Trieste, Italy
- Post-Doc Fellowship **Sep-Oct 2009**
University of L’Aquila, L’Aquila, Italy
- Post-Doc Fellowship **Jun-Aug 2009**
Laboratori Nazionali del Gran Sasso, INFN, L’Aquila, Italy

EDUCATION

- Ph. D in Physics May 2009
University of L'Aquila, L'Aquila, Italy
"Statistical analysis of SN1987A neutrinos: implications for the emission model, neutrino properties and gravitational waves search."
(Advisors: Francesco Vissani and Francesco Lorenzo Villante)
- Laurea in Physics, cum Laude October 2005
University of L'Aquila, L'Aquila, Italy
"Studio di segnali in coincidenza tra i rivelatori di onde gravitazionali EXPLORER e NAUTILUS."
(Advisors: Flavio Cavanna and Ornella Palamara)

AWARDS

- **"SIGRAV" prize** for relevant contribution in Astrophysics, 2014
Cosmology and Experimental Gravity received from the SIGRAV Italian Society of General Relativity, Italy
 - **"Polvani" award** for Master Thesis 2009
from the Italian Physical Society €1k
 - **Poster session prize** of Recent Developments in neutrino 2017
physics and astrophysics, 4-7 September 2017, LNGS and GSSI,
(poster title: Enhanced tau neutrino appearance through invisible decay)
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RESEARCH STAYS OFF-CAMPUS (as visiting scientist)

- CERN laboratory July-2005
- University of Geneva, collaboration with Prof. Michele Maggiore Feb-2006
- Abdus Salam International Centre for Theoretical Physics (ICTP), Nov-Dec 2009
Trieste, Italy

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

- 2022: Advisor of 1 PhD student and 1 Post-Doc researcher
- 2020: Co-Advisor of 3 PhD students:
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- 2018: Co-Advisor of , master thesis:"
", Physics
Department, L'Aquila University, Italy
- 2015-2017: Co-Advisor of , PhD student, thesis: "
", Physics Department, Roma Tor
Vergata University, Roma, Italy
- 2017: Co-Advisor of , master thesis:"

", Physics Department, L'Aquila University, Italy

- 2016: Co-Advisor of
- 2014: Co-Advisor of , master thesis:
- 2013: Tutor of

RESEARCH PROJECTS

Lead as Coordinator

- **2020 Local GSSI Coordinator of the PRIN 2017W4HA7S (PI Lisi Eligio)**
Title: NAT-NET:Neutrino and Astroparticle Theory Network (**BUDGET under my responsibility €83427**);
- **2014-2015: Scientific Coordinator of the Gran Sasso Center for Astroparticle Physics (CFA)**, i.e. a joint facility of the Gran Sasso National Laboratory, University of Rome Tor Vergata and University of L'Aquila funded by Regione Abruzzo and European Union, in order to promotes the research in the field of Astroparticle Physics, among its main research areas are Neutrino Physics, Dark Matter Physics, High Energy Astrophysics and Gravitational Waves (**BUDGET under my responsibility €30k/year**), Progetto Speciale Multiasse "La Societa' della Conoscenza in Abruzzo" P.O. FSE Abruzzo 2007-2013
- **2014-2020: Local LNGS Coordinator of "Neumatt" INFN theoretical working group** dedicated to the search in the field of nuclear matter in astrophysical object (**BUDGET €5k/year**), Laboratori Nazionali del Gran Sasso, Italy, members: 2 researchers and 2 Post-Doc student.

Others

- 2015- Segretario Scientifico del Board Scientifico del Centro di Fisica Astroparticellare, Progetto Speciale Multiasse "La Societa' della Conoscenza in Abruzzo" P.O. FSE Abruzzo 2007-2013
- 2013- Progetto Speciale Multiasse "La Societa' della Conoscenza in Abruzzo" P.O. FSE Abruzzo 2007-2013

OUTREACH AND TEACHING ACTIVITIES

- 2019-2021: Teaching of the **PhD Astroparticle Physics** program at GSSI on the topic: " Low energy neutrinos and gamma from GW events".
- 2017: Teaching assistant in General Physics II (30 hours) at the Department of Civil Engineering, Building-Architecture, Environmental, University of L'Aquila.
- 2010-2015-2016-2019: Topic Seminars for the class of Gravitational Waves (Prof. Viviana Fafone), PhD Physics program of the Physics Department, University of Roma "Tor Vergata", Italy (2 hours/year)
- 2014: Partecipazione in the Project PLS "Piano Nazionale Lauree Scientifiche" at the University of L'Aquila, coordinators: Prof. A. Filipponi, Prof. A. Continenza (Docente di 30 ore di Laboratorio di potenziamento nelle scienze fisiche, presso Liceo Scientifico)

OUTREACH

- 2019: Responsible of the scientific Treasure Hunt activity devoted to high school students (SHARPER 2019);
- 2018-2019-2020: Member of the organizing committee of GSSI seminars;
- 2018: Interview with TG2, rubrica “Lavori in corso” sul contributo “Donne e Scienza”
- 2014-2015: Scientific Responsible of activity, Coordinator of 30 people, SHARPER (Call H2020-MSCA-NIGHT-2014 - Grant 633367), Laboratori Nazionali del Gran Sasso, Italy
- 2014-2015: Member of the Organizing Committee, SHARPER (Call H2020-MSCA-NIGHT-2014 - Grant 633367), Laboratori Nazionali del Gran Sasso, Italy
- 2007-2015: Partecipation to the LNGS Open Day activities

ORGANISATION OF CONFERENCES OR SCIENTIFIC MEETINGS

- 2022: Member of the Local Organizing Committee of the UHECR 2022 conference, 3-7 October GSSI, Italy
- 2022: Convener of the Mulimessenger parallel session of the NOW 2022 conference, 4-11 September Ostuni, Italy
- 2019: Member of the Local Organizing Committee of the SIF Conference “105° Congresso Nazionale”, 23-27 September Gran Sasso Science Institute, L’Aquila, Italy.
- 2016: Member of the Local Organizing Committee of the International Conference “Compact Stars in the QCD diagram V”, 23-27 May Gran Sasso Science Institute, L’Aquila, Italy.
- 2015: Chair of the Organizing Committee of “Lectures on Magnetars”, Sept 15-16, Gran Sasso Center for Astroparticle Physics (CFA), Italy
- 2015: Chair of the Organizing Committee of “Hot Topics in Astroparticle Physics”, Sept 14-26, Gran Sasso Center for Astroparticle Physics (CFA), Italy
- 2015: Member of the Organizing Committee of “Lectures on Neutrinoless Double Beta Decay”, 25-26 June Gran Sasso Center for Astroparticle Physics (CFA), Italy
- 2014: Member of the Organizing Committee of “Lectures on Nuclear Astrophysics”, 27 January -14 February Gran Sasso Center for Astroparticle Physics (CFA), Italy
- 2014: Member of the Organizing Committee of “Lectures on Dark Matter”, 21 - 23 October Gran Sasso Center for Astroparticle Physics (CFA), Italy

INSTITUTIONAL RESPONSIBILITIES

- 2016: Member of the Committee of the Gran Sasso Science Institute for 20 student scholarships at the University of L’Aquila, Italy (bando n.17482)
- 2013-2014: Member of the Committee for 2 INFN Post-Doc position at Laboratori Nazionali del Gran Sasso

PEER REVIEW

- 2021: Member of the Editorial Board of *Particles* (ISSN 2571-712X; CODEN: PARTE7), an international, open access, peer-reviewed journal covering all aspects of nuclear physics, particle physics and astrophysics science, and is published quarterly online by MDPI.
- External Reviewer of proposals submitted to the French National Research Agency (ANR) 2019 generic call, panel “CE31 - Physique subatomique, sciences de l’Univers, structure et histoire de la Terre”
- Referee for Physical Review Letters, Physical Review D, European Physical Journal C

MEMBERSHIPS

- Member, Theory Group of LNGS, Assergi (AQ) 2007-present
- Member, Virgo-Ego Scientific Forum (VESF) 2009-present
- Member, Virgo collaboration at Casina (PI): 2008-present
<https://wwwcascina.virgo.infn.it/>
- Member, Borexino collaboration: 2013-2014
task for the detection of CNO solar neutrinos
<http://borex.lngs.infn.it/>
- Member, R.O.G. (Ricerca di Onde Gravitazionali) 2005-2007
collaboration at Laboratori Nazionali di Frascati, Roma:
<http://www.roma1.infn.it/rog/>

ELIGIBILITIES THROUGH COMPETITIONS

- 2020 Habilitation (Full Professor) in Theoretical particle physics (settore concorsuale 02/A2, settore scientifico disciplinare FIS/02).
- 2020 Habilitation (Associate Professor) in Astronomy, astrophysics (settore concorsuale 02/C1 - settore scientifico disciplinare FIS/05).
- 2017 Habilitation (Associate Professor) in theoretical particle Physics (settore concorsuale 02/A2, settore scientifico disciplinare FIS/02).
- 2009: INFN competition for the eligibility to theoretical researchers (R5) (personale ricercatore di III livello bando n. 13154/2009.)
- 2013: Tirocinio Formativo Attivo (TFA) Classe abilitazione all’insegnamento A049 - Matematica e fisica

PRESENTATIONS

1. TAUP 2021, online conference, 30- 3 September 2021 (talk: Looking for Core-Collapse Supernovae with Gravitational Waves and Low-energy Neutrinos)
2. ICRC 2021, online conference, 12-23 July 2021 (talk: The Role of Unresolved PWNe to the Gamma-ray Diffuse Emission at GeV)

3. TAUP 2019, Toyama International Conference Center (Toyama , Japan); 9-13 September 2019 (talk: Probing Galactic Cosmic Ray Distribution with TeV Gamma-ray Sky)
4. Neutrino Oscillation Workshop (NOW 2018), Ostuni, Otranto (LE) (**invited** talk: Combined search of MeV neutrinos and GWs from astrophysical sources)
5. Conference on Neutrino and Nuclear Physics, 15-21 October 2017, Catania, Italy (talk: Improved method for the detection of low-energy astrophysical neutrinos bursts)
6. Perspectives in Astroparticle physics from High Energy Neutrinos (PAHEN) 2017, 25-26 September 2017 – Naple, Italy (poster: The contribution of galactic sources to the diffuse high-energy neutrinos signal)
7. Recent Developments in neutrino physics and astrophysics, 4-7 September 2017, LNGS and GSSI, (poster: Enhanced tau neutrino appearance through invisible decay, **winner of the poster session**)
8. **Invited Panel Member** of the Workshop on Core Collapse Supernovae, their signatures in gravitational waves and their detection with ground-based laser interferometers, March 17-18, 2017 in Pasadena, CA
9. 8th Symposium on Large TPCs for Low Energy Rare Events, 5-7 December 2016, Paris Diderot University, (**invited** talk: Neutrinos and Gravitational Waves from CCSNe)
10. Compact Stars in the QCD diagram V'' , 23-27 May 2016, Gran Sasso Science Institute, L'Aquila, Italy. (talk: Supernova Neutrinos Detection @ LNGS)
11. TAUP 2015, September 2015, Torino, Italy (talk: What Is The Flavor Of The Cosmic Neutrinos Seen By IceCube?)
12. What Next 2 December 2014, Rome, Italy (**invited** talk: Supernova Neutrinos Status and Perspectives)
13. SIGRAV XXI Conference 15-19 September 2014, Alessandria (**invited** talk: Neutrinos as a probe of Supernova physics and as a trigger for GW search)
14. The structure and signals of Neutron Stars, from birth to death, 24-28 March 2014, Firenze (talk: Electromagnetic signals from Bare Strange Stars)
15. The Physics of the Sun and the Solar Neutrinos 2012: 3rd Laboratori Nazionali del Gran Sasso, Assergi (AQ) (talk: A step toward CNO solar neutrino detection in liquid scintillators)
16. Neutrino Oscillation Workshop (NOW 2012), Conca Specchiulla, Otranto (LE) (**invited** talk: Potential of Supernova Neutrinos)
17. European Week of Astronomy and Space Science (EWASS 2012), Roma. (talk: Gravitational Waves and Neutrinos from Core-Collapse Supernovae: The advantages of a joint search)
18. DESY center, 2012, Amburg (invited seminar: A Parameterized Model for Supernova Electron Antineutrino Emission and Its Applications.)
19. Neutrino Oscillation Workshop (NOW 2010), Conca Specchiulla, Otranto (LE) (**invited** talk: Supernova Neutrinos and Gravitational Waves)
20. TAUP 2009, Roma (talk: Using Neutrinos to search GW signal)
21. Joint ET WP5 - ILIAS WP3: European GW research strategy 2008, (**invited** talk: Core Collapse SNe: Neutrinos as a Trigger of GW search)
22. 13th Summer Institute Astroparticle Physics in the Age of LHC 2008, at LNGS (talk: SN Core-Collapse & Neutrinos: SN1987A, SN mechanisms,

neutrino properties and Gravitational Waves)

23. Gravitational Waves Advanced Detectors Workshop (GWADW) 2008, Isola d'Elba, Italy (talk: Core Collapse SNe: Neutrinos as a Trigger of GW search)
24. Incontri di Fisica delle Alte Energie 2007, Napoli, Italy (talk: Analysis of Neutrino signals from SN1987A)

SKILLS

Languages	Italian, English, basic French
Computer Skills	Programming in C, C++, FORTRAN. Operating systems: UNIX, LINUX, Windows. Analysis Softwares: MS-Excel, ROOT and MATHEMATICA. Other Softwares: LaTeX, MS-Word, MS-PowerPoint Use of HTML language.

PUBLICATIONS IN REFEREED JOURNALS

- 1 "Unresolved Sources Naturally Contribute to PeV Gamma-Ray Diffuse Emission Observed by Tibet AS γ ", V. Vecchiotti, F. Zuccarini, F. L. Villante and G. Pagliaroli, *Astrophys.J.* 928 (2022) 1, 19
- 2 "The contribution of Galactic TeV Pulsar Wind Nebulae to Fermi-LAT diffuse emission", V. Vecchiotti, G. Pagliaroli, F. L. Villante, *COMMUNICATIONS PHYSICS* (2022) 5:161
- 3 "Multimessenger analysis strategy for core-collapse supernova search: gravitational waves and low-energy neutrinos", O.Halim, C. Casentini, M. Drago, et al. , *JCAP* 11 (2021) 021
- 4 "SNEWS 2.0: a next-generation supernova early warning system for multi-messenger astronomy", SNEWS Collaboration, S. Al Kharusi et al., *New J.Phys.* 23 (2021) 3, 031201
- 5 "The TeV Gamma-Ray Luminosity of the Milky Way and the Contribution of H.E.S.S. Unresolved Sources to Very High Energy Diffuse Emission" M. Cataldo, G. Pagliaroli, V. Vecchiotti, F. L. Villante, *Astrophys.J.* 904 (2020) 2,85
- 6 "The advanced Virgo longitudinal control system for the O2 observing run", Virgo coll., *Astropart.Phys.* 116 (2020) 102386
- 7 "GW190425: Observation of a Compact Binary Coalescence with Total Mass $\sim 3.4M_{\odot}$ ", LIGO and Virgo coll., *Astrophys.J.Lett.* 892 (2020) L3
- 8 "Increasing the Astrophysical Reach of the Advanced Virgo Detector via the Application of Squeezed Vacuum States of Light", Virgo coll., *Phys.Rev.Lett.* 123 (2019) 23, 231108
- 9 "Optically targeted search for gravitational waves emitted by core-collapse supernovae during the first and second observing runs of advanced LIGO and advanced Virgo", LIGO and Virgo Collaborations, *Phys.Rev.D* 101 (2020) 8, 084002
- 10 "Search for Eccentric Binary Black Hole Mergers with Advanced LIGO and Advanced Virgo during their First and Second Observing Runs", LIGO and Virgo Collaborations, *Astrophys.J.* 883 (2019) 2, 149

- 11 "Search for gravitational-wave signals associated with gamma-ray bursts during the second observing run of Advanced LIGO and Advanced Virgo", LIGO and Virgo Collaborations, *Astrophys.J.* 886 (2019) 75
- 12 "Search for intermediate mass black hole binaries in the first and second observing runs of the Advanced LIGO and Virgo network", LIGO and Virgo Collaborations, *Phys.Rev.D* 100 (2019) 6, 064064
- 13 "All-Sky Search for Short Gravitational-Wave Bursts in the Second Advanced LIGO and Advanced Virgo Run", LIGO and Virgo Collaborations, *Phys.Rev.D* 100 (2019) 2, 024017
- 14 "Search for Subsolar Mass Ultracompact Binaries in Advanced LIGO's Second Observing Run" Advanced LIGO observing run", LIGO and Virgo Collaborations, *Phys.Rev.Lett.* 123 (2019) 16, 161102
- 15 "Probing galactic cosmic ray distribution with TeV gamma-ray sky." M. Cataldo, G. Pagliaroli, V. Vecchiotti, F.L. Villante, *JCAP* 12 (2019) 050
- 16 "All-sky search for long-duration gravitational-wave transients in the second Advanced LIGO observing run" LIGO Scientific and Virgo Collaborations, *Phys.Rev.D* 99 (2019) 10, 104033
- 17 "A multi-messenger study of the total galactic high-energy neutrino emission", **G.Pagliaroli**, F.L.Villante, *JCAP* 1808 (2018) no.08, 035
- 18 "Pinpointing astrophysical bursts of low-energy neutrinos embedded into the noise", C. Casentini, G. Pagliaroli, C. Vigorito, V. Fafone *JCAP* 1808 (2018) no.08, 010
- 19 "Scrutinizing the pion condensed phase", Stefano Carignano, Luca Lepori, Andrea Mammarella, Massimo Mannarelli, Giulia Pagliaroli, *Eur.Phys.J.* A53 (2017) no.2, 35
- 20 "Expectations for high energy diffuse galactic neutrinos for different cosmic ray distributions", **G.Pagliaroli**, C.Evoli and F.L. Villante, *JCAP* 1611 (2016) no.11, 004
- 21 "Enhanced tau neutrino appearance through invisible decay", **Pagliaroli G.**, Di Marco N. and Mannarelli M., *Phys.Rev.* D93 (2016) no.11, 113011
- 22 "Double pulses and cascades above 2 PeV in IceCube", Palladino A., Pagliaroli G., Villante F.L. and Vissani F., *Eur.Phys.J.* C76 (2016) no.2, 52
- 23 "Testing nonradiative neutrino decay scenarios with IceCube data", **Pagliaroli G.**, Palladino A., Villante F. L. and Vissani F., *Phys.Rev. D* 92 (2015) Issue: 11 Article Number: 113008
- 24 "Torsional oscillations of nonbare strange stars", Mannarelli M., Pagliaroli G., Parisi A., Pilo L. and Tonelli F., *ASTROPHYSICAL JOURNAL* 815 (2015) Issue: 2 Article Number: 81
- 25 "What is the Flavor of the Cosmic Neutrinos Seen by IceCube?", Palladino A., Pagliaroli G., Villante, F. L and Vissani F., **Phys.Rev.Lett.** **114 (2015)** Issue: 17, Article Number: 171101
- 26 "Electromagnetic signals from bare strange stars", Massimo Mannarelli, Giulia Pagliaroli, Alessandro Parisi, Luigi Pilo, *Phys.Rev.* D89 (2014) 10, 103014
- 27 "Spectrum of Supernova Neutrinos in Ultra-pure Scintillators", C. Lujan-Peschard, G. Pagliaroli, F. Vissani, *JCAP* 1407 (2014) 051
- 28 "The fraction of muon tracks in cosmic neutrinos", Francesco Vissani, Giulia Pagliaroli and Francesco L. Villante, *JCAP* 1309 (2013) 017

- 29 "Counting muons to probe the neutrino mass spectrum", Carolina Lujan-Peschard, Giulia Pagliaroli, Francesco Vissani, *Eur. Phys. J. C* (2013) 73:2439 DOI 10.1140/epjc/s10052-013-2439-1
- 30 "Using Low-Energy Neutrinos from Pion Decay at Rest to Probe the Proton Strangeness", **Giulia Pagliaroli**, Carolina Lujan-Peschard, Manimala Mitra, Francesco Vissani, **Phys.Rev.Lett.** **111** (2013) **022001**
- 31 "A Step toward CNO solar neutrinos detection in liquid scintillators", F. L. Villante, A. Ianni, F. Lombardi, G. Pagliaroli and F. Vissani, *Phys. Lett. B* 701 (2011) 336
- 32 "The diffuse supernova neutrino background: Expectations and uncertainties derived from SN1987A." F. Vissani and G. Pagliaroli, *Astron. Astrophys.* 528 (2011) L1
- 33 "Neutrino mass bound in the standard scenario for supernova electronic antineutrino emission." **G. Pagliaroli**, F. Rossi-Torres and F. Vissani, *Astropart. Phys.* 33 (2010) 287
- 34 "Searching for prompt signatures of nearby core-collapse supernovae by a joint analysis of neutrino and gravitational-wave data." I. Leonor, L. Cadonati, E. Coccia, S. D'Antonio, A. Di Credico, V. Fafone, R. Frey and W. Fulgione et al., *Class. Quant. Grav.* 27 (2010) 084019
- 35 "On the Goals of Neutrino Astronomy." F. Vissani, G. Pagliaroli and F. L. Villante, *Nuovo Cim. C* 32N3-4 (2009) 353
- 36 "The likelihood for Supernova neutrinos analyses." A. Ianni, G. Pagliaroli, A. Strumia, F.R. Torres, F.L. Villante, F. Vissani. *Phys.Rev.D*80 (2009) 043007
- 37 "Neutrinos from Supernovae as a trigger for Gravitational Waves search." **G. Pagliaroli**, F. Vissani, E. Coccia, W. Fulgione. **Phys.Rev.Lett.****103** (2009) **031102**.
- 38 "Improved analysis of SN1987A antineutrinos events." **G. Pagliaroli**, F. Vissani, M.L. Costantini, A. Ianni. *Astropart.Phys.*31 (2009) 163.
- 39 "Features of KAMIOKANDE-II, IMB and BAKSAN observations and their interpretation in a 2-components model for the signal." Francesco Vissani and Giulia Pagliaroli. *Astronomy Letters* 35 (2009) 1.
- 40 "Is there a problem with low energy SN1987A neutrinos?", Maria Laura Costantini, Aldo Ianni, Giulia Pagliaroli, Francesco Vissani *JCAP* 0705:014,2007.
- 41 "Virgo: a laser interferometer to detect gravitational waves", T. Accadia et al. [VIRGO Collaboration], *JINST* 7 (2012) P03012.
- 42 "All-sky search for gravitational-wave bursts in the second joint LIGO-Virgo run", J. Abadie et al. [LIGO Scientific and Virgo Collaborations], *Phys. Rev. D* 85 (2012) 122007.
- 43 "Search for Gravitational Waves from Intermediate Mass Binary Black Hole", J. Abadie et al. [LIGO Scientific and Virgo Collaborations], *Phys. Rev. D* 85 (2012) 102004.
- 44 "Search for Gravitational Waves from Low Mass Compact Binary Coalescence in LIGO's Sixth Science Run and Virgo's Science Runs 2 and 3", J. Abadie et al. [LIGO and Virgo Collaborations], *Phys. Rev. D* 85 (2012) 082002.
- 45 "All-sky Search for Periodic Gravitational Waves in the Full S5 LIGO Data.", J. Abadie et al. [The LIGO Scientific and The Virgo Collaboration], *Phys. Rev. D* 85 (2012) 022001.

- 46 "Directional limits on persistent gravitational waves using LIGO S5 science data.", J. Abadie et al., *Phys. Rev. Lett.* 107 (2011) 271102.
- 47 "Characterization of the Virgo Seismic Environment.", T. Accadia et al. [The Virgo Collaboration], *Class. Quant. Grav.* 29 (2012) 025005
- 48 "Status of the Virgo project.", T. Accadia et al., *Class. Quant. Grav.* 28 (2011) 114002.
- 49 "Beating the spin-down limit on gravitational wave emission from the Vela pulsar.", J. Abadie et al. [The LIGO Scientific and the Virgo Collaborations], *Astrophys. J.* 737 (2011) 93
- 50 "Performance of the Virgo interferometer longitudinal control system during the second science run.", T. Accadia et al., *Astropart. Phys.* 34 (2011) 521.
- 51 "Search for gravitational waves from binary black hole inspiral, merger and ringdown.", J. Abadie et al. [The LIGO Scientific and the Virgo and the Virgo Collaborations], *Phys. Rev. D* 83 (2011) 122005
- 52 "Automatic alignment system during the second science run of the Virgo interferometer.", T. Accadia et al., *Astropart. Phys.* 34 (2011) 327
- 53 "Search for Gravitational Wave Bursts from Six Magnetars.", J. Abadie et al. [The LIGO Scientific and the Virgo Collaboration], *Astrophys. J.* 734 (2011) L35
- 54 "Cleaning the Virgo sampled data for the search of periodic sources of gravitational waves." F. Acernese et al., *Class. Quant. Grav.* 26 (2009) 204002.
- 55 "Noise from scattered light in Virgo's second science run data.", T. Accadia et al., *Class. Quant. Grav.* 27 (2010) 194011.
- 56 "Calibration and sensitivity of the Virgo detector during its second science run." T. Accadia et al. [Virgo Collaboration], *Class. Quant. Grav.* 28 (2011) 025005 Erratum-ibid. 28 (2011) 079501
- 57 "Search for Gravitational Waves from Compact Binary Coalescence in LIGO and Virgo Data from S5 and VSR1.", J. Abadie et al. [LIGO Scientific and Virgo Collaborations], *Phys. Rev. D* 82 (2010) 102001
- 58 "Automatic alignment for the first science run of the Virgo interferometer.", F. Acernese et al., *Astropart. Phys.* 33 (2010) 131.
- 59 "Performances of the Virgo interferometer longitudinal control system.", F. Acernese et al., *Astropart. Phys.* 33 (2010) 75.
- 60 "Predictions for the Rates of Compact Binary Coalescences Observable by Ground-based Gravitational-wave Detectors.", J. Abadie et al. [LIGO Scientific and Virgo Collaborations], *Class. Quant. Grav.* 27 (2010) 173001
- 61 "All-sky search for gravitational-wave bursts in the first joint LIGO-GEO-Virgo run.", J. Abadie et al. [The LIGO Scientific and The Virgo Collaboration], *Phys. Rev. D* 81 (2010) 102001
- 62 "Search for gravitational-wave inspiral signals associated with short Gamma-Ray Bursts during LIGO's fifth and Virgo's first science run.", J. Abadie et al. [LIGO Scientific and Virgo Collaborations], *Astrophys. J.* 715 (2010) 1453
- 63 "An Upper Limit on the Stochastic Gravitational-Wave Background of Cosmological Origin.", B. P. Abbott et al. [LIGO Scientific and VIRGO Collaborations], *Nature* 460 (2009) 990
- 64 "Searches for gravitational waves from known pulsars with S5 LIGO data.", B. P. Abbott et al. [The Virgo Collaboration], *Astrophys. J.* 713 (2010) 671

- 65 "Search for gravitational-wave bursts associated with gamma-ray bursts using data from LIGO Science Run 5 and Virgo Science Run 1.", B. P. Abbott et al. [Virgo Collaboration], *Astrophys. J.* 715 (2010) 1438
- 66 "Gravitational wave burst search in the Virgo C7 data.", F. Acernese et al. [Virgo Collaboration], *Class. Quant. Grav.* 26 (2009) 085009
- 67 "Noise studies during the first Virgo science run and after.", F. Acernese, M. Alshourbagy, P. Amico, F. Antonucci, S. Aoudia, K. G. Arun, P. Astone and S. Avino et al., *Class. Quant. Grav.* 25 (2008) 184003.
- 68 "Lock acquisition of the Virgo gravitational wave detector.", F. Acernese et al., *Astropart. Phys.* 30 (2008) 29.
- 69 "Virgo status.", F. Acernese et al., *Class. Quant. Grav.* 25 (2008) 184001.
- 70 "Search for gravitational waves associated with GRB 050915a using the Virgo detector.", F. Acernese et al. [Virgo Collaboration], *Class. Quant. Grav.* 25 (2008) 225001
- 71 "Astrophysically Triggered Searches for Gravitational Waves: Status and Prospects.", B. Abbott et al. [LIGO Scientific and Virgo Collaborations], *Class. Quant. Grav.* 25 (2008) 114051
- 72 "A Cross-correlation method to search for gravitational wave bursts with AURIGA and Virgo.", M. Bignotto et al. [AURIGA and Virgo Collaborations], *Class. Quant. Grav.* 25 (2008) 114046
- 73 "First joint Gravitational Waves search by the Auriga-Explorer-Nautilus-Virgo collaboration.", F. Acernese et al. [AURIGA-EXPLORER-NAUTILUS-Virgo Collaboration], *Class. Quant. Grav.* 25 (2008) 205007

CONFERENCE PROCEEDINGS

1. Expanding Core-Collapse Supernova search horizon of neutrino detectors, O. Halim, C. Vigorito, C. Casentini, M. Drago, **G. Pagliaroli**, *J.Phys.Conf.Ser.* 1468 (2020) 1, 012154
2. Can the TeV gamma-ray sky probe the galactic cosmic ray distribution?, **G. Pagliaroli**, M. Cataldo, V. Vecchiotti, F.L. Villante, *J.Phys.Conf.Ser.* 1468 (2020) 1, 01209
3. Combined search of MeV ν and gravitational waves from astrophysical impulsive sources, **G. Pagliaroli**, O. Halim, C. Casentini, V., C. Vigorito. *PoS NOW2018* (2019) 057
4. Improved method for the detection of low-energy astrophysical neutrinos bursts, **G. Pagliaroli**, C. Casentini, C. Vigorito, V. Fafone, *J.Phys.Conf.Ser.* 1056 (2018) no.1, 012042
5. The galactic diffuse high energy neutrino flux, F.L. Villante, G. Pagliaroli, C. Evoli, *PoS NOW2016* (2017) 052
6. On the high-energy cosmic neutrinos seen by IceCube, **G. Pagliaroli**, A. Palladino, F. Vissani and F. L. Villante, *J.Phys.Conf.Ser.* 718 (2016) no.6, 062046
7. The Scientific Potential of Supernova Neutrinos, **G. Pagliaroli** and F. Vissani, *Nuclear Physics B (Proc. Suppl.)* 237–238 (2013) 87–89
8. A method to extract the CNO solar neutrino signal in ultrapure liquid scintillator detectors, F. L. Villante, A. Ianni, F. Lombardi, G. Pagliaroli and F. Vissani, *J. Phys. Conf. Ser.* 375 (2012) 042035.

9. The use of supernova neutrinos to monitor the collapse, to search for gravity waves, to probe neutrino masses, F. Vissani, G. Pagliaroli and F. Rossi-Torres, *Int. J. Mod. Phys. D* 20 (2011) 1873.
10. Virgo gravitational wave detector: Results and perspectives, T. Accadia, F. Acernese, P. Astone, G. Ballardin, F. Barone, M. Barsuglia, A. Basti and T. S. Bauer et al., *Nuovo Cim. C* 034N06 (2011) 189.
11. A parameterized model for supernova electron antineutrino emission and its applications. F. Vissani, G. Pagliaroli and M. L. Costantini *J. Phys. Conf. Ser.* 309 (2011) 012025.
12. Tools for noise characterization in Virgo. T. Accadia et al., *J. Phys. Conf. Ser.* 243 (2010) 012004.
13. Status and perspectives of the Virgo gravitational wave detector. T. Accadia et al., *J. Phys. Conf. Ser.* 203 (2010) 012074.
14. Using neutrinos to search for gravity waves. **G. Pagliaroli**, *J. Phys. Conf. Ser.* 203 (2010) 012080.
15. The use of supernova neutrinos to monitor the collapse, to search for gravity waves, to probe neutrino masses. F. Vissani, G. Pagliaroli and F. Rossi-Torres *Int. J. Mod. Phys. D* 20 (2011) 1873.
16. Virgo calibration and reconstruction of the gravitational wave strain during VSR1. T. Accadia et al. [The Virgo Collaboration], *J. Phys. Conf. Ser.* 228 (2010) 012015
17. The Virgo interferometer for gravitational wave detection. T. Accadia et al. [Virgo Collaboration], *Int. J. Mod. Phys. D* 20 (2011) 2075.
18. Supernova neutrinos and gravitational waves. **G. Pagliaroli** and F. Vissani, *Nucl. Phys. Proc. Suppl.* 217 (2011) 278.
19. Formation of quark phases in compact stars and SN explosion. Alessandro Drago, Giuseppe Pagliara, Giulia Pagliaroli, Francesco Lorenzo Villante, Francesco Vissani. *AIP Conf.Proc.*1056 (2008) 256.
20. How much can we learn from SN1987A events? (Or: An analysis with a two-Component model for the antineutrino signal.) F. Vissani and G. Pagliaroli. *Proceedings of Neutrino oscillations in Venice, NOVE-2008*, pages 215.
21. Analysis of neutrinos signals from SN1987A. **G. Pagliaroli**, M.L. Costantini, F. Vissani. *IFAE 2007, Naples*, pag. 225, eds. G. Carlino, G. D'Ambrosio, L. Merola, P. Paolucci and G. Ricciardi. (ISBN: 978-88-470-0746-8). e-Print: arXiv:0804.4598 [astro-ph].

Date: 10/2022

EMPLOYMENTS

CURRENT POSITION(S)

2017/11-present

Associate Professor

Universita' degli studi dell'Aquila, ITALY

- Teaching and research (PHYS/02 – Theoretical Physics)

PREVIOUS POSITION(S)

2013/09-2017/12

Senior Research Associate (equivalent to First Researcher)

Ruder Bošković Institute, Zagreb, Croatia

- Research and teaching

2016-2017

Researcher (Ricercatore a Tempo Determinato B)

Università degli Studi di Trieste, Trieste, Italia

2013-2014

Researcher (Research Contract)

Gran Sasso Science Institute, L'Aquila, Italy

2004-2012

Postdoc contracts

Ferrara University, Italy, Aquila University & INFN-LNGS, Italy

2000-2003

Coordinator position (EP4)

SISSA's MediaLab, SISSA, Italy

Software coordinator, Editorial office coordinator, System manager, for EU Vth framework projects.

1998-1999

Postdoc (Assegno di Ricerca)

SISSA, Italy

EDUCATION AND ACADEMIC DEGREES

01/10/96

PhD in Physics

SISSA, Trieste, Italy

01/07/92

Degree in Physics

University of Pisa, Italy

Grants (last 10 years)

General coordinator (PI) of the H2020 CSA Twinning project: "The quest for the understanding of the Dark matter phenomenon", (2024-2026) (with SISSA, UNISI, CERN)

Coordinator of the PRIN 2022 "RBI-T-WINNING Theoretical physics", amount 1M € (2016-2019) (IRB as main node, with SISSA (Trieste), LMU (Munich), LPT (Orsay) and NBI (Copenhagen))

PUBLICATIONS**Bibliometric parameters**Total number of publications in peer-review journals: **67**Total number of citations: **5230**H index: **34****Some relevant publications**

- The dark matter density at the Sun's location
P. Salucci, F. Nesti, G. Gentile, C.F. Martins,
Astronomy & Astrophysics 523 (2010) A83, [astro-ph/1003.3103]
- FRW Cosmology in Ghost Free Massive Gravity
D. Comelli, M. Crisostomi, F. Nesti, L. Pilo
JHEP 1203 (2012) 067 [1110.4967 [hep-th]]
- The Dark Matter Halo of the Milky Way, AD 2013
F. Nesti, P. Salucci
JCAP,07:016 (2013) [1304.5127 [astro-ph.GA]]
- Massive gravity: a General Analysis
D.Comelli, F. Nesti, L. Pilo
JHEP07:161 (2013), [1305.0236 [hep-th]]
- Lepton Number Violation in Higgs Decay
Alessio Maiezza , Miha Nemevsek, Fabrizio Nesti
Phys. Rev. Lett. 115 (2015) 081802 [arXiv:1503.06834 [hep-ph]]
- Axion-mediated forces, CP violation and left-right interactions
Stefano Bertolini, Luca Di Luzio, Fabrizio Nesti
Phys.Rev.Lett. 126 (2021) 8, 081801 • [arxiv:2006.12508 [hep-ph]]
- Left-Right Symmetry at FCC-hh
Miha Nemevšek, Fabrizio Nesti
Phys.Rev.D 108 (2023) 1, 015030 • [arxiv:2306.12104 [hep-ph]]

ADDITIONAL INFORMATION**Institutional responsibilities**

2010-2020

Member of a number of committees for PhD and Master thesis evaluation/discussion in various institutions.

Mentorship of students/young researchers/fellows

Advisor for 7 Master theses

Advisor for 4 PhD theses

Organisation of conferences/scientific meetingsOrganizer of the *Gran Sasso Summer Institute* - LNGS (2004-2008).

Organizer of ICTP Workshop "Neutrino at LHC" (2013)

Organizer of workshop "Flavour and new physics" Frejus, 2016.

Organizer of workshop "LHC days in Split" Split, 2016.

Organizer of school "First Zagreb school on Thretical physics" Zagreb, 2017

Main organizer of international conference "Cosmology2018" Dubrovnik, 2017

Main organizer of international conference "Cosmology2023" Trieste, 2023

Main organizer of international conference "Cosmology2025" Elba, 2025

Organizer of L'Aquila Astroparticle Colloquia 2021-22, 22-23 (with LNGS and GSSI)

Major invited presentationsTopic '*Dark Matter densities*' -- FERRARA 2018, TRIESTE 2015, CERN 2012, LNGS 2012, CEA-Saclay 2012.Topic: '*Massive gravity*' -- Ljubljana 2011, Munich 2011, Lausanne 2008, SISSA 2007.Topic: '*Low scale Left-Right symmetry*' --SISSA 2020, TRIESTE 2015, ICTP 2011, Munich 2011, Oslo 2009. Topic: '*Unified models of Gravity*' -- Marseille, 2009.

"According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV "

December 2025

Alberto Santambrogio: Curriculum Vitae

Present Position: Researcher at INFN - Sezione di Milano.

Education and Qualifications

- **May 1993:** *Laurea (Degree)* in Theoretical Physics at the University of Milano with full marks and honors (110/110 cum laude)
Supervisor: Prof. Daniela Zanon (University of Milano)
Title of the Thesis: *Study of the quantum properties of supersymmetric Toda theories*
- **November 1994** (after one year of compulsory military service): he won the entrance examination for the Ph.D. course at the University of Milano and he started his research activity under the supervision of Prof. Daniela Zanon
- **May 1998:** final discussion of the Ph.D. Thesis
Title of the Thesis : *Quantum aspects in perturbative and non-perturbative strings*
- **01/10/1998 – 31/08/2000:** Post-Doctoral position at KULeuven, Belgium
in the context of the EC contract TMR ERBFMRXCT96-0045
- **01/11/2000 – 31/10/2004:** Post-Doctoral position (“Assegno di Ricerca”) at University of Milano
- **01/11/2004 – 31/10/2005:** Post-Doctoral position (“Assegno di Ricerca”) at University of Milano - Bicocca
- from **28/12/2005:** Researcher at INFN - Sezione di Milano

Scientific techniques and skills acquired

- *Scientific background:* it is mainly founded on general relativity, quantum field theory, string theory, supersymmetry and group theory.
- *Skills acquired:* renormalization techniques in quantum field theory, superspace methods in supersymmetric quantum field theories, with particular emphasis to *supergraph* techniques, representation group theory and geometrical techniques in general relativity.

Teaching Activities

- Assistant at the undergraduate course *Esperimentazioni di Fisica I* and at the relative examinations at the University of Milano for the academic year 1997/1998
- Tutor of the course on *Constrained Dynamics* for the Ph.D. Course at the Institute of Theoretical Physics of K.U.Leuven for the academic year 1999/2000
- Titular of the course *Introduction to Supersymmetry* for the Ph.D. Course at the University of Milano for the academic year 2000/2001
- Titular of the course *Quantum properties of supersymmetric theories* for the Ph.D. Course at the University of Milano for the academic year 2002/2003
- Assistant at the undergraduate course *Structure of the Matter II* and at the relative examinations at University of Milano-Bicocca for the academic years 2003/2004
- Titular of the course *Group Theory and Applications to the Structure of the Matter*, in the framework of the undergraduate course “Structure of the Matter II” at the University of Milano-Bicocca for the academic years 2004/2005, 2005/2006 and 2006/2007

- Titular of the undergraduate course *Theoretical Physics II* (on quantum gauge theories) at “Università Cattolica” of Brescia for the academic years 2004/2005 and 2005/2006
- Lectures on *Supersymmetry* for the undergraduate course *Gravity and Superstrings - 1st module* at the University of Milano for the academic years 2004/2005, 2005/2006, 2006/2007, 2007/2008
- Titular of the undergraduate course *Gravity and Superstrings - 1st module* at the University of Milano from the academic year 2008/2009 to the academic year 2012/2013
- Titular of the undergraduate course *Gravity and Superstrings - 2nd module* at the University of Milano from the academic year 2014/2015 to the academic year 2017/2018 and for the academic year 2023/2024
- Titular of the undergraduate course *Mathematical Methods for Physics - Geometry and Groups 1* at the University of Milano from the academic year 2009/2010 to the academic year 2017/2018, and for the academic year 2019/2020
- Titular of the undergraduate course *Mathematical Methods for Physics - Geometry and Groups 2* at the University of Milano from the academic year 2020/2021 to the academic year 2023/2024 and for the academic year 2025/2026
- Relator and Co-relator of many degree thesis and Tutor of 6 Ph.D. students at the Department of Physics of the University of Milano

List of Scientific Publications

1. *Renormalization group flows in σ -models coupled to two-dimensional dynamical gravity*
S. Penati, A. Santambrogio and D. Zanon
Nucl. Phys. B483 (1997) 495-513
2. *Gravitational dressing of sigma-model beta-functions*
S. Penati, A. Santambrogio and D. Zanon
Proceedings of the “2nd International Sakharov Conference on Physics” - Moscow, May 1996. Edited by I.M. Dremin and A.M. Semikhatov. Singapore, World Scientific, 1997
3. *Dressing of the beta-function in sigma-models coupled to two dimensional gravity*
S. Penati, A. Santambrogio and D. Zanon
Nucl. Phys. B (Proc. Suppl.) 57 (1997) 216-219
4. *Quantizing $N = 2$ matter-supergravity systems*
M.T. Grisaru, A. Santambrogio and D. Zanon
Nucl. Phys. B487 (1997) 174-190
5. *Gravitational dressing of $N = 2$ sigma-models beyond leading order*
S. Penati, A. Santambrogio and D. Zanon
Nucl. Phys. B499 (1997) 479-494
6. *Non-transversal colliding singularities in F-theory*
S. Penati, A. Santambrogio and D. Zanon
Fortsch. Phys. 47 (1999) 279-285
7. *(α') ⁴ corrections to the $N = 2$ supersymmetric Born-Infeld action*
A. De Giovanni, A. Santambrogio and D. Zanon
Phys. Lett. B472 (2000), 94; Phys. Lett. B478 (2000), 457
8. *Two-point functions of chiral operators in $N = 4$ SYM at order g^4*
S. Penati, A. Santambrogio and D. Zanon
JHEP 9912 (1999), 006
9. *Isometric embedding of BPS branes in flat spaces with two times*
L. Andrianopoli, M. Derix, G.W. Gibbons, C. Herdeiro, A. Santambrogio and A. Van Proeyen
Class. Quant. Grav. 17 (2000), 1875

10. *Embedding Branes in Flat Two-time Spaces*
L. Andrianopoli, M. Derix, G.W. Gibbons, C. Herdeiro, A. Santambrogio and A. Van Proeyen
Proceedings of the TMR meeting “Quantum aspects of gauge theories, supersymmetry and unification”,
Paris - September 1999
11. *Correlation functions of chiral primary operators in perturbative $\mathcal{N} = 4$ SYM*
S. Penati, A. Santambrogio and D. Zanon
Proceedings of the TMR meeting “Quantum aspects of gauge theories, supersymmetry and unification”,
Paris - September 1999
12. *More on correlators and contact terms in $\mathcal{N} = 4$ SYM at order g^4*
S. Penati, A. Santambrogio and D. Zanon
Nucl. Phys. B593 (2001), 651
13. *One-loop four-point function in noncommutative $\mathcal{N} = 4$ Yang-Mills theory*
A. Santambrogio and D. Zanon
JHEP 0101 (2001) 024
14. *The one-loop effective action of noncommutative $\mathcal{N} = 4$ super Yang-Mills is gauge invariant*
M. Pernici, A. Santambrogio and D. Zanon
Phys. Lett. B504 (2001), 131
15. *F^5 contributions to the nonabelian Born Infeld action from a supersymmetric Yang-Mills five-point function*
A. Refolli, A. Santambrogio, N. Terzi and D. Zanon
Nucl. Phys. B613 (2001), 64; Nucl. Phys. B648 (2003) 453
16. *Superspace approach to anomalous dimensions in $\mathcal{N} = 4$ SYM*
S. Penati and A. Santambrogio
Nucl. Phys. B614 (2001), 367
17. *Nonabelian Born-Infeld from Super-Yang-Mills effective action*
A. Refolli, A. Santambrogio, N. Terzi, D. Zanon
Fortsch. Phys. 50 (2002), 952
18. *Non-protected operators in $N=4$ SYM and multiparticle states of AdS_5 SUGRA*
G. Arutyunov, S. Penati, A.C. Petkou, A. Santambrogio, E. Sokatchev
Nucl. Phys. B643 (2002), 49
19. *Exact anomalous dimensions of $N=4$ Yang-Mills operators with large R charge*
A. Santambrogio and D. Zanon
Phys. Lett. B545 (2002), 425
20. *Four-point correlators of BPS operators in $N=4$ SYM at order g^4*
G. Arutyunov, S. Penati, A. Santambrogio and E. Sokatchev
Nucl.Phys. B670 (2003), 103
21. *Two-point functions for $N=4$ Konishi-like operators*
S. Maghini, A. Santambrogio and D. Zanon
JHEP 0411 (2004) 056
22. *On $\mathcal{N} = 1$ exact superpotentials from $U(N)$ matrix models*
F. Elmetti, A. Santambrogio and D. Zanon
JHEP 0510 (2005) 104
23. *Two-point correlators in the beta-deformed $\mathcal{N} = 4$ SYM at the next-to-leading order*
S. Penati, A. Santambrogio and D. Zanon
JHEP 0510 (2005) 023
24. *Exact results in planar $\mathcal{N} = 1$ superconformal Yang-Mills theory*
A. Mauri, S. Penati, A. Santambrogio and D. Zanon
JHEP 0511 (2005) 024

25. *On the perturbative chiral ring for marginally deformed $\mathcal{N} = 4$ SYM theories*
A. Mauri, S. Penati, M. Pirrone, A. Santambrogio and D. Zanon
JHEP 0608 (2006) 072
26. *Conformal invariance of the planar beta-deformed $\mathcal{N} = 4$ SYM theory requires beta real*
F. Elmetti, A. Mauri, S. Penati, A. Santambrogio and D. Zanon
JHEP 0701 (2007) 026
27. *Real versus complex beta-deformation of the $\mathcal{N} = 4$ planar super Yang-Mills theory*
F. Elmetti, A. Mauri, S. Penati, A. Santambrogio and D. Zanon
JHEP 0710 (2007) 102
28. *Wrapping at four loops in $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio, C. Sieg and D. Zanon
Phys. Lett. B666 (2008), 100
29. *Anomalous dimension with wrapping at four loops in $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio, C. Sieg and D. Zanon
Nucl. Phys. B805 (2008), 231
30. *Finite-size effects in the superconformal beta-deformed $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio, C. Sieg and D. Zanon
JHEP 0808 (2008) 057
31. *Wrapping interactions in standard and β -deformed $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio, C. Sieg and D. Zanon
Fortsch. Phys. 57 (2009), 552
32. *Single impurity operators at critical wrapping order in the beta-deformed $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio, C. Sieg and D. Zanon
JHEP 0908 (2009) 034
33. *Five-loop anomalous dimension at critical wrapping order in $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio and C. Sieg
JHEP 1003 (2010) 103
34. *Wrapping at four loops in $\mathcal{N} = 4$ SYM theory*
F. Fiamberti, A. Santambrogio, C. Sieg and D. Zanon
Nucl. Phys. Proc. Suppl. 192-193:187-189 (2009)
35. *Superspace methods for the computation of wrapping effects in the standard and β -deformed $\mathcal{N} = 4$ SYM*
F. Fiamberti, A. Santambrogio and C. Sieg
e-print: arXiv:1006.3475
36. *Superspace calculation of the four-loop spectrum in $N=6$ supersymmetric Chern-Simons theories*
M. Leoni, A. Mauri, J.A. Minahan, O. Ohlsson Sax, A. Santambrogio, C. Sieg and G. Tartaglino-Mazzucchelli
JHEP 1012 (2010) 074
37. *From Correlators to Wilson Loops in Chern-Simons Matter Theories*
M.S. Bianchi, M. Leoni, A. Mauri, S. Penati, C.A. Ratti and A. Santambrogio
JHEP 1106 (2011) 118
38. *Scattering Amplitudes/Wilson Loop Duality In ABJM Theory*
M.S. Bianchi, M. Leoni, A. Mauri, S. Penati and A. Santambrogio
JHEP 1201 (2012) 056
39. *Scattering in ABJ theories*
M.S. Bianchi, M. Leoni, A. Mauri, S. Penati and A. Santambrogio
JHEP 1112 (2011) 073

40. *Four-points two-loop scattering amplitude in ABJM theory*
M.S. Bianchi, M. Leoni, A. Mauri, S. Penati and A. Santambrogio
Fortsch. Phys. 60 (2012) 921-927
41. *One Loop Amplitudes In ABJM*
M.S. Bianchi, M. Leoni, A. Mauri, S. Penati and A. Santambrogio
JHEP 1207 (2012) 029
42. *ABJM amplitudes and WL at finite N*
M.S. Bianchi, M. Leoni, M. Leoni, A. Mauri, S. Penati and A. Santambrogio
JHEP 1309 (2013) 114
43. *The Leading Order Dressing Phase in ABJM Theory*
A. Mauri, A. Santambrogio and S. Scoleri
JHEP 1304 (2013) 146
44. *Four-point amplitudes in N=2 SCQCD*
M. Leoni, A. Mauri and A. Santambrogio
JHEP 1409 (2014) 017; JHEP 1502 (2015) 022
45. *On the amplitude/Wilson loop duality in N=2 SCQCD*
M. Leoni, A. Mauri and A. Santambrogio
Phys. Lett. B747 (2015) 325
46. *Gluon Amplitudes at Two Loops in N = 2 SCQCD*
M. Leoni, A. Mauri and A. Santambrogio
Mathematics and Computer Science: Contemporary Developments Vol. 4 (2024) 18-38
47. *The dark side of double-tensor multiplets*
L. Andrianopoli, G. Casale, L. Ravera and A. Santambrogio
JHEP 01 (2025) 133

Scientific CV Silke Klemm

- Place and date of birth:
- Academic degrees:
Diplom in physics, Stuttgart University, february 1992; Degree in mathematics (Lehramt), Stuttgart University, april 1997; PhD in physics, Stuttgart University, april 1995. Title of the thesis: *Variational calculus for magnetic polarons in high temperature superconductors.*
- Academic career:
Postdoc Stuttgart University, 1995-97; NATO post-doctoral research grant at Trento University, 1997-99; postdoc position (assegno di ricerca) at Milano University, 1999-2002; Researcher at Milano University, 2002-2005; Associate Professor at Milano University, since 2005.
- Research interests:
Black holes, quantum gravity, string theory, supergravity, Chern-Simons theories, condensed matter physics.
- Selected list of publications (the complete list may be retrieved from: <https://inspirehep.net/literature?sort=mostrecent&size=100&page=1&q=exactauthor%3ASilke.Klemm.1>):
 - [1] F. Faedo, S. Klemm and A. Viganò, “Supersymmetric black holes with spiky horizons,” *JHEP* **09** (2021), 102 [arXiv:2105.02902 [hep-th]].
 - [2] S. Klemm and L. Ravera, “Schrödinger connection with selfdual nonmetricity vector in 2+1 dimensions,” *Phys. Lett. B* **817** (2021), 136291 [arXiv:2008.12740 [hep-th]].
 - [3] S. Klemm and L. Ravera, “An action principle for the Einstein–Weyl equations,” *J. Geom. Phys.* **158** (2020), 103958 [arXiv:2006.15890 [hep-th]].
 - [4] F. Faedo, D. A. Farotti and S. Klemm, “Black holes in Sol minore,” *JHEP* **12** (2019), 151 [arXiv:1908.07421 [hep-th]].
 - [5] D. S. Klemm and L. Ravera, “Supersymmetric near-horizon geometry and Einstein-Cartan-Weyl spaces,” *Phys. Lett. B* **793** (2019), 265-270 [arXiv:1904.03681 [hep-th]].
 - [6] D. S. Klemm and L. Ravera, “Einstein manifolds with torsion and nonmetricity,” *Phys. Rev. D* **101** (2020) no.4, 044011 [arXiv:1811.11458 [gr-qc]].

- [7] D. Klemm, N. Petri and M. Rabbiosi, “Symplectically invariant flow equations for $N = 2$, $D = 4$ gauged supergravity with hypermultiplets,” JHEP **04** (2016), 008 [arXiv:1602.01334 [hep-th]].
- [8] S. Chimento, D. Klemm and N. Petri, “Supersymmetric black holes and attractors in gauged supergravity with hypermultiplets,” JHEP **06** (2015), 150 [arXiv:1503.09055 [hep-th]].
- [9] D. Klemm, “Four-dimensional black holes with unusual horizons,” Phys. Rev. D **89** (2014) no.8, 084007 [arXiv:1401.3107 [hep-th]].
- [10] A. Gnechchi, K. Hristov, D. Klemm, C. Toldo and O. Vaughan, “Rotating black holes in 4d gauged supergravity,” JHEP **01** (2014), 127 [arXiv:1311.1795 [hep-th]].
- [11] D. Klemm and O. Vaughan, “Nonextremal black holes in gauged supergravity and the real formulation of special geometry,” JHEP **01** (2013), 053 [arXiv:1207.2679 [hep-th]].
- [12] S. Bertini, S. L. Cacciatori and D. Klemm, “Conformal structure of the Schwarzschild black hole,” Phys. Rev. D **85** (2012), 064018 [arXiv:1106.0999 [hep-th]].
- [13] S. L. Cacciatori and D. Klemm, “Supersymmetric AdS₄ black holes and attractors,” JHEP **01** (2010), 085 [arXiv:0911.4926 [hep-th]].
- [14] M. M. Caldarelli, O. J. C. Dias and D. Klemm, “Dyonic AdS black holes from magnetohydrodynamics,” JHEP **03** (2009), 025 [arXiv:0812.0801 [hep-th]].
- [15] M. M. Caldarelli, O. J. C. Dias, R. Emparan and D. Klemm, “Black holes as lumps of fluid,” JHEP **04** (2009), 024 [arXiv:0811.2381 [hep-th]].
- [16] S. L. Cacciatori, D. Klemm, D. S. Mansi and E. Zorzan, “All timelike supersymmetric solutions of $N = 2$, $D = 4$ gauged supergravity coupled to abelian vector multiplets,” JHEP **05** (2008), 097 [arXiv:0804.0009 [hep-th]].
- [17] M. M. Caldarelli, D. Klemm and P. J. Silva, “Chronology protection in anti-de Sitter,” Class. Quant. Grav. **22** (2005), 3461-3466 [arXiv:hep-th/0411203 [hep-th]].
- [18] D. Klemm and L. Vanzo, “Aspects of quantum gravity in de Sitter spaces,” JCAP **11** (2004), 006 [arXiv:hep-th/0407255 [hep-th]].

- [19] S. L. Cacciatori, M. M. Caldarelli, D. Klemm and D. S. Mansi, “More on BPS solutions of $N = 2$, $D = 4$ gauged supergravity,” JHEP **07** (2004), 061 [arXiv:hep-th/0406238 [hep-th]].
- [20] M. M. Caldarelli and D. Klemm, “All supersymmetric solutions of $N = 2$, $D = 4$ gauged supergravity,” JHEP **09** (2003), 019 [arXiv:hep-th/0307022 [hep-th]].
- [21] S. Cacciatori, A. H. Chamseddine, D. Klemm, L. Martucci, W. A. Sabra and D. Zanon, “Noncommutative gravity in two dimensions,” Class. Quant. Grav. **19** (2002), 4029-4042 [arXiv:hep-th/0203038 [hep-th]].
- [22] S. Cacciatori and D. Klemm, “The Asymptotic dynamics of de Sitter gravity in three dimensions,” Class. Quant. Grav. **19** (2002), 579-588 [arXiv:hep-th/0110031 [hep-th]].
- [23] D. Klemm, “Some aspects of the de Sitter/CFT correspondence,” Nucl. Phys. B **625** (2002), 295-311 [arXiv:hep-th/0106247 [hep-th]].
- [24] D. Klemm, A. C. Petkou, G. Siopsis and D. Zanon, “Universality and a generalized C function in CFTs with AdS duals,” Nucl. Phys. B **620** (2002), 519-536 [arXiv:hep-th/0104141 [hep-th]].
- [25] D. Klemm, S. Penati and L. Tamassia, “Non(anti)commutative superspace,” Class. Quant. Grav. **20** (2003), 2905-2916 [arXiv:hep-th/0104190 [hep-th]].
- [26] D. Klemm, A. C. Petkou and G. Siopsis, “Entropy bounds, monotonicity properties and scaling in CFTs,” Nucl. Phys. B **601** (2001), 380-394 [arXiv:hep-th/0101076 [hep-th]].
- [27] D. Klemm and W. A. Sabra, “General (anti-)de Sitter black holes in five dimensions,” JHEP **02** (2001), 031 [arXiv:hep-th/0011016 [hep-th]].
- [28] D. Klemm and W. A. Sabra, “Charged rotating black holes in 5-D Einstein-Maxwell (A)dS gravity,” Phys. Lett. B **503** (2001), 147-153 [arXiv:hep-th/0010200 [hep-th]].
- [29] M. Cadoni, P. Carta, D. Klemm and S. Mignemi, “AdS₂ gravity as conformally invariant mechanical system,” Phys. Rev. D **63** (2001), 125021 [arXiv:hep-th/0009185 [hep-th]].
- [30] D. Klemm and W. A. Sabra, “Supersymmetry of black strings in $D = 5$ gauged supergravities,” Phys. Rev. D **62** (2000), 024003

[arXiv:hep-th/0001131 [hep-th]].

[31] S. Cacciatori, D. Klemm and D. Zanon, “ W_∞ algebras, conformal mechanics, and black holes,” *Class. Quant. Grav.* **17** (2000), 1731-1748 [arXiv:hep-th/9910065 [hep-th]].

[32] M. M. Caldarelli, G. Cognola and D. Klemm, “Thermodynamics of Kerr-Newman-AdS black holes and conformal field theories,” *Class. Quant. Grav.* **17** (2000), 399-420 [arXiv:hep-th/9908022 [hep-th]].

[33] M. M. Caldarelli and D. Klemm, “Supersymmetry of anti-de Sitter black holes,” *Nucl. Phys. B* **545** (1999), 434-460 [arXiv:hep-th/9808097 [hep-th]].

[34] D. Klemm, “Topological black holes in Weyl conformal gravity,” *Class. Quant. Grav.* **15** (1998), 3195-3201 [arXiv:gr-qc/9808051 [gr-qc]].

[35] D. Klemm, V. Moretti and L. Vanzo, “Rotating topological black holes,” *Phys. Rev. D* **57** (1998), 6127-6137 [erratum: *Phys. Rev. D* **60** (1999), 109902] [arXiv:gr-qc/9710123 [gr-qc]].

- Referee of the following high-impact journals: *Physical Review Letters*, *Physical Review*, *Journal of High Energy Physics*, *Classical and Quantum Gravity*, *Communications in Mathematical Physics*, *Physics Letters B*.

Additional details may be found on the personal web site:

<http://www.mi.infn.it/~strings/homepages/homeklemm.php>

Curriculum Vitae

Education

- Oct. 2001 – Jul. 2006** Undergraduate studies in Physics, Milano-Bicocca University.
Specialization in Theoretical Physics.
- Jul. 2006** Degree in Physics. Thesis title:
Metastable vacua in $SU(N)$ SQCD with adjoint matter.
Advisors: Prof. Luciano Girardello and Prof. Alberto Zaffaroni.
Final degree mark: 110/110 *cum laude*.
- Nov. 2006 – Oct. 2009** PhD student at Milano-Bicocca University.
PhD advisor: Prof. Luciano Girardello.
- Oct. 2009** PhD degree in Physics. Thesis title: Recent aspects of Seiberg duality:
metastable vacua, stringy instantons and M2 branes
Committee: Prof. Alberto Lerda, Prof. Carlos Nunez and
Prof. Riccardo Argurio

Jobs

- Nov. 2009 – Oct. 2012** PostDoc at University of California San Diego
- Nov. 2012 – Oct. 2014** PostDoc at ENS, Philippe Meyer Fellowship, Paris
- Nov. 2014 – Sep. 2015** PostDoc at ENS, CNRS, Paris
- Sep. 2015 – Sep. 2016** PostDoc at CCNY, CUNY, New York
- Oct. 2016 – Aug. 2017** PostDoc at AEI, Bern University
- Sep. 2017 – Current** INFN researcher at University of Milano

Talks and Seminars

- "SU(N) dualities with tensors: universalities across dimensions", webinar at the Shing-Tung Yau Center of SEU, 9 maggio 2025
- "Updates on 3d N=2 dualities", Scuola Normale di Pisa, workshop conclusivo del progetto PRIN 2017CC72MK-003, 26 Maggio 2023
- "3d N=2 dualities for SQCD with D-type superpotential", 14/06/22 Venezia TFI, 14 Giugno 2022
- "Subleading corrections to the Cardy limit of the superconformal index", Roma 11 ottobre 2021
- "N=1 inherited S-duality for oriented quivers", Torino 5 ottobre 2021
- "(2+1)d dualities with N = 2 supersymmetry", Review talk for the PRIN2017 program, Pisa, November 2019
- "Recent aspects of 3d N=2 dualities", Cern, February 2019
- "Aspects of 4d/2d reductions" Joint ICTP/SISSA string seminar, Trieste, February 2018
- "Aspects of 4d/2d reductions", University of Torino, April 2018
- "Modern aspects of 3d N=2 QFTs", Milano, November 2017
- "Introduction to the 3d-3d correspondence", AEI and ITP Bern, February 2017
- "Exact R-symmetry from attractors in Gauged supergravity", ITP Utrecht, November 2016
- "Exact R-symmetry from attractors in Gauged supergravity", ITP Bern, November 2016
- "Global properties of 4d N=2 theories and S-duality", UCSD, May 2016
- "Global properties of 4d N=2 theories and S-duality", University of Cincinnati, April 2016
- "4d \rightarrow 3d dualities with branes", Bern University, July 13, 2015
- "4d \rightarrow 3d dualities with branes", University of Milano-Bicocca, June 30, 2015
- "4d \rightarrow 3d dualities with branes", UC San Diego, May 13, 2015
- "4d \rightarrow 3d dualities with branes", CCNY, New York, 4 May, 2015
- "Progress on 3d $\mathcal{N} = 2$ dualities", Università di Tor-Vergata, Rome, March 3, 2015
- "Duality in 3D $\mathcal{N} = 2$ ", SUSY 2014, Manchester, July 21, 2014
- "Aspects of 3d N=2 dualities: RG flows, localization and contact terms", Crete centre for theoretical physics, April 17, 2014

- “Aspects of N=2 duality in three dimensional SUSY gauge theories”, Annual symposium, ENS, Paris, October 1, 2013
- “A Zig-Zag Index”, Joint Seminars ENS-Jussieu, Paris, May 25, 2013
- “A Zig-Zag Index”, Joint Seminars VUB-ULB-Leuven, Lauven, Belgium, March 27, 2013
- “The partition function on the three sphere”, ENS, Paris, February, 2013
- “Cluster Algebra and Integrable Dimer Models”, Math. department, UCSD, San Diego, May 2012
- “Holographic Optics”, Avogadro meeting, GGI, Firenze, Italy, December 20-22, 2010
- “Negative refraction and additional light waves from AdS/CFT”, UCSD, San Diego, CA, USA, November 22 , 2010
- “A new class of supersymmetry breaking vacua from superconformal field theories”, Problemi attuali di fisica teorica, XVI edizione, Vietri Sul Mare, Salerno, Italy, March 26-31 2010
- “Supersymmetry breaking”, Avogadro meeting, SISSA, Trieste, Italy, December 21-23, 2009
- “Seiberg duality for M2 branes and supersymmetry breaking”, UCSD, San Diego, CA, USA, November 17, 2009
- “Spontaneous R symmetry breaking in models of chiral fields” , Jounal Club at VUB-ULB, Bruxelles, Belgium, March 10 2009
- “Aspects of Metastable vacua and R -symmetry breaking” , University of Milano-Bicocca, Milan, Italy, February 6 2009
- “Aspects of Metastable vacua and R -symmetry breaking” , Institute for theoretical physics, Utrecht, Holland, December 12 2008
- “Aspects of Metastable vacua and R -symmetry breaking” , UAM and IFT, Madrid, Spain, November 25 2008
- “Aspects of Metastable vacua and R -symmetry breaking” , Swansea University, Wales, UK, November 21 2008
- “Stringy instantons and strong dynamics”, ENS, Paris, France, September 26 2008
- “Stringy instantons and strong dynamics”, Constituents, Fundamental Forces and Symmetries of the Universe, RTN 4th Workshop and Midterm Meeting, September 11-17 2008, Varna, Bulgaria
- “On metastability in N=1 gauge theories”, Luciano Girardello Fest, November 23-24 2007, Milano, Italy

Conferences and Schools Attended

- ” Parma School of Theoretical Physics, SNFT06”, September 5-15 2006, Parma, Italy

- "RTN Winter School on Strings, Supergravity and Gauge Theories", January 15-19 2007, CERN, Geneva, Switzerland.
- "Spring school on superstring theory and related topics", March 22 - March 30 2007, Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
- "String and M theory approaches to particle physics and cosmology", March 19 - June 22 2007, Galileo Galilei Institute for Theoretical Physics (GGI), Arcetri, Florence, Italy
- "Constituents, Fundamental Forces and Symmetries of the Universe", RTN 3rd Workshop and Midterm Meeting, October 1-5 2007, Valencia, Spain
- "RTN Winter School on Strings, Supergravity and Gauge Theories", January 15-19 2008, CERN, Geneva, Switzerland.
- "Spring school on superstring theory and related topics", March 27 - April 4 2008, Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy.
- "Constituents, Fundamental Forces and Symmetries of the Universe", RTN 4th Workshop and Midterm Meeting, September 11-17 2008, Varna, Bulgaria
- "RTN Winter School on Strings, Supergravity and Gauge Theories", February 9-13 2009, CERN, Geneva, Switzerland.
- "Constituents, Fundamental Forces and Symmetries of the Universe", RTN 5rd Workshop and Midterm Meeting, September 2009, Zurich, Switzerland
- "Constituents, Fundamental Forces and Symmetries of the Universe" RTN 5rd Workshop and Midterm Meeting, September 2009, Zurich, Switzerland
- "Cordes, particules et l'univers", XLIIIème Institut d'été, 19-30 August 2013, ENS, Paris
- "Gauge theories: quivers, tilings and Calabi-Yaus" 12-16 May 2014, ICMS, Edinburgh
- "SUSY" 2014, 21-26 July 2014, Manchester
- "Strings, Matrices, Integrability" 18-20 August 2014, ENS, Paris
- "Cordes, particules et l'univers", XLIVème Institut d'été, 21-29 August 2014, ENS, Paris
- "Cordes, particules et l'univers", XLVème Institut d'été, 19-28 August 2015, ENS, Paris
- "The String Theory Universe", 21st European string workshop and 3rd COST MP1210 meeting, 7-11 September 2015, Leuven
- "2016 Simons Summer Workshop in Mathematics and Physics", Simons Center for Geometry and Physics,
- "The String Theory Universe", 22nd European string workshop and FINAL COST MP1210 conference, 20-24 February 2017, Milano-Bicocca

Phd Courses attended

Teaching Experiences

- September 2005 - June 2009, Mechanics, Electromagnetism and Thermodynamics. High school "I.I.S. Peano", Cinisello Balsamo, Milano, Italy.
- June 2012 , Holography and Superconductivity, PhD Course, UCSD, San Diego, USA
- September 2013, $\mathcal{N} = 2$ dualities in three dimensions, Modave Summer School, Belgium
- May 2015, Introduction to D-branes, PhD Course, UCSD, San Diego, USA
- Gravità and Superstringhe II. Master Course, A.A. 2018 - 2025, University of Milano
- "4d and 3d theories with four supercharges: field theory, D-branes, holography and localization", PhD course for the AA 2021/2022, 2022/2023 and 2024/2025, University of Milano

Organization of conferences

- "Lucianofest", conference for the 70-th birthday of Luciano Girardello, University of Milano-Bicocca, October 2007
- "Supersymmetric gauge theories, dualities and deformation", 1st edition, AEC Bern, July 2017
- "Supersymmetric gauge theories, dualities and deformation", 2nd edition, AEC Bern, July 2018
- "Theory in Trona", Phd School at the "Rifugio Trona Soliva", September 2019
- "Workshop to the memory of Luciano Girardello", University of Milano-Bicocca, January 2023
- "Black holes, Holography and de Sitter spacetimes", University of Milano, January 2025

Grants

- Grant of 20.000 Euro from INFN to the winners of the 2017 INFN concourse.
- Prin2017: grant from the Italian minister of university for the project "supersymmetry breaking with strings and branes" (project coordinated by SNS PISA, with PI Augusto Sagnotti).

Mentoring Students

I have advised the thesis of the following students

- **Master degree:**

- **Bachelor degree:**

- **PhD degree:** I helped in mentoring the PhD work

EUROPEAN
CURRICULUM VITAE
FORMAT



Name **SILVIA PENATI**

WORK EXPERIENCE

- Dates (from - to) 1 November 2017 -
 - Name and address of the employer Università degli studi di Milano-Bicocca (UNIMIB)
 - Type of business or sector Dipartimento di Fisica
 - Occupation or position held **Full Professor in Theoretical Physics**
 - Main activities and responsibilities Research and Teaching in Theoretical Physics; Bachelor, Master and PhD students' supervisor; President of the Teaching Council from 2017 to 2018; Rector Delegate for Gender Equality Plan; Member of the University Committee for Internationality; Member of the Observatory for Equal Opportunities, UNIMIB.

- Dates (from - to) 1 Aprile 2020 – 14 Giugno 2026
 - Name and address of the employer University of Surrey, UK
 - Type of business or sector Faculty of Engineering and Physical Sciences
 - Occupation or position held **Visiting Professor**
 - Main activities and responsibilities Research in Theoretical Physics

- Dates (from - to) 23 December 2003 – 31 October 2017
 - Name and address of the employer Università degli studi di Milano-Bicocca
 - Type of business or sector Dipartimento di Fisica
 - Occupation or position held **Associate Professor in Theoretical Physics**
 - Main activities and responsibilities Research and Teaching in Theoretical Physics; Bachelor, Master and PhD students' supervisor; President of the Teaching Council from 2012 to 2017

- Dates (from - to) 1999 – 22 December 2003
 - Name and address of the employer Università degli studi di Milano-Bicocca
 - Type of business or sector Dipartimento di Fisica
 - Occupation or position held **Researcher**
 - Main activities and responsibilities Research and teaching in Theoretical Physics; Bachelor, Master and PhD students' supervisor

- Dates (from - to) 1992 - 1999
 - Name and address of the employer Università di Milano
 - Type of business or sector Dipartimento di Fisica
 - Occupation or position held **Researcher**
 - Main activities and responsibilities Research and teaching in Theoretical Physics; Master students' supervisor

- Dates (from - to) 1998 - 1999
 - Name and address of the employer University of Maryland, College Park, MD, USA
 - Type of business or sector Physics Department
 - Occupation or position held **Visiting Professor**
 - Main activities and responsibilities Research in Theoretical Physics

- Dates (from - to) 1991 - 1992
- Name and address of the employer Università di Milano
 - Type of business or sector Dipartimento di Fisica
 - Occupation or position held **Postdoctoral Fellow**
- Main activities and responsibilities Research in Theoretical Physics

- Dates (from - to) 1988 - 1990
- Name and address of the employer Brandeis University, Waltham, MA, USA
 - Type of business or sector Physics Department
 - Occupation or position held **Postdoctoral Fellow**
- Main activities and responsibilities Research in Theoretical Physics

EDUCATION AND TRAINING

- Dates (from - to) November 1985 – October 1988
- Name and type of organisation providing education and training Università di Milano
- Principal subjects/occupational skills covered PhD thesis “On some aspects of string theory”
- Title of qualification awarded **Ph.D degree in Theoretical Physics**

- Dates (from - to) 1979 - 1984
- Name and type of organisation providing education and training Università di Milano
- Principal subjects/occupational skills covered Laurea thesis in Theoretical Physics
- Title of qualification awarded **Physics Master**

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE
OTHER LANGUAGES

Italian
ENGLISH (LEVEL C1)

SCIENTIFIC SKILLS AND COMPETENCES

Living and working with other people, in multicultural environments, in positions where communication is important and situations where teamwork is essential (for example culture and sports), etc.

- Research interests: fundamental particles and fundamental interactions, string theory, gauge theories, supersymmetry, quantum gravity
- Author of 110 research papers published in international journals with peer review
- Numerous invited talks at international conferences (about 35 in the last 10 years)
- Lecturer at International PhD Schools in Theoretical Physics (LACES at Galileo Galilei Institute; Solvay School)
- Chair and Grant holder of the **COST Action** “The String Theory Universe” from 2013 to 2017
- Member of several national and international grants (PRIN and EU projects)
- Organization of several international physics conferences (about 20 in the last 10 years)
- Supervisor of about 65 Bachelor thesis, 37 Master thesis and 15 PhD students
- Thirty-years’ experience in outreach activity in high schools (The world of elementary particles, Introduction to Quantum Mechanics, Introduction to Special Relativity)
- From 2021, member of the steering committee of **Strings Conference**
- From 2022, Member of the steering committee of **Eurostrings Conference**
- Organizer of the “**First Workshop in String Theory and Gender**”, Valencia 2015

- Organizer of the “**Second Workshop in String Theory and Gender**”, Paris 2016
- Organizer of the “**First Workshop on High Energy Physics and Gender**”, CERN 2018
- Main Organizer of the Conference “**Women in Sciences**”, May 13-14 2019, Università di Milano-Bicocca
- Organizer of the stand “**Conosci le Scienziate**” (Come and meet women scientists), MEETneTONIGHT 2019, Milano
- Organizer of the event “**Un giorno tra le scienziate in Bicocca**” (One day with women scientists in Bicocca), within the project “I talenti delle donne” funded by Comune di Milano, February 2021
- Chair of the **project SVELAMI-B** (SVolgere Esperimenti nei Laboratori di Milano-Bicocca), funded by Dipartimento per le pari opportunità della Presidenza del Consiglio, aimed at organizing STEM activities for primary and secondary school students, May-June 2021
- Organizer of the stand “**Insegnare la Scienza al femminile**”, within the Festival GenerAzioni, October 2021

ACHIEVEMENTS AND SERVICE

Coordination and administration of people, projects and budgets; at work, in voluntary work (for example culture and sports) and at home, etc.

- 2020-2022: Coordinator of the **University Focus Group on Gender Topics**
- Member of the University Committee for Internationality
- Member of the Observatory for Equal Opportunities, from December 2022
- Founder and member of **GenHET**, a permanent working group based at CERN, whose aim is to monitor and foster gender balance in High Energy Theoretical Physics <https://genhet.web.cern.ch>
- Contact person of the Physics Department in **ABCD – The interdepartmental Center for Gender Studies** – Università di Milano-Bicocca
- Member of the Council of the PhD school in Physics (since 2006)
- University responsible for the Dual Doctorate Program UNIMIB-Surrey in Theoretical Physics and Mathematics
- Referee for several international journals and international programmes

PUBLICATION INDEXES

*Scopus
Google scholar*

- NUMBER OF PUBLICATIONS: 110 (Inspire);
- TOTAL NUMBER OF CITATIONS: 3033 (Inspire)
- H-INDEX: 33 (Inspire)

10 MOST RELEVANT PUBLICATIONS

In the last 10 years.

1. P.A. Grassi, S. Penati, “Super-Higher-Form Symmetries”, JHEP08 (2025) 169
2. M.S. Bianchi, L. Castiglioni, M. Tenser, S. Penati, D. Trancanelli, “Framing fermionic Wilson Loops in ABJ(M)”, JHEP12 (2024) 053
3. D. Bielli, S. Penati, A. Ramirez, “JT gravity from non-abelian T-duality”, JHEP06 (2024) 148
4. L. Castiglioni, M. Tenser, S. Penati, D. Trancanelli, “Interpolating Wilson Loops and enriched RG flows”, JHEP08 (2023) 106
5. S. Penati, “Superconformal line defects in 3D”, Universe 7 (2021) 9, 348
6. C.A. Cremonini, A.P. Grassi, S. Penati, “Surface Operators in Superspace”, JHEP 11 (2020) 050
7. N. Drukker, D. Trancanelli, S. Penati, et al, “Roadmap on Wilson loops in 3D Chern-Simons-matter theories”, J.Phys. A53 (2020) 17173001
8. R. Auzzi, S. Baiguera, G. Nardelli, S. Penati, “Renormalization properties of a Galilean Wess-Zumino model”, JHEP06 (2019) 048
9. M.S. Bianchi, L. Griguolo, A. Mauri, S. Penati, D. Seminara, “A matrix model for the latitude Wilson loop in ABJM theory”, JHEP08 (2018) 060
10. M.S. Bianchi, L. Griguolo, A. Mauri, S. Penati, M. Preti, D. Seminara, “Towards the exact Bremsstrahlung function of ABJM theory”, JHEP08 (2017) 022

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Milano, 03/11/2025

Signature

CURRICULUM VITAE

Pietro Antonio Grassi

Present Address

Studies

- | | |
|-----------------------|--|
| Oct. 1981 – Jul. 1986 | Scientific High School “L.B. Alberti”
Valenza (AL) – Scientific Degree, High School
1986. |
| Oct. 1987 – Jul. 1993 | Degree in Physics, Genoa University, Italy
– mark 110/110 <i>summa cum laude</i>
21. July 1993 |
| Nov. 1993 – Feb. 1997 | “ <i>Dottorato di ricerca</i> ” (Ph.D.) in Physics,
Milan University, Italy. |

Ph.D. and Master Thesis

Thesis Advisor: Prof. C. Becchi (University of Genoa).
Thesis Title: *Renormalization of Yang-Mills theory with the background field method.*

Ph. D. Advisor: Prof. L. Girardello (University of Milan).
External Ph. D. Advisors: Prof. C. Becchi and Prof. R. Ferrari (University of Milan).

Ph. D. Thesis: *Renormalization of the Standard Model in the ‘t Hooft-background gauge with symbolic automatic computations.*

Ph.D. and post-doc positions

- Oct. 1987 – Jul. 1993, Master Student in Physics at University of Genoa, Italy.
- Nov. 1993 – Feb. 1997, Ph. D. Student in Physics at University of Milan, Italy.
- Sep. 1997 – Aug. 1999, Post-Doctoral fellow at Max-Planck-Institut für Physik, (Werner-Heisenberg-Institut), Munich, Germany.
- Oct. 1999 – Sep. 2001, Post-Doctoral fellow at New York University, Dip. of Physics, Theory Group, New York, NY, USA.
- Oct. 2001 – Nov. 2003, Post-Doctoral fellow at C.N. Yang Institute for Theoretical Physics, State University at Stony Brook, NY, USA.
- Nov. 2003 – Oct. 2005 Adjunct Professor at C.N. Yang Institute for Theoretical Physics State University at Stony Brook, USA.
- Jul. 2004 – Jul. 2005 contract for collaboration with Eastern Piedmont University Alessandria, Italy.
- Sep. 2004 – Sep. 2006 Scientific Associate at Th-Ph Unity CERN, Geneve, Switzerland.
- Jun. 2005 – May 2007 Senior Grant, Centro Studi E. Fermi at DISTA, University of Eastern Piedmont, Alessandria, Italy.
- Jun. 2006 – Jan. 2018 (Permanent Job Position) FIS/02 Researcher (Assistant Professor) at DISIT, Eastern Piedmont University Alessandria, Italy
- Feb. 2013 – Apr. 2013 Scientific Associate at Th-Ph Unity CERN, Geneve, Switzerland.
- Jan. 2014 **ABILITATION for Associate Professor (Professore di Seconda Fascia) and for Full Professor (Professore di Prima Fascia)** on the basis of selection of National Scientific Habilitation. ASN c/o <http://abilitazione.miur.it/>
- Apr. – July 2017 Scientific Associate, Yukawa Institute for Theoretical Physics Kyoto University, JAPAN
- Feb. 2018 FIS/02 Associate Professor (Professore di Seconda Fascia) at DISIT, Eastern Piedmont University Alessandria, Italy

Visiting Professorships

- Jun. 2001 – Jul. 2001, Short-Term Visitor CERN, Theory Division, Switzerland.

- Jun. 2002 – Jul. 2002, Short-Term Visitor CERN, Theory Division, Switzerland.
- Jul. 2002 – Aug. 2002, Short-Term Visitor, Ecole Normale Supérieure, Paris, France.
- Jul. 2003 – Aug. 2003, Short-Term Visitor CERN, Theory Division, Geneva, Switzerland.
- Oct. 2003 – Dec. 2003, Eastern Piedmont, Alessandria, Italy.
- Mar. 2004 – Apr. 2004, Short Term Visitor CERN, Theory Division, Geneva, Switzerland.
- Apr. 2004 – May 2004, Short Term Visitor IHES, Bures-sur-Yvette, France.
- May 2005, Short Term visiting professor at Tel-Aviv university, Israel.
- Jan. 2006, Short Term visiting professor at Tel-Aviv university, Israel.
- Jun. 2006, Short Term visiting Scientist, ESI, Wien, Austria.
- Dec. 2006, Short Term visiting Scientist, Ecole Normale Supérieure, Paris, France.
- Aug. 2007, Visiting Scientist, Newton Institute, Cambridge, UK.
- Jan. 2008, Short Term visiting Scientist, Institute for Theoretical Physics, Saclay, Paris, France.
- Jan. – Feb. 2009, Visitor at Kvali Institute for Theoretical Physics at Santa Barbara UC, USA.
- Nov. 2010, Short Term visiting Scientist, Institute for Theoretical Physics, Saclay, Paris, France.
- Nov. 2011, Short Term visiting Scientist, Institute for Theoretical Physics, Ecole Normale Supérieure, Paris, France.
- Feb. 2013 – Apr. 2013 Paid Associate Scientist at CERN, Th-Ph Division, Geneva, Switzerland
- April. 2017 – Jul. 2017 Visiting Professor at Yukawa Institute, Kyoto University, JAPAN

Schools

12 Jun. 1995 – 28 Jul. 1995,	Summer School in High Energy Physics and Cosmology, ICTP, Miramare (TS), Italy.
18 Mar. 2002 – 26 Mar. 2002,	Spring School in String Theory and Related Material, ICTP, Miramare (TS), Italy.
29 Aug. 2005 – 6 Sep. 2005,	International School of Subnuclear Physics, 43rd Course, Erice, TP, Italy.
21 Jan. 2008 – 25 Jan. 2008,	RTN Network School on Theoretical Physics, CERN, Switzerland.

Conferences

Jun. 1994, *Quark confinement and Hadronic Spectrum*, Como, Italy;
 Jul. 1996, *Gauge Theories, Applied Supersymmetry and Quantum Gravity*, London, UK;
 Jun. 1996, *Italian Theoretical Conference*, Cortona (AR), Italy;
 Mar. 1998 (*DPG*) *German Physics Society Conference*, Regensburg, Germany;
 Jun. 1998, *Italian Theoretical Workshop*, Cortona (AR), Italy;
 Jul. 1998, *Ringberg Symposium on Quantum Field Theory*, Ringberg Castle, Germany;
 Sep. 1998, *RADCOR, Conference of Radiative Corrections*, Barcellona, Spain;
 Oct. 1998, *Quantization, BRST and anomalies*, Wien, Austria;
 Apr. 2000, *Theoretical Developements in lattice gauge theory*, Ringberg, Germany;
 Sep. 2000, *RADCOR, Conference of Radiative Corrections*, Carmel, CA, USA;
 Dec. 2000, *Sirlin's Festival*, New York University, NY, USA;
 Dec. 2001, *Supergravity at 25*, Stony Brook, NY, USA;
 Mar. 2002, *School on Superstrings and related material*, ITCP, Trieste, It;
 Jul. 2002, *STRING2002*, Cambridge, UK;
 May 2003 *Wigner Symposium*, New York, USA;
 Jul./Aug. 2003 *Simons Workshop*, Stony Brook, USA;
 Jul. 2004 *String Workshop* CERN, Switzerland;
 Jul./Aug. 2004 *Simons Workshop*, Stony Brook, USA;
 Sep. 2004 *Italian Network for String and Quantum Field Theory*, Capri, Italy;
 Mar. 2005 *Problemi di Fisica Teorica*, Vietri sul Mare, SA, Italy;
 Jun. 2005 *The Legacy of Supergravity*, Villa Mondragone, Frascati, Italy;
 Jul. 2005 *Supersymmetry and Quantum Symmetries*, JNLR, BLTP, Dubna, Russia;
 Aug. 2005 *International School of Subnuclear Physics*, Erice (TP), Italy;
 Sep. 2005 *Inaugural Conference of the Galileo Galilei Institute*, Florence, Italy;
 Apr. 2006 *European Network Meeting*, Cambridge, UK;
 Jun. 2006 *Workshop on Gerbes and Non-commutative Geometry*, Vienna;
 Jul. 2006 *Pure Spinor String Theory Conference*, Sao Paulo, Brazil;
 Aug. 2006 *Young Research Symposium*, Rio de Janeiro, Brazil;
 Aug. 2006 *International Conference on Mathematical Physics*, Rio de Janeiro, Brazil;
 Oct. 2006 *RTN Meeting*, Naples, Italy;
 Dec. 2007, *Avogadro Meeting II*, Alessandria, Italy;
 Mag 2007, *M-theory and String theory*, Galileo Galilei Institute in Florence, Italy;
 Giu 2007, *Twistor, Pure Spinors and Superstring Workshop*, Munich, Germany;

Aug./Sep. 2007, *Superstring at Strong Couplings and Integrability*,
Newton Institute, Cambridge University, UK;
Nov. 2007 *Girardello Fest* Milano Bicocca, Italy;
Dec. 2007 *PRIN Meeting 2007*, Pisa, Scuola Normale Superiore, Italy;
Dec. 2007 *III Avogadro Meeting on Theoretical Physics*, Alessandria, Italy;
Jan. 2008 *Workshop on Theoretical Physics*, Saclay, Paris;
Jun. 2008 *Wonders in Gauge and String Theories*, IHP and Saclay, Paris, France;
Jun. 2008 *Fundamental Interactions*, INFN Meeting, Villa Mondragone, Roma, Italy.
Aug. 2008 *String 2008*, CERN, Switzerland.
Dec. 2008 *IV Avogadro Meeting on Theoretical Physics*, Trieste, Italy.
Jan. 2009 Kvali Institute for Theoretical Physics Superstrings and Supergravity
Dec. 2009 *IV Avogadro Meeting on Theoretical Physics*, Trieste, Italy.
Jan. 2010 *Superstring on RR backgrounds* Stony Brook, (NY), USA
May 2010 *Convegno Informale di Fisica Teorica*, Cortona, Italy
Oct. 2010 *Italian Conference SIGRAV*, Scuola Normale di Pisa, Italy
Dec. 2010 *LACES 2010*, Lectures of quantum field theory and Strings, GGI, Florence,
Italy
Dec. 2010 *V Avogadro Meeting on Theoretical Physics*, GGI, Florence, Italy
Dec. 2011 *LACES 2011*, Lectures of quantum field theory and Strings, GGI, Florence,
Italy
Dec. 2011 *VI Avogadro Meeting on Theoretical Physics*, GGI, Florence, Italy.
Jan. 2012 *INFN Conference in Theoretical Physics*, Trieste, Italy.
May 2012 *Convegno Informale di Fisica Teorica*, Cortona, Italy
Sep. 2012 *INFN Meeting on Theoretical Physics*
Dec. 2012, *Round Table on Theoretical Physics*
Feb. 2013 *Black Holes and Theoretical Physics at CERN*.
Jun. 2013 *Mathematical and Theoretical Physics Workshop*, Stony Brook, NY, USA
Jan. 2014 *Supergravity at Stony Brook*, Stony Brook, NY, USA.
Jul. 2014 *String Field Theory and Higher Spins*, SISSA, Trieste, Italy.
Sep. 2014 *String Theory Universe*, Euroconference, Mainz, Germany
Sep. 2014 *SIGRAV conference*, DISIT, Alessandria, Italy.
Oct. 2014 *Superfields, Gauge Completion and Inflation*, Arnold Sommerfeld Int. Munich,
Germany.
Oct. 2014, Munich, *Fermionic Corrections to Supergravity Solutions*
Sep. 2015 *Physics on Riviera*, Santa Margherita Lig. Genova, Italy;
Nov. 2015 *Round Table on Supergravity*, Dubna, Russia;
Mar. 2016 *Progress in Theoretical Physics*, Vietri sul Mare, Italy;
Oct. 2016 *Supergravity at GGI*, Galileo Galilei Institute, Florence, Italy;
Nov. 2016 *Recontres de la physique*, Paris, France;
Feb. 2017 *Inaugural Conference of Arnold-Regge Center*, Turin, Italy.
Feb 2019 *Quantum SpaceTime*, Bratislava, Slovacchia.
Apr. 2019 *Focus Week at GGI*, Florence, Italy
May, 2019 *Conference at GGI*, Florence, Italy.
Jul. 2019 *CERN, Conference*, Geneve, Switzerland.
Sept. 2019 *Two Days in Modena*, Modena, Italy.

Sept. 2019 *Conference on SuperModuli*, Trieste, Italy
Dec. 2019 *International Conference on Supergeometry*, Luxembourg.
Jan. 2020 *Abu Dhabi Conference on Theoretical Physics*, Emirates.
Sep. 2020 *Shrödinger Institute Conference*, Austria
May. 2021 *Sissa Conference on SuperModuli*, Trieste, Italy
Oct. 2021 *Heidelberg Univ. Conference on Supermanifolds*, Germany.
Dec. 2021 *Mainz Univ. Conference, Young Reserchers*, Mainz, Germany

Seminars

24 Apr. 2002, New York University, NY, USA, *Berkovits' formalism and covariant superstrings*;
24 Dec. 2002, CERN Theory Division, Switzerland, *Covariant quantum superstrings*,
26 Feb. 2003, New York University, NY, USA, *Covariant quantum superstrings with/without pure spinors*
6 Mar. 2003, Harvard University, Theory Group, Cambridge, USA, *Covariant quantum superstrings with Ramond-Ramond fields*.
17 Mar. 2003, Tor Vergata, Rome University, Italy, *Covariant quantum superstrings with Ramond-Ramond fields*.
23 Mar. 2003, Institute Henri Poincarè, Paris, France, *Covariant quantum superstrings with Ramond-Ramond fields*.
3 Apr. 2003, Bruxelles University, Belgium, *Covariant quantum superstrings with Ramond-Ramond fields*.
23 Aug. 2003, Stony Brook, USA, *Covariant quantum superstrings with Ramond-Ramond fields*.
2 Oct. 2003, Chapel Hill and Duke University, USA, *Covariant quantum superstrings with Ramond-Ramond fields*.
Oct. 2003, ITP Ann Arbor, USA, *Covariant quantum superstrings*.
Feb. 2004, NYU, NY, USA, *Deformed Superspace and String Theory*
Mar. 2004, CERN, Theory Division, Switzerland, *Deformed Superspace and String Theory*
Apr. 2004, LAPTH, Annecy, France, *Harmonic and Deformed Superspace from String Theory*
Apr. 2004, IHES, Bures-sur-Yvette, France, *Recent Developements in Pure Spinor String Theory*
Aug. 2004, Stony Brook, USA, *11d Superparticles and Supergravity*.
Oct. 2004, (Institute Henri Poincare') IHP, Paris, *Covariant Superstrings*.
Oct. 2004, Saclay, France, *Supergeometry and Superstrings*.
Feb. 2005, Utrech, Holland, *Superstrings and Supergeometry*.
Feb. 2005, Amsterdam, *M-theory and topological Strings*,
Mar. 2005, Vietri sul Mare, *Superstrings and Supergeometry*,
Apr. 2005, CERN Theory Unit, *Pure Spinor String Theory*,
May 2005, Tel-Aviv University, *Pure Spinor String theory*,
Aug. 2005, BLTP, Dubna, *Harmonic Superspace from string theory*,
Sep. 2005, Erice, TR, *Non-commutative Structure of Spacetime*,

Dec. 2006, Lueven, Belgium, *Progresses in Pure Spinor String theory*
Jan. 2006, Univ. di Firenze, *Pure Spinor String theory*;
Jan. 2006, SISSA, Trieste, *Supermanifolds and String Theory*;
Feb. 2006, Weizmann Institute, Israel, *Progress in Pure Spinor String theory*;
Feb. 2006, Tel-Aviv Univ., *Partition Functions in Pure Spinor String theory*;
May 2006, Univ. Torino, *BRST for everybody*;
Jun. 2006, Vienna, *Supermanifolds and Supergeometry*;
Aug. 2006, Univ. of Sao Paolo (IFT), Brasile, *Supermembrane, FDA and Pure Spinors*;
Aug. 2006, Univ. of Sao Paolo (IFT), Brasile, *Partition Functions for Pure Spinor String theories*;
Sep. 2006, Univ. of Amsterdam, Theoretical Physics Institute, The Netherlands, *Partition Functions for Pure Spinor String theories*;
Oct. 2006, DESY, Hamburg *Partition Functions for Pure Spinor String theories and An introduction on pure spinor string theory*;
Oct. 2006, Queen Mary College, London, UK *Partition Functions for Pure Spinor String theories*;
Oct. 2006, RTN Meeting, Naples *Partition Functions for Pure Spinor String theories and Non-critical Strings*;
Feb. 2007, University of Tel-Aviv, Israel, *Partition Functions for Pure Spinor String theories and Non-critical Strings*;
Jul. 2007, University LMU, Munich, Germany, *Pure Spinor Non-critical Strings*;
Aug. 2007, Newton Institute, Cambridge University, UK. *Pure Spinor Non-critical Strings*;
Dec. 2007, Pisa, Scuola Normale Superiore, IT, *Pure Spinor Superstrings and AdS backgrounds*;
Dec. 2007, Alessandria, University of Eastern Piedmont, Avogadro Meeting, 2007, *Pure Spinor Superstrings and AdS backgrounds*.
Jan. 2008, Institute for Theoretical Physics, Saclay, Paris, France, *Pure Spinor Superstrings and AdS backgrounds*.
Apr. 2008, SISSA, Trieste, Italy, *Higher Loop Computations in Pure Spinor Formalism*
May 2008, Dipartimento di Fisica, Università di Padova, *From supergravity backgrounds to pure spinor sigma models*.
May 2008, Institute for Theoretical Physics, Utrecht, The Netherlands, *From supergravity backgrounds to pure spinor sigma models*.
May 2008, Department of Physics, Chalmers University, Goteborg, Sweeden, *From supergravity backgrounds to pure spinor sigma models*.
May 2008, Department of Physics, Chalmers University, Goteborg, Sweeden, *Partition Functions and Lower dimensional Pure spinors*.
May 2008, NBI, Copenhagen, Danmark, *From supergravity backgrounds to pure spinor sigma models*.
May 2008, Institute for Theoretical Physics, Amsterdam University, *From supergravity backgrounds to pure spinor sigma models*.
Jun. 2008, Institute Henri Poincaré Paris, France, *From supergravity backgrounds to pure spinor sigma models*.
Jun. 2008, INFN Meeting Villa Mondragone *From supergravity backgrounds to pure spinor sigma models*.

Jan. 2009, Kvali Institute for Theoretical Physics, Santa Barbara CA, USA *Non-critical Pure Spinor Superstrings*.
 Feb. 2009, New York University, USA *Non-critical Pure Spinor Superstrings*.
 Feb. 2009, SUNY at Stony Brook, USA *Non-critical Pure Spinor Superstrings*.
 Apr. 2009, University of Parma, Italy *Lectures on Pure Spinor Superstrings*
 Nov. 2009, ETH, Zurich, Switzerland. *Lectures on Pure Spinor Superstrings*
 Jan. 2010, Stony Brook, *Lectures on Pure Spinor Superstrings*
 Oct. 2010, Pisa, *Superstring Corrections to Supergravity*
 Jan. 2012, Trieste, *Fermionic Corrections to Supergravity Solutions*
 Jan. 2014, Stony Brook, USA *Fermionic Corrections to Supergravity Solutions*
 Jul. 2014, SISSA, Trieste, *Fermionic Corrections to Supergravity Solutions*
 Sep. 2015, S. Margherita Ligure, Genova, Italy *Integral Forms and Some Applications*
 Nov. 2015, Genova, Italy *Integral Forms and Some Applications*
 Nov. 2015, Pisa, Italy *Integral Forms and Some Applications*
 Nov. 2015, Dubna, Russia *Integral Forms and Some Applications* Mar. 2016, Vietri sul Mare, SA, Italy I *Integral Forms and Some Applications*
 Apr. 2016, CERN, CH *Integral Forms and Some Applications*
 May, 2016, Pisa, *Supergeometry Primer*
 Feb. 2017 *Inaugural Conference of Arnold-Regge Center, Turin, Italy. Supergeometry Primer*
 May, 2017 *Kyoto University Supergeometry Primer* Series of Lectures.
 Dec. 2018 *Edinburgh Supergeometry Primer*
 Feb 2019 *Quantum SpaceTime, Bratislava, Slovacchia. Supergeometry Applications*
 Apr. 2019 *Focus Week at GGI, Florence, Italy, Supergeometry Applications*
 May, 2019 *Conference at GGI, Florence, Italy. Supergeometry Applications*
 Jul. 2019 *CERN, Conference, Geneve, Switzerland. Supergeometry Applications*
 Sept. 2019 *Two Days in Modena, Modena, Italy. Supergeometry Applications*
 Sept. 2019 *Conference on SuperModuli, Trieste, Italy Supergeometry and $A-\infty$ algebras*
 Dec. 2019 *International Conference on Supergeometry, Luxembourg. Supergeometry and $A-\infty$ algebras*
 Jan. 2020 *Abu Dhabi Conference on Theoretical Physics, Emirates. Supergeometry and $A-\infty$ algebras*
 Jun. 2021 *Seminar at Turin Group, Turin, Italy.*

Awards

Award: *Best Original work on Theoretical Physics*, Erice, Aug, 2005.

Teaching Activity

- Monographic Series of Lectures

- University of Milan, Lectures on Algebraic Renormalization of Ph. D. students. Student Advised for Ph.D.: A. Quadri.
- New York University; Lectures on String Theory in collaboration with M. Porrati. Student Advised: G. Policastro (Scuola Normale di Pisa).
- C.N.Yang Institute for Theoretical Physics: Lectures on String Theory and Superparticles. Student Advised: A. Iglesias, L. Anguelova (Stony Brook Univ.) e L. Tamassia (University of Pavia).
- C.N. Yang Institute: Lectures for Ph. D. students 1) Renormalization of Standard Model and Background Field Method 2) Covariant Quantization of 10d superstrings.
- University of Turin (Italy), Theoretical Physics Dep. Lectures for Ph. D. students: Covariant Quantization of 10d superstrings.
- Scuola Normale di PISA, Lectures on String Theory and Supermembranes in collaboration with M. Porrati.
- Lectures at Galileo Galilei Institute for Theoretical Physics (I am in the organiser board of the School): year 2008: Advanced Quantum Field Theory, year 2009: compactifications and Calabi-Yau spaces. Florence, Italy, year 2010: Conformal Field Theory, year 2011: Background Field Method and Sigma Models, year 2012: Conformal Field Theory, year 2014: Conformal Field Theory and Applications.
- Univ. of Turin, Lectures on *Pure Spinor String theory*.
- Kyoto University, Lectures on *Supergeometry*

- Teaching Courses at University of Eastern Piedmont in Alessandria

- Lectures on Mathematical Methods for Physics sec. A (40h) 2008/2009 - 2009/2010
- Lectures on Mathematical Methods for Physics sec. B (48h) 2008/2009 - 2009/2010
- Lectures on Mathematical Methods for Physics (Course on Mathematics and Applications) (48h) 2010/2011 - 2011/2012
- Lectures on General Relativity (48h), 2007/2008 - 2008/2009 - 2009/2010 - 2010/2011
- Lectures on Gauge Theories (48h), 2008/2009
- Lectures on Geometry and Linear Algebra (24h), 2008/2009 - 2009/2010
- Lectures on Physics II for Chemistry (48h), 2013/2014 - 2014/2015 - 2015/2016 - 2016/2017 - 2017/2018 - 2018/2019 - 2019/2020 - 2020/2021 - 2021/2022 - 2022/2023 - 2023/2024 - 2024/2025

- Lectures on Mathematical Methods in Theoretical Physics (48h), 2010/2011 - 2011/2012 - 2012/2013 - 2013/2014 - 2014/2015
- Lectures on Probability and Statistics for Computer Science (72h) 2015/2016 - 2016/2017 - 2017/2018 - 2018/2019 - 2019/2020 - 2020/2021 - - 2021/2022 - 2022/2023 - 2023/2024
- Quantum Computations for Computer Science (24h) 2022/2023 - 2023/2024
- Students (Undergraduate (Triennale), Graduate (Magistrale) and Ph.D.)

- Books

Esercizi di metodi matematici per fisici e ingegneri.

P A Grassi, published by Casa Editrice Ambrosiana, (Zanichelli), ISBN-10: 8808880036
ISBN-13: 978-8808880031; CEA (1 gennaio 2018) -Italiano.

Research Activity

My research concerns String Theory and Quantum Field Theory.

1. Expertise on Quantum Field Theory

- Standard model of elementary particles, renormalization, computation of quantum corrections, Ward-Identities, Slavnov-Taylor
- Gauge symmetries, BRST symmetry, rigid and local supersymmetry, conformal symmetry
- BRST cohomology, spectral sequences, geometrical methods
- Supersymmetric Quantum Field Theories, Superspace techniques, supergeometry, integration on supermanifolds, Non-renormalization Theorems.
- Renormalization Group, Polchinsky- Wilson Renormalization Group, Lattice Gauge theory and perfect actions
- BV formalism, antifields, geometrical structure QP-manifolds, AKSZ model, odd-symplectic structures and supergeometry
- Supergravity and applications. M5 branes and self-dual field theories.

2. Expertise on String Theory

- Quantization of Green-Schwarz model, infinite reducible symmetries
- Coupling to Supergravity and D-/p-branes geometry, Membrane physics.
- Supersymmetric D-branes, in several dimensions.
- Pure spinor string theory
- BRST cohomology, index theorem, localization techniques, Molien-Weyl formula
- Picture-Changing-Operators in string theory and supersymmetric models
- Supergeometry application to string theory
- Supergravity solutions and supergeometry techniques
- Duality AdS/CFT

3. Expertise on Neural Network

- Graph neural Networks
- Mathematical methods for Machine Learning and AI
- Mathematical techniques to graph models

Publications

- Metric: 3900 citations on HEP-SPIRES, 5000 citations on GOOGLE SCHOLAR, h-index (31 su HEP-SPIRES, 34 su GOOGLE SCHOLAR), 2700 citations on SCOPUS.
 - Collaborators: 57 International Coauthors.
 - All publications are on Scientific International Journals of Class A/B (first and the second quartile Q1/Q2). Those under review and those which are not published (conferences or seminars) are listed with the hep-th number as a preprint at www.arXiv.org.
 - Journal Referee: Nucl. Physics B, Phys. Rev. D, JHEP, Comm. Math. Phys., EJPC, JMPA, Universe, JPG, Phys. Rev. Lett, Phys Lett. B.
 - [Link to publications on Spires](#)
1. E. Boffo, P. A. Grassi, O. Hulík and I. Sachs, [arXiv:2504.03231 [hep-th]].
 2. P. A. Grassi and S. Penati, [arXiv:2503.16182 [hep-th]].
 3. C. A. Cremonini, P. A. Grassi, R. Noris, L. Ravera and A. Santi, [arXiv:2411.16869 [hep-th]].
 4. P. A. Grassi and M. Porrati, JHEP **03** (2025), 175 doi:10.1007/JHEP03(2025)175 [arXiv:2411.08865 [hep-th]].
 5. P. A. Grassi and O. Hulik, [arXiv:2410.18285 [hep-th]].
 6. E. Boffo, P. A. Grassi, O. Hulik and I. Sachs, “On Superparticles and their Partition Functions,” [arXiv:2402.09868 [hep-th]].
 7. L. Aceto and P. A. Grassi, “A charge-preserving method for solving graph neural diffusion networks,” [arXiv:2312.10279 [math.NA]].
 8. L. Castellani and P. A. Grassi, “Hodge duality and supergravity,” Phys. Rev. D **108** (2023) no.4, 046018 doi:10.1103/PhysRevD.108.046018 [arXiv:2305.06034 [hep-th]].
 9. P. A. Grassi, “Novel Free Differential Algebras for Supergravity,” Universe **9** (2023) no.8, 376 doi:10.3390/universe9080376 [arXiv:2304.04877 [hep-th]].
 10. P. A. Grassi, “Remarks on the Integral Form of D=11 Supergravity,” J. Phys. Conf. Ser. **2531** (2023) no.1, 012010 doi:10.1088/1742-6596/2531/1/012010 [arXiv:2304.01743 [hep-th]].
 11. G. Barbagallo and P. A. Grassi, “Fermionic Sen’s Mechanism for Self-Dual Super Maxwell theory,” [arXiv:2212.13856 [hep-th]].

12. C. A. Cremonini, P. A. Grassi, R. Noris and L. Ravera, “Supergravities and branes from Hilbert-Poincaré series,” JHEP **12** (2023), 088 doi:10.1007/JHEP12(2023)088 [arXiv:2211.10454 [hep-th]].
13. L. Andrianopoli, C. A. Cremonini, R. D’Auria, P. A. Grassi, R. Matrecano, R. Noris, L. Ravera and M. Trigiante, “M5-brane in the superspace approach,” Phys. Rev. D **106** (2022) no.2, 026010 doi:10.1103/PhysRevD.106.026010 [arXiv:2206.06388 [hep-th]].
14. C. A. Cremonini and P. A. Grassi, “Generalised Cocycles and Super p-Branes,” [arXiv:2206.03394 [hep-th]].
15. C. A. Cremonini and P. A. Grassi, “Cohomology of Lie Superalgebras: Forms, Pseudoforms, and Integral Forms,” [arXiv:2106.11786 [hep-th]].
16. C. A. Cremonini and P. A. Grassi, “Power to Integral Forms,” [arXiv:2105.09196 [hep-th]].
17. C. A. Cremonini and P. A. Grassi, “Self-dual forms in supergeometry I: The chiral boson,” Nucl. Phys. B **973** (2021), 115596 doi:10.1016/j.nuclphysb.2021.115596 [arXiv:2012.10243 [hep-th]].
18. R. Catenacci, C. A. Cremonini, P. A. Grassi and S. Noja, “Cohomology of Lie Superalgebras: Forms, Integral Forms and Coset Superspaces,” [arXiv:2012.05246 [hep-th]].
19. C. A. Cremonini, P. A. Grassi and S. Penati, “Surface Operators in Superspace,” JHEP **11** (2020), 050 doi:10.1007/JHEP11(2020)050 [arXiv:2006.08633 [hep-th]].
20. R. Catenacci, C. A. Cremonini, P. A. Grassi and S. Noja, “On Forms, Cohomology, and BV Laplacians in Odd Symplectic Geometry,” [arXiv:2004.02890 [hep-th]].
21. C. A. Cremonini, P. A. Grassi and S. Penati, “Supersymmetric Wilson Loops via Integral Forms,” JHEP **04** (2020), 161 doi:10.1007/JHEP04(2020)161 [arXiv:2003.01729 [hep-th]].
22. L. Castellani, C. A. Cremonini and P. A. Grassi, “Chern-Simons Supergravity on Supergroup Manifolds,” JHEP **05** (2020), 110 doi:10.1007/JHEP05(2020)110 [arXiv:2002.09400 [hep-th]].
23. C. A. Cremonini and P. A. Grassi, “Super Chern-Simons Theory: BV-formalism and A_∞ -algebras,” Phys. Rev. D **102** (2020), 025009 doi:10.1103/PhysRevD.102.025009 [arXiv:1912.10807 [hep-th]].
24. C. A. Cremonini and P. A. Grassi, “Pictures from Super Chern-Simons Theory,” JHEP **03** (2020), 043 doi:10.1007/JHEP03(2020)043 [arXiv:1907.07152 [hep-th]].
25. P. Fré, A. Giambrone, P. A. Grassi and P. Vaško, “The $\mathcal{N}_3 = 3 \rightarrow \mathcal{N}_3 = 4$ enhancement of Super Chern-Simons theories in $D = 3$, Calabi HyperKähler metrics and M2-branes on the $\mathcal{C}(\mathbb{N}^{0,1,0})$ conifold,” [arXiv:1906.11672 [hep-th]].

26. L. Andrianopoli, B. L. Cerchiai, P. A. Grassi and M. Trigiante, “The Quantum Theory of Chern-Simons Supergravity,” *JHEP* **06** (2019), 036
doi:10.1007/JHEP06(2019)036 [arXiv:1903.04431 [hep-th]].
27. U. Bruzzo, A. Fino, P. Fré, P. A. Grassi and D. Markushevich, “Crepan resolutions of $\mathbf{C}^3/\mathbf{Z}_4$ and the generalized Kronheimer construction (in view of the gauge/gravity correspondence),” *J. Geom. Phys.* **145** (2019), 103467
doi:10.1016/j.geomphys.2019.06.018 [arXiv:1902.01060 [hep-th]].
28. R. Catenacci, P. A. Grassi and S. Noja, “ A_∞ -Algebra from Supermanifolds,” *Annales Henri Poincare* **20** (2019) no.12, 4163-4195
doi:10.1007/s00023-019-00854-8 [arXiv:1901.00818 [hep-th]].
29. R. Catenacci, P. A. Grassi and S. Noja, “Superstring Field Theory, Superforms and Supergeometry,” *J. Geom. Phys.* **148** (2020), 103559
doi:10.1016/j.geomphys.2019.103559 [arXiv:1807.09563 [hep-th]].
30. R. Catenacci and P. A. Grassi, “String Sigma Models on Curved Supermanifolds,” *Universe* **4** (2018) no.4, 60
doi:10.3390/universe4040060 [arXiv:1801.04854 [hep-th]].
31. L. Castellani, R. Catenacci and P. A. Grassi, “Wess-Zumino and Super Yang-Mills Theories in D=4 Integral Superspace,” *JHEP* **05** (2018), 040
doi:10.1007/JHEP05(2018)040 [arXiv:1711.07194 [hep-th]].
32. P. Fré and P. A. Grassi, “D = 10 Super-Yang-Mills Theory and Poincaré Duality in Supermanifolds,” [arXiv:1710.11498 [hep-th]].
33. L. Castellani, R. Catenacci and P. A. Grassi, “Super Quantum Mechanics in the Integral Form Formalism,” *Annales Henri Poincare* **19** (2018) no.5, 1385-1417
doi:10.1007/s00023-018-0653-y [arXiv:1706.04704 [hep-th]].
34. P. Fré and P. A. Grassi, “The Integral Form of D=3 Chern-Simons Theories Probing \mathbf{C}^n/Γ Singularities,” *Fortsch. Phys.* **65** (2017) no.10-11, 1700040
doi:10.1002/prop.201700040 [arXiv:1705.00752 [hep-th]].
35. L. Castellani, R. Catenacci and P. A. Grassi, “The Integral Form of Supergravity,” *JHEP* **10** (2016), 049 doi:10.1007/JHEP10(2016)049 [arXiv:1607.05193 [hep-th]].
36. P. A. Grassi and C. Maccaferri, “Chern-Simons Theory on Supermanifolds,” *JHEP* **09** (2016), 170 doi:10.1007/JHEP09(2016)170 [arXiv:1606.06609 [hep-th]].
37. F. Del Monte, D. Francia and P. A. Grassi, “Multimetric Supergravities,” *JHEP* **09** (2016), 064 doi:10.1007/JHEP09(2016)064 [arXiv:1605.06793 [hep-th]].
38. L. Castellani, R. Catenacci and P. A. Grassi, “Integral representations on supermanifolds: super Hodge duals, PCOs and Liouville forms,” *Lett. Math. Phys.* **107** (2017) no.1, 167-185 doi:10.1007/s11005-016-0895-x [arXiv:1603.01092 [hep-th]].

39. P. Fré, P. A. Grassi, L. Ravera and M. Trigiante, “Minimal $D = 7$ Supergravity and the supersymmetry of Arnold-Beltrami Flux branes,” *JHEP* **06** (2016), 018 doi:10.1007/JHEP06(2016)018 [arXiv:1511.06245 [hep-th]].
40. L. Castellani, R. Catenacci and P. A. Grassi, “The Hodge Operator Revisited,” [arXiv:1511.05105 [hep-th]].
41. P. Fré, P. A. Grassi and A. S. Sorin, “Hyperinstantons, the Beltrami Equation, and Triholomorphic Maps,” *Fortsch. Phys.* **64** (2016) no.2-3, 151-175 doi:10.1002/prop.201500061 [arXiv:1509.09056 [hep-th]].
42. L. Castellani, R. Catenacci and P. A. Grassi, “Hodge Dualities on Supermanifolds,” *Nucl. Phys. B* **899** (2015), 570-593 doi:10.1016/j.nuclphysb.2015.08.002 [arXiv:1507.01421 [hep-th]].
43. L. Castellani, R. Catenacci and P. A. Grassi, “The Geometry of Supermanifolds and New Supersymmetric Actions,” *Nucl. Phys. B* **899** (2015), 112-148 doi:10.1016/j.nuclphysb.2015.07.028 [arXiv:1503.07886 [hep-th]].
44. L. Castellani, R. Catenacci and P. A. Grassi, “Supergravity Actions with Integral Forms,” *Nucl. Phys. B* **889** (2014), 419-442 doi:10.1016/j.nuclphysb.2014.10.023 [arXiv:1409.0192 [hep-th]].
45. L. Gentile, G.C., P. A. Grassi, A. Marrani, A. Mezzalira and W. A. Sabra, “No Fermionic Wigs for BPS Attractors in 5 Dimensions,” *Phys. Lett. B* **735** (2014), 231-243 doi:10.1016/j.physletb.2014.06.026 [arXiv:1403.5097 [hep-th]].
46. L. G. C. Gentile, P. A. Grassi, A. Marrani and A. Mezzalira, “Fermions, Wigs, and Attractors,” *Phys. Lett. B* **732** (2014), 263-268 doi:10.1016/j.physletb.2014.03.046 [arXiv:1309.0821 [hep-th]].
47. L. Andrianopoli, R. D’Auria, P. A. Grassi and M. Trigiante, “A Note on the Field-Theoretical Description of Superfluids,” *Phys. Lett. B* **729** (2014), 172-176 doi:10.1016/j.physletb.2014.01.013 [arXiv:1304.6915 [hep-th]].
48. L. Andrianopoli, R. D’Auria, P. A. Grassi and M. Trigiante, “Entropy Current Formalism for Supersymmetric Theories,” *Nucl. Phys. B* **892** (2015), 105-131 doi:10.1016/j.nuclphysb.2015.01.001 [arXiv:1304.2206 [hep-th]].
49. L. G. C. Gentile, P. A. Grassi and A. Mezzalira, “Fermionic Corrections to Fluid Dynamics from BTZ Black Hole,” *JHEP* **11** (2015), 153 doi:10.1007/JHEP11(2015)153 [arXiv:1302.5060 [hep-th]].
50. L. G. C. Gentile, P. A. Grassi and A. Mezzalira, “Fermionic Wigs for BTZ Black Holes,” *Nucl. Phys. B* **871** (2013), 393-402 doi:10.1016/j.nuclphysb.2013.02.009 [arXiv:1209.4100 [hep-th]].
51. L. G. C. Gentile, P. A. Grassi and A. Mezzalira, “Fermionic Wigs for AdS-Schwarzschild Black Holes,” *JHEP* **10** (2013), 065 doi:10.1007/JHEP10(2013)065 [arXiv:1207.0686 [hep-th]].

52. P. A. Grassi, A. Mezzalira and L. Sommovigo, “BCJ and KK Relations from BRST Symmetry and Supergravity Amplitudes,” [arXiv:1111.0544 [hep-th]].
53. P. A. Grassi and S. Guttenberg, “On Projections to the Pure Spinor Space,” JHEP **12** (2011), 089 doi:10.1007/JHEP12(2011)089 [arXiv:1109.2848 [hep-th]].
54. P. A. Grassi and L. Sommovigo, “On Supergravity Amplitudes from Pure Spinor Strings,” [arXiv:1107.3923 [hep-th]].
55. P. A. Grassi, A. Mezzalira and L. Sommovigo, “Supersymmetric Fluid Dynamics,” Phys. Rev. D **85** (2012), 125009 doi:10.1103/PhysRevD.85.125009 [arXiv:1107.2780 [hep-th]].
56. L. G. C. Gentile, P. A. Grassi and A. Mezzalira, “Fluid Super-Dynamics from Black Hole Superpartners,” Phys. Lett. B **703** (2011), 81-87 doi:10.1016/j.physletb.2011.07.048 [arXiv:1105.4706 [hep-th]].
57. P. A. Grassi and A. Mezzalira, “Aspects of Quantum Fermionic T-duality,” JHEP **05** (2011), 019 doi:10.1007/JHEP05(2011)019 [arXiv:1101.5969 [hep-th]].
58. P. A. Grassi and L. Sommovigo, “Pure Spinor Integration from the Collating Formula,” Nucl. Phys. B **849** (2011), 675-692 doi:10.1016/j.nuclphysb.2011.04.001 [arXiv:1009.3874 [hep-th]].
59. R. Catenacci, M. Debernardi, P. A. Grassi and D. Matessi, “Cech and de Rham Cohomology of Integral Forms,” J. Geom. Phys. **62** (2012), 890-902 doi:10.1016/j.geomphys.2011.12.011 [arXiv:1003.2506 [math-ph]].
60. L. Castellani, P. A. Grassi and L. Sommovigo, “Quantum Computing with Superqubits,” [arXiv:1001.3753 [hep-th]].
61. P. Fre, P. A. Grassi, L. Sommovigo and M. Trigiante, “Theory of Superdualities and the Orthosymplectic Supergroup,” Nucl. Phys. B **825** (2010), 177-202 doi:10.1016/j.nuclphysb.2009.09.020 [arXiv:0906.2510 [hep-th]].
62. L. Castellani, P. A. Grassi and L. Sommovigo, “Triality Invariance in the N=2 Superstring,” Phys. Lett. B **678** (2009), 308-312 doi:10.1016/j.physletb.2009.06.032 [arXiv:0904.2512 [hep-th]].
63. P. A. Grassi, D. Sorokin and L. Wulff, “Simplifying superstring and D-brane actions in $AdS_4 \times CP^3$ superbackground,” JHEP **08** (2009), 060 doi:10.1088/1126-6708/2009/08/060 [arXiv:0903.5407 [hep-th]].
64. P. A. Grassi and P. Vanhove, “Higher-loop amplitudes in the non-minimal pure spinor formalism,” JHEP **05** (2009), 089 doi:10.1088/1126-6708/2009/05/089 [arXiv:0903.3903 [hep-th]].
65. L. Andrianopoli, R. D’Auria, S. Ferrara, P. A. Grassi and M. Trigiante, “Exceptional N=6 and N=2 AdS(4) Supergravity, and Zero-Center Modules,” JHEP **04** (2009), 074 doi:10.1088/1126-6708/2009/04/074 [arXiv:0810.1214 [hep-th]].

66. R. D'Auria, P. Fre, P. A. Grassi and M. Trigiante, "Superstrings on $AdS(4) \times CP^3$ from Supergravity," *Phys. Rev. D* **79** (2009), 086001 doi:10.1103/PhysRevD.79.086001 [arXiv:0808.1282 [hep-th]].
67. G. Bonelli, P. A. Grassi and H. Safaai, "Exploring Pure Spinor String Theory on $AdS(4) \times CP^3$," *JHEP* **10** (2008), 085 doi:10.1088/1126-6708/2008/10/085 [arXiv:0808.1051 [hep-th]].
68. P. Fre and P. A. Grassi, "Pure Spinor Formalism for $Osp(N|4)$ backgrounds," *Int. J. Mod. Phys. A* **27** (2012), 1250185 doi:10.1142/S0217751X12501850 [arXiv:0807.0044 [hep-th]].
69. L. Grant, P. A. Grassi, S. Kim and S. Minwalla, "Comments on 1/16 BPS Quantum States and Classical Configurations," *JHEP* **05** (2008), 049 doi:10.1088/1126-6708/2008/05/049 [arXiv:0803.4183 [hep-th]].
70. P. Fre and P. A. Grassi, "Pure Spinors for General Backgrounds," [arXiv:0803.1809 [hep-th]].
71. R. D'Auria, P. Fre, P. A. Grassi and M. Trigiante, "Pure Spinor Superstrings on Generic type IIA Supergravity Backgrounds," *JHEP* **07** (2008), 059 doi:10.1088/1126-6708/2008/07/059 [arXiv:0803.1703 [hep-th]].
72. P. A. Grassi, I. Oda and M. Tonin, "Y-Formalism and Curved Beta-Gamma Systems," *Nucl. Phys. B* **806** (2009), 1-22 doi:10.1016/j.nuclphysb.2008.04.016 [arXiv:0803.0236 [hep-th]].
73. P. Fre and P. A. Grassi, "Free Differential Algebras, Rheonomy, and Pure Spinors," [arXiv:0801.3076 [hep-th]].
74. P. A. Grassi and M. Marescotti, "Integration of Superforms and Super-Thom Class," [arXiv:0712.2600 [hep-th]].
75. R. Catenacci, M. Debernardi, P. A. Grassi and D. Matessi, "Balanced superprojective varieties," *J. Geom. Phys.* **59** (2009) no.10, 1363-1378 doi:10.1016/j.geomphys.2009.07.002 [arXiv:0707.4246 [math-ph]].
76. P. Fre and P. A. Grassi, "Constrained Supermanifolds for AdS M-Theory Backgrounds," *JHEP* **01** (2008), 036 doi:10.1088/1126-6708/2008/01/036 [arXiv:0704.3413 [hep-th]].
77. P. A. Grassi, G. Policastro and E. Scheidegger, "Partition Functions, Localization, and the Chiral de Rham complex," [arXiv:hep-th/0702044 [hep-th]].
78. P. A. Grassi and J. Kluson, "Pure spinor strings in TsT deformed background," *JHEP* **03** (2007), 033 doi:10.1088/1126-6708/2007/03/033 [arXiv:hep-th/0611151 [hep-th]].
79. P. A. Grassi and M. Marescotti, "Flux vacua and supermanifolds," *JHEP* **01** (2007), 068 doi:10.1088/1126-6708/2007/01/068 [arXiv:hep-th/0607243 [hep-th]].

80. P. Fre' and P. A. Grassi, "Pure Spinors, Free Differential Algebras, and the Supermembrane," Nucl. Phys. B **763** (2007), 1-34 doi:10.1016/j.nuclphysb.2006.10.026 [arXiv:hep-th/0606171 [hep-th]].
81. I. Adam, P. A. Grassi, L. Mazzucato, Y. Oz and S. Yankielowicz, "Non-Critical Pure Spinor Superstrings," JHEP **03** (2007), 091 doi:10.1088/1126-6708/2007/03/091 [arXiv:hep-th/0605118 [hep-th]].
82. P. A. Grassi and G. Policastro, "Curved beta-gamma systems and quantum Koszul resolution," [arXiv:hep-th/0602153 [hep-th]].
83. P. A. Grassi, "N=2 superparticles, RR fields and noncommutative structures of (super)-spacetime," Subnucl. Ser. **43** (2007), 414-422 doi:10.1140/epjcd/s2006-03-002-6 [arXiv:hep-th/0511015 [hep-th]].
84. P. A. Grassi and J. F. Morales Morera, "Partition functions of pure spinors," Nucl. Phys. B **751** (2006), 53-74 doi:10.1016/j.nuclphysb.2006.05.021 [arXiv:hep-th/0510215 [hep-th]].
85. P. A. Grassi and N. Wyllard, "Lower-dimensional pure-spinor superstrings," JHEP **12** (2005), 007 doi:10.1088/1126-6708/2005/12/007 [arXiv:hep-th/0509140 [hep-th]].
86. P. A. Grassi and Y. Oz, "Non-critical covariant superstrings," [arXiv:hep-th/0507168 [hep-th]].
87. P. A. Grassi, "Notes on harmonic superspace and pure spinor string theory," CERN-PH-TH-2006-034.
88. P. A. Grassi and G. Policastro, "Super-Chern-Simons theory as superstring theory," [arXiv:hep-th/0412272 [hep-th]].
89. P. A. Grassi and P. Vanhove, "Topological M theory from pure spinor formalism," Adv. Theor. Math. Phys. **9** (2005) no.2, 285-313 doi:10.4310/ATMP.2005.v9.n2.a3 [arXiv:hep-th/0411167 [hep-th]].
90. L. Anguelova, P. A. Grassi and P. Vanhove, "Covariant one-loop amplitudes in D=11," Nucl. Phys. B **702** (2004), 269-306 doi:10.1016/j.nuclphysb.2004.09.024 [arXiv:hep-th/0408171 [hep-th]].
91. P. A. Grassi and P. van Nieuwenhuizen, "N=4 superconformal symmetry for the covariant quantum superstring," Phys. Lett. B **610** (2005), 129-140 doi:10.1016/j.physletb.2005.01.082 [arXiv:hep-th/0408007 [hep-th]].
92. P. A. Grassi, T. Hurth and A. Quadri, "On the Landau background gauge fixing and the IR properties of YM Green functions," Phys. Rev. D **70** (2004), 105014 doi:10.1103/PhysRevD.70.105014 [arXiv:hep-th/0405104 [hep-th]].
93. P. A. Grassi and L. Tamassia, "Vertex operators for closed superstrings," JHEP **07** (2004), 071 doi:10.1088/1126-6708/2004/07/071 [arXiv:hep-th/0405072 [hep-th]].

94. P. A. Grassi and A. Quadri, "The Background field method and the linearization problem for Poisson manifolds," Nucl. Phys. B **706** (2005), 549-568 doi:10.1016/j.nuclphysb.2004.10.046 [arXiv:hep-th/0403265 [hep-th]].
95. P. A. Grassi and P. van Nieuwenhuizen, "Gauging cosets," Nucl. Phys. B **702** (2004), 189-206 doi:10.1016/j.nuclphysb.2004.07.033 [arXiv:hep-th/0403209 [hep-th]].
96. P. A. Grassi and P. van Nieuwenhuizen, "Harmonic superspaces from superstrings," Phys. Lett. B **593** (2004), 271 doi:10.1016/j.physletb.2004.04.051 [arXiv:hep-th/0402189 [hep-th]].
97. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, "Superstrings and WZNW models," doi : 10.1142/9789812702340_058 [arXiv:hep-th/0402122 [hep-th]].
98. P. A. Grassi, R. Ricci and D. Robles-Llana, "Instanton calculations for $N = 1/2$ superYang-Mills theory," JHEP **07** (2004), 065 doi:10.1088/1126-6708/2004/07/065 [arXiv:hep-th/0311155 [hep-th]].
99. L. Anguelova and P. A. Grassi, "Super D-branes from BRST symmetry," JHEP **11** (2003), 010 doi:10.1088/1126-6708/2003/11/010 [arXiv:hep-th/0307260 [hep-th]].
100. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, "The Quantum superstring as a WZNW model," Nucl. Phys. B **676** (2004), 43-63 doi:10.1016/j.nuclphysb.2003.10.008 [arXiv:hep-th/0307056 [hep-th]].
101. P. A. Grassi, T. Hurth and A. Quadri, "Super background field method for $N=2$ SYM," JHEP **07** (2003), 008 doi:10.1088/1126-6708/2003/07/008 [arXiv:hep-th/0305220 [hep-th]].
102. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, "An Introduction to the covariant quantization of superstrings," Class. Quant. Grav. **20** (2003), S395-S410 doi:10.1088/0264-9381/20/12/304 [arXiv:hep-th/0302147 [hep-th]].
103. J. de Boer, P. A. Grassi and P. van Nieuwenhuizen, "Noncommutative superspace from string theory," Phys. Lett. B **574** (2003), 98-104 doi:10.1016/j.physletb.2003.08.071 [arXiv:hep-th/0302078 [hep-th]].
104. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, "Yang-Mills theory as an illustration of the covariant quantization of superstrings," [arXiv:hep-th/0211095 [hep-th]].
105. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, "The Covariant quantum superstring and superparticle from their classical actions," Phys. Lett. B **553** (2003), 96-104 doi:10.1016/S0370-2693(02)03185-4 [arXiv:hep-th/0209026 [hep-th]].
106. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, "On the BRST Cohomology of Superstrings with/without Pure Spinors," Adv. Theor. Math. Phys. **7** (2003) no.3, 499-524 doi:10.4310/ATMP.2003.v7.n3.a5 [arXiv:hep-th/0206216 [hep-th]].

107. P. A. Grassi, G. Policastro and P. van Nieuwenhuizen, “The Massless spectrum of covariant superstrings,” *JHEP* **11** (2002), 004 doi:10.1088/1126-6708/2002/11/004 [arXiv:hep-th/0202123 [hep-th]].
108. P. A. Grassi, G. Policastro, M. Porrati and P. Van Nieuwenhuizen, “Covariant quantization of superstrings without pure spinor constraints,” *JHEP* **10** (2002), 054 doi:10.1088/1126-6708/2002/10/054 [arXiv:hep-th/0112162 [hep-th]].
109. P. A. Grassi, B. A. Kniehl and A. Sirlin, “Width and partial widths of unstable particles in the light of the Nielsen identities,” *Phys. Rev. D* **65** (2002), 085001 doi:10.1103/PhysRevD.65.085001 [arXiv:hep-ph/0109228 [hep-ph]].
110. P. A. Grassi, T. Hurth and M. Steinhauser, “The Algebraic method,” *Nucl. Phys. B* **610** (2001), 215-250 doi:10.1016/S0550-3213(01)00303-0 [arXiv:hep-ph/0102005 [hep-ph]].
111. P. A. Grassi and T. Hurth, “On the two loop electroweak amplitude of the muon decay,” [arXiv:hep-ph/0101183 [hep-ph]].
112. R. Frezzotti *et al.* [Alpha], “Lattice QCD with a chirally twisted mass term,” *JHEP* **08** (2001), 058 [arXiv:hep-lat/0101001 [hep-lat]].
113. P. A. Grassi and P. van Nieuwenhuizen, “No van Dam-Veltman-Zakharov discontinuity for supergravity in AdS space,” *Phys. Lett. B* **499** (2001), 174-178 doi:10.1016/S0370-2693(01)00023-5 [arXiv:hep-th/0011278 [hep-th]].
114. P. A. Grassi, T. Hurth and M. Steinhauser, “Noninvariant two loop counterterms for the three gauge boson vertices,” *JHEP* **11** (2000), 037 doi:10.1088/1126-6708/2000/11/037 [arXiv:hep-ph/0011067 [hep-ph]].
115. P. A. Grassi, G. Policastro and M. Porrati, “Notes on the quantization of the complex linear superfield,” *Nucl. Phys. B* **597** (2001), 615-632 doi:10.1016/S0550-3213(00)00745-8 [arXiv:hep-th/0010052 [hep-th]].
116. P. A. Grassi, G. Policastro and M. Porrati, “Covariant quantization of the Brink-Schwarz superparticle,” *Nucl. Phys. B* **606** (2001), 380-400 doi:10.1016/S0550-3213(01)00225-5 [arXiv:hep-th/0009239 [hep-th]].
117. L. Baulieu, P. A. Grassi and D. Zwanziger, “Gauge and topological symmetries in the bulk quantization of gauge theories,” *Nucl. Phys. B* **597** (2001), 583-614 doi:10.1016/S0550-3213(00)00725-2 [arXiv:hep-th/0006036 [hep-th]].
118. P. A. Grassi, B. A. Kniehl and A. Sirlin, “Width and partial widths of unstable particles,” *Phys. Rev. Lett.* **86** (2001), 389-392 doi:10.1103/PhysRevLett.86.389 [arXiv:hep-th/0005149 [hep-th]].
119. G. Barnich and P. A. Grassi, “Gauge dependence of effective action and renormalization group functions in effective gauge theories,” *Phys. Rev. D* **62** (2000), 105010 doi:10.1103/PhysRevD.62.105010 [arXiv:hep-th/0004138 [hep-th]].

120. P. A. Grassi, “Renormalization of nonsemisimple gauge models with the background field method,” Nucl. Phys. B **560** (1999), 499-550 doi:10.1016/S0550-3213(99)00457-5 [arXiv:hep-th/9908188 [hep-th]].
121. P. A. Grassi, T. Hurth and M. Steinhauser, “Practical algebraic renormalization,” Annals Phys. **288** (2001), 197-248 doi:10.1006/aphy.2001.6117 [arXiv:hep-ph/9907426 [hep-ph]].
122. R. Frezzotti, P. A. Grassi, S. Sint and P. Weisz, “A Local formulation of lattice QCD without unphysical fermion zero modes,” Nucl. Phys. B Proc. Suppl. **83** (2000), 941-946 doi:10.1016/S0920-5632(00)91852-8 [arXiv:hep-lat/9909003 [hep-lat]].
123. P. Gambino and P. A. Grassi, “The Nielsen identities of the SM and the definition of mass,” Phys. Rev. D **62** (2000), 076002 doi:10.1103/PhysRevD.62.076002 [arXiv:hep-ph/9907254 [hep-ph]].
124. R. Ferrari, P. A. Grassi and A. Quadri, “Direct algebraic restoration of Slavnov-Taylor identities in the Abelian Higgs-Kibble model,” Phys. Lett. B **472** (2000), 346-356 doi:10.1016/S0370-2693(99)01452-5 [arXiv:hep-th/9905192 [hep-th]].
125. P. Gambino, P. A. Grassi and F. Madricardo, “Fermion mixing renormalization and gauge invariance,” Phys. Lett. B **454** (1999), 98-104 doi:10.1016/S0370-2693(99)00321-4 [arXiv:hep-ph/9811470 [hep-ph]].
126. R. Ferrari and P. A. Grassi, “Constructive algebraic renormalization of the Abelian Higgs-Kibble model,” Phys. Rev. D **60** (1999), 065010 doi:10.1103/PhysRevD.60.065010 [arXiv:hep-th/9807191 [hep-th]].
127. P. A. Grassi, “The Abelian anti-ghost equation for the standard model in the ’t Hooft background gauge,” Nucl. Phys. B **537** (1999), 527-548 doi:10.1016/S0550-3213(98)00619-1 [arXiv:hep-th/9804013 [hep-th]].
128. P. A. Grassi, “Renormalization of the standard model in the ’t Hooft-background Gauge by means of automatic symbolic computation,” Ph. D. Thesis. Available on request.
129. P. A. Grassi, “Stability and renormalization of Yang-Mills theory with background field method: A Regularization independent proof,” Nucl. Phys. B **462** (1996), 524-550 doi:10.1016/0550-3213(96)00017-X [arXiv:hep-th/9505101 [hep-th]].

Alessandria,
November 28, 2025

Curriculum Vitæ of Sara Pasquetti

Office Address

Dipartimento di Fisica, Università di Milano-Bicocca,
Piazza della Scienza 3, I-20126 Milano, Italy

Education

UNIVERSITY OF PARMA Parma, Italy
February 2004 — December 2006.

Ph.D. in Theoretical Physics, received on February 2007.

Thesis Advisor: Luca Griguolo.

Thesis: *Phase Transitions in q -Deformed Yang–Mills and Topological String Theories.*

UNIVERSITY OF FLORENCE Florence, Italy
October 1998 — December 2003.

Laurea in Fisica (Degree in Physics), December 2003.

Thesis Advisor: Domenico Seminara.

Thesis: *Perturbative Dynamics of Non–Commutative Maxwell–Chern–Simons Theory.*

Teaching Qualification

Graduate Certificate in Learning and Teaching, University of Surrey, 2013-2014.

Positions

UNIVERSITY OF MILANO-BICOCCA Milan, Italy
April 2016–present
Associate Professor in Physics.

UNIVERSITY OF SURREY Guildford, England
September 2012–March 2016
Lecturer in Mathematics, promoted to Reader effective April 2016.

IMPERIAL COLLEGE London, England
September 2011–September 2012
Visiting Researcher in the Pure Mathematics section.

QUEEN MARY UNIVERSITY OF LONDON London, England
October 2010 — September 2012
Marie Curie Fellow in the String Theory Group.

CERN Geneva, Switzerland
October 2008 — September 2010
CERN Fellow in the Theory Division.

UNIVERSITÉ DE NEUCHÂTEL
April 2007 — October 2008.

Neuchâtel, Switzerland

Post-Doctoral Researcher in the Institute de Physique.

Grants and Awards

2015–Fondazione CARIPLLO: “Holomorphic Blocks in Quantum Field Theory: New Constructions of Exact Results”, principal-investigator.

2014–ERC Starting Grant-2014: “Holomorphic Blocks in Quantum Field Theory: New Constructions of Exact Results”, principal-investigator. (EUR: 1,287,088.00)

2013–STFC Consolidated Grant, “Fundamental Implications of Fields, Strings and Gravity”, co-investigator with the Strings Fields and Geometry Group at the University of Surrey.

2013–Emmy Noether Visiting Fellowship, Faculty stream, Perimeter Institute.

2010–Marie Curie FP7-PEOPLE-2009-IEF Fellowship.

Extended Visits

UNIVERSITY OF VIENNA
January–February 2025

Wien, Austria

Guest Professor in the Mathematical Physics group.

PERIMETER INSTITUTE
February–July 2014

Waterloo, Canada

Emmy Noether Visiting Fellow.

NEWTON INSTITUTE
February–April 2012

Cambridge, England

Visiting Researcher.

CERN
February–March 2007

Geneva, Switzerland

Visiting Researcher in the Theory Division.

CERN
March–May 2006

Geneva, Switzerland

Visiting Student in the Theory Division.

Coordination of Academic and Administrative Activities

2025–present: Coordinator of the Master's Degree in Physics, University of Milan-Bicocca.

PhD Students Supervision

Master Thesis Supervision

BSc Project Supervision

Since 2017, I have supervised 13 BSc projects at the University of Milan-Bicocca.

Postdoc Mentoring

Researchers funded under grants I coordinated or co-managed, often in collaboration with colleagues: Francesco Aprile, Simone Giacomelli, Chiung Hwang, Valentin Reys, Jiaju Zhang, Yegor Zenkevich.

Teaching Activities

Since 2019: “Mathematics for Physics”, BSc in Physics, University of Milan-Bicocca.

Since 2017: “Statistical Mechanics” Year 1, Master in Physics, University of Milan-Bicocca.

2016–2019: “Quantum Field Theory *I*”, Year 1, Master in Physics, University of Milan-Bicocca.

2016–2017: “Quantum Field Theory *II*”, Year 1, Master in Physics, University of Milan-Bicocca.

2014–2015: “Engineering Mathematics”, Year 1, Electronic Engineering BEng (Hons), University of Surrey.

2013–2016: “Lagrangian and Hamiltonian dynamics”, Year 3, MMat-BSc in Mathematics, University of Surrey.

- PHD courses**
- “Supersymmetric Quantum Field Theories”, LACES Ph.D. training program, GGI Florence, November-December 2020.
 - “Conformal Field Theories” Graduate program in Theoretical Physics, University of Milan-Bicocca, 2018.
 - “Introduction to $N = 2$ theories”, Graduate program in String/Field Theory, Queen Mary University of London, 2011.

Invited Lectures

- “RG-flows and Wilsonian renormalization”, University of Vienna, January-February 2025.
- “Localisation, holomorphic blocks and q -Virasoro correlators”, Nagoya University, March 2015.
- “An introduction to supersymmetric theories and dualities”, International School of Theory and Analysis in Particle Physics, Istanbul, January-February 2011.
- “Lectures on $N = 2$ theories: from Seiberg-Witten to AGT”, invited lectures at Parma University, 15-19 November 2010.
- “Nonperturbative effects in matrix models and topological strings”, Invited lectures at the: Matrix Models and Geometry, CAMGSD Thematic Period @ IST Lisbon, April 25-May 1, 2010.

General public talks

Informal talks at the European Night of Researchers in Milan, 2017-2018-2019.

Fisica e Matematica una relazione in evoluzione, Aperitivo Scientifico, Pub Maga Furla, Milano 2018.

Mathematics-Physics interface, Queen Mary University of London, Alumni Day 2012.

Colloquia

The local dualisation algorithm at work, Western Hemisphere Colloquium on Geometry and Physics, (Zoom), November 2022.

Dualities and exact methods in SUSY gauge theories, Hamburg, April 2019.

Dualities and exact methods in SUSY gauge theories, Dublin, February 2019.

Dualities and exact methods in SUSY gauge theories, CERN, July 2017.

Exact results in supersymmetric gauge theories, Padua University, April 2015.

Exact results in supersymmetric gauge theories, SISSA Trieste, March 2015.

Exact results in supersymmetric gauge theories, Milan-Bicocca, February 2015.

Exact results in supersymmetric gauge theories in various dimensions, Perimeter Institute, March 2014.

Invited Conference Talks

Planar abelian mirror duals of 3d $\mathcal{N}=2$ CS quiver theories, "Strings & Geometry", April 2025, Trieste.

The local dualization algorithm approach, "Geometry and Symmetries of SCFTs", June 2024, Mainz.

Mirror dualities with four supercharges via the improved algorithm, "Strings & Geometry", May 2024, Hamburg.

The mirror dualisation algorithm at work, "50 Years of Supersymmetry (SUSY 50)", May 2023, University of Minnesota.

Dualities from dualities: sequential deconfinement & the mirror dualisation algorithm, "STRINGS 2022", July 2022, Vienna.

The mirror dualisation algorithm at work, "Geometric Correspondences of Gauge Theories", June 2022, Trieste.

Mirror symmetry as a local duality on fields, "Strings & Geometry", May 2022, Utrecht.

Dualities from deconfinement, "Dynamics of SCFTs and Special Functions:", April 2022, Simons Center.

Mirror symmetry as a local duality on fields, "Quantum Field Theory at the Boundary" September 2021 27-30 Mainz (Remote event).

Mirror symmetry as a local duality on fields, "Geometry of (S)QFT", September 20-24, 2021 Simons Center (Remote event).

Free field correlators, kernel functions and the rank Q E -string on a torus, "BPS/CFT Correspondence", September 2019, CIRM, Luminy Marseille.

Free field correlators, kernel functions and the rank Q E -string on a torus, "Geometry and Strings 2019", September 2019, Oxford.

From 3d dualities to 2d free field correlators and back and an E -string surprise, "STRING-MATH 2019", July 2019, Uppsala.

$T[SU(N)]$ duality webs, "Supersymmetric theories, dualities and deformations", July 2018, Bern.

3d $\mathcal{N}=2$ dualities with monopoles, "CERN-Korea-Conference", July 2017, CERN.

3d $\mathcal{N}=2$ dualities with monopoles, "Pollica Summer workshop", June 2017, Pollica (Italy)

3d $\mathcal{N}=2$ dualities with monopoles, "GATIS-Closing-Conference", December 2016, DESY Hamburg (Germany).

3d $\mathcal{N}=2$ dualities with monopole superpotentials, "STiL 2016", August 2016, King's College London (England).

5D partition functions, q -Virasoro systems and integrable spin-chains, "Integrability in Gauge and String Theory", DESY, Hamburg (Germany), July 2014.

5d holomorphic blocks and q -CFT correlators, "Supersymmetric Quantum Field Theories in Five and Six Dimensions", Perimeter Institute (Canada), April 2014.

3d & 5d gauge theory partition functions as q -CFT correlators, "Geometry of Strings and Fields", GGI Florence (Italy) September 2013.

3d & 5d gauge theory partition functions as q -CFT correlators, "Geometric Correspondences of Gauge Theories", ICTP, Trieste (Italy) September 2013.

3d & 5d gauge theory partition functions as q -CFT correlators, "Frontiers of String Theory", Paris (France) June 2013.

3d & 5d gauge theory partition functions as q -CFT correlators, STRINGS 2013, Seoul (Korea) June 2013.

Holomorphic blocks in 3d, 37th Johns Hopkins Workshop New Perspectives in String Theory, KAST and Seoul National University, Seoul (Korea) June 2013.

3d holomorphic blocks, q -CFT correlators and 5d partition functions, Pre-Strings 2013, KIAS, Seoul (Korea) June 2013.

3d & 5d gauge theory partition functions as q -CFT correlators, String-Math-UK, Surrey (England) May 2013.

Exact results in susy gauge theories, VIII Avogadro Meeting, Scuola Normale, Pisa (Italy) December 2012.

Holomorphic blocks in 3d, "Geometric Correspondences of Gauge Theories", SISSA, Trieste (Italy), September 2012.

Holomorphic blocks in 3d, STRING-MATH 2012, Hausdorff Center for Mathematics, Bonn (Germany), July 2012.

Factorisation of $N = 2$ partition functions, "Integrability in topological field theory", Hausdorff Center for Mathematics, Bonn (Germany), April 2012.

Factorisation of $N = 2$ partition functions, "New perspectives on supersymmetric gauge theories", LMU Munich (Germany), February 2012.

Factorisation of $N = 2$ partition functions, "Mathematics and Applications of Branes in String and M-theory", Isaac Newton Institute for Mathematical Sciences, Cambridge (England), February 2012.

3D-partition functions: exact evaluation and mirror symmetry, "Geometric Correspondences of Gauge Theories", SISSA, Trieste (Italy), September 2011.

2d CFT's, $\mathcal{N}=2$ theories and surface operators, "Problemi Attuali di Fisica Teorica", Vietri sul Mare, (Italy) April 2011.

The ABC of AGT, "Theories of the Fundamental Interactions", Perugia (Italy), June 2010.

Non-perturbative Topological Strings, "2nd Workshop on Geometric Methods in Theoretical Physics", SISSA, Trieste (Italy), July 2009.

q -Deformed Yang-Mills, Topological Strings and Large N Phase-Transitions, Avogadro Meeting, Alessandria (Italy), December 2005.

Black Holes, Topological Strings and Large N Phase-Transitions, Convegno Informale di Fisica Teorica, Cortona (Italy), June 2005.

Non-Commutative Yang-Mills Chern-Simons Theory, BUSSTEPP School, Plymouth (United Kingdom), August 2004.

Invited Seminars

The local dualisation algorithm at work, Desy, Hamburg, January 2023.

Rethinking mirror symmetry as a local duality, Geneva, May 2022.

Rethinking mirror symmetry as a local duality on fields, Quiver Meeting (Zoom), February 2022.

4d mirror-like dualities, Quiver Meeting (Zoom), January 2021.

From 3d dualities to 2d free field correlators and back, Neve Shalom (Israel), May 2019.

From 3d dualities to 2d free field correlators and back, Turin (Italy), March 2019 .

From 3d dualities to 2d free field correlators and back, Leuven (Belgium), February 2019 .

$T[SU(N)]$ duality webs, Amsterdam (Netherlands), May 2018.

$T[SU(N)]$ duality webs, ETH Zurich (Switzerland), May 2018.

3d $N = 2$ dualities with monopoles, Dampt, Cambridge, November 2017.

3d $N = 2$ dualities with monopoles, École Normale supérieure (Paris), December 2016.

3d $N = 2$ dualities with monopoles, Uppsala (Sweden), November 2016.

3d $N = 2$ dualities with monopoles, Mathematical Institute, University of Oxford, (England), March 2016.

3d $N = 2$ dualities with monopoles, Queen Mary University of London (England), March 2016.

Holomorphic Blocks and q -deformed correlators, CERN (Switzerland), February 2015.

Holomorphic Blocks and q -deformed correlators, ETH Zurich (Switzerland), December 2014.

3d & 5d holomorphic blocks and q-deformed CFT, Uppsala (Sweden), February 2014.

Holomorphic blocks in 3d, Bicocca University, Milan (Italy) February 2013.

Holomorphic blocks in 3d, London Polygon, King's College London (England), February 2013.

Holomorphic blocks in 3d, DAMPT, Cambridge (England), January 2013.

Holomorphic blocks in 3d, Tor Vergata University, Rome (Italy), December 2012.

Holomorphic blocks in 3d, Mathematical Institute, University of Oxford (England), November 2012.

Holomorphic blocks in 3d, Imperial College, London (England), October 2012.

Holomorphic blocks in 3d, Tata Institute, Mumbai (India), August 2012.

Topological strings and dualities from M5 branes, COW seminar in Algebraic geometry, Oxford (England), December 2011.

3D-partition functions: exact evaluation and mirror symmetry, Rencontres Theoriciennes, Paris (France), November 2011.

3D-partition functions: exact evaluation and mirror symmetry, Mathematical Institute, University of Oxford (England), June 2011.

3D-partition functions: exact evaluation and mirror symmetry, DESY, Hamburg (Germany), June 2011.

2d CFT's, $\mathcal{N}=2$ theories and surface operators, ETH Zurich (Switzerland), March 2011.

The ABC of AGT, AEI Potsdam-Golm (Germany), May 2010.

Large N duality beyond genus expansion, Imperial College, London (England), March 2010.

Large N duality beyond genus expansion, Utrecht (Netherlands), December 2009.

Large N duality beyond genus expansion, Universite' Libre de Bruxelles (Belgium), November 2009.

Non-perturbative Topological Strings, Queen Mary University, London (England), October 2009.

Non-perturbative Topological Strings, Parma University (Italy), September 2009.

A matrix model for Hurwitz numbers, CERN, Geneva (Switzerland), July 2009.

Non-perturbative Topological Strings, Munich (Germany), July 2009.

Non-perturbative effects in Matrix Models and Topological Strings, CERN, Geneva (Switzerland), December 2008.

Non-perturbative effects in Topological Strings, CERN, Geneva (Switzerland), October 2008.

Remodelling the B-Model, Bonn (Germany), February 2008.

Remodelling the B-Model, Turin (Italy), January 2008.

Remodelling the B-Model, SEMPARI, I.H.P. Paris (France), December 2007.

Remodelling the B-Model, AEI Potsdam-Golm (Germany), November 2007.

Remodelling the B-Model, Amsterdam (Netherlands), November 2007.

Remodelling the B-Model, Utrecht (Netherlands), November 2007.

Remodelling the B-Model, CERN, Geneva (Switzerland), November 2007.

Remodelling the B-Model, SISSA, Trieste (Italy), October 2007.

Remodelling the B-Model, University of Florence (Italy), October 2007.

Topological Strings and Large N Phase-Transitions in q -Deformed Yang-Mills Theories, CERN, Geneva (Switzerland), March 2007.

Topological Strings and Large N Phase-Transitions in q -Deformed Yang-Mills Theories, University of Roma Tor Vergata, Rome (Italy), March 2006.

Topological Strings and Large N Phase-Transitions in q -Deformed Yang-Mills Theories, GeNeZiSS VI ETH Zurich (Switzerland), February 2006.

q -Deformed Yang-Mills, Topological Strings and Large N Phase-Transitions, SISSA, Trieste (Italy), November 2005.

Organisation of Seminars, Schools and Conferences

2022: Co-organiser of “Geometrization of (S)QFT in $D \leq 6$ ”, Aspen Winter Conference February 2022 (hybrid).

2020: Co-organiser of “QFT and Geometry Summer School”, July 2020 (online).

2020: Co-organiser of “QFT and Geometry Seminars”, since April 2020 (online).

2020: Co-organiser of “LACES-2020”, November 30 - December 11, GGI Florence (online).

2019: Co-organiser of “LACES-2019”, November 25 - December 13, GGI Florence.

2018: Co-organiser of “LACES-2018”, November 26 - December 14, GGI Florence.

2018: Co-organiser of “Bicocca-Surrey-School on Prospects in Strings, Fields and related topics”, September 17-21, University of Milano Bicocca.

2014: Co-organiser of “New Trends in Quantum Integrability”, August 18-22, University of Surrey.

2013: Co-organiser of “Supersymmetric Theories and Localization”, November 4-6, University of Parma.

2012–2015: Co-organiser of the “Department of Mathematics Colloquium”, University of Surrey.

2010–2012: Co-organiser of the “String Theory Seminar at Queen Mary” and of the London Triangular Seminar.

2009–2010: Co-organiser of the “CERN String Theory Journal Club”.

Refereeing

Communications in Mathematical Physics, Journal of High Energy Physics, Physics Letters B, Journal of Mathematical Physics.

Research Publications

(The 15 selected publications appear in boldface)

[42] — *Planar Abelian Duals of Chern-Simons QCD*, (52 pp), arXiv:2506.05465[hep-th](with S. Benvenuti, R. Comi, G.P. Ungureanu, S. Rota and A. Shri).

[41] — *A Chiral-Planar dualization algorithm for 3d $\mathcal{N}=2$ Chern-Simons-matter theories*, (89 pp), arXiv:2505.02913[hep-th](with S. Benvenuti, R. Comi, G.P. Ungureanu, S. Rota and A. Shri).

[40] — *Planar Abelian Mirror Duals of $\mathcal{N}=2$ SQCD₃*, (6 pp), arXiv:2411.05620[hep-th](with S. Benvenuti, R. Comi, G.P. Ungureanu, S. Rota and A. Shri).

[39] — *Star-triangle dualities and supersymmetric improved bifundamentals*, JHEP 04 (2025) 056 (84 pp), arXiv:2410.19049[hep-th] (with S. Benvenuti and R. Comi).

[38] — *Deconfinements, Kutasov-Schwimmer dualities and $D_p[SU(N)]$ theories*, JHEP 04 (2025) 056 (65 pp), arXiv:2407.11134[hep-th](with S. Benvenuti, R. Comi and M. Sacchi).

[37] — *Probing bad theories with the dualization algorithm II*, JHEP 04 (2024) 008 (131 pp), arXiv:2401.14456[hep-th](with S. Giacomelli, C. Hwang, F. Marino, and M. Sacchi).

[34] — *Mirror dualities with four supercharges*, JHEP 06 (2023) 119 (100 pp), arXiv:2312.07667[hep-th](with S. Benvenuti and R. Comi).

[35] — **Probing bad theories with the dualization algorithm. Part I**, JHEP 04 (2024) 008 (122 pp), arXiv:2309.05326[hep-th](with S. Giacomelli, C. Hwang, F. Marino, and M. Sacchi).

[34] — **The $SL(2, Z)$ dualization algorithm at work**, JHEP 06 (2023) 119 (107 pp), arXiv:2212.10571[hep-th](with R. Comi, C. Hwang, F. Marino, and M. Sacchi).

[33] — *Dualities from dualities: the sequential deconfinement technique*, JHEP 05 (2022) 069 (61 pp), arXiv:2201.11090[hep-th](with L. Bottini, C. Hwang and M. Sacchi).

[32] — **Rethinking mirror symmetry as a local duality on fields**, Phys.Rev.D 106 (2022) 10, 105014, Editors' Suggestion (6 pp), arXiv:2110.11362[hep-th](with C. Hwang and M. Sacchi).

[30] — *4d S-duality walls and $SL(2, Z)$ relations*, JHEP 03 (2022) 035 (58 pp), arXiv:2110.08001[hep-th](with L. Bottini, C. Hwang and M. Sacchi).

- [30] — *Flips, dualities and symmetry enhancements*, JHEP 05 (2021) 094 (54 pp), arXiv:2010.10446[hep-th](with C. Hwang and M. Sacchi).
- [29] — **4d mirror-like dualities**, JHEP 09 (2020) 047 (85 pp), arXiv:2002.12897[hep-th](with C. Hwang and M. Sacchi).
- [28] — **Rank Q E-string on a torus with flux**, SciPost Phys. 8 (2020) 1, 014 (54 pp), arXiv:1908.03278[hep-th](with S. Razamat, M. Sacchi and G. Zafrir).
- [27] — *3d dualities from 2d free field correlators: recombination and rank stabilization*, JHEP 01 (2020) 061 (79 pp), arXiv:1905.05807[hep-th](with M. Sacchi).
- [26] — **From 3d dualities to 2d free field correlators and back**, JHEP 1911 (2019) 081 (45 pp), arXiv:1903.10817[hep-th](with M. Sacchi).
- [25] — *Flipping the head of $T[SU(N)]$: mirror symmetry, spectral duality and monopoles*, JHEP 1904 (2019) 138 (74 pp), arXiv:1812.08142 [hep-th](with F. Aprile and Y. Zenkevich).
- [24] — *$T[U(N)]$ duality webs: mirror symmetry, spectral duality and gauge/CFT correspondences*, JHEP 1902 (2019) 176 (60 pp), arXiv:1712.08140 [hep-th](with A. Nedelin and Y. Zenkevich).
- [23] — **SUSY monopole potentials in 2+1 dimensions**, JHEP 1708 (2017) 086 (41 pp), arXiv:1703.08460[hep-th](with F. Benini and S. Benvenuti).
- [22] — *3d $\mathcal{N}=2$ mirror symmetry, pq-webs and monopole superpotentials*, JHEP 1608 (2016) 136 (52 pp), arXiv:1605.02675[hep-th](with S. Benvenuti).
- [21] — **Factorisation and holomorphic blocks in 4d**, JHEP 1511 (2015) 155 (57 pp), arXiv:1507.00261[hep-th](with F. Nieri).
- [20] — *5D partition functions, q -Virasoro systems and integrable spin-chains*, JHEP 1412 (2014) 040, (58 pp), arXiv:1312.1294[hep-th](with F. Nieri, F. Passerini and A. Torrielli).
- [19] — **3d & 5d gauge theory partition functions as q -CFT correlators**, Lett.Math.Phys. 105 (2015) 1, 109-148, (41 pp), arXiv:1303.2626[hep-th](with F. Nieri and F. Passerini).
- [18] — **Holomorphic Blocks in Three Dimensions**, JHEP 1412 (2014) 177, (123 pp), arXiv:1211.1986[hep-th](with C. Beem and T. Dimofte).
- [17] — **Factorisation of $N = 2$ theories on the squashed 3-sphere**, JHEP 1204 (2012) 120 (19 pp), arXiv:1111.6905[hep-th]

- [16] — **3D-partition functions on the sphere: exact evaluation and mirror symmetry**, *JHEP* **1205** (2012) 099 (30 pp), arXiv:1105.2551[hep-th](with S. Benvenuti).
- [15] — *Affine $sl(N)$ conformal blocks from $N = 2$ $SU(N)$ gauge theories*, *JHEP* **1101** (2011) 045 (40 pp), arXiv:1008.1412[hep-th](with C. Kozcaz, F. Passerini and N. Wyllard).
- [14] — **A & B model approaches to surface operators and Toda theories**, *JHEP* **1008** (2010) 042 (37 pp), arXiv:1004.2025[hep-th](with C. Kozcaz and N. Wyllard).
- [13] — *Large N duality beyond genus expansion*, *JHEP* **1007** (2010) 074 (37 pp), arXiv:0911.4692[hep-th](with M. Mariño and P. Putrov).
- [12] — *The Real Topological Vertex At Work*, *Nucl. Phys. B* **833**:153-198,2010 (58 pp), arXiv:0909.1324[hep-th](with D. Krefl and J. Walcher).
- [11] — **Borel and Stokes Nonperturbative Phenomena in Topological String Theory and $c = 1$ Matrix Models**, *Ann. Henri Poincaré* **10.1007/s00023-010-0044-5** (71pp), arXiv:0907.4082[hep-th] (with R. Schiappa).
- [10] — *Topological open strings on orbifolds*, *Commun. Math. Phys.* **296**:589-623, 2010 (38 pp), arXiv:0807.0597[hep-th](with V. Bouchard, A. Klemm and M. Mariño).
- [9] — **Remodeling the B-Model**, *Commun. Math. Phys.* **287**:117-178, **2009** (83 pp), arXiv:0709.1453[hep-th](with V. Bouchard, A. Klemm and M. Mariño).
- [8] — *Non-Commutative (Softly Broken) Supersymmetric Yang-Mills Chern-Simons* (41 pp), arXiv:hep-th/0609168 (with N. Caporaso).
- [7] — *Topological Strings, Two-Dimensional Yang-Mills theory and Chern-Simons Theory on Torus Bundles*, *Adv. Theor. Math. Phys.* (Volume 12, Number 5, October 2008) (62 pp), arXiv:hep-th/0609129(with N. Caporaso, M. Cirafici, L. Griguolo, R.J. Szabo and D. Seminara).
- [6] — *Phase-Transitions, Double-Scaling Limit, and Topological Strings*, *Phys. Rev. D* **75** (2007) 046004 (49 pp), arXiv:hep-th/0606120(with N. Caporaso, L. Griguolo, M. Mariño and D. Seminara).
- [5] — *Gauge-Invariant Resummation Formalism and Unitarity in Non-Commutative QED*, *JHEP* **0604** (2006) 016 (30 pp), arXiv:hep-th/0511127(with N. Caporaso).
- [4] — *Black-holes, topological strings and large N phase transitions*, *J. Phys. Conf. Ser.* **33**: 13-25, (2006), arXiv:hep-th/0512213 (with N. Caporaso, M. Cirafici,

L. Griguolo, R.J. Szabo and D. Seminara).

[3] — *Topological Strings and Large N Phase-Transitions. II: Chiral Expansion of q -Deformed Yang-Mills Theory*, JHEP **0601** (2006) 036 (49 pp), [arXiv:hep-th/0511043](#)(with N. Caporaso, M. Cirafici, L. Griguolo, R.J. Szabo and D. Seminara).

[2] — *Topological Strings and Large N Phase-Transitions. I: Nonchiral Expansion of q -Deformed Yang-Mills Theory*, JHEP **0601** (2006) 035 (69 pp), [arXiv:hep-th/0509041](#)(with N. Caporaso, M. Cirafici, L. Griguolo, R.J. Szabo and D. Seminara).

[1] — *Non-Commutative Topologically Massive Gauge Theory*, Ann Arbor 2004, Deserfest 255-265, [arXiv:hep-th/0409109](#)(with N. Caporaso, L. Griguolo and D. Seminara).

Invited review contribution

Holomorphic blocks and the 5d AGT correspondence, S. Pasquetti, Chapter 16 in the review: *Localization techniques in quantum field theories*, J. Phys. A50 (2017) no.44, 443016, V. Pestun et al., [arXiv:1608.02952](#).

Dated: 11/7/2025

Curriculum Vitae

November 25, 2025

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EDUCATION

Oct 2007- Aug 2011 DOCTOR OF PHILOSOPHY IN THEORETICAL PHYSICS

Imperial College London, UK

Thesis advisor: Professor Amihay Hanany

Oct 2004- Jun 2007 BACHELOR OF ARTS IN MATHEMATICS (FIRST CLASS HONOURS)

University of Cambridge, UK

CURRENT POSITION

Jan 2021- present PRIMO RICERCATORE (EQUIVALENT TO ASSOCIATE PROFESSOR)

National Institute for Nuclear Physics (INFN), Milano-Bicocca Division, Italy

PREVIOUS POSITIONS

Aug 2017- Dec 2020 RICERCATORE (EQUIVALENT TO ASSISTANT PROFESSOR)

INFN, Milano-Bicocca Division, Italy

Oct 2016- July 2017 POSTDOCTORAL POSITION

The University of Milano-Bicocca, Milan, Italy

Oct 2013- Sep 2016 CERN FELLOWSHIP

The Theory Unit, CERN, Geneva, Switzerland

Oct 2011- Sep 2013 POSTDOCTORAL FELLOWSHIP

The Max Planck Institute for Physics, Munich, Germany

FELLOWSHIPS

Nov 2022 VISITING PROFESSOR at École Normale Supérieure (ENS) and CNRS, Paris.

Oct 2013- Sep 2016 CERN FELLOWSHIP

Oct 2011- Sep 2013 MAX PLANCK POSTDOCTORAL FELLOWSHIP

PRIZES AND AWARDS

July 2023 ITALIAN NATIONAL RESEARCH GRANT PRIN 2022

Feb 2012 WINTON CAPITAL PRIZE FOR THE BEST PHD THESIS IN PHYSICS

May 2010 AWARD FOR EXCELLENCE IN TEACHING (IMPERIAL COLLEGE LONDON)

2005-2007 HORNE PRIZE & FOUNDATION SCHOLARSHIP

Clare College, University of Cambridge, for excellent exam results.

TEACHING ACTIVITIES

Sep 2025 Group and Representation Theories (graduate course, 48 hours)

Dec 2024 Introduction to 't Hooft anomalies (doctoral school, 6 hours)

LACES PhD School, Galileo Galilei Institute, Florence.

Nov 2022 Generalized Global Symmetries and their Anomalies (advanced course, 5 hours)

École Normale Supérieure (ENS), Paris, France

Mar 2022 Quantum Gravity (graduate course, 24 hours)

Jun 2017 Geometrical Aspects of the AdS/CFT correspondence (graduate course, 6 hours)
University of Milano-Bicocca, Milan, Italy

Nov 2019 The Dynamics of 4d $\mathcal{N} = 1$ Supersymmetric Theories (doctoral school, 16 hours)
LACES PhD School, Galileo Galilei Institute, Florence.

Jan 2013 The Dynamics of Supersymmetric Theories (graduate course, 8 hours)
Max Planck Institute for Physics, Munich, Germany.

ORGANISATION OF SCIENTIFIC MEETINGS

Nov 2020-2023 Annual PhD School, LACES, at the Galileo Galilei Institute, Florence
Role: co-organiser. Number of participants: 60

8-19 Feb 2016 The CERN theory workshop on Recent Developments in M-theory
Role: co-organiser. Number of participants: 50

INSTITUTIONAL RESPONSIBILITIES

COORDINATOR, THEORETICAL PHYSICS GROUP (GROUP IV)

Aug 2023-present INFN, Milano-Bicocca Division, Italy

FACULTY MEMBER

Aug 2017-present INFN, Milano-Bicocca Division, Italy

MENTORSHIP AND SUPERVISION, University of Milano-Bicocca, Italy

1 postdoc under mentorship: S. Giacomelli (2021-2025)

3 PhD students: I. Garozzo (2018-2021), E. Beratto (2019-2022), W. Harding (2023-present).

5 Master's students: G. Peveri (2018-2019), L. Viscardi (2021-2022), R. Pozzi (2022-2023),
W. Harding (2022-2023), M. D'Angelo (2025-2026)

6 Bachelor's students: J. Finati (2020), M. Martelli (2021), D. Villa (2022), M. Riva (2022),
E. Bertoli (2023), D. Bergna (2025)

MEMBER OF A COMMITTEE, INFN and University of Milano-Bicocca, Italy

Jun 2022 Committee for the admission of PhD students for the academic year 2022.

Oct-Dec 2021 Committee for the admission of the INFN theoretical postdoc fellowship.

May-Oct 2021 Various committees for the admission of the INFN postdocs.

Aug 2017-present Various committees for the defences of doctoral, Master's and Bachelor's theses

REVIEWING ACTIVITIES

2023-present Reviewer of the United States-Israel Binational Science Foundation Grants

2009-present Reviewer of the *Journal of High Energy Physics* (JHEP), *Physical Review Letters*,
Physical Review D, *SciPost*, and *Nuclear Physics B*

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2016-present Member, Research Network "Gauge Theories, Supergravity and String Theory" (GSS)

CURRENT RESEARCH GRANT: PRIN 2022

Project title: Quantum Gravity from Strong Coupling Dynamics

Funding source: Italian Ministry of Education, University and Research (MIUR)

Role: INFN coordinator

Amount: 313000 Euro

Period: July 2023 to February 2026

INVITED RESEARCH SEMINARS

Since 2008, I have given more than 80 invited seminars in various universities and institutes including: Simons Center for Geometry and Physics, Stony Brook (2022); DESY, Hamburg (2022, 2013); ENS, Paris (2022, 2021); Joint String Theory Seminar for Universities in Belgium (2022); University of Oxford (2021, 2019, 2011, 2010); Imperial College London (2021, 2019); Korea Institute for Advanced Study, KIAS (2020); CERN (2018, 2012); ICTP Trieste (2017); Harvard University (2015); ETH Zurich (2015); Joint String Theory Seminar for all Universities and research institutes in the Greater Paris area (2015); Kavli IPMU, University of Tokyo (2015, 2012); California Institute of Technology, Caltech (2014, 2010); Kavli Institute for Theoretical Physics (KITP), University of California at Santa Barbara (2014); Perimeter Institute (2014, 2010); University of Bonn (2013); Humboldt University (2012); Yukawa Institute, University of Kyoto (2011); University of California at Los Angeles, UCLA (2010); Princeton University (2010); University of Cambridge (2010).

INVITED SPEAKER AT INTERNATIONAL CONFERENCES AND WORKSHOPS

<i>Nov 2025</i>	Aspects of Supersymmetric Quantum Field Theory, Seoul, South Korea
<i>Oct 2023</i>	Recent Trends in Supersymmetric Field Theories, Jeju Island, South Korea
<i>Oct 2022</i>	Simons Workshop on 5d $\mathcal{N} = 1$ SCFTs and Gauge Theories on Brane Webs, USA
<i>Feb 2022</i>	Aspen Winter Conference 2022 on Geometrization of (S)QFTs in $D \leq 6$, USA
<i>Jun 2017</i>	Pollica Summer Workshop on Dualities in Superconformal Field Theories, Italy
<i>May 2017</i>	Aspen Summer Conference 2017 on SCFTs in $d \geq 4$, USA
<i>Jun 2015</i>	Workshop on Developments in M-theory, South Korea
<i>Apr 2014</i>	KITP Program on New Methods in Nonperturbative QFT, USA
<i>Sep 2013</i>	DESY theory workshop, DESY, Hamburg, Germany
<i>Jul 2013</i>	Aspen Summer Program on Mathematics of SCFTs, Aspen, USA
<i>July 2012</i>	String-Math Conference 2012, Bonn, Germany
<i>Apr 2012</i>	Progress in Quantum Field Theory and String Theory, Osaka, Japan

BIBLIOMETRICS DATA

# published papers	Total citations	Citations per paper	h -index	# papers with citations ≥ 100	# papers with citations between 50 and 100
64	2615	40.9	33	4	16

For the bibliometrics data and complete list of publications, please consult <http://inspirehep.net/search?ln=en&ln=en&p=a+mekareeya%2C+noppadol1>.

List of publications

- [1] S. Garavaglia, W. Harding, D. Liu and N. Mekareeya, “Interplay of Generalised Symmetries and Moduli Spaces in 3d $\mathcal{N} = 5$ SCFTs,” [arXiv:2511.01970 [hep-th]].
- [2] F. Apruzzi, N. Mekareeya, B. Robinson and A. Tomasiello, “New punctures for six-dimensional compactifications,” [arXiv:2510.17972 [hep-th]].
- [3] S. Giacomelli, W. Harding, N. Mekareeya and A. Mininno, “From Regular to Irregular: A Unified Origin for Argyres-Douglas Theories,” JHEP 10 (2025) 155 doi:10.1007/JHEP10(2025)155 [arXiv:2507.13434 [hep-th]].
- [4] W. Harding, N. Mekareeya and Z. Zhong, “Orthosymplectic Quivers: Indices, Hilbert Series, and Generalised Symmetries,” JHEP 09 (2025) 212 doi:10.1007/JHEP09(2025)212 [arXiv:2505.03875 [hep-th]].
- [5] S. Giacomelli, W. Harding, N. Mekareeya and A. Mininno, “All Class \mathcal{S} Theories of Type- A Originate from Orbi-instantons,” JHEP 02 (2025), 185 doi:10.1007/JHEP02(2025)185 [arXiv:2411.03425 [hep-th]].
- [6] J. F. Grimminger, W. Harding and N. Mekareeya, “Generalised-Edged Quivers and Global Forms,” JHEP 03 (2025), 021 doi:10.1007/JHEP03(2025)021 [arXiv:2410.16353 [hep-th]].
- [7] J. F. Grimminger, W. Harding and N. Mekareeya, “Wreathing, discrete gauging, and non-invertible symmetries,” JHEP 01 (2025), 124 doi:10.1007/JHEP01(2025)124 [arXiv:2410.12906 [hep-th]].
- [8] F. Apruzzi, N. Mekareeya, B. Robinson and A. Tomasiello, “Superconformal anomalies for string defects in six-dimensional $\mathcal{N} = (1, 0)$ SCFTs,” JHEP 12 (2024), 153 doi:10.1007/JHEP12(2024)153 [arXiv:2407.18049 [hep-th]].
- [9] S. Giacomelli, W. Harding, N. Mekareeya and A. Mininno, “Discrete global symmetries: gauging and twisted compactification,” JHEP 05 (2024), 304 doi:10.1007/JHEP05(2024)304 [arXiv:2402.03424 [hep-th]].
- [10] R. Comi, W. Harding and N. Mekareeya, “Chern-Simons-Trinion Theories: One-form Symmetries and Superconformal Indices,” JHEP 09 (2023), 060 doi:10.1007/JHEP09(2023)060 [arXiv:2305.07055 [hep-th]].
- [11] F. Carta, S. Giacomelli, N. Mekareeya and A. Mininno, “Comments on Non-invertible Symmetries in Argyres-Douglas Theories,” JHEP 07 (2023), 135 doi:10.1007/JHEP07(2023)135 [arXiv:2303.16216 [hep-th]].
- [12] N. Mekareeya and M. Sacchi, “Mixed anomalies, two-groups, non-invertible symmetries, and 3d superconformal indices,” JHEP 01 (2023), 115 doi:10.1007/JHEP01(2023)115 [arXiv:2210.02466 [hep-th]].
- [13] F. Carta, S. Giacomelli, N. Mekareeya and A. Mininno, “A tale of 2-groups: $D_p(\text{USp}(2N))$ theories,” JHEP 06 (2023), 102 doi:10.1007/JHEP06(2023)102 [arXiv:2208.11130 [hep-th]].
- [14] F. Carta, S. Giacomelli, N. Mekareeya and A. Mininno, “Dynamical consequences of 1-form symmetries and the exceptional Argyres-Douglas theories,” JHEP 06 (2022), 059 doi:10.1007/JHEP06(2022)059 [arXiv:2203.16550 [hep-th]].
- [15] E. Beratto, N. Mekareeya and M. Sacchi, “Zero-form and one-form symmetries of the ABJ and related theories,” JHEP 04 (2022), 126 doi:10.1007/JHEP04(2022)126 [arXiv:2112.09531 [hep-th]].
- [16] F. Carta, S. Giacomelli, N. Mekareeya and A. Mininno, “Conformal manifolds and 3d mirrors of (D_n, D_m) theories,” JHEP 02 (2022), 014 doi:10.1007/JHEP02(2022)014 [arXiv:2110.06940 [hep-th]].
- [17] F. Carta, S. Giacomelli, N. Mekareeya and A. Mininno, “Conformal manifolds and 3d mirrors of Argyres-Douglas theories,” JHEP 08 (2021), 015 doi:10.1007/JHEP08(2021)015 [arXiv:2105.08064 [hep-th]].
- [18] S. Giacomelli, N. Mekareeya and M. Sacchi, “New aspects of Argyres–Douglas theories and their dimensional reduction,” JHEP 03 (2021), 242 doi:10.1007/JHEP03(2021)242 [arXiv:2012.12852 [hep-th]].

- [19] E. Beratto, N. Mekareeya and M. Sacchi, “Marginal operators and supersymmetry enhancement in 3d S -fold SCFTs,” JHEP **12** (2020), 017 doi:10.1007/JHEP12(2020)017 [arXiv:2009.10123 [hep-th]].
- [20] E. Beratto, S. Giacomelli, N. Mekareeya and M. Sacchi, “3d mirrors of the circle reduction of twisted A_{2N} theories of class S,” JHEP **09** (2020), 161 doi:10.1007/JHEP09(2020)161 [arXiv:2007.05019 [hep-th]].
- [21] I. Garozzo, N. Mekareeya, M. Sacchi and G. Zafrir, “Symmetry enhancement and duality walls in 5d gauge theories,” JHEP **06** (2020), 159 doi:10.1007/JHEP06(2020)159 [arXiv:2003.07373 [hep-th]].
- [22] I. Garozzo, N. Mekareeya and M. Sacchi, “Duality walls in the 4d $\mathcal{N} = 2$ $SU(N)$ gauge theory with $2N$ flavours,” JHEP **11** (2019), 053 doi:10.1007/JHEP11(2019)053 [arXiv:1909.02832 [hep-th]].
- [23] I. Garozzo, G. Lo Monaco, N. Mekareeya and M. Sacchi, “Supersymmetric Indices of 3d S -fold SCFTs,” JHEP **08** (2019), 008 doi:10.1007/JHEP08(2019)008 [arXiv:1905.07183 [hep-th]].
- [24] A. Amariti, M. Fazzi, N. Mekareeya and A. Nedelin, “New 3d $\mathcal{N} = 2$ SCFT’s with $N^{3/2}$ scaling,” JHEP **12** (2019), 111 doi:10.1007/JHEP12(2019)111 [arXiv:1903.02586 [hep-th]].
- [25] I. Garozzo, G. Lo Monaco and N. Mekareeya, “Variations on S -fold CFTs,” JHEP **03** (2019), 171 doi:10.1007/JHEP03(2019)171 [arXiv:1901.10493 [hep-th]].
- [26] A. Amariti, L. Cassia, I. Garozzo and N. Mekareeya, “Branes, partition functions and quadratic monopole superpotentials,” Phys. Rev. D **100** (2019) no.4, 046001 doi:10.1103/PhysRevD.100.046001 [arXiv:1901.07559 [hep-th]].
- [27] I. Garozzo, G. Lo Monaco and N. Mekareeya, “The moduli spaces of S -fold CFTs,” JHEP **01** (2019), 046 doi:10.1007/JHEP01(2019)046 [arXiv:1810.12323 [hep-th]].
- [28] A. Amariti, I. Garozzo and N. Mekareeya, “New 3d $\mathcal{N} = 2$ dualities from quadratic monopoles,” JHEP **11** (2018), 135 doi:10.1007/JHEP11(2018)135 [arXiv:1806.01356 [hep-th]].
- [29] A. Hanany and N. Mekareeya, “The small E_8 instanton and the Kraft Procesi transition,” JHEP **07** (2018), 098 doi:10.1007/JHEP07(2018)098 [arXiv:1801.01129 [hep-th]].
- [30] G. Ferlito, A. Hanany, N. Mekareeya and G. Zafrir, “3d Coulomb branch and 5d Higgs branch at infinite coupling,” JHEP **07** (2018), 061 doi:10.1007/JHEP07(2018)061 [arXiv:1712.06604 [hep-th]].
- [31] S. Giacomelli and N. Mekareeya, “Mirror theories of 3d $\mathcal{N} = 2$ SQCD,” JHEP **03** (2018), 126 doi:10.1007/JHEP03(2018)126 [arXiv:1711.11525 [hep-th]].
- [32] N. Mekareeya, K. Ohmori, H. Shimizu and A. Tomasiello, “Small instanton transitions for M5 fractions,” JHEP **10** (2017), 055 doi:10.1007/JHEP10(2017)055 [arXiv:1707.05785 [hep-th]].
- [33] N. Mekareeya, K. Ohmori, Y. Tachikawa and G. Zafrir, “ E_8 instantons on type-A ALE spaces and supersymmetric field theories,” JHEP **09** (2017), 144 doi:10.1007/JHEP09(2017)144 [arXiv:1707.04370 [hep-th]].
- [34] C. Closset, N. Mekareeya and D. S. Park, “A-twisted correlators and Hori dualities,” JHEP **08** (2017), 101 doi:10.1007/JHEP08(2017)101 [arXiv:1705.04137 [hep-th]].
- [35] N. Mekareeya, T. Rudelius and A. Tomasiello, “T-branes, Anomalies and Moduli Spaces in 6D SCFTs,” JHEP **10** (2017), 158 doi:10.1007/JHEP10(2017)158 [arXiv:1612.06399 [hep-th]].
- [36] A. Dey, A. Hanany, P. Koroteev and N. Mekareeya, “On Three-Dimensional Quiver Gauge Theories of Type B,” JHEP **09** (2017), 067 doi:10.1007/JHEP09(2017)067 [arXiv:1612.00810 [hep-th]].
- [37] S. Cremonesi, N. Mekareeya and A. Zaffaroni, “The moduli spaces of 3d $\mathcal{N} \geq 2$ Chern-Simons gauge theories and their Hilbert series,” JHEP **10** (2016), 046 doi:10.1007/JHEP10(2016)046 [arXiv:1607.05728 [hep-th]].
- [38] S. M. Hosseini and N. Mekareeya, “Large N topologically twisted index: necklace quivers, dualities, and Sasaki-Einstein spaces,” JHEP **08** (2016), 089 doi:10.1007/JHEP08(2016)089 [arXiv:1604.03397 [hep-th]].
- [39] N. Mekareeya, “The moduli space of instantons on an ALE space from 3d $\mathcal{N} = 4$ field theories,” JHEP **12** (2015), 174 doi:10.1007/JHEP12(2015)174 [arXiv:1508.06813 [hep-th]].

- [40] S. Cremonesi, G. Ferlito, A. Hanany and N. Mekareeya, “Instanton Operators and the Higgs Branch at Infinite Coupling,” *JHEP* **04** (2017), 042 doi:10.1007/JHEP04(2017)042 [arXiv:1505.06302 [hep-th]].
- [41] S. Cremonesi, A. Hanany, N. Mekareeya and A. Zaffaroni, “ T_ρ^σ (G) theories and their Hilbert series,” *JHEP* **01** (2015), 150 doi:10.1007/JHEP01(2015)150 [arXiv:1410.1548 [hep-th]].
- [42] S. Cremonesi, G. Ferlito, A. Hanany and N. Mekareeya, “Coulomb Branch and The Moduli Space of Instantons,” *JHEP* **12** (2014), 103 doi:10.1007/JHEP12(2014)103 [arXiv:1408.6835 [hep-th]].
- [43] N. Mekareeya and D. Rodriguez-Gomez, “The ADHM-like constructions for instantons on \mathbb{CP}^2 and three-dimensional gauge theories,” *Nucl. Phys. B* **891** (2015), 346-377 doi:10.1016/j.nuclphysb.2014.12.009 [arXiv:1404.3738 [hep-th]].
- [44] S. Cremonesi, A. Hanany, N. Mekareeya and A. Zaffaroni, “Coulomb branch Hilbert series and Three Dimensional Sicilian Theories,” *JHEP* **09** (2014), 185 doi:10.1007/JHEP09(2014)185 [arXiv:1403.2384 [hep-th]].
- [45] S. Cremonesi, A. Hanany, N. Mekareeya and A. Zaffaroni, “Coulomb branch Hilbert series and Hall-Littlewood polynomials,” *JHEP* **09** (2014), 178 doi:10.1007/JHEP09(2014)178 [arXiv:1403.0585 [hep-th]].
- [46] A. Dey, A. Hanany, P. Koroteev and N. Mekareeya, “Mirror Symmetry in Three Dimensions via Gauged Linear Quivers,” *JHEP* **06** (2014), 059 doi:10.1007/JHEP06(2014)059 [arXiv:1402.0016 [hep-th]].
- [47] N. Mekareeya and D. Rodriguez-Gomez, “5d gauge theories on orbifolds and 4d ‘t Hooft line indices,” *JHEP* **11** (2013), 157 doi:10.1007/JHEP11(2013)157 [arXiv:1309.1213 [hep-th]].
- [48] A. Dey, A. Hanany, N. Mekareeya, D. Rodríguez-Gómez and R. K. Seong, “Hilbert Series for Moduli Spaces of Instantons on C^2/Z_n ,” *JHEP* **01** (2014), 182 doi:10.1007/JHEP01(2014)182 [arXiv:1309.0812 [hep-th]].
- [49] Y. Chen, N. Jokela, M. Jarvinen and N. Mekareeya, “Moduli space of supersymmetric QCD in the Veneziano limit,” *JHEP* **09** (2013), 131 doi:10.1007/JHEP09(2013)131 [arXiv:1303.6289 [hep-th]].
- [50] N. Mekareeya, J. Song and Y. Tachikawa, “2d TQFT structure of the superconformal indices with outer-automorphism twists,” *JHEP* **03** (2013), 171 doi:10.1007/JHEP03(2013)171 [arXiv:1212.0545 [hep-th]].
- [51] D. Lüüst, N. Mekareeya, O. Schlotterer and A. Thomson, “Refined Partition Functions for Open Superstrings with 4, 8 and 16 Supercharges,” *Nucl. Phys. B* **876** (2013), 55-146 doi:10.1016/j.nuclphysb.2013.08.003 [arXiv:1211.1018 [hep-th]].
- [52] A. Hanany, N. Mekareeya and S. S. Razamat, “Hilbert Series for Moduli Spaces of Two Instantons,” *JHEP* **01** (2013), 070 doi:10.1007/JHEP01(2013)070 [arXiv:1205.4741 [hep-th]].
- [53] E. Basor, Y. Chen and N. Mekareeya, “The Hilbert Series of $N = 1SO(N_c)$ and $Sp(N_c)$ SQCD, Painlevé VI and Integrable Systems,” *Nucl. Phys. B* **860** (2012), 421-463 doi:10.1016/j.nuclphysb.2012.02.018 [arXiv:1112.3848 [hep-th]].
- [54] C. A. Keller, N. Mekareeya, J. Song and Y. Tachikawa, “The ABCDEFG of Instantons and W-algebras,” *JHEP* **03** (2012), 045 doi:10.1007/JHEP03(2012)045 [arXiv:1111.5624 [hep-th]].
- [55] A. Hanany and N. Mekareeya, “Complete Intersection Moduli Spaces in N=4 Gauge Theories in Three Dimensions,” *JHEP* **01** (2012), 079 doi:10.1007/JHEP01(2012)079 [arXiv:1110.6203 [hep-th]].
- [56] Y. Chen and N. Mekareeya, “The Hilbert series of U/SU SQCD and Toeplitz Determinants,” *Nucl. Phys. B* **850** (2011), 553-593 doi:10.1016/j.nuclphysb.2011.05.012 [arXiv:1104.2045 [hep-th]].
- [57] J. Davey, A. Hanany, N. Mekareeya and G. Torri, “M2-Branes and Fano 3-folds,” *J. Phys. A* **44** (2011), 405401 doi:10.1088/1751-8113/44/40/405401 [arXiv:1103.0553 [hep-th]].
- [58] A. Hanany and N. Mekareeya, “Tri-vertices and $SU(2)$ ’s,” *JHEP* **02** (2011), 069 doi:10.1007/JHEP02(2011)069 [arXiv:1012.2119 [hep-th]].

-
- [59] S. Benvenuti, A. Hanany and N. Mekareeya, “The Hilbert Series of the One Instanton Moduli Space,” JHEP **06** (2010), 100 doi:10.1007/JHEP06(2010)100 [arXiv:1005.3026 [hep-th]].
- [60] J. Davey, A. Hanany, N. Mekareeya and G. Torri, “Brane Tilings, M2-branes and Chern-Simons Theories,” [arXiv:0910.4962 [hep-th]].
- [61] J. Davey, A. Hanany, N. Mekareeya and G. Torri, “Higgsing M2-brane Theories,” JHEP **11** (2009), 028 doi:10.1088/1126-6708/2009/11/028 [arXiv:0908.4033 [hep-th]].
- [62] J. Davey, A. Hanany, N. Mekareeya and G. Torri, “Phases of M2-brane Theories,” JHEP **06** (2009), 025 doi:10.1088/1126-6708/2009/06/025 [arXiv:0903.3234 [hep-th]].
- [63] A. Hanany, N. Mekareeya and G. Torri, “The Hilbert Series of Adjoint SQCD,” Nucl. Phys. B **825** (2010), 52-97 doi:10.1016/j.nuclphysb.2009.09.016 [arXiv:0812.2315 [hep-th]].
- [64] A. Hanany, N. Mekareeya and A. Zaffaroni, “Partition Functions for Membrane Theories,” JHEP **09** (2008), 090 doi:10.1088/1126-6708/2008/09/090 [arXiv:0806.4212 [hep-th]].
- [65] A. Hanany and N. Mekareeya, “Counting Gauge Invariant Operators in SQCD with Classical Gauge Groups,” JHEP **10** (2008), 012 doi:10.1088/1126-6708/2008/10/012 [arXiv:0805.3728 [hep-th]].
- [66] J. Gray, A. Hanany, Y. H. He, V. Jejjala and N. Mekareeya, “SQCD: A Geometric Apercu,” JHEP **05** (2008), 099 doi:10.1088/1126-6708/2008/05/099 [arXiv:0803.4257 [hep-th]].

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Position : Full Professor, University of Milano-Bicocca
Address for correspondence : Dipartimento di Fisica

Homepage:

1 Academic degrees

- Laurea magna cum laude Università di Milano, 1991.
- Ph. D in Physics, SISSA/ISAS, Trieste, 1994. Supervisors: Prof. Pietro Fre' (SISSA) and Luciano Girardello (Milano).

2 Academic career

- Post-doctoral fellow at Ecole Polytechnique, Palaiseau, France (1994-1995).
- Post-doctoral fellow at the Institute for Advanced Study in Princeton (1995-1997).
- Post-doctoral fellow at the Theory Division at CERN, Geneva (1997-1999).
- INFN researcher (1999-2001 - temporary position, Milano).
- Professor at the University of Milano-Bicocca (associate 2001 -, full 2016-)

3 Awards and honors

- SIGRAV prize 2000 (Società Italiana di Relatività Generale e Gravitazione).

4 Teaching:

Bachelor and master courses:

- Quantum Mechanics, bachelor (from 2010/11 to 2014/15 and from 2021/22 -)
- Theory of Quantum Computing and Quantum Information, master (from 2021/22 -)
- Mathematical Methods for Physics, bachelor (from 2002/03 to 2007/08 and 2015/16, 2016/17, 2019/20).
- Quantum Gravity, master (from 2015/16 to 2020/21).
- Mathematical Methods for Physics, master (from 2001/02 to 2009/10).
- Group Theory, master (from 2003/04 to 2007/08).
- Introduction to Quantum Mechanics, bachelor (from 2008/09 to 2009/10).
- Statistical Mechanics, master (from 2015/16 to 2016/17).
- Theoretical Physics (introduction to Quantum Field Theory and the Standard Model), master (2017/18, 2018/2019 and 2021/22).

Ph. D. courses:

- Ph. D. courses for the Ph. D school in Milano-Bicocca, 2001, 2002, 2003, 2004, 2011, 2012, 2015 and 2017.
- *Superstrings*, Scuola Normale Superiore, Pisa, anno 2000.
- *Introduction to AdS/CFT*, Ecole Polytechnique Federal de Lausanne (Troisième cycle de la physique en suisse romande), 2009.
- *Introduction to AdS/CFT*, Scuola Normale Superiore, Pisa, 2011, and from 2017 to 2022.
- *Monopoles in Three Dimensional Gauge Theories*, Ecole Normale Superieure, Parigi, 2015.

Courses at national and international schools for Ph. D students and post-docs:

- SIFTS, Summer Institute de Fisica teorica, Madrid 2024.
- Scuola di Dottorato LACES 2023, Galileo Galilei Institute, Firenze 2023.
- International School of Subnuclear Physics, Erice 2023
- SIGRAV International School, School of Applied Quantum Gravity, Vietri 2023

- School on Supersymmetric Localization, Holography and Related Topics, ICTP, Trieste July 2018.
- CERN Winter School on Strings and Fields 2017, February 2017.
- Parma International School of Theoretical Physics, Parma, 30/8 - 4/10 2010.
- Scuola di Dottorato LACES 2009, Galileo Galilei Institute, Firenze 2009.
- TMR European Network Graduate school on *Strings, Supergravity and Gauge Theories*, Trieste, 31/1-4/2/2005, pubblicate in PoS RTN2005:005,2005.
- Scuola Nazionale di Dottorato dell'INFN, Parma, 30/8 -3/9/2005.
- TMR European Network Graduate school on *Quantum aspects of gauge theories supersymmetry and unification*, Torino, 26/1-2/2/2000.
- Scuola Nazionale di Dottorato dell'INFN, Parma, 6-10/9/1999.

5 Student Supervision:

- I partially supervised the research of other students of the Ph. D. school in Milano
- I supervised about 20 master thesis

and more than 40 bachelor thesis.

6 Administrative and teaching activities

- Coordinator of the Master in Physics, Bicocca 2020-2024.
- President of the Teaching Committee for the degrees in Physics, Bicocca (2006-2018).
- Member of the "Comitato d'Area Fisica dell'Ateneo di Milano-Bicocca" until September 2009.
- Member of the "Commissione Paritetica della Scuola di Scienze di Milano-Bicocca" until 2014/15.
- Member of the "Commissione Paritetica del Dipartimento di Fisica dell'Università di Milano-Bicocca" from 2015/16 to 2017/18.
- Member of the "Commissione per l'Abilitazione Scientifica Nazionale nel settore 02/A2, tornata 2018-2020".

7 Research grant management

- PI of the project "Quantum Gravity from Strongly Coupled Dynamics" in MIUR - Prin2022.
- Scientific coordination of Milano unit "Supersymmetry Breaking with Fields, Strings and Branes" in MIUR - Prin2017.
- National coordinator of contract GSS of Istituto Nazionale di Fisica Nucleare (INFN), which includes seven units: Bicocca, Milano, Torino, Genova, Padova, Lecce, Frascati (2010 -2016).
- Scientific coordination of Milano unit "Campi di gauge, stringhe e dualità" in MIUR - Prin2007.
- Scientific coordination of Milano unit "Simmetrie dell'Universo e delle Interazioni Fondamentali" in MIUR - Prin2009.
- Participation to several italian and european grants: "Teorie di gauge e stringhe", MIUR - Prin 2003; - "Campi di gauge, stringhe e dualita", MIUR - Prin 2005 - "La teoria delle stringhe e la fisica delle interazioni fondamentali", MIUR - Furb 2010; - EC-RTN network "Constituents, Fundamental Forces and Symmetries of the Universe" (MRTN-CT-2004-005104); - TMR network "The quantum structure of spacetime and the geometric nature of fundamental interactions" (RTN HPRN-CT-2000-00131).

8 Other Activities

- Member of the editorial board of the international journals JHEP and SciPost.
- Panel member for ERC - Starting Grants (PE2 sector) 2022 and 2024.
- Referee for various international journals including JHEP, Nuclear Physics B, Physics Letters B, Physical Review D, Physical Review Letters.
- External Reviewer for: ERC; US National Science Foundation (NSF); Swiss National Science Fund (SNSF); UK Science and Technology Facilities Council (STFC) and Royal Society; Israel Science Foundation (ISF); Rita Levi Montalcini fellowship program (MIUR); VQR 2004-2010 e 2011-2014.
- Invited scientific visits and seminars at several international Institutions including MIT, UCLA, USC, Caltech, KITP Santa Barbara, New York University, Imperial College London, King's College London, Queen Mary College London, Cambridge, Oxford, Max Planck Munich, Desy, CERN, ICTP, Universidad Autonoma Madrid, Amsterdam University, Utrecht, Ecole Normale Supérieure Paris, Ecole Polytechnique Paris, Paris VI-Jussieu.

9 Books

- *A Guide to Mathematical Methods for Physicists With Problems and Solutions.* By Michela Petrini, Gianfranco Pradisi, Alberto Zaffaroni; World Scientific (2017).
- *A Guide to Mathematical Methods for Physicists Advanced Topics and applications.* By Michela Petrini, Gianfranco Pradisi, Alberto Zaffaroni; World Scientific (2018).

10 Research interests

- Quantum Field Theories.
- Quantum Gravity.
- Gauge Theories and String Theories, in particular their non-perturbative properties.

11 Bibliometry:

- INSPIRE database (standard database for high energy physics): h index = 60, about 9300 citations, average 84, with 2 papers with more than 500 citations,

3 papers with more than 250, 22 papers with more than 100 and 42 papers with more than 50

<https://inspirehep.net/literature?sort=mostrecent&size=25&page=1&q=f%20a%20zaffaroni%2Ca&ui-citation-summary=true>

- Google Scholar: 10800 citations, h index = 63

<https://scholar.google.com/citations?user=GpxCB-UAAAAJ&hl=en>

Updated December 2024.

Curriculum Vitæ et Studiorum

Paride Paradisi

Education and Academic Career

- March 2025 - present:
“**Full Professor**”, Physics Department of the University of Padua, Italy.
- March 2017: Italian “**Full Professor habilitation**”.
- September 2017 - March 2025:
“**Associate Professor**”, Physics Department of the University of Padua, Italy.
- September 2014 - August 2017:
“**Ricercatore di tipo B**”, Physics Department of the University of Padua, Italy.
- October 2013 - August 2014:
“**Postdoctoral Research Fellow**” at the Physics Department of the University of Padua, Italy under the ERC grant DaMeSyFla.
- October 2011 - September 2013:
“**CERN Fellow**”, CERN Theory Division, Geneva, Switzerland.
- February 2008 - September 2011:
“**Postdoctoral Research Fellow**” at the Physics Department of the University of Munich, “Technische Universitat Munchen”, Germany.
- February 2007 – February 2008:
“**Postdoctoral Research Fellow**” at the Physics Department of the University of Valencia, Spain.
- March 2007: **Ph.D in Physics**, University of Roma II “Tor Vergata”, Italy.
Thesis title: *The Problem of the Flavour in Supersymmetric Theories*,
supervisors Prof. A. Masiero and Prof. R. Petronzio.

Awards

- 2014 Winner of the “*Programma per Giovani Ricercatori Rita Levi Montalcini*”.
- 2012 Certificate of Excellence in Reviewing, Physics Letter B, Gian Giudice Editor.

Teaching Activity (Attivita Didattica Frontale e Online)

- Master Courses (Laurea Magistrale):

- 2022-today. **Lecturer**, Theoretical Physics of Fundamental Interactions (mod. B), DFA-UNIPD, (48 hours/year - L.M. in Physics).
- 2022-today. **Lecturer**, Theoretical Physics of Fundamental Interactions, DFA-UNIPD, (48 hours/year - L.M. in Physics of Data).
- 2018-today. **Lecturer**, Standard Model, DFA-UNIPD, (48 hours/year - L.M. in Physics).
- 2017-2018. **Lecturer**, Astroparticle Physics, DFA-UNIPD, (48 hours/year - L.M. in Physics).
- 2014-2018. **Lecturer**, Fisica Astroparticellare, DFA-UNIPD, (48 hours/year - L.M. in Fisica).

- **Bachelor Courses (Laurea Triennale):**

- 2015-2022. **Lecturer**, Fisica, Matematica con Elementi di Informatica, Dipartimento di Scienze del Farmaco, SFA-UNIPD, (48 hours/year).
- 2018 – 2019: **Lecturer**, Fisica Moderna, DFA-UNIPD, (16 hours/year).

- **PhD Courses (Didattica Integrativa):**

- 2017-2018. **Lecturer**, Supersymmetry, DFA-UNIPD, (10 hours/year).
- 2019-2020. **Lecturer**, Effective Field Theories, DFA-UNIPD, (24 hours/year).
- 2020-2021. **Lecturer**, Effective Field Theories, DFA-UNIPD, (24 hours/year).
- 2021-2022. **Lecturer**, Effective Field Theories for Particle Physics, DFA-UNIPD, (16 hours/year).
- 2022-2023. **Lecturer**, Effective Field Theories for Particle Physics, DFA-UNIPD, (16 hours/year).
- 2023-2024. **Lecturer**, Effective Field Theories for Particle Physics, DFA-UNIPD, (16 hours/year).

- **Teaching Support (Didattica Integrativa):**

- 2008-2011. **T.A.**, University of Munich, TUM, Germany, Theoretical Physics.

Supervision of Thesis (Didattica di Servizio)

- **Supervisor of Bachelor students at DFA-UNIPD:**

- Supervisor of Master students at DFA-UNIPD:

- Supervisor of PhD students:

Scientific Coordinator of Postdoctoral Researchers

- 10/2023-09/2025. Nudzeim Selimovic, INFN.
- 06/2023-05/2025. Pablo Olgoso, DFA-UNIPD.
- 01/2023 - 12/2024 Sebastian Hoof, DFA-UNIPD.
- 11/2023 - 10/2024 Claudio Toni, DFA-UNIPD.
- 09/2017-08/2019. Natascia Vignaroli, INFN.

Institutional activities (Attività istituzionali e gestionali)

- 2021-today. **National Coordinator** of the INFN iniziativa specifica APINE.
- 2016-2021. **National Coordinator** of the INFN iniziativa specifica HEPCUBE.
- 2020-today. **Faculty Member** of the Colloquia Committee, DFA-UNIPD.
- 2017-2020. **Faculty Member** of the Web Committee, DFA-UNIPD.
- 2022-today. **Faculty Member** of the Council for the Cycles of Studies in Physics of Data (Consiglio Corso di Laurea in Physics of Data), DFA-UNIPD.
- 2014-today. **Faculty Member** of the Council for the Cycles of Studies in Physics (Consiglio Corso di Laurea in Physics), DFA-UNIPD.
- 2014-today. **Faculty Member** of the Council for the PhD school in Physics (Collegio dei Docenti del Dottorato in Physics), DFA-UNIPD.
- 2015-2022. **Faculty Member** of the Council for the Cycles of Studies in Pharmaceutical Sciences (Consiglio Corso di Laurea in Scienze del Farmaco), SFA-UNIPD.

Committees

- **Panel member, Associate Professor Evaluation:** Procedura valutativa a Professore di II fascia, Università degli studi di Torino, 2021;
- **Panel member, Type-b Researcher Selection:** Procedura comparativa Ricercatore RTDb, Università degli studi di Padova, 2019;
- **Panel member for the selection of Postdoc and Research Fellows:**
 - Concorso Assegno di Ricerca, INFN Sezione di Padova, 2023;

- Concorso Assegno di Ricerca, DFA-UNIPD, 2023;
- Concorso Assegno di Ricerca, DFA-UNIPD, 2021;
- Concorso Assegno di Ricerca, DFA-UNIPD, 2020;
- Concorso Assegno di Ricerca, DFA-UNIPD, 2019;
- Concorso Assegno di Ricerca, INFN-LNF, 2017;
- Concorso Assegno di Ricerca, INFN Sezione di Padova, 2016.

- **PhD Commettee member/reviewer**

- University of Padova, 2023;
- LUPM, CNRS, Université Montpellier, 2023;
- University of Zurich, Switzerland, 2021;
- Indian Institute of Technology Guwahati, 2021;
- Sapienza, Rome U., Italy, 2020;
- University of Padova, 2019;
- University of Valencia, Spain, 2017;
- University of Zurich, Switzerland, 2017;
- University of Padova, 2017;
- UAM, Madrid, Spain, 2013;
- University of Valencia, Spain, 2010.

Reviewer/Referee for International Grants (Commissions of Trust)

- Swiss National Science Foundation (SNSF).
- Austrian Science Fund (FWF).

Journal's Referee

- Physics Letters B
- Physics Review D
- Nuclear Physics B
- Journal of High Energy Physics
- The European Physics Journal C
- SciPost

Membership of Scientific Institutions

- 2013 - today. Associate Researcher. INFN, Sezione di Padova.
- 2013 - today. Associate Researcher. CERN Theory Department.

Conference Organization: (Attivita organizzative)

- **Organizer** of the workshop “Effective Field Theory in Multiboson Production”, June 10 – 11 (2024), at Padua U., Italy.
- **Organizer** of the workshop “Flavour of BSM in the LHC era”, October 20 – 31 (2022) at the MITP, Mainz, Germany.
- **Organizer** of the workshop “Indirect Searches for New Physics at the time of the LHC”, February 15 – March 26 (2010), at the GGI, Florence, Italy.
- **Convenor** of the workshop “Implications of LHCb measurements and future prospects workshop”, 14 - 16 October 2013, CERN.
- **Convenor** of the conference CKM2012, September 28 - October 2, 2012, Cincinnati, Ohio, USA;
- **Convenor** of the conference “IFAE 2012”, April 11 – 13 (2012), Ferrara, Italy;
- **Convenor** of the conference “KAON09”, June 9 – 12 (2009), Tsukuba, Japan;
- **Convenor** of the workshop “New Physics with SuperB” workshops starting from the 6th meeting, January 7 – 15 (2008), Valencia, Spain.

Meeting Organization: (Attivita organizzative)

- 2020-today. **Organizer**. Colloquia (phenomenology), DFA-UNIPD.
- 2015-2020. **Organizer**. Theory seminars (phenomenology), DFA-UNIPD.

Research Funding and Grants (Capacita di attrarre finanziamenti e ricercatori, ed annesse Attivita Gestionali)

- **Principal Investigator (PI)** of the Programma Giovani Ricercatori “Rita Levi Montalcini”. Funding source: 2012 by MIUR. Amount 195 KE. Period: 2014-2017.
- **National Coordinator** of the Iniziativa specifica HEPCUBE. Funding source: INFN. Amount 200 KE. Period: 2016-2021.

- **National Coordinator** of the Iniziativa specifica APINE. Funding source: INFN. Amount 80 KE. Period: 2021-2024.
- **PhD Industriale:** Finanziamento n.1 borse di studio per la frequenza al corso di dottorato in Physics, di durata triennale, con sede amministrativa presso l'Università degli Studi di Padova, a partire dall'a.a. 2023/2024 all'interno del progetto di PhD industriale ex Decreto Ministeriale 117 del 02.03.2023. Amount 72 KE.
- **2023 - PRIN 2022 (Local Responsible Unipd)**, Progetto di Rilevante Interesse Nazionale, finanziato dal MUR. Acronimo: Axion-Origins. Codice: 2022K4B58X. Budget: 210 kEUR.
- **2022 - Marie Skłodowska-Curie Postdoctoral Fellowship (Supervisor)**, Padua U., Acronym: AxiTools. Program HORIZON-MSCA-2021-PF-01. Code: 101065579. Budget: 173 kEUR.
- **Scientific Responsible** of a Research Fellowship “Progetti di Ricerca Dipartimentali BIRD 2022”. Funding source: DFA-UNIPD. Amount 40 KE. Period: 2023-2025.
- **Scientific Responsible** of a senior INFN Research Fellowship. Funding source: INFN. Amount 80 KE. Period: 2023-2025.
- **Scientific Responsible** of a senior INFN Research Fellowship. Funding source: INFN. Amount 80 KE. Period: 2017-2019.

Outreach Activity

- **Master Classes** at several High Schools since 2014.
- **Public lecture**, Comune di Amandola, 2014, to celebrate the win of the prize “Rita Levi Montalcini” for young researchers.
- **Guide** for the “Notte Europea dei Ricercatori” during the 2004 and 2005 editions.

Invited Lectures at Advanced Schools

- Ph.D. lectures on *Flavor Physics within and beyond the Standard Model*, Madrid, IFT, October 2024.
- Ph.D. lectures on *Leptonic Dipoles in the Standard Model and Beyond*, International School of Subnuclear Physics, Erice, 14-23 June 2023.
- Ph.D lectures on *Axions and WISPs*, Bad Honnef Physics School 2021.

- Ph.D lectures on *Introduction to Supersymmetry*, Ferrara International School Niccolo' Cabeo 2013.
- Ph.D lectures on *Flavor Physics within and beyond the Standard Model*, 2011, Stefan Institute, Ljubljana, Slovenia.
- Ph.D lectures on *Lepton Flavor Physics*, Flavianet-School Karlsruhe 2009.

Research Interests

My main research interests concern the phenomenology of high energy physics. High energy physics, also known as particle physics, investigates the elementary particles in Nature and the interactions among them. It asks the most basic questions in physics, and seeks for the laws of Nature from which all phenomena can, in principle, be understood. The word “phenomenology” refers, in this context, to theoretical work that is undertaken in close relation to laboratory experiments. The Standard Model (SM) is a very beautiful theory, describing the strong, weak and electromagnetic interactions. It explains almost all experimental results related to these interactions. Yet, it fails to account for neutrino masses, for dark matter, and for the matter-antimatter asymmetry of the Universe. We study these failures and other shortcomings of the model in the context of collider physics, flavor factories, and particle cosmology.

To make progress in this field we follow a twofold path: i) in the one hand, we construct possible extensions of the SM of fundamental interactions and ii) we predict and analyse the outcome of experiments performed both at the high-energy and at the high-intensity frontier of particle physics, investigating their sensitivity on physics beyond the SM.

In more detail, our research activity is focused on the following three main directions:

- **The origin of Quark and Lepton masses** [Flavor Symmetries, Dynamical Flavor Models, precision tests of the SM and search for New Physics via rare processes]
- **Electroweak Physics and the Hierarchy Problem** [Higgs Physics, Stability of the SM Higgs potential, Supersymmetry, Composite-Higgs models]
- **Effective Field Theories (EFT)** [EFT for physics beyond the Standard Model, Chiral Perturbation theory, Heavy Quark Symmetry]

My main research interests concern the phenomenology of high energy physics in beyond SM theories. To make progress in this field, we follow two paths: i) in the one hand, we construct possible extensions of the SM of fundamental interactions and ii) we predict and analyse the outcome of experiments performed both at the high-energy and at the high-intensity frontier of particle physics, investigating their sensitivity on physics beyond the SM.

In more detail, my research activity is focused on the following main directions:

- Lepton and Quark Flavor Violation (FCNCs).
- CP violation (EDMs and FCNCs).
- Precision tests of the SM: leptonic ($g - 2$), lepton flavour universality tests, EWPO.
- Higgs Physics: the Higgs boson mass and its properties in extensions of the SM.
- High-energy physics (LHC and future colliders) and its interplay with low-energy physics (conducted at experiments based on high statistics).

Plenary Presentations to National and International Conferences

I have given more than 100 seminars at National and International Workshops, Conferences and various Institutes. In the following, I report just a selection of the most significant Plenary Presentations of my career so far.

1. Title: Beyond Standard Model in the muon $g-2$ and Hadronic Vacuum Polarization
Sixth Plenary Workshop of the Muon $g-2$ Theory Initiative, Bern, Switzerland, September 4-8, 2023.
2. Title: $g-2$ del muone: scenari teorici BSM
SIF 2023, Salerno, Italy, September 11-15, 2023.
3. Title: Leptonic $g-2$: Theory outlook
Anomalies 2023 Workshop, SCGP, Stony Brook, USA, March 8-10, 2023.
4. Title: Hunting for new physics with leptonic $g-2$
SchwingerFest 2022: muon $g-2$, UCLA, USA, June 14-17, 2022.
5. Title: On the old and new muon $g-2$ puzzles
Workshop on the Standard Model and Beyond, Corfu, Greece, 28 August - 8 September, 2022.
6. Title: The quest for New Physics at the Intensity Frontier
Workshop on the Standard Model and Beyond, Corfu, Greece, 31 August - 9 September, 2018.
7. Title: The quest for New Physics at the Intensity Frontier
MASS 2018, CP3 Origins, Odense, Denmark, 28 May - 1 June, 2018.
8. Title: Overview of Flavour Physics
PASCOS 2017, Madrid, Spain, 19 - 23 June, 2017.

9. Title: On the importance of Electroweak Corrections for B-anomalies
Instant workshop on B meson anomalies, CERN, Switzerland, 17 - 19 May, 2017.
10. Title: The quest for New Physics at the Intensity Frontier
IFAE 2017, Trieste, Italia, 17 - 19 April, 2016.
11. Title: Lepton Flavour Universality in B Decays: Model Independent Lessons
11 - 13 June, 2016;
Sixth Workshop on Theory, Phenomenology and Experiments in Flavour Physics (FPCapri 2016), Capri, Italia.
12. Title: Indirect determinations of the top-quark mass
7-11 September, 2015;
LFC15: physics prospects for Linear and other Future Colliders after the discovery of the Higgs, ECT* Trento, Italy.
13. Title: Connections between $g - 2$, EDMs, CLFV and LHC (Theory Overview)
10 - 15 August, 2015;
NuFact15, Rio de Janeiro, Brazil.
14. Title: Testing New Physics with the lepton $g - 2$
25 - 30 August, 2014;
NuFact14, Glasgow, Scotland, UK.
15. Title: Status of Lepton Flavour Violation
14 - 16 October, 2013;
Implications of LHCb measurements and future prospects, CERN.
16. Title: Interrelationships among $g - 2$, EDMs and CLFV
6 - 8 May, 2013;
1st Conference on Charged Lepton Flavour Violation (Lecce 2013), Lecce, Italia.
17. Title: Charm-Top Flavour Physics at the LHC(b)
15 - 18 April, 2013;
Portoroz 2013: Probing the Standard Model and New Physics at Low and High Energies (Portoroz 2013), Portoroz, Slovenia.
18. Title: Direct CP violation in charm and flavor mixing beyond the SM
11 - 13 June, 2012;
Fourth Workshop on Theory, Phenomenology and Experiments in Flavour Physics (Capri 2012), Capri, Italia.

19. Title: Rassegna teorica: decadimenti rari e charm
11 - 13 Aprile, 2012;
IFAE 2012, Ferrara, Italia.
20. Title: Fenomenologia della fisica dei sapori pesanti
April 27th - April 29th, 2011;
IFAE 2011, Perugia, Italy.
21. Title: Phenomenology of Heavy Fermions in Physics beyond the SM
April 11 - 14 2011;
Portoroz 2011, “*The Role of Heavy Fermions in Fundamental Physics*”,
Portoroz, Slovenia.
22. Title: Lepton Flavor Violation and Neutrino Physics
March 15th - March 18th, 2011;
XIV International Workshop on “Neutrino Telescopes”,
Venice, Italy.
23. Title: LFV in charged leptons: a theory overview
February 27th - March 5th, 2011;
XXIV Rencontres de Physique de la Vallee d’Aoste,
La Thuile, Aosta Valley, Italy.
24. Title: Lepton flavor violation and CP violation in SUSY
October 13th, 2010;
PSI 2010,
Paul Scherrer Institut, Switzerland.
25. Title: Lepton flavor violation: where are we?
October 11th - 15th, 2010;
Heavy Quarks and Leptons 2010,
INFN - Laboratori Nazionali di Frascati, Italy.
26. Title: Open issues in flavor physics
6 - 10 Settembre, 2010;
CKM 2010, Warwick, UK.
27. Title: Unitarity Triangle and New Physics
21 - 26 Giugno, 2010;
BEACH 2010, Perugia, Italia.

28. Title: Recenti sviluppi teorici in fisica del sapore
7 - 9 Aprile, 2010;
IFAE 2010, Roma, Italia.
29. Title: SUSY effects in Kaon Physics: Lepton Universality tests and rare decays
9 - 12 Giugno 2009;
KAON 2009, Tsukuba, Giappone.
30. Title: Tau Lepton Flavor Violation in SUSY see-saw models and SUSY GUTs
14 - 17 Novembre, 2009;
SuperB Physics Workshop, Universita' di Warwick, UK.
31. Title: Large $\tan\beta$ MSSM effects on flavour physics
5 - 9 Giugno 2008;
Heavy Quarks and Leptons 2008, Melbourne, Australia.
32. Title: Theoretical Review on Lepton Universality and Lepton Flavor Violation
21 - 25 Maggio 2007;
KAON 2007, LNF, Frascati, Italia.
33. Title: Probing New Physics through $\mu - e$ Universality in $K \rightarrow \ell\nu$
28 Febbraio - 3 Marzo, 2006;
DIF06, International Workshop on Discoveries in Flavour Physics at e+e- Colliders,
LNF, Frascati, Italia.

Selected publications

I am author of 94 publications, out of which 60 articles in high quality peer reviewed journals which collected around 6000 citations with total index factor $h = 40$ according to INSPIRE. In my field of research, the authors appear in alphabetic order.

1. **F. Feruglio, P. Paradisi and A. Pattori, "Revisiting Lepton Flavor Universality in B Decays," *Phys. Rev. Lett.* **118** (2017) no.1, 011801:** After the experimental hints of non-standard Lepton Flavor Universality breaking effects in B Decays in 2013, several (few hundreds) theoretical papers appeared aiming at explaining such anomalies. In this paper, we have pointed out that quantum effects, so far neglected in the literature, challenged all the proposed solutions which were therefore revised. The inclusion of our effects represents nowadays a standard test to check whether models trying to accommodate B-anomalies are viable or not (190 citations counted in INSPIRE).

2. **G. F. Giudice, P. Paradisi and M. Passera, “Testing new physics with the electron $g-2$,”** *JHEP* **11** (2012), 113: In this paper, we argued that the anomalous magnetic moment of the electron (a_e) can be used to probe new physics. Although in 2012 our proposal seemed to be quite speculative, as it required about an order of magnitude improvements both in the measurement of a_e as well as in the determinations of α in atomic-physics experiments, we have reached today precisely such improvements! Our proposal can play a crucial role in the interpretation of the observed discrepancy in the anomalous magnetic moment of the muon (a_{μ}) and it is acknowledged today as one of the most avenue to look for new physics in the high-intensity frontier program (212 citations counted in INSPIRE).
3. **W. Altmannshofer, A.J. Buras, S. Gori, P. Paradisi and D.M. Straub, “Anatomy and Phenomenology of FCNC and CPV Effects in SUSY Theories,”** *Nucl. Phys. B* **830** (2010) 17: In this paper, we performed an extensive study of FCNC and CP Violation within SUSY theories. We have shown how the characteristic patterns of correlations among flavour observables allow to distinguish between different SUSY scenarios. This work represents a standard reference of the subject for both theoretical studies and experimental collaborations such as Belle(II), BaBar, LHCb, MEG, etc. (262 citations counted in INSPIRE).
4. **G. Isidori and P. Paradisi, “Hints of large $\tan\beta$ in flavour physics,”** *Phys. Lett. B* **639** (2006) 499: In this paper, we have analysed the phenomenological implications of a quite minimal and predictive low-energy SUSY scenario, the so-called minimal flavor violating framework at large $\tan\beta$. We predicted a pattern of possible non-standard effects, including a heavy SM-like Higgs ($120 \leq m_h \leq 130$ GeV), which received a great interest from both the theory and experimental communities and that is still under scrutiny (308 citations counted in INSPIRE).
5. **A. Masiero, P. Paradisi and R. Petronzio, “Probing new physics through $\mu - e$ universality in $K \rightarrow \ell\nu$,”** *Phys. Rev. D* **74** (2006) 011701: In this paper, we put forward a mechanism in scenarios beyond the Standard Model for the generation of $\mu - e$ universality violations through lepton flavor violating sources. This idea, which was applied to $K \rightarrow \ell\nu$ processes, stimulated many theoretical investigations as well as dedicated experimental runs at KLOE2 in Frascati and at the NA62 experiment at CERN. After this work, a number of international conferences and workshops dedicated a special session to this subject. It is worth pointing out that our mechanism is the standard one employed nowadays in the attempt of solving the so-called B-anomalies which came out a decade after our original work (201 citations counted in INSPIRE).

6. **P. Paradisi**, “Constraints on SUSY lepton flavor violation by rare processes,” **JHEP 0510 (2005) 006**: This single-authored paper, which is the first paper of my career, provides a systematic and comprehensive analysis of the constraints on LFV soft SUSY breaking terms arising from several low-energy processes. This work became soon and still represents the standard reference of the subject for both theoretical studies and experimental collaborations such as Belle(II), BaBar and LHCb, MEG, etc. (151 citations counted in INSPIRE).

Publications

I am author of 96 publications, out of which 60 articles in high quality peer reviewed journals which collected around 6000 citations with total index factor $h = 40$ according to INSPIRE. In my field of research, the authors appear in alphabetic order. All publications are available at the following url:

<http://inspirehep.net/author/profile/P.Paradisi.1>

1. L. Di Luzio, A. Keshavarzi, A. Masiero and P. Paradisi, “Model Independent Tests of the Hadronic Vacuum Polarization Contribution to the Muon $g-2$,” [arXiv:2408.01123 [hep-ph]].
2. J. Alda, G. Levati, P. Paradisi, S. Rigolin and N. Selimovic, “Collider and astrophysical signatures of light scalars with enhanced τ couplings,” [arXiv:2407.18296 [hep-ph]].
3. L. Di Luzio, H. Gisbert, G. Levati, P. Paradisi and P. Sørensen, “CP-Violating Axions: A Theory Review,” [arXiv:2312.17310 [hep-ph]].
4. L. C. Bresciani, G. Levati, P. Mastrolia and P. Paradisi, “Anomalous Dimensions via on-shell Methods: Operator Mixing and Leading Mass Effects,” [arXiv:2312.05206 [hep-ph]].
5. L. Di Luzio, G. Levati and P. Paradisi, “The chiral Lagrangian of CP-violating axion-like particles,” **JHEP 2024 (2024) no.02, 020** [arXiv:2311.12158 [hep-ph]].
6. L. Di Luzio, G. Levati, P. Paradisi and X. Ponce Díaz, “Flavour constraints on light spin-1 bosons within a chiral Lagrangian approach,” **JHEP 12 (2023), 016** [arXiv:2308.05215 [hep-ph]].
7. C. Accettura, D. Adams, R. Agarwal, C. Ahdida, C. Aimè, N. Amapane, D. Amorim, P. Andreetto, F. Anulli and R. Appleby, *et al.* “Towards a muon collider,” **Eur. Phys. J. C 83 (2023) no.9, 864** [erratum: **Eur. Phys. J. C 84 (2024) no.1, 36**] [arXiv:2303.08533 [physics.acc-ph]].

8. L. Di Luzio, R. Gröber and P. Paradisi, “Higgs physics confronts the M_W anomaly,” *Phys. Lett. B* **832** (2022), 137250 [arXiv:2204.05284 [hep-ph]].
9. P. Paradisi, O. Sumensari and A. Valenti, *Phys. Rev. D* **106** (2022) no.11, 115038 [arXiv:2203.06103 [hep-ph]].
10. L. Di Luzio, A. Masiero, P. Paradisi and M. Passera, “New physics behind the new muon $g-2$ puzzle?,” *Phys. Lett. B* **829** (2022), 137037 [arXiv:2112.08312 [hep-ph]].
11. D. Buttazzo and P. Paradisi, “Probing the muon $g-2$ anomaly with the Higgs boson at a muon collider,” *Phys. Rev. D* **104** (2021) no.7, 075021 [arXiv:2012.02769 [hep-ph]].
12. L. Di Luzio, R. Gröber and P. Paradisi, “Hunting for CP -violating axionlike particle interactions,” *Phys. Rev. D* **104** (2021) no.9, 095027 [arXiv:2010.13760 [hep-ph]].
13. A. Masiero, P. Paradisi and M. Passera, “New physics at the MUonE experiment at CERN,” *Phys. Rev. D* **102** (2020) no.7, 075013 [arXiv:2002.05418 [hep-ph]].
14. C. Cornella, P. Paradisi and O. Sumensari, “Hunting for ALPs with Lepton Flavor Violation,” *JHEP* **2001** (2020) 158 [arXiv:1911.06279 [hep-ph]].
15. F. Feruglio, P. Paradisi and O. Sumensari, “Implications of scalar and tensor explanations of $R_{D^{(*)}}$,” *JHEP* **1811** (2018) 191 [arXiv:1806.10155 [hep-ph]].
16. C. Cornella, F. Feruglio and P. Paradisi, “Low-energy Effects of Lepton Flavour Universality Violation,” *JHEP* **1811** (2018) 012 [arXiv:1803.00945 [hep-ph]].
17. F. Feruglio, P. Paradisi and A. Pattori, “On the Importance of Electroweak Corrections for B Anomalies,” *JHEP* **1709** (2017) 061 [arXiv:1705.00929 [hep-ph]].
18. W. J. Marciano, A. Masiero, P. Paradisi and M. Passera, “Contributions of axionlike particles to lepton dipole moments,” *Phys. Rev. D* **94** (2016) no.11, 115033 [arXiv:1607.01022 [hep-ph]].
19. F. Feruglio, P. Paradisi and A. Pattori, “Revisiting Lepton Flavor Universality in B Decays,” *Phys. Rev. Lett.* **118** (2017) no.1, 011801 [arXiv:1606.00524 [hep-ph]].
20. D. Ghosh, P. Paradisi, G. Perez and G. Spada, “CP Violation Tests of Alignment Models at LHCII,” *JHEP* **1602** (2016) 178 [arXiv:1512.03962 [hep-ph]].
21. F. Feruglio, P. Paradisi and A. Pattori, “Lepton Flavour Violation in Composite Higgs Models,” *Eur. Phys. J. C* **75** (2015) no.12, 579 [arXiv:1509.03241 [hep-ph]].

22. G. F. Giudice, P. Paradisi and A. Strumia, “Indirect determinations of the top quark mass,” JHEP **1511** (2015) 192 [arXiv:1508.05332 [hep-ph]].
23. L. Calibbi, I. Galon, A. Masiero, P. Paradisi and Y. Shadmi, “Charged Slepton Flavor post the 8 TeV LHC: A Simplified Model Analysis of Low-Energy Constraints and LHC SUSY Searches,” JHEP **1510** (2015) 043 [arXiv:1502.07753 [hep-ph]].
24. L. Calibbi, P. Paradisi and R. Ziegler, “Lepton Flavor Violation in Flavored Gauge Mediation,” Eur. Phys. J. C **74** (2014) no.12, 3211 [arXiv:1408.0754 [hep-ph]].
25. S. Mihara, J. P. Miller, P. Paradisi and G. Piredda, “Charged Lepton Flavor-Violation Experiments,” Ann. Rev. Nucl. Part. Sci. **63** (2013) 531.
26. L. Calibbi, P. Paradisi and R. Ziegler, “Gauge Mediation beyond Minimal Flavor Violation,” JHEP **1306** (2013) 052 [arXiv:1304.1453 [hep-ph]].
27. M. Blanke, G. F. Giudice, P. Paradisi, G. Perez and J. Zupan, “Flavoured Naturalness,” JHEP **1306** (2013) 022 [arXiv:1302.7232 [hep-ph]].
28. R. Aaij *et al.* [LHCb Collaboration], “Implications of LHCb measurements and future prospects,” Eur. Phys. J. C **73** (2013) no.4, 2373 [arXiv:1208.3355 [hep-ex]].
29. G. F. Giudice, P. Paradisi and M. Passera, “Testing new physics with the electron $g-2$,” JHEP **1211** (2012) 113 [arXiv:1208.6583 [hep-ph]].
30. G. F. Giudice, P. Paradisi, A. Strumia and A. Strumia, “Correlation between the Higgs Decay Rate to Two Photons and the Muon $g - 2$,” JHEP **1210** (2012) 186 [arXiv:1207.6393 [hep-ph]].
31. G. F. Giudice, G. Isidori and P. Paradisi, “Direct CP violation in charm and flavor mixing beyond the SM,” JHEP **1204** (2012) 060 [arXiv:1201.6204 [hep-ph]].
32. W. Altmannshofer, P. Paradisi and D. M. Straub, “Model-Independent Constraints on New Physics in $b \rightarrow s$ Transitions,” JHEP **1204** (2012) 008 [arXiv:1111.1257 [hep-ph]].
33. B. Bellazzini, Y. Grossman, I. Nachshon and P. Paradisi, “Non-Standard Neutrino Interactions at One Loop,” JHEP **1106** (2011) 104 [arXiv:1012.3759 [hep-ph]].
34. A. J. Buras, M. Nagai and P. Paradisi, “Footprints of SUSY GUTs in Flavour Physics,” JHEP **1105** (2011) 005 [arXiv:1011.4853 [hep-ph]].
35. A. J. Buras, G. Isidori and P. Paradisi, “EDMs vs. CPV in $B_{s,d}$ mixing in two Higgs doublet models with MFV,” Phys. Lett. B **694** (2011) 402 [arXiv:1007.5291 [hep-ph]].

36. G. F. Giudice, P. Paradisi and A. Strumia, “The electron and neutron EDM from supersymmetric see-saw thresholds,” *Phys. Lett. B* **694** (2011) 26 [arXiv:1003.2388 [hep-ph]].
37. W. Altmannshofer, A. J. Buras and P. Paradisi, “A Lower Bound on hadronic EDMs from CP Violation in $D^0 - \bar{D}^0$ mixing in SUSY Alignment Models,” *Phys. Lett. B* **688** (2010) 202 [arXiv:1001.3835 [hep-ph]].
38. A. J. Buras, L. Calibbi and P. Paradisi, “Slepton mass-splittings as a signal of LFV at the LHC,” *JHEP* **1006** (2010) 042 [arXiv:0912.1309 [hep-ph]].
39. W. Altmannshofer, A. J. Buras, S. Gori, P. Paradisi and D. M. Straub, “Anatomy and Phenomenology of FCNC and CPV Effects in SUSY Theories,” *Nucl. Phys. B* **830** (2010) 17 [arXiv:0909.1333 [hep-ph]].
40. M. Antonelli *et al.*, “Flavor Physics in the Quark Sector,” *Phys. Rept.* **494** (2010) 197 [arXiv:0907.5386 [hep-ph]].
41. P. Paradisi and D. M. Straub, “The SUSY CP Problem and the MFV Principle,” *Phys. Lett. B* **684** (2010) 147 [arXiv:0906.4551 [hep-ph]].
42. J. Hisano, M. Nagai, P. Paradisi and Y. Shimizu, “Waiting for $\mu \rightarrow e\gamma$ from the MEG experiment,” *JHEP* **0912** (2009) 030 [arXiv:0904.2080 [hep-ph]].
43. J. Hisano, M. Nagai and P. Paradisi, “Flavor effects on the electric dipole moments in supersymmetric theories: A beyond leading order analysis,” *Phys. Rev. D* **80** (2009) 095014 [arXiv:0812.4283 [hep-ph]].
44. O. Buchmueller *et al.*, “Predictions for Supersymmetric Particle Masses using Indirect Experimental and Cosmological Constraints,” *JHEP* **0809** (2008) 117 [arXiv:0808.4128 [hep-ph]].
45. W. Altmannshofer, A. J. Buras and P. Paradisi, “Low Energy Probes of CP Violation in a Flavor Blind MSSM,” *Phys. Lett. B* **669** (2008) 239 [arXiv:0808.0707 [hep-ph]].
46. A. Masiero, P. Paradisi and R. Petronzio, “Anatomy and Phenomenology of the Lepton Flavor Universality in SUSY Theories,” *JHEP* **0811** (2008) 042 [arXiv:0807.4721 [hep-ph]].
47. P. Paradisi, M. Ratz, R. Schieren and C. Simonetto, “Running minimal flavor violation,” *Phys. Lett. B* **668** (2008) 202 [arXiv:0805.3989 [hep-ph]].

48. M. Artuso *et al.*, “ B , D and K decays,” *Eur. Phys. J. C* **57** (2008) 309 [arXiv:0801.1833 [hep-ph]].
49. M. Raidal *et al.*, “Flavour physics of leptons and dipole moments,” *Eur. Phys. J. C* **57** (2008) 13 [arXiv:0801.1826 [hep-ph]].
50. G. Barenboim, P. Paradisi, O. Vives, E. Lunghi and W. Porod, “Light charged Higgs at the beginning of the LHC era,” *JHEP* **0804** (2008) 079 [arXiv:0712.3559 [hep-ph]].
51. J. Hisano, M. Nagai and P. Paradisi, “Electric dipole moments from flavor-changing supersymmetric soft terms,” *Phys. Rev. D* **78** (2008) 075019 [arXiv:0712.1285 [hep-ph]].
52. O. Buchmueller *et al.*, “Prediction for the Lightest Higgs Boson Mass in the CMSSM using Indirect Experimental Constraints,” *Phys. Lett. B* **657** (2007) 87 [arXiv:0707.3447 [hep-ph]].
53. G. Isidori, F. Mescia, P. Paradisi and D. Temes, “Flavour physics at large $\tan(\beta)$ with a Bino-like LSP,” *Phys. Rev. D* **75** (2007) 115019 [hep-ph/0703035 [HEP-PH]].
54. M. Ciuchini, A. Masiero, P. Paradisi, L. Silvestrini, S. K. Vempati and O. Vives, “Soft SUSY breaking grand unification: Leptons versus quarks on the flavor playground,” *Nucl. Phys. B* **783** (2007) 112 [hep-ph/0702144 [HEP-PH]].
55. J. Hisano, M. Nagai and P. Paradisi, “New Two-loop Contributions to Hadronic EDMs in the MSSM,” *Phys. Lett. B* **642** (2006) 510 [hep-ph/0606322].
56. G. Isidori, F. Mescia, P. Paradisi, C. Smith and S. Trine, “Exploring the flavour structure of the MSSM with rare K decays,” *JHEP* **0608** (2006) 064 [hep-ph/0604074].
57. G. Isidori and P. Paradisi, “Hints of large $\tan\beta$ in flavour physics,” *Phys. Lett. B* **639** (2006) 499 [hep-ph/0605012].
58. P. Paradisi, “Higgs-mediated $e \rightarrow \mu$ transitions in II Higgs doublet model and supersymmetry,” *JHEP* **0608** (2006) 047 [hep-ph/0601100].
59. G. Isidori and P. Paradisi, “Higgs-mediated $K \rightarrow \pi\nu\bar{\nu}$ in the MSSM at large $\tan(\beta)$,” *Phys. Rev. D* **73** (2006) 055017 [hep-ph/0601094].
60. A. Masiero, P. Paradisi and R. Petronzio, “Probing new physics through $\mu - e$ universality in $K \rightarrow \ell\nu$,” *Phys. Rev. D* **74** (2006) 011701 [hep-ph/0511289].
61. P. Paradisi, “Higgs-mediated $\tau \rightarrow \mu$ and $\tau \rightarrow e$ transitions in II Higgs doublet model and supersymmetry,” *JHEP* **0602** (2006) 050 [hep-ph/0508054].

62. P. Paradisi, “Constraints on SUSY lepton flavor violation by rare processes,” *JHEP* **0510** (2005) 006 [hep-ph/0505046].

Proceedings

63. P. Paradisi, “Theory overview of muon $g-2$ and EDM,” *PoS Muon4Future2023* (2024), 015.
64. C. Accettura, D. Adams, R. Agarwal, C. Ahdida, C. Aimè, N. Amapane, D. Amorim, P. Andreetto, F. Anulli and R. Appleby, *et al.* “Towards a Muon Collider,” [arXiv:2303.08533 [physics.acc-ph]].
65. P. Paradisi, “New physics behind the $g-2$ puzzle?,” *PoS ICHEP2022* (2022), 1242.
66. N. Bartosik *et al.* [Muon Collider], “Simulated Detector Performance at the Muon Collider,” [arXiv:2203.07964 [hep-ex]].
67. D. Stratakis *et al.* [Muon Collider], “A Muon Collider Facility for Physics Discovery,” [arXiv:2203.08033 [physics.acc-ph]].
68. S. Jindariani *et al.* [Muon Collider], “Promising Technologies and R&D Directions for the Future Muon Collider Detectors,” [arXiv:2203.07224 [physics.ins-det]].
69. C. Aime, A. Apyan, M. A. Mahmoud Mohammed, N. Bartosik, F. Batsch, A. Bertolin, M. Bonesini, S. Bottaro, D. Buttazzo and R. M. Capdevilla Roldan, *et al.* “Muon Collider Physics Summary,” [arXiv:2203.07256 [hep-ph]].
70. J. de Blas *et al.* [Muon Collider], “The physics case of a 3 TeV muon collider stage,” [arXiv:2203.07261 [hep-ph]].
71. P. Paradisi, “Revisiting Lepton Flavour Universality in B Decays,” *Nucl. Part. Phys. Proc.* **285-286** (2017), 116-121.
72. P. Paradisi, “Theory of lepton universality, flavour and number violation,” *PoS CKM2016* (2017), 067.
73. A. Masiero and P. Paradisi, “Exploring the flavour mystery with Roberto,” *Nuovo Cim. C* **40** (2017) no.4, 154.
74. P. Paradisi, “On the interrelationship among leptonic $g-2$, EDMs and lepton flavor violation,” *EPJ Web Conf.* **118** (2016), 01026.
75. P. Paradisi, “Indirect Determinations of the top Quark Mass,” *Frascati Phys. Ser.* **61** (2016), 56-63.

76. P. Paradisi, “Flavor physics in and after the LHC era,” *Nuovo Cim. C* **037** (2014) no.02, 33-40.
77. P. Paradisi, “Interrelationship among $g-2$, EDMs and cLFV,” *Nucl. Phys. B Proc. Suppl.* **248-250** (2014), 8-12.
78. A. Masiero and P. Paradisi, “Lepton flavor violation,” *Nuovo Cim. C* **037** (2014) no.03, 101-110.
79. A. Di Canto and P. Paradisi, “CP violation in the charm system,” *PoS LHCPP2013* (2013), 027.
80. P. Paradisi, “Direct CP violation in charm and flavor mixing beyond the SM,” *Nucl. Phys. B Proc. Suppl.* **241-242** (2013), 158-163.
81. P. Paradisi, “Theoretical review on lepton flavour violation,” *Nuovo Cim. C* **35** (2012) no.1, 399-403.
82. P. Paradisi, “Unitarity triangle and new physics,” *Nucl. Phys. B Proc. Suppl.* **210-211** (2011), 80-85.
83. P. Paradisi, “LFV: where are we?,” *PoS HQL2010* (2010), 052.
84. B. O’Leary *et al.* [SuperB], “SuperB Progress Reports – Physics,” [arXiv:1008.1541 [hep-ex]].
85. P. Paradisi, “Flavour physics in SUSY extensions of the SM in the LHC era,” *Nucl. Phys. B Proc. Suppl.* **209** (2010), 188-193.
86. P. Paradisi, “SUSY effects in kaon physics: Lepton universality tests and rare decays,” *PoS KAON09* (2009), 044.
87. D. G. Hitlin, C. H. Cheng, D. M. Asner, T. Hurth, B. McElrath, T. Shindou, F. Ronga, M. Rama, S. Tosi and G. Simi, *et al.* “New Physics at the Super Flavor Factory. Proceedings, 6th superB Workshop, Valencia, Spain, January 7-15, 2008,” [arXiv:0810.1312 [hep-ph]].
88. M. Bona *et al.* [SuperB], “SuperB: A High-Luminosity Asymmetric e^+e^- Super Flavor Factory. Conceptual Design Report,” [arXiv:0709.0451 [hep-ex]].
89. P. Paradisi, “Flavor Physics in SUSY at large $\tan\beta$,” [arXiv:0704.0358 [hep-ph]].
90. G. Isidori and P. Paradisi, “Large $\tan(\beta)$ effects in flavour physics,” *Nucl. Phys. B Proc. Suppl.* **163** (2007), 192-197.

91. A. Masiero and P. Paradisi, “Flavor physics in SUSY grand unified theories,” Nucl. Phys. B Proc. Suppl. **168** (2007), 328-333.
92. A. Masiero and P. Paradisi, “Probing supersymmetric grand unification through flavor physics,” Nucl. Phys. B Proc. Suppl. **169** (2007), 147-154.
93. P. Paradisi, “Lepton universality breaking vs lepton flavor violation in kaon physics,” PoS **KAON** (2008), 046.
94. A. Masiero and P. Paradisi, “The B - TAU FCNC connection in SUSY Unified Theories,” J. Phys. Conf. Ser. **53** (2006), 248-254 [arXiv:hep-ph/0609262 [hep-ph]].
95. P. Paradisi, “Lepton flavor violation and rare kaon decays,” doi:10.1007/978-88-470-0530-3_38.
96. P. Paradisi, “Lepton universality and rare kaon decays: A window towards new physics,” Frascati Phys. Ser. **41** (2006), 87-97.

Invited Review Articles

97. S. Mihara, J. P. Miller, P. Paradisi and G. Piredda, “Charged Lepton Flavor-Violation Experiments,” Ann. Rev. Nucl. Part. Sci. **63** (2013) 531.

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Curriculum Vitae

Informazioni personali

Posizioni accademiche

- dal 15/11/2022 **Ricercatore a tempo indeterminato (III livello)**,
Istituto Nazionale di Fisica Nucleare, Sezione di Padova.
- 2021 – 2022 **Ricercatore universitario a tempo determinato (tipo A)**,
Dipartimento di Fisica e Astronomia, Università di Padova.
- 2019 – 2021 **Marie Skłodowska-Curie Fellow**, *DESY, Hamburg (Germania)*,
Finanziato da un grant individuale H2020-MSCA-IF-2018 dell'Unione Europea.
- 2018 – 2019 **Assegnista di Ricerca**, *Dipartimento di Fisica, Università di Pisa.*
- 2016 – 2018 **Research Associate**, *IPPP, Durham University (Regno Unito)*,
Finanziato da un grant della "Science and Technology Facilities Council (STFC)".
- 2014 – 2016 **Assegnista di Ricerca**, *Dipartimento di Fisica, Università di Genova.*
- 2011 – 2014 **Research Fellow**, *Karlsruhe Institute of Technology, Karlsruhe (Germania)*,
Finanziato da un grant della "Deutsche Forschungsgemeinschaft (DFG)".

Educazione scientifica

- 26/09/2011 **PhD in Elementary Particle Theory**, *International School for Advanced Studies (ISAS/SISSA), Trieste.*
- 28/09/2007 **Laurea Specialistica in Fisica**, *Università di Roma "La Sapienza".*
Voto: 110/110 cum laude
- 05/10/2005 **Laurea Triennale in Fisica**, *Università dell'Aquila.*
Voto: 110/110 cum laude

Qualifiche professionali

- 14/04/2021 **Abilitazione scientifica nazionale per professore di I fascia**,
settore concorsuale 02/A2, fisica teorica delle interazioni fondamentali,
valida fino al 14/04/2032.
- 13/07/2018 **Abilitazione scientifica nazionale per professore di II fascia**,
settore concorsuale 02/A2, fisica teorica delle interazioni fondamentali,
valida fino al 13/07/2029.

Finanziamenti per progetti di ricerca (come responsabile scientifico)

- 2023 **PRIN 2022 (PI)**, INFN,
Progetto di Rilevante Interesse Nazionale, finanziato dal MUR.
Acronimo: Axion-Origins. Codice: 2022K4B58X. Budget: 210 kEUR.
- 2022 **STARS Consolidator Grant (PI)**, Università di Padova,
Progetto di tipo ERC dell'Università di Padova, valutato da ex membri del panel ERC.
Acronimo: CPV-Axion. Programma STARS@UNIPD. Budget: 140 kEUR.
- 2022 **Marie Skłodowska-Curie Postdoctoral Fellowship (Supervisore)**, Università di Padova, Acronimo: AxiTools. Programma HORIZON-MSCA-2021-PF-01. Codice: 101065579. Budget: 173 kEUR.

Borse di studio

- 2019 – 2021 **Marie Skłodowska-Curie Individual Fellowship**, DESY, Hamburg
Acronimo: AXIONRUSH. Programma H2020-MSCA-IF-2018. Codice: 840791. Budget: 173 kEUR.
- 2007 – 2011 **SISSA PhD fellowship for graduate students**, SISSA, Trieste.
- 2007 **Borsa di studio INFN/Roma-1 per laureandi**, Università di Roma "La Sapienza".

Premi e riconoscimenti

- 2020 **Performance bonus conferito dal Direttore del DESY**, "in recognition of the special commitment to axion model building and phenomenology".
- 2020 **Physical Review Letters Editors' Suggestion**, L'articolo "Solar axions cannot explain the XENON1T excess", by L. Di Luzio et al. [*Phys. Rev. Lett.* 125, 131804 (2020)], è stato selezionato "due to its particular importance, innovation, and broad appeal".
- 2017 **Physical Review Letters Editors' Suggestion**, L'articolo "Redefining the Axion Window", by L. Di Luzio et al. [*Phys. Rev. Lett.* 118, 031801 (2017)], è stato selezionato "due to its particular importance, innovation, and broad appeal".
- 2017 **Outstanding contribution in reviewing**, premio da parte della rivista *Physics Letters B* "in recognition of the contributions made to the quality of the journal".

Riassunto dell'attività scientifica

- 91 pubblicazioni di cui 65 su riviste "peer reviewed" (lista completa delle pubblicazioni in Annex I): **Physics Reports (1)**, **Physical Review Letters (6)**, *Journal of High Energy Physics (24)*, *Physical Review D (22)*, *European Physics Journal C (5)*, *Physics Letters B (3)*, *Journal of Cosmology and Astroparticle physics (2)*, *Reviews in Physics (1)*, *Journal of Physics G (1)*.
- Numero di citazioni: > 3900; h-index: 32 [INSPIRE].
- 105 interventi come relatore presso conferenze/workshop e università/centri di ricerca, di cui 83 come "invited speaker" (lista completa degli interventi in Annex II).

Attività istituzionali

- dal 01/10/2023 Professore a contratto, Dipartimento di Fisica e Astronomia, Università di Padova.
- 27/09/2022 Membro di commissione della seduta di Laurea Triennale in Fisica, Università di Padova.
- 02/09/2022 Membro di commissione per la discussione di tesi di Dottorato in Fisica, Università di Padova.

- 06/2022 Membro della commissione esaminatrice di 2 concorsi per assegni di ricerca (prot. n. 1706 e 1707) presso il Dipartimento di Fisica e Astronomia dell'Università di Padova.
- 03/2022 Membro della commissione esaminatrice del concorso n. 23920/2021 dell'INFN per una borsa di studio per laureati presso la Sezione INFN di Padova.
- 17/12/2021 Membro di commissione della seduta di Laurea Triennale in Fisica, Università di Padova.
- 2021 - 2022 Membro del Consiglio di Corso di Laurea aggregato in Fisica, Università di Padova.

Attività organizzative

Organizzazione di eventi scientifici

- 2024 **Particle Avenues in the Dark Universe Arena (PADUA): Light Dark Sectors**
Sep 6 – 8, 2023, Padova (Organizzatore locale).
- 2023 **Axions Across Boundaries between Particle Physics, Astrophysics, Cosmology and front Detection Technologies**
GGI Workshop 2023 program: Training Week + Workshop + Conference.
Apr 24, 2023 – Jun 09, 2023, Firenze (Organizzatore).
- 2022 **Particle Avenues in the Dark Universe Arena (PADUA): Axions**
Sep 12 – 14, 2022, Padova (Organizzatore locale).
- 2020 – 2021 **Newton 1665** (webinars on phenomenology/theory/astrophysics/cosmology).
- 2016 **IFAE2016**, *Università di Genova*, Convenor della sessione “Intensity Frontier”.
- 2015 – 2016 **Particle Physics Phenomenology Seminars**, *Università di Genova*.

Attività di divulgazione scientifica

- 2020 **Intervista su phys.org**, *Why solar axions cannot explain the observed XENON1T excess*.
- 2017 **Modelling the Invisible**, *Royal Society Summer Science Exhibition, London*,
Co-organizzatore per la Durham University.
- 2016 Organizzazione, coordinamento e direzione dell'attività “Formazione alla ricerca scientifica – PLS 2016, per lo stage di “Fisica Moderna” indirizzato a studenti delle scuole medie superiori presso il dipartimento di Fisica dell'Università di Genova.
- 2015 Organizzazione, coordinamento e direzione dell'attività “Formazione alla ricerca scientifica” – PLS 2015, per lo stage di “Fisica Teorica delle interazioni fondamentali” indirizzato a studenti delle scuole medie superiori presso il dipartimento di Fisica dell'Università di Genova.

Attività di valutazione e revisione

- 2023 **HORIZON-MSCA-PF-2023 Expert Reviewer**.
- 2023 **Valutatore di progetti di ricerca per il National Science Center (Polonia)**.
- 2022 **HORIZON-MSCA-PF-2022 Expert Reviewer**.
- 2021 **Revisore esterno per la VQR 2015-2019**.
- 2012 – in corso **Revisore per riviste scientifiche**,
European Physical Journal C, Physical Review D, Physical Review Letters, Physics Letters B, Journal of High Energy Physics, SciPost Physics, Journal of Cosmology and Astroparticle Physics.

Annex I: Pubblicazioni

Pubblicazioni in riviste "peer reviewed"

1. D. Barducci, L. Di Luzio, M. Nardecchia, C. Toni,
Closing in on new chiral leptons at the LHC,
[JHEP 12 \(2023\) 154](#)
2. L. Di Luzio, G. Levati, P. Paradisi, X. Ponce Díaz,
Flavour constraints on light spin-1 bosons within a chiral Lagrangian approach,
[JHEP 12 \(2023\) 016](#)
3. L. Di Luzio, M. Giannotti, F. Mescia, E. Nardi, S. Okawa, G. Piazza,
Running effects on QCD axion phenomenology,
[Phys.Rev.D 108 \(2023\) 11, 11](#)
4. C. Accettura *et al.*,
Towards a Muon Collider,
[Eur. Phys. J. C 83 \(2023\) 9, 864](#)
5. L. Di Luzio, J. M. Camalich, G. Martinelli, J. A. Oller, G. Piazza,
Axion-pion thermalization rate in unitarized NLO chiral perturbation theory,
[Phys. Rev. D 108 \(2023\) 3, 035025](#)
6. L. Di Luzio, A. W. M. Guerrero, X. P. Díaz S. Rigolin,
On the IR/UV flavour connection in non-universal axion models,
[JHEP 06 \(2023\) 046](#)
7. L. Di Luzio, G. Piazza,
 $a \rightarrow \pi\pi\pi$ decay at next-to-leading order in chiral perturbation theory,
[JHEP 12 \(2022\) 041](#)
8. L. Di Luzio, F. Mescia, E. Nardi, S. Okawa,
Renormalization group effects in astrophobic axion models,
[Phys. Rev. D 106 \(2022\) 5, 055016](#)
9. F. Devoto, S. Devoto, L. Di Luzio, G. Ridolfi,
False vacuum decay: an introductory review,
[J.Phys.G 49 \(2022\) 10, 103001](#)
10. L. Di Luzio, M. Nardecchia, C. Toni
Light vectors coupled to anomalous currents with harmless Wess-Zumino terms,
[Phys. Rev. D 105 \(2022\) 11, 115042](#)
11. L. Di Luzio, R. Gróber, P. Paradisi
Higgs physics confronts the M_W anomaly,
[Phys. Lett. B 832 \(2022\) 137250](#)
12. G. Lucente, L. Mastrototaro, L. Di Luzio, P. Carenza, M. Giannotti, A. Mirizzi
Axion signatures from supernova explosions through the nucleon electric-dipole portal,

[Phys. Rev. D 105 \(2022\) 12, 123020](#)

13. L. Di Luzio, A. Masiero, P. Paradisi and M. Passera,
New physics behind the new muon $g-2$ puzzle?,
[Phys. Lett. B 829 \(2022\) 137037](#)
14. L. Di Luzio *et al.*,
Probing the axion-nucleon coupling with the next generation of axion helioscopes,
[Eur. Phys. J. C 82 \(2022\) no. 2, 120](#)
15. L. Di Luzio, M. Fedele, M. Giannotti, F. Mescia, E. Nardi,
Stellar evolution confronts axion models,
[JCAP 02 \(2022\), 035](#)
16. L. Di Luzio, R. Gröber, P. Paradisi,
Hunting for CP-violating axionlike particle interactions,
[Phys. Rev. D 104 \(2021\) no. 9, 095027](#)
17. L. Allwicher, L. Di Luzio, M. Fedele, F. Mescia, M. Nardecchia,
What is the scale of new physics behind the muon $g - 2$?,
[Phys.Rev.D 104 \(2021\) 5, 055035](#)
18. L. Di Luzio, B. Gavela, P. Quilez, A. Ringwald,
Dark matter from an even lighter QCD axion: trapped misalignment,
[JCAP 10 \(2021\) 001](#)
19. L. Di Luzio, B. Gavela, P. Quilez, A. Ringwald,
An even lighter QCD axion,
[JHEP 2105 \(2021\) 184](#)
20. L. Di Luzio, G. Martinelli, G. Piazza,
Breakdown of chiral perturbation theory for the axion hot dark matter bound,
[Phys. Rev. Lett. 126 \(2021\) no. 24, 241801](#)
21. Q. Bonnefoy, L. Di Luzio, C. Grojean, A. Paul, A. N. Rossia,
Comments on gauge anomalies at dimension-six in the Standard Model Effective Field Theory,
[JHEP 2105 \(2021\) 153](#)
22. Q. Bonnefoy, L. Di Luzio, C. Grojean, A. Paul, A. N. Rossia,
The Anomalous Case of Axion EFTs and Massive Chiral Gauge Fields,
[JHEP 07 \(2021\) 189](#)
23. L. Darmé, L. Di Luzio, M. Giannotti, E. Nardi
Selective enhancement of the QCD axion couplings,
[Phys. Rev. D 103 \(2021\) no. 1, 015034](#)
24. S. Bertolini, L. Di Luzio, F. Nesti
Axion-mediated forces, CP violation and left-right interactions,
[Phys. Rev. Lett. 126 \(2021\) no. 8, 081801](#)

25. L. Di Luzio
Accidental $SO(10)$ axion from gauged flavour,
[JHEP 2011 \(2020\) 074](#)
26. M. Ardu, L. Di Luzio, G. Landini, A. Strumia, D. Teresi, J. W. Wang
Axion quality from the (anti)symmetric of $SU(N)$,
[JHEP 2011 \(2020\) 090](#)
27. L. Di Luzio, M. Fedele, M. Giannotti, F. Mescia, E. Nardi,
Solar axions cannot explain the XENON1T excess,
[Phys. Rev. Lett. 125 \(2020\) no. 13, 131804 \[PRL Editors' Suggetion\]](#)
28. L. Di Luzio,
Pati-Salam Axion,
[JHEP 07 \(2020\) 071](#)
29. L. Di Luzio, M. Giannotti, E. Nardi, L. Visinelli,
The Landscape of QCD Axion Models,
[Phys. Rept. 870 \(2020\) 1-117](#)
30. F. Björkeroth, L. Di Luzio, F. Mescia, E. Nardi, P. Panci, R. Ziegler,
Axion-electron decoupling in nucleophobic axion models,
[Phys. Rev. D 101, no. 3, 035027 \(2020\)](#)
31. B. Di Micco *et al.*,
Higgs Boson Potential at Colliders: Status and Perspectives,
[Rev. Phys. 5 \(2020\) 100045](#)
32. F. Björkeroth, L. Di Luzio, F. Mescia, E. Nardi,
Covert symmetries in the neutrino mass matrix,
[JHEP 02 \(2020\) 066](#)
33. D. Buttazzo, L. Di Luzio, P. Ghorbani, C. Gross, G. Landini, A. Strumia, D. Teresi, J. W. Wang,
Scalar gauge dynamics and Dark Matter,
[JHEP 2001 \(2020\) 130](#)
34. L. Di Luzio, M. Kirk, A. Lenz, T. Rauh,
 ΔM_s theory precision confronts flavour anomalies,
[JHEP 1912 \(2019\) 009](#)
35. D. Buttazzo, L. Di Luzio, G. Landini, A. Strumia, D. Teresi,
Dark Matter from self-dual gauge/Higgs dynamics,
[JHEP 1910 \(2019\) 067](#)
36. L. Di Luzio, M. Redi, A. Strumia, D. Teresi,
Coset Cosmology,
[JHEP 1906 \(2019\) 110](#)

37. F. Björkeröth, L. Di Luzio, F. Mescia, E. Nardi,
 $U(1)$ flavour symmetries as Peccei-Quinn symmetries,
[JHEP 1902 \(2019\) 133](#)
38. L. Di Luzio, R. Gröber, G. Panico,
Probing new electroweak states via precision measurements at the LHC and future colliders,
[JHEP 1901 \(2019\) 011](#)
39. L. Di Luzio, J. Fuentes-Martin, A. Greljo, M. Nardecchia, S. Renner,
Maximal Flavour Violation: a Cabibbo mechanism for leptoquarks,
[JHEP 1811 081 \(2018\)](#)
40. L. Di Luzio, A. Ringwald, C. Tamarit,
Axion mass prediction from minimal grand unification,
[Phys. Rev. D 98, no. 9, 095011 \(2018\)](#)
41. L. Di Luzio, F. Mescia, E. Nardi, P. Panci, R. Ziegler,
Astrophobic Axions,
[Phys. Rev. Lett. 120 no. 26, 261803 \(2018\)](#)
42. L. Di Luzio, M. Kirk, A. Lenz,
Updated B_s -mixing constraints on new physics models for $b \rightarrow s\ell^+\ell^-$ anomalies,
[Phys. Rev. D97 no. 9, 095035 \(2018\)](#)
43. L. Di Luzio, A. Greljo, M. Nardecchia,
Gauge leptoquark as the origin of B -physics anomalies,
[Phys. Rev. D96 no. 11, 115011 \(2017\)](#)
44. L. Di Luzio, R. Gröber, M. Spannowsky,
Maxi-sizing the trilinear Higgs self-coupling: how large could it be?,
[Eur. Phys. J. C77 no. 11, 788 \(2017\)](#)
45. L. Di Luzio, F. Mescia and E. Nardi,
Window for preferred axion models,
[Phys. Rev. D96 no. 7, 075003 \(2017\)](#)
46. L. Di Luzio and M. Nardecchia,
What is the scale of new physics behind the B -flavour anomalies?,
[Eur. Phys. J. C 77, no. 8, 536 \(2017\)](#)
47. L. Di Luzio, E. Nardi, L. Ubaldi,
Accidental Peccei-Quinn symmetry protected to arbitrary order,
[Phys. Rev. Lett. 119, no. 1, 011801 \(2017\)](#)
48. L. Di Luzio, F. Mescia, E. Nardi,
Redefining the Axion Window,
[Phys. Rev. Lett. 118, no. 3, 031801 \(2017\)](#) [[PRL Editors' Suggestion](#)]
49. L. Di Luzio, J. F. Kamenik, M. Nardecchia,

Implications of perturbative unitarity for scalar di-boson resonance searches at LHC,
[Eur. Phys. J. C77 no. 1, 30 \(2017\)](#)

50. C. Biggio, M. Bordone, L. Di Luzio, G. Ridolfi,
Massive vectors and loop observables: the $g - 2$ case,
[JHEP 10 002 \(2016\)](#)
51. S. Bertolini, L. Di Luzio, H. Kolesova, M. Malinsky, J. C. Vasquez,
Neutrino-axion-dilaton interconnection,
[Phys. Rev. D93, 1, 015009 \(2016\)](#)
52. L. Di Luzio, G. Isidori, G. Ridolfi,
Stability of the electroweak ground state in the Standard Model and its extensions,
[Phys. Lett. B753, 150-160 \(2016\)](#)
53. L. Di Luzio, R. Gröber, J. F. Kamenik, M. Nardecchia,
Accidental matter at the LHC,
[JHEP 1507 074 \(2015\)](#)
54. B. Bajc, L. Di Luzio,
R-parity violation in $SU(5)$,
[JHEP 1507 123 \(2015\)](#)
55. S. Bertolini, L. Di Luzio, H. Kolesova, M. Malinsky,
Massive neutrinos and invisible axion minimally connected,
[Phys. Rev. D91, 055014 \(2015\)](#)
56. L. Di Luzio, L. Mihaila,
On the gauge dependence of the Standard Model vacuum instability scale,
[JHEP 1406 079 \(2014\)](#)
57. L. Di Luzio, M. Nardecchia, A. Romanino,
Framework for baryonic R-parity violation in grand unified theories,
[Phys. Rev. D88, 115008 \(2013\)](#)
58. L. Di Luzio, L. Mihaila,
Unification scale vs. electroweak-triplet mass in the $SU(5) + 24_F$ model at 3 loops,
[Phys. Rev. D87, 115025 \(2013\)](#)
59. S. Bertolini, L. Di Luzio, M. Malinsky,
Light color octet scalars in the minimal $SO(10)$ grand unification,
[Phys. Rev. D87, 085020 \(2013\)](#)
60. S. Bertolini, L. Di Luzio, M. Malinsky,
Seesaw Scale in the Minimal Renormalizable $SO(10)$ Grand Unification,
[Phys. Rev. D85, 095014 \(2012\)](#)
61. G. Arcadi, L. Di Luzio, M. Nardecchia,
Minimal Flavour Violation and Neutrino Masses without R-parity,

[JHEP 1205 048 \(2012\)](#)

62. G. Arcadi, L. Di Luzio, M. Nardecchia,
Gravitino Dark Matter in Tree Level Gauge Mediation with and without R-parity,
[JHEP 1112 040 \(2011\)](#)
63. S. Bertolini, L. Di Luzio, M. Malinsky,
Minimal Flipped $SO(10) \otimes U(1)$ Supersymmetric Higgs model,
[Phys. Rev. D83, 035002 \(2011\)](#)
64. S. Bertolini, L. Di Luzio, M. Malinsky,
On the vacuum of the minimal nonsupersymmetric $SO(10)$ unification,
[Phys. Rev. D81, 035015 \(2010\)](#)
65. S. Bertolini, L. Di Luzio, M. Malinsky,
Intermediate mass scales in the non-supersymmetric $SO(10)$ grand unification: A Reappraisal,
[Phys. Rev. D80, 015013 \(2009\)](#)

Articoli in fase di "peer review"

66. L. Di Luzio, H. Gisbert, G. Levati, P. Paradisi, P. Sørensen,
CP-Violating Axions: A Theory Review,
[arXiv:2312.17310 \[hep-ph\]](#)
67. L. Di Luzio, G. Levati, P. Paradisi,
The Chiral Lagrangian of CP-Violating Axion-Like Particles,
[arXiv:2311.12158 \[hep-ph\]](#)
68. L. Di Luzio, H. Gisbert, P. Sørensen,
On the oscillating electric dipole moment induced by axion-fermion couplings,
[arXiv:2308.16135 \[hep-ph\]](#)

Proceedings

69. L. Di Luzio, G. Levati, P. Paradisi, X. Ponce Díaz,
Low-energy flavour probes of light vector bosons,
Proceedings of La Thuile 2023
[arXiv:2309.07052 \[hep-ph\]](#)
70. L. Di Luzio, A. W. M. Guerrero, X. P. Díaz S. Rigolin,
UV-IR interplay in axion flavour violation,
Proceedings of Moriond EW 2023
[arXiv:2305.09440 \[hep-ph\]](#)
71. A. Rossia, Q. Bonnefoy, L. Di Luzio, C. Grojean, A. Paul,
Axion EFTs and Massive Chiral Gauge Fields through the Anomalous Lens,
[PoS EPS-HEP2021 \(2022\) 693](#)
72. P. Quilez, L. Di Luzio, B. Gavela, A. Ringwald,
An exceptionally light axion: Strong CP and Dark Matter,

73. A. Rossia, Q. Bonnefoy, L. Di Luzio, C. Grojean, A. Paul,
Wilson is not anomalous: on gauge anomalies in SMEFT,
PoS LHCP2021 (2021) 196
74. L. Di Luzio,
CP-violating Axions,
PoS EPS-HEP2021 (2022) 513
75. L. Di Luzio,
Flavour Violating Axions,
EPJ Web Conf. 234 (2020) 01005
76. L. Di Luzio, M. Kirk and A. Lenz,
 B_s - \bar{B}_s mixing interplay with B anomalies,
Proceedings of the 10th International Workshop on the CKM Unitarity Triangle (CKM 2018).
[arXiv:1811.11860 \[hep-ph\]](https://arxiv.org/abs/1811.11860)
77. A. Ernst, L. Di Luzio, A. Ringwald, C. Tamarit,
Axion properties in GUTs,
Proceedings of the Corfu Summer Institute 2018
PoS CORFU2018 (2019) 054
78. L. Di Luzio, J. F. Kamenik, M. Nardecchia,
Perturbative unitarity bounds on di-boson scalar resonances,
EPJ Web Conf. 164 07026 (2017)
79. L. Di Luzio, R. Gröber, J. F. Kamenik, M. Nardecchia,
Accidentally safe extensions of the Standard Model,
Proceedings of the 27th Rencontres the Blois
[arXiv:1509.00367 \[hep-ph\]](https://arxiv.org/abs/1509.00367)
80. S. Bertolini, L. Di Luzio, M. Malinsky,
Structure and prospects of the simplest $SO(10)$ GUTs,
AIP Conf. Proc. 1534, 293 (2012)
81. S. Bertolini, L. Di Luzio, M. Malinsky,
Towards a New Minimal $SO(10)$ Unification,
AIP Conf. Proc. 1467, 37 (2012)
82. L. Di Luzio,
Aspects of symmetry breaking in $SO(10)$ GUTs,
J. Phys. Conf. Ser. 335, 012025 (2011)
83. L. Di Luzio,
Recent developments in nonsupersymmetric $SO(10)$ unification,
Nuovo Cim. C33 257-258 (2010)

84. S. Bertolini, L. Di Luzio, M. Malinsky,
The quantum vacuum of the minimal $SO(10)$ GUT,
[J. Phys. Conf. Ser. 259 012098 \(2010\)](#)

Contributi riassuntivi relativi a gruppi di lavoro

85. F. Maltoni *et al.*,
TF07 Snowmass Report: Theory of Collider Phenomena,
[arXiv:2210.02591 \[hep-ph\]](#). 2021 Snowmass Summer Study
86. C. B. Adams *et al.*,
Axion Dark Matter,
[arXiv:2203.14923 \[hep-ex\]](#). 2021 Snowmass Summer Study
87. D. Antypas *et al.*,
New Horizons: Scalar and Vector Ultralight Dark Matter,
[arXiv:2203.07256 \[hep-ex\]](#). 2021 Snowmass Summer Study
88. C. Aimè *et al.*,
Muon Collider Physics Summary,
[arXiv:2203.14915 \[hep-ph\]](#). 2021 Snowmass Summer Study
89. J. de Blas *et al.*,
The physics case of a 3 TeV muon collider stage,
[arXiv:2203.07261 \[hep-ph\]](#). 2021 Snowmass Summer Study
90. J. de Blas *et al.*,
The CLIC Potential for New Physics,
[CERN Yellow Rep. Monogr. Vol. 3 \(2018\)](#)

Tesi di dottorato

91. L. Di Luzio,
Aspects of Symmetry Breaking in Grand Unified Theories,
[arXiv:1110.3210 \[hep-ph\]](#), pubblicata in "SISSA Digital Library"

Current position

Associate professor **Nov. 2025 – present**
Dipartimento di Fisica e Astronomia,
Alma Mater Studiorum – Università di Bologna *Bologna (Italy)*

Previous positions

Senior assistant professor – tenure-track (RTDb) **Nov. 2022 – Oct 2025**
Dipartimento di Fisica e Astronomia,
Alma Mater Studiorum – Università di Bologna *Bologna (Italy)*

SNF Professor **Jun. – Oct. 2022**
Physik-Institut, University of Zurich *Zurich (Switzerland)*

Akademische Rätin auf Zeit **Mar. 2019 – May 2022**
Institut für Theoretische Physik, Universität Heidelberg *Heidelberg (Germany)*

Postdoctoral researcher **Oct. 2016 – Feb. 2019**
Niels Bohr International Academy and Discovery Center, Niels Bohr Institute, University of Copenhagen *Copenhagen (Denmark)*

Profesor Ayudante **Oct. 2015 – Sep. 2016**
Dep.to de Física Teórica, Universidad Autónoma de Madrid *Madrid (Spain)*

Junior ESR of the European Union network FP7 ITN INVISIBLES **Oct. 2012 – Sep. 2015**
Dep.to de Física Teórica, Universidad Autónoma de Madrid *Madrid (Spain)*

Education

Ph.D. **Oct. 2012 – Jun. 2016**
Dep.to de Física Teórica, Universidad Autónoma de Madrid *Madrid (Spain)*
Advisor: Prof. M. Belén Gavela Legazpi

Diploma of Higher Education **Oct. 2007 – Sep. 2012**
Scuola Galileiana di Studi Superiori *Padova (Italy)*

Master's degree in Physics (curriculum Theoretical Physics) **Oct. 2010 – Sep. 2012**
Università degli Studi di Padova *Padova (Italy)*

Bachelor's degree in Physics **Oct. 2007 – Jul. 2010**
Università degli Studi di Padova *Padova (Italy)*

Awards and Grants

- **PRIMA Grant, awarded by the Swiss National Science Foundation** *Call 2020*
Title: Identifying new physics footprints: Effective Field Theories for the Large Hadron Collider
- **COST Action CA22130, awarded by the COST association** *Call 2022*
Title: COmprehensive Multiboson Experiment-Theory Action (COMETA)

Responsibilities and service activities

- **Chair of the COMETA COST Action** Sep. 2023 – present
www.cost.eu/actions/CA22130/
- **Convener of the LHC EFT Working Group** 2020 – present
lpcc.web.cern.ch/lhc-eft-wg
- **WG leader of the CosmicWISPers COST action** 2022 – 2023
Co-leader of the working group dedicated to WISP Model Building.
www.cost.eu/actions/CA21106/
- **WG leader of the VBSCan COST action** 2019 – 2021
Co-leader of the working group dedicated to theoretical understanding.
vbscanaction.web.cern.ch
- **Reviewer for NWO (NL), Royal Society (UK) and Helmholtz HIG (DE) funding schemes** 2025 – present

Scientific publications

Author of 40+ publications. Full record available on [inspirehep](https://inspirehep.net). 10 most relevant:

1. I. Brivio, T. Corbett, O.J.P. Éboli, M.B. Gavela, M.C. Gonzalez-Garcia, J. Gonzalez-Fraile, L. Merlo, S. Rigolin, *Disentangling a dynamical Higgs*, published in **JHEP 03 (2014) 024**.
arXiv: 1311.1823
2. I. Brivio, J. Gonzalez-Fraile, M. C. Gonzalez-Garcia, L. Merlo, *The complete HEFT Lagrangian after the LHC Run I*, published in **Eur. Phys. J. C76 (2016) no.7, 416**. arXiv: 1604.06801
3. I. Brivio, B. Gavela, L. Merlo, K. Mimasu, J. M. No, R. del Rey, V. Sanz, *ALPs Effective Field Theory and Collider Signatures*. published in **Eur.Phys.J. C77 (2017) no.8, 572**.
arXiv: 1701.05379
4. I. Brivio, M. Trott, *Radiatively Generating the Higgs Potential and Electroweak Scale via the Seesaw Mechanism*. Published in **PRL 119, 141801**. arXiv: 1703.10924
5. I. Brivio, M. Trott, *The Standard Model as an Effective Field Theory*, published in **Phys. Rept. 793 (2019) 1**. arXiv: 1706.08945
6. I. Brivio, Y. Jiang, M. Trott, *The SMEFTsim package, theory and tools*.
Published in **JHEP 12 (2017) 070**. arXiv: 1709.06492
7. I. Brivio, S. Bruggisser, F. Maltoni, R. Moutafis, T. Plehn, E. Vryonidou, S. Westhoff, C. Zhang, *O new physics, where art thou? A global search in the top sector*. Published in **JHEP 02 (2020) 131**.
arXiv: 1910.03606.
8. I. Brivio, *SMEFTsim 3.0 – a practical guide*. Published in **JHEP 04 (2021) 073**. arXiv: 2012.11343
9. M. Alminawi, I. Brivio, J. Davighi, *Jet bundle geometry of scalar field theories*.
Published in **J. Phys. A 57 (2024) 43501**. arXiv: 2308.00017
10. M. Alminawi, I. Brivio, J. Davighi, *Scalar Amplitudes from Fibre Bundle Geometry* arXiv: 2509.20482

Organization of International Schools and Conferences

Event series.....

- **Les Rencontres de Physique de la Vallée d'Aoste conf. series** *La Thuile (Italy), 2025 - present*
Organizing committee
- **Events of the COMETA COST Action** *2024 – present*
Organising committee of *1st general meeting of the COMETA COST Action* - Izmir, Feb. 2024
Program committee of *Effective Field Theory in Multiboson Production* - Padova, June 2024
Organizing committee of *4th Baltic School of HEP and Accelerator Technologies* - Kuldīga, Aug. '24
Program committee of *COMETA workshop on EFT in HH and VBS* - Paris, March 2025
Organising committee of *2nd general meeting of the COMETA COST Action* - Krakow, Apr. 2025
Organising committee of *ML4Physics@Ljubljana school* - Ljubljana, June 2025
Supervision of the organization of 5 more topical workshops
- **“MultiBoson Interactions” workshop series** *2022 – present*
2022 - present: Member of the International Advisory Board
- **“Higgs” Conference series** *2020 – 2024*
2021 – 2024: Member of International Organizing Committee
2022 (Pisa): Member of Program Committee
2020: Convener of EFT session
- **Meetings of the LHC EFT Working Group** *2020 – 2024*
Organizing committee for 4 general meetings and 4 topical meetings
- **HEFT workshop series**
International organizing committee for the editions 2018 (Mainz), 2019 (Louvain), 2020, 2021 (Hefei)
Chair of Local Organisation and Program Committees for 2024 edition (Bologna)
- **Events of the VBSCan COST Action** *2018 – 2021*
Organising committee of *Effective Field Theory in Polarised VBS* - Sept. 2020
Scientific committee of *BSM models in Vector Boson Scattering processes* - Lisbon, Dec. 2019
Organising committee of *Winter 2021 topical meeting on VBS: VBS at Snowmass* - Jan 2021
Organising committee of *Advanced VBS Training School* - Milano, Sept. 2021
- **Invisibles workshops and school series**
2024 (Bologna): Local organizing committee for School and Workshop
2015 (Madrid): Local organizing committee for School and Workshop
- **Incontri di Fisica delle Alte Energie (IFAE)**
2026 (Bologna): Local organizing committee
2018 (Milano): Convener of Intensity frontier session

Individual events.....

- **SEARCH 2025** *CERN, 20 - 24 October 2025*
Program committee
- **EPS 2023** *Hamburg (Germany), 20-25 Aug 2023*
Convener of Higgs Physics session
- **Winter 2021 topical meeting on VBS: VBS at Snowmass** *25-29 January 2021*
Organizing committee
- **CRC Workshop on Standard Model Effective Theory** *Heidelberg (Germany), 11-12 July 2019*
Local organizing committee

Presentations at international conference

Over 50 plenary talks, parallel talks and poster presentations at international conferences, meetings and workshops. 5 most significant in the last 3 years:

1. **Higgs 2025** *Providence (US), 27 - 31 October 2025*
Invited talk: HEFT and non-decoupling BSM in Higgs sector
2. **HEFT 2025** *CERN (Switzerland), 2-6 June 2025*
Invited talk: The art of counting: the HEFT expansion and HH production
3. **Zurich Phenomenology Workshop 2025** *Zurich (Switzerland), 6-8 January 2025*
Invited talk: Geometric approaches to SMEFT and HEFT
4. **Les Rencontres de Physique de la Vallée d'Aoste** *La Thuile (Italy), 5-11 March 2023*
Invited talk: LHC constraints on the SM Effective Field Theory
5. **SMEFT-Tools 2022** *Zurich (Switzerland), 14-16 Sep. 2022*
Invited talk: Monte Carlo SMEFT predictions for the LHC

Seminars and visits

40+ invited seminars at Universities and research institutions. 5 most significant in the last 2 years:

1. **PRISMA+ Colloquium** *Mainz (DE), 20 November 2024*
Invited seminar: ALPs at Colliders
2. **CERN: BSM forum series** *CERN (Switzerland), 18 April 2024*
Invited seminar: SMEFT and HEFT with jet bundle geometry
3. **MMPG Munich** *Munich (Germany), 02 February 2024*
Invited seminar: SMEFT vs HEFT for new physics searches at the LHC
4. **RTG Colloquium Aachen** *Aachen (Germany), 11 July 2023*
Invited seminar: Hunting New Physics Footprints: EFT interpretations of LHC data
5. **Zurich Physics Colloquium** *Zurich (Switzerland), 1 March 2023*
Invited seminar: Hunting New Physics Footprints at the Large Hadron Collider

Teaching experience

University courses.....

- **Theory of the Standard Model** *A.Y. 2025/6*
- **Advanced Standard Model: Effective Field Theories** *A.Y. 2025/6*
- **Beyond the Standard Model – Module 2** *A.Y. 2024/5*
- **Nuclear and Subnuclear Physics – Exercises** *A.Y. 2023/4*
- **Physics 1 – Module 2 (Thermodynamics)** *A.Y. 2022/3 – present*
- **Quantum Mechanics – Exercises** *A.Y. 2022/3 – present*
- **Group Theory for Physics – Module 2** *A.Y. 2022/3*
- **Quantum Field Theory I course: tutoring** *A.Y. 2021/2*
- **Standard Model: tutoring** *A.Y. 2019/20*
- **Quantum Field Theory II: tutoring** *A.Y. 2018/9 + 2020/1*
- **Physics laboratory tutor** *A.Y. 2015/6*
- **Physics laboratory tutor** *A.Y. 2013/4*

PhD courses.....

- **Effective Field Theory at the LHC [8h]** *U. Milano Bicocca (Italy) 2024*
- **KSETA PhD school** *Karlsruhe (Germany), 19-20 February 2024*
Course: The Standard Model EFT: theory and phenomenological applications [6h]
- **EFT fitting in Standard Model measurements [8h]** *U. Milano Bicocca (Italy) 2023*

Lectures at training schools.....

- **Particle physics at colliders in the LHC precision era - Training School** *Würzburg (Germany), 6 - 10 October 2025*
[6 hours] Course: SMEFT
- **Theory Challenges in the Precision Era of the LHC – Training Week** *GGI (Italy) 2023*
[6 hours] Course: SMEFT predictions for the LHC
- **SMEFT'2022 summer school** *Siegen (Germany) 022*
[7 hours] Course: Precision Electroweak Physics in the SMEFT
- **RTG Fall Workshop 2021** *Freiburg (Germany) 2021*
[3.5 hours] Lectures: An introduction to SMEFT
- **PREFIT School** *DESY Hamburg (Germany) 2020*
[9 hours] Courses: EFT UFO Hands-On, Madgraph and parton shower Hands-On, SMEFT Hands-On.

Supervision of students

- **PhD students**

- **MSc students**

- **B.Sc students**

CV NICOLA BARTOLO

Dipartimento di Fisica e Astronomia "G. Galilei", Università degli studi di Padova, via Marzolo 8, Padova I-35131, Italy

Telephone

E-mail:

ACADEMIC CAREER

2024-present: Full Professor at the Physics and Astronomy Department "Galileo Galilei", Padova Univ. Scientific Sector PHYS-05/A - Astrophysics, Cosmology and Space Science

2014–2024: Associate Professor at the Physics and Astronomy Department "G. Galilei", Padova Univ. Scientific Sector FIS/05 Astronomy and Astrophysics

2006–2014 Lecturer (Ricercatore) at the Physics and Astronomy Department "G. Galilei", Padova Univ. Scientific Sector FIS/05 Astronomy and Astrophysics

2004–2006 Postdoc, International Centre for Theoretical Physics, Trieste, Italy

2002–2004 Postdoc, Astronomy Centre, Sussex Univ., U.K.

2001–2002 Marie Curie visiting student, Astronomy Centre, Sussex Univ., U.K.

1999–2002 PhD in Physics, Padova Univ.

1994–1999 Master Degree in Physics, 110/110 cum laude, Padova Univ.

RESEARCH INTERESTS

I have twenty years of internationally recognized experience in various key-aspects of modern Cosmology: Inflationary models and observable predictions for the generation of primordial density perturbations in the early universe; (primordial) non-Gaussianity and its impact on Cosmic Microwave Background and Large-Scale Structures; mechanisms for the production of the stochastic background of primordial gravitational waves; evolution of cosmological perturbations; anisotropic cosmological models; observational implications on inflation models; tests of fundamental physics through CMB measurements (e.g. cosmological signatures of parity breaking), dark-energy/modified gravity models; quantum physics aspects in Cosmology (such as quantum-to-classical transition of primordial perturbations, open quantum systems and quantum decoherence in cosmology).

I gave a primary contribution to the *Planck satellite* papers on primordial non-Gaussianity (of which I am the corresponding author) and I had a primary role in the coordination between the *Planck* constraints on inflationary models and the analysis on primordial non-Gaussianity. My research work nicely fits with my activities within the international collaborations I am involved in. I contributed to review papers (such as the first review on primordial non-Gaussianity) highly cited and to various scientific white papers.

NATIONAL & INTERNATIONAL COLLABORATIONS and COORDINATION ACTIVITIES

- Member of the LiteBIRD satellite collaboration.

Co-Leader of the LiteBIRD Project Team on "Tests of Cosmic Inflation".

<https://www.isas.jaxa.jp/en/missions/spacecraft/future/litebird.html>

- National PI of PRIN2022 project "BROWSEPOL: Beyond standaRd mOdel With coSmic microwavE background POLarization", funded by MUR (Italian Ministry of

University and Research), involving 3 Research Units (Padova, University of Ferrara and INAF-OAS Bologna).

- Member of ESA *Planck* satellite mission: *Planck* scientist, Core Team member
- Member of Italian Projects ASI-COSMOS & ASI-LiteBIRD for CMB polarization Coordinator of the Work Packages "Inflation and Gravitational Waves" and "Modelling primordial Gravitational Wave background & CMB primordial spectral distortions".
- Member of the LISA satellite mission
<https://sci.esa.int/web/lisa>
- Member of Division 2 Cosmology of Einstein Telescope Observational Science Board
<http://www.et-gw.eu>
- Member of the Euclid satellite collaboration
Coordinator of the "Cosmological Theory SWG WP3 Initial conditions (TH-WP3)"
- Member of the Science Case working groups of BPOL, CORe, PRISM, CORe+ proposals, submitted to ESA for a post-Planck satellite to map CMB polarization
- Member of the "Inflation working group" of CMBPol Mission Concept Study by NASA for a satellite to map CMB polarization
- Member of ASI COFIS I/016/07/0 "Studies of Cosmology and Fundamental Physics"
- National coordinator of the INFN astroparticle physics specific initiatives "PD51" & "InDark", including 8 nodes in Italy. Its goal is the study of early universe models, dark matter and dark energy models and observable effects (2011-2019).
- At present local coordinator of the Padova node of the INFN specific initiative "InDark".
- Convenor of the Working Group "New Directions" for the INFN initiative "What Next", invited to discuss future Research related to CMB, Dark Energy, Large Scale Structure and Cosmology (2014-2016)
- Member of PRIN2009 project "The Quest for Primordial Non-Gaussianity", involving 3 nodes (Padova, Roma Tor Vergata and SISSA) (2011-2013)
- Member of PRIN2002 project "Dark Energy in the Universe: theoretical predictions and observational constraints", involving 3 nodes (Padova, Roma Tor Vergata and SISSA) (2002-2004)

MAIN INSTITUTIONAL RESPONSIBILITIES

- Since 2023: Coordinator (elected) of the Scientific Committee for Physical Sciences ("Commissione Scientifica d'Area 02") within the Physics and Astronomy Department "G. Galilei", University of Padova. The Scientific Committee for Physical Sciences has the responsibility of organizing and distributing to the various Research Groups of my Department all the research funds available.
Being coordinator of such a Commission I am member of the Scientific Committee of the University of Padova ("Commissione Scientifica di Ateneo"). In particular within "Commissione Scientifica di Ateneo" I belong to the "Working Group University funding and selection for external calls" ("Gruppo di Lavoro Finanziamenti di Ateneo e selezioni per bandi esterni")
- Since 2023: member of the Scientific Board of the recently funded "Departments of Excellence grant - Quantum Frontiers" (MUR 2023-2027)
- 2009- 2012 and since 2021: member of the PhD Faculty Board ("Collegio Docenti")

for the PhD in Physics, at the Physics and Astronomy Department "G. Galilei", University of Padova.

- Since 2019: member of the Coordinating Committee of the Master Degree in "Astrophysics and Cosmology" at the Physics and Astronomy Department "G. Galilei".

- 2017- 2020: member of the PhD Faculty Board ("Collegio Docenti") for the PhD in Astronomy, at the Physics and Astronomy Department "G. Galilei", University of Padova.

- 2009- 2015: Council ("Giunta") member of the Physics and Astronomy Dept. of Padova (as elected representative of permanent Researchers, the last year as elected representative of Professors).

PUBLICATIONS (up to 9 October 2025)

253 papers published in international refereed journals +1 submitted papers; 11 publications including white papers and conference proceedings

CITATIONS & BIBLIOMETRIC INDICES Inspire: total number of citations~85230, h-index=94; ADS/NASA database: total number of citations ~80000, h-index=95;

Average citations ~ 282; 48 papers with 50+ citations; 39 with 100+; 24 with 250+;

27 with 500+ citations

AWARDS

- Cocconi Award 2019, from EPS High Energy and Particle Physics Division, as *Planck* team member

- 2018 Royal Astronomical Society Group Achievement Award 'A' *Planck* Team, as *Planck* team member

- Gruber Cosmology Prize 2018, as *Planck* Team member

EDITORIAL ACTIVITY

Referee for international journals: PRL, PRD, JCAP, MNRAS, CQG, Physics of the Dark Universe and others

SELECTION PANELS

Since 2010: Referee for various international funding agencies: (NWO, Dutch research council); Swiss National Science Foundation; FONDECYT, Chile; ERC evaluator for Consolidator Grant ERC for Universe Sciences. Referee for SIR 2014 (Scientific Independence of young Researchers program) and for the evaluation of the Italian research system VQR carried on by the Italian Research and University Evaluation Agency (ANVUR) and MIUR. Referee for the Young Researchers' Program "Rita Levi Montalcini". Invited Referee for 2021 Edition of the "Adams Prize" of the University of Cambridge annually awarded to a young scientist.

ORGANIZATION OF SCIENTIFIC MEETINGS

- Since 2018 PhD School on "Theoretical Aspects of Astroparticle Physics, Cosmology and Gravitation", Galileo Galilei Institute, Firenze, Italy

- "Learning the Deep Mysteries of Nature with Cosmology", workshop, Fiera di Primiero (Italy), 2025

- Focus Week Program on "Parity violation through CMB observations", at IFPU

(Institute of Fundamental Physics of the Universe), Trieste, Italy, 2024

- Organizing Committee of the “International Workshop on Neutrino Telescopes”, Venice, Italy (2015-2023)
- Informal one-day meeting on “Cosmology, Quantum physics and Gravitational Waves”, Padova, 2023
- “Asiago Cosmology Dedicated Meeting”, Osservatorio Astrofisico di Asiago (VI), Italy, 2023
- Member of the Local Organizing Committee of the Workshop “Messengers of the very early universe: Gravitational Waves and Primordial Black Holes”, Centro Universitario Padovano, Padova, Italy, 2022
- “Axions: experimental, cosmological and theoretical aspects”, one day Workshop in Padova, Italy, 2020
- PhD School on “Multimessenger Astrophysics”, Asiago, Italy 2020
- VII LISA satellite Cosmology Working Group Workshop, Padova, Italy 2019
- SCfA workshop “Concordances and challenges in cosmology after Planck”, Sesto, Italy 2019
- “Theoretical and Experimental aspects of Gravitational Waves”, one day Workshop in Padova, Italy, 2018
- Member of the SOC of the SCfA Workshop “General Relativity effects in Cosmological Large-Scale Structures”, Sesto, Bolzano, Italy, 2018
- Workshop “Early Universe” for ASI-COSMOS project, Padova, Italy 2018
- First COSMOCLASSIC meeting, Padova, Italy 2012
- One of the organizers of the (informal) talks “Pheno-Coffee”, Physics Dept. Padova (2008-2013)
- Workshop “non-Gaussianity in Cosmology” and Summer School in “Cosmology and Astroparticle Physics” at ICTP, Trieste, Italy 2006

MAIN TEACHING

- “Cosmology of the Early Universe” for Master students in Astrophysics & Cosmology, and for Physics, Padova Univ., since 2013
- “Cosmology” course for the PhD School in Physics at the Physics and Astronomy Dept. of Padova, since 2007
- “Experimental Physics” for the Bachelor degree in Geology, Univ. of Padova
- Since 2025: “Fundamentals of Astrophysics and Cosmology” for Master students in Astrophysics & Cosmology, Univ. of Padova

SUPERVISION

- Since 2006 Advising 8 postdocs
- Since 2006 Supervision of 19 PhD students. Almost all of them continued as post-docs in various Universities
- Since 2006 Supervision of more than 55 Master students and co-supervision of about 16 Master students in “Physics” and in “Astrophysics and Cosmology”, and various Bachelor students supervised

A SELECTION OF INVITED TALKS

- “Primordial non-Gaussianity”, Conference “The Origin of the Primordial Density

Perturbation”, Lancaster Univ., U.K. 2005

- “Non-Gaussianity and 2nd-order CMB anisotropies”, Workshop “Non-Gaussianity from Inflation”, Cambridge Univ. 2006
- “CMB non-Gaussianity from second-order anisotropies”, Workshop “Non-Gaussianity from fundamental Physics”, Cambridge Univ. 2008
- Lecture “Primordial Non-Gaussianity & the CMB in the Standard Model of the Universe”, XIII Colloquium of Cosmology Daniel Chalonge International School of Astrophysics, Paris 2009
- “Some novel results on non-Gaussianity and anisotropic features”, “The Almost Gaussian Universe Workshop”, CEA/Saclay 2010
- “CMB non-Gaussianity and statistical anisotropies”, “Pre-Planckian Inflation” Workshop, Univ. of Minnesota 2011
- “Non-linearities vs primordial NG in the CMB”, Workshop “Critical Tests of Inflation using Non-Gaussianity”, MPI fur Astrophysik, Garching, Germany 2012
- “Probing fundamental physics with CMB polarization”, EPI Consortium Meeting, Santander, Spain, 2012
- “Inflation and primordial non-gaussianities”, 25th Rencontres de Blois on “Particle Physics and Cosmology”, Blois, France 2013
- Lectures ‘The Future of Cosmology: Early Universe Cosmology”, Astrophysics PhD School “Francesco Lucchin”, Gaeta, Italy 2013
- “Have primordial gravitational waves been detected?”, Colloquium, Physics and Astronomy Dept. of Padova 2014
- Lectures “Cosmology after Planck”, XVII PhD LNF Spring School “Bruno Touschek”, LNF, Italy 2014
- “Planck power spectrum and bispectrum constraints: implications for inflation”, Conference “PLANCK 2014-The microwave sky in temperature and polarization”, Ferrara, Italy 2014
- “Primordial non-Gaussianity after Planck 2015: looking for new observational tests and new signatures”, II Flag Meeting “The Quantum and Gravity”, Univ. of Trento, Italy 2016
- “Inflation models in the LHC era”, “XIX Roma Tre Topical Seminar on Subnuclear Physics: Gravitational waves and cosmology”, Univ. Roma Tre, Italy 2016
- Lectures “The quest for dark matter: a cosmological point of view”, Heraeus School Padova-Heidelberg, Astronomy Dept. Padova 2017
- “Large Scale Structure in mimetic Horndeski gravity”, Workshop “Dark Energy and Modified-Gravity cosmologies: DARKMOD”, Saclay 2017
- “What gravitational waves can tell us about Cosmology?”, Meeting “GW170817 and multimessenger astronomy: the research in Padua”, Padua 2017
- “Inflation: current status and future prospects”, at the 27th Workshop on General Relativity and Gravitation, Hiroshima, Japan 2017
- “Probing anisotropic signatures from inflation with CMB spectral distortions”, Workshop “Probing fundamental physics with CMB spectral distortions”, Cern, 2018.
- “The rise of GW astronomy and its implications for cosmology”, “Universum 2018”, Bologna, Italy 2018
- “Large-Scale Structure in mimetic Horndeski gravity”, Workshop: “From Dark Energy to Bright synergies”, Sexten, Italy 2018

- Discussion leader “Gravitational Wave Cosmology and primordial Black Holes” , Venice Cosmology Workshop 2018: The Island, Venice, Italy 2018
- “Non-Gaussian gNL-like toy models that reproduce the CMB anomalies”, Workshop “ASI/COSMOS Astroparticle and Fundamental Physics with the CMB”, Ferrara, Italy 2018
- “Inflation and its observables: primordial gravitational waves and non-Gaussianity”, Workshop “Euclid and beyond: the many faces of modern cosmology”, Roma, Italy 2019
- “Cosmology in the era of gravitational waves: Anisotropies & non-Gaussianity of the Cosmological Gravitational Wave Background”, “The Paris-Saclay AstroParticle Symposium 2019”, Saclay, France 2019
- “The Inflationary paradigm”, “Physics of the Early Universe” Workshop, ICTS, Bengaluru, India 2020
- “Cosmology and Gravitational Waves”, “The Paris-Saclay AstroParticle Symposium 2021”, Saclay, France 2021
- “CMB anomalies and gravitational waves: a new perspective”, “Bethe Forum”, Bonn, Germany, April 2022
- “Gravity, non-Gaussianity and quantum signatures of the Universe”, “The complexity of the cosmos: an interdisciplinary symposium in cosmology, astrophysics and statistical mechanics”, Gran Sasso Science Institute in L'Aquila, Italy, October 2022
- “Inflation & gravitational waves , Workshop “LiteBIRD-ITALIA 2023 @INFN-LNF”, Laboratori Nazionali di Frascati, Frascati (Italy), May 2023
- “New avenues to the Cosmological Gravitational Wave Background”, Copernicus Webinar and Colloquium Series, 16 May 2023 (online).
- “Inflation: current status and future prospects”, ASI Workshop “CMB day-2”, ASI Rome (Italy), 16-18 October 2023
- “Primordial non-Gaussianity at the mirror”, “Parity Violation from Home workshop”, October 2023 (online).
- Invited talk at “Gravitational Waves in the desert” workshop, Ein Gedi, Dead Sea (Israel). November 2023 Workshop postponed.
- “CMB probes of fundamental physics: current status and future prospects ” INFN CSN2 (National Scientific Committee II) meeting”, Foligno (Italy), April 2024
- “A parity-violating Universe? Cosmic Birefringence (and more)”, “ATHEXIS - Athens Symposium on Exploring the Universe”, Athens (Greece), June 2024
- “CMB probes of fundamental physics: current status and future prospects ” , “Marcel Grossmann 17th”, Pescara (Italy), July 2024.
- “More on Quantum decoherence signatures from inflation”
- “More on Quantum decoherence signatures from inflation”, “ The complexity of the cosmos: an interdisciplinary symposium in cosmology, astrophysics and statistical mechanics”, Gran Sasso Science Institute in L'Aquila (Italy), October 2024
- “The Quantum Universe”, “Universum workshop”, Padova (Italy), April 2025
- “Quantum signatures from the Early Universe” , “The Dawn of Gravitational Wave Cosmology workshop”, Benasque (Spain), April-May 2025.
- “New directions in Cosmology”, “New Frontiers in Theoretical Physics - XXXVIII Convegno Nazionale di Fisica Teorica”, Cortona (Italy), May 2025

- "Primordial gravitational waves", Workshop on Gravitational Waves Probes of Beyond Standard Model Physics, Warsaw (Poland), June 2025

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Curriculum Vitæ

Dr. DANIELE BERTACCA

Work Address:

Date and Place of Birth:

Academic Positions

- Dec. 2022-Now:** Tenure Track “RTDB” at Dipartimento di Fisica e Astronomia “G. Galilei”, Università degli Studi di Padova.
- Mar. 2018**
-Nov. 2022: Research fellow “RTDA” at Dipartimento di Fisica e Astronomia “G. Galilei”, Università degli Studi di Padova.
- Jan.-Feb. 2018:** Excelencia María De Maeztu position at ICCUB, University of Barcelona, Spain.
- Nov. 2014-2017:** Postdoctoral researchers in theoretical astrophysics and cosmology at the Argelander Institute of Astrophysics, Bonn University, Germany.
- 2011-2014:** SKA Research Fellowship. Research Fellowship to conduct a programme of advanced postdoctoral research in cosmology and astrophysics at the University of the Western Cape, South Africa. This research programme is linked to the South African SKA (Square Kilometre Array) Project, including the South African MeerKAT radio telescope array, and also to the South African SALT optical telescope.
- 2009-2011:** Postdoctoral associate at Padua University (Italy), Physics Department “Galileo Galilei”, (from January 2009 to September 2011).
- During 2010, 6 months fellowship (Fondazione “Ing. Aldo Gini”) for research projects at the Institute of Cosmology and Gravitation, University of Portsmouth, UK.
- 2008:** Postdoctoral associate at Turin University (Italy), Dipartimento di Fisica Teorica and Dipartimento di Fisica Generale “Amedeo Avogadro”.

Academic Qualifications, Awards and Fellowships

- June 2022:** Attended Teaching4Learning@Unipd New Faculty course and owner of the Open Badge (<https://bestr.it/badge/show/500?ln=en>), University of Padua, Italy.
- December 2019:** National Scientific Qualification (ASN) for Associate Professor position, SSD FIS/05, in “Astronomia, Astrofisica, Fisica Della Terra e dei Pianeti”
- 2010-2013:** Visiting Research Fellow, Institute of Cosmology and Gravitation, University of Portsmouth, UK.
- 2010:** Grant for foreign nationals to the scientific fields of Agriculture, Engineering, Mathematical, Physical and Natural Sciences. Fondazione “Ing. Aldo Gini”.
- 14 March 2008:** PhD degree in Physics.
Thesis title: “Unified Dark Matter in Scalar Field Cosmologies ”
Supervisors: Prof. Sabino Matarrese and Dr. Massimo Pietroni
- 2005-2007:** Ph.D. student at Padua University (Italy), Physics Department “Galileo Galilei” with a three years postgraduate fellowship.
- 14 July 2004:** Degree in Physics with specialization in theoretical particle physics, with the mark of 110/110 cum laude.
Thesis title: “Associated production of $J/\psi + \gamma$ at HERA”
Supervisors: Prof. Riccardo Brugnera and Dr. Alessandro Bertolin
- 2003:** Summer student at DESY (Hamburg - Germany).
- October 1999:** Degree student at University of Padua (Italy), Department of Physics.
- July 1999:** High-school graduation
1994- 1999: I studied at the Technical Institute “Luigi Galvani” in Milano where I attended courses on telecommunications, electronics, electrical measurements.

Research activity

My work primarily concerns understanding the origin and evolution of structure in the Universe. During my career, I have mastered both the analytical and numerical techniques, which are a basis for the successful outcome of my scientific career. I am an expert in the techniques of 3D correlation functions, perturbations, Post-Newtonian and

Post-Friedmann approaches. I studied for the first time the galaxy number over-density up to second order in redshift space on cosmological scales. More in general, I am an expert in Theoretical Physics, Cosmology, General Relativity, Modified Gravity, and Scalar Field models. I have always pursued new ideas, which modify gravity in the UV and the IR, with the ultimate goal to explain theoretical and observational puzzles of the current paradigm.

Recently, I devoted my work to open and increase new national & international collaborations through several experiments (for example, LISA Cosmology Group and Cosmology Group and GWIC 3G Science Team) and new projects within the Science Working Group of the Euclid and SKA Consortium. Then I increased my research on Gravitational Waves (GWs), for example related on theoretical analysis of GWs in Modified Gravity and a future detection of the Stochastic Gravitational Wave Background (SGWB) with the current pulsar timing array (PTA) and future GW experiments, e.g. space-based such as LISA and earth-based like Einstein Telescope (ET). SGWB is expected to open a new window on early universe cosmology and on the astrophysics of compact objects.

Major projects I have been involved in are the following.

- i)* For the Large Scale Structures (LSS), current and upcoming cosmological experiments (e.g. Euclid, WFIRST, LSST, SKA and SPHEREx) will provide accurate redshifts for millions of galaxies, tracing back to high redshift. These major surveys will provide the most accurate constraints on the nature of the Universe. The objective of my research on LSS is to develop various methods and new approaches to the solution of crucial questions in cosmology. Through my studies I will be able to find out more about one of the greatest puzzles in modern physics such as the nature of the Dark Energy that is accelerating the Universe today, the statistics of primordial fluctuations and to provide essential information for characterising the mechanism producing cosmological perturbations. Recently, I have devoted my research to studying our peculiar speed, which imprints a dipole on galaxy density maps derived from redshift surveys. Both analytically and numerically, using the LIGER method, we have shown that measuring the of the power spectrum of the galaxies generates an additive component reflecting the kinematic dipole overdensity caused by the peculiar velocity. This component is characterised by a damped oscillatory pattern on large scales. We show that this 'finger of the observer' effect is detectable in some redshift bins and suggest that its measurement could possibly open new research directions in connection with the determination of the cosmological parameters, the properties of the galaxy population under study, and the dipole itself.
- ii)* GWs will become the most powerful tool to explore our Universe from its early epoch until nowadays. The LIGO-Virgo detection of several GW signals, has greatly boosted the astrophysical understanding of astrophysical compact objects, and, at the same time, has given strong constraints on modified-gravity models. The upcoming surge of GW detections by current and future pulsar timing array (PTA), future space-based (LISA, DECIGO, BBO) and ground-based (ET, Cosmic Explorer, LIGO India) will clearly promote GWs at the same level of the Cosmic Microwave Background (CMB) and LSS as a tracer to study our Universe. Now, I am interested in developing tools and techniques to characterise the stochastic gravitational wave background, both of cosmological (e.g. inflation, phase transition) and astrophysical origin, which will be detected by PTA and next-generation ground-based telescopes such as the ET and CE, so that they can be combined with other cosmological probes, such as large-scale structures and the cosmic microwave background.

I think that the nature of gravitational wave background is a key question in modern astrophysics and cosmology, with significant implications for understanding of the structure and evolution of the Universe. Then, I am interested in studying the luminosity distance of propagating gravitational waves which can provide invaluable information on the geometry and content of our Universe and impact estimates for future detectors such as ET and CE.

Finally, in the last two years, research has also been focused on the study of possible quantum signatures of the early Universe or the effect of quantum decoherence on primordial cosmological perturbations could lead to define the quantum nature of the inflationary mechanism, the standard scenario to explain all the structures we observe today in the Universe. In these new projects I intend to study possible signals that could unambiguously reveal the quantum nature of primordial fluctuations arising from inflation, which could remain imprinted in some current observables. I believe that these signatures can be measured in the form of primordial non-Gaussianity of future CMB data from experiments such as LiteBIRD, CMBS4, Simons Observatory or in higher order correlation functions of galaxies for future surveys such as SPHEREx, Euclid, ATLAS, and how future gravitational wave experiments, such as the space interferometers LISA or the ET and CE, and/or table-top experiments, can shed light on the quantum nature of primordial gravitational waves. From this year, in collaboration with Dr. Rosa Laura Lachuga, we want to further investigate these topics and we plan to adopt different methods and approaches related to quantum information, quantum optics and quantum statistical physics.

Citation count

- I have published 86 papers (+ 28 submitted + 1 conference paper) in the most established peer-reviewed International Journals.
- Citations: More than 7200 (based on INSPIRE Citation Index)
- h-index: 42 (based on INSPIRE Citation Index)
- Google scholar: citation count: 7110 (5774 since 2020), h-index: 42.
- 19 first author papers with h-index: 15 and 1028 citations (based on INSPIRE Citation Index).
- 16 papers having more than 100 citations and 35 papers having more than 50 citations (based on INSPIRE Citation Index).
- **ORCID iD:** orcid.org/0000-0002-2490-7139

List of Publications

1. S. Qua *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Predicting star-forming galaxy scaling relations with the spectral stacking code SpectraPyle,” [arXiv:2509.16120 [astro-ph.GA]].
2. M. Urbano *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Using mock Low Surface Brightness dwarf galaxies to probe Wide Survey detection capabilities,” [arXiv:2509.13163 [astro-ph.GA]].

3. J. B. Melin *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Methodology for validating the Euclid Catalogue of Galaxy Clusters using external data,” [arXiv:2509.06805 [astro-ph.CO]].
4. N. Malavasi *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Establishing the quality of the 2D reconstruction of the filaments of the cosmic web with DisPerSE using Euclid photometric redshifts,” [arXiv:2508.15915 [astro-ph.CO]].
5. F. Finelli *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation: Expected constraints on initial conditions,” [arXiv:2507.15819 [astro-ph.CO]].
6. P. Monaco *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Simulating thousands of Euclid spectroscopic skies,” [arXiv:2507.12116 [astro-ph.CO]].
7. B. Kubik *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Overview of Euclid infrared detector performance from ground tests,” [arXiv:2507.11326 [astro-ph.IM]].
8. K. Paterson *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid VI. NISP-P optical ghosts,” [arXiv:2507.11072 [astro-ph.IM]].
9. M. Guidi *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Full-shape modelling of 2-point and 3-point correlation functions in real space,” [arXiv:2506.22257 [astro-ph.CO]].
10. K. Naidoo *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Accurate and precise data-driven angular power spectrum covariances,” arXiv:2506.09118
11. W. Gillard *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation: The NISP spectroscopy channel, on ground performance and calibration,” arXiv:2506.08378
12. I. S. Albuquerque *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. Constraining parameterised models of modifications of gravity with the spectroscopic and photometric primary probes,” arXiv:2506.03008
13. I. Risso *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. The impact of redshift interlopers on the two-point correlation function analysis,” arXiv:2505.04688
14. L. Zalesky *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation: TBD. Cosmic Dawn Survey: evolution of the galaxy stellar mass function across $0.2 < z < 6.5$ measured over 10 square degrees,” arXiv:2504.17867
15. T. Dusserre *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). The Euclid view on Planck galaxy protocluster candidates: towards a probe of the highest sites of star formation at cosmic noon,” arXiv:2503.21304
16. S. Bhargava *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). First detections from the galaxy cluster workflow,” arXiv:2503.19196
17. V. Le Brun *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1) – Characteristics and limitations of the spectroscopic measurements,” arXiv:2503.15308
18. H. J. McCracken *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1): VIS processing and data products,” arXiv:2503.15303

19. M. Tucci *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). Photometric redshifts and physical properties of galaxies through the PHZ processing function,” arXiv:2503.15306
20. T. Matamoro Zatarain *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). The active galaxies of Euclid,” arXiv:2503.15320
21. M. Huertas-Company *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1), A first look at the fraction of bars in massive galaxies at $z < 1$,” arXiv:2503.15311
22. G. Polenta *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). NIR processing and data products,” arXiv:2503.15304
23. V. Busillo *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). LEMON – Lens Modelling with Neural networks. Automated and fast modelling of Euclid gravitational lenses with a singular isothermal ellipsoid mass profile,” arXiv:2503.15329
24. K. Rojas *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1) The Strong Lensing Discovery Engine B – Early strong lens candidates from visual inspection of high velocity dispersion galaxies,” arXiv:2503.15325
25. P. Corcho-Caballero *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). A probabilistic classification of quenched galaxies,” arXiv:2503.15315
26. P. Bergamini *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). The first catalogue of strong-lensing galaxy clusters,” arXiv:2503.15330
27. E. Romelli *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1): From images to multiwavelength catalogues: the Euclid MERge Processing Function,” arXiv:2503.15305
28. N. Mai *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). Combined Euclid and Spitzer galaxy density catalogues at $z > 1.3$ and detection of significant Euclid passive galaxy overdensities in Spitzer overdense regions,” arXiv:2503.15331
29. C. Laigle *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). Galaxy shapes and alignments in the cosmic web,” arXiv:2503.15333 [
30. P. Holloway *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). The Strong Lensing Discovery Engine E – Ensemble classification of strong gravitational lenses: lessons for Data Release 1,” arXiv:2503.15328
31. C. Gouin *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid Quick Data Release (Q1). The role of cosmic connectivity in shaping galaxy clusters,” arXiv:2503.15332
32. L. Gervani, D. Bertacca and N. Bartolo, “Observed galaxy number counts on the lightcone up to third order,” arXiv:2503.11191
33. V. Duret *et al.* (incl. **D. Bertacca**) [Euclid and Astrophysics Group, Blackett Laboratory, Imperial College London, London SW7 2AZ, UK], “Euclid preparation. BAO analysis of photometric galaxy clustering in configuration space,” arXiv:2503.11621

34. F. Spezzati, E. Vanzan, A. Raccanelli, Z. Vlah and **D. Bertacca**, “Observed unequal-time power spectrum,” *Phys. Rev. D* **112** (2025) no.2, 023530 arXiv:2503.09759
35. S. de la Torre *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation - LXXII. Three-dimensional galaxy clustering in configuration space: Two-point correlation function estimation,” *Astron. Astrophys.* **700** (2025), A78 [arXiv:2501.16555 [astro-ph.CO]].
36. **D. Bertacca**, R. Jimenez, S. Matarrese and A. Ricciardone, “Inflation without an inflaton,” *Phys. Rev. Res.* **7** (2025) no.3, L032010 arXiv:2412.14265
37. M. Y. Elkhatab, C. Porciani and **D. Bertacca**, “Measuring our peculiar velocity from spectroscopic redshift surveys,” *JCAP* **03** (2025), 044, arXiv:2412.03953
38. F. Semenzato, J. A. Casey-Clyde, C. M. F. Mingarelli, A. Raccanelli, N. Bellomo, N. Bartolo and **D. Bertacca**, “Cross-Correlating the Universe: The Gravitational Wave Background and Large-Scale Structure,” arXiv:2411.00532
39. M. Y. Elkhatab *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation - LXIX. The impact of relativistic redshift-space distortions on two-point clustering statistics from the Euclid wide spectroscopic survey,” *Astron. Astrophys.* **697** (2025), A85, arXiv:2410.00956
40. K. Koyama *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation LXXI. Simulations and nonlinearities beyond Λ CDM. 3. Constraints on $f(R)$ models from the photometric primary probes,” *Astron. Astrophys.* **698** (2025), A233 [arXiv:2409.03524 [astro-ph.CO]].
41. G. R acz *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation - LXIII. Simulations and non-linearities beyond Lambda cold dark matter. 2. Results from non-standard simulations,” *Astron. Astrophys.* **695** (2025), A232, arXiv:2409.03523
42. L. Ingoglia *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation - LXXV. Determining the weak lensing mass accuracy and precision for galaxy clusters,” *Astron. Astrophys.* **695** (2025), A280, arXiv:2409.02783
43. T. Castro *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation. L. Calibration of the linear halo bias in $\Lambda(\nu)$ CDM cosmologies,” *Astron. Astrophys.* **691** (2024), A62, arXiv:2409.01877
44. J. Lesgourgues *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation - LVI. Sensitivity to non-standard particle dark matter models,” *Astron. Astrophys.* **693** (2025), A249, arXiv:2406.18274
45. F. Semenzato, **D. Bertacca** and A. Raccanelli, “The full-sky Spherical Fourier-Bessel power spectrum in general relativity,” *Phys. Rev. D* **111** (2025) no.2, 023522, arXiv:2406.09545
46. K. Jahnke *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid. III. The NISP Instrument,” *Astron. Astrophys.* **697** (2025), A3, arXiv:2405.13493
47. M. Cropper *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid. II. The VIS Instrument,” *Astron. Astrophys.* **697** (2025), A2, arXiv:2405.13492

48. F. J. Castander *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid. V. The Flagship galaxy mock catalogue: a comprehensive simulation for the Euclid mission,” *Astron. Astrophys.* **697** (2025), A5, 2405.13495
49. Y. Mellier *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid. I. Overview of the Euclid mission,” [arXiv:2405.13491 [astro-ph.CO]].
50. M. Archidiacono *et al.* (incl. **D. Bertacca**) [Euclid], “Euclid preparation - LIV. Sensitivity to neutrino parameters,” *Astron. Astrophys.* **693** (2025), A58 [arXiv:2405.06047 [astro-ph.CO]].
51. A. Begnoni, L. V. D. Armi, **D. Bertacca** and A. Raccanelli, “Gravitational wave luminosity distance-weighted anisotropies,” *JCAP* **10** (2024), 087, arXiv:2404.12351
52. P. Tejerina-Pérez, **D. Bertacca** and R. Jimenez, “An Entangled Universe,” arXiv:2403.15742
53. E. Frion, D. Camarena, L. Giani, T. Miranda, **D. Bertacca**, V. Marra and O. F. Piattella, “Bayesian analysis of Unified Dark Matter models with fast transition: can they alleviate the H_0 tension?,” *The Open Journal of Astrophysics*, vol. 7, id. 17, arXiv:2307.06320
54. F. Schulze, L. Valbusa Dall’Armi, J. Lesgourgues, A. Ricciardone, N. Bartolo, **D. Bertacca**, C. Fidler and S. Matarrese, “GW_CLASS: Cosmological Gravitational Wave Background in the cosmic linear anisotropy solving system,” *JCAP* **10** (2023), 025, arXiv:2305.01602
55. G. Perna, A. Ricciardone, **D. Bertacca** and S. Matarrese, “Non-Gaussianity from the Cross-correlation of the Astrophysical Gravitational Wave Background and the Cosmic Microwave Background,” *JCAP* **10**(2023), 014, arXiv:2302.08429
56. P. Bari, **D. Bertacca**, N. Bartolo, A. Ricciardone, S. Giardiello and S. Matarrese, “An Analytical Study of the Primordial Gravitational-Wave-Induced Contribution to the Large-Scale Structure of the Universe,” *JCAP* **07** (2023), 034, arXiv:2209.05329
57. L. V. Dall’Armi, A. Ricciardone and **D. Bertacca**, “The Dipole of the Astrophysical Gravitational-Wave Background,” *JCAP* **11** (2022), 040 arXiv:2206.02747
58. K. G. Arun, E. Belgacem, R. Benkel, L. Bernard, E. Berti, G. Bertone, M. Besancon, D. Blas, C. G. Böhrer and R. Brito, *et al.* (incl. **D. Bertacca**) “New Horizons for Fundamental Physics with LISA,” *Living Rev. Rel.* **25** (2022) no.1, 4 arXiv:2205.01597
59. P. Auclair, D. Bacon, T. Baker, T. Barreiro, N. Bartolo, E. Belgacem, N. Bellomo, I. Ben-Dayan, **D. Bertacca** and M. Besancon, *et al.* [LISA Cosmology Working Group], “Cosmology with the Laser Interferometer Space Antenna,” *Living Rev. Rel.* **26** (2023) no.1, 5, arXiv:2204.05434
60. T. Baker, G. Calcagni, A. Chen, M. Fasiello, L. Lombriser, K. Martinovic, M. Pieroni, M. Sakellariadou, G. Tasinato and **D. Bertacca**, *et al.* “Measuring the propagation speed of gravitational waves with LISA,” *JCAP* **08** (2022) no.08, 031 arXiv:2203.00566

61. N. Bartolo, **D. Bertacca**, R. Caldwell, C. R. Contaldi, G. Cusin, V. De Luca, E. Dimastrogiovanni, M. Fasiello, D. G. Figueroa and G. Franciolini, *et al.* “Probing Anisotropies of the Stochastic Gravitational Wave Background with LISA,” JCAP **11** (2022), 009 arXiv:2201.08782
62. P. Bari, A. Ricciardone, N. Bartolo, **D. Bertacca** and S. Matarrese, “Signatures of Primordial Gravitational Waves on the Large-Scale Structure of the Universe,” Phys. Rev. Lett. **129** (2022), 091301 arXiv:2111.06884
63. V. Kalogera, B. S. Sathyaprakash, M. Bailes, M. A. Bizouard, A. Buonanno, A. Burrows, M. Colpi, M. Evans, S. Fairhurst and S. Hild, *et al.* (incl. **D. Bertacca**) “The Next Generation Global Gravitational Wave Observatory: The Science Book,” arXiv:2111.06990
64. N. Bellomo, **D. Bertacca**, A. C. Jenkins, S. Matarrese, A. Raccanelli, T. Regimbau, A. Ricciardone and M. Sakellariadou, “CLASS_GWB: robust modeling of the astrophysical gravitational wave background anisotropies,” JCAP **06** (2022) no.06, 030, arXiv:2110.15059
65. **D. Bertacca**, R. Jimenez, S. Matarrese and L. Verde, “Breaking the single clock symmetry: Measuring single-field inflation non-Gaussian features,” Phys. Rev. D **105** (2022) no.4, 043503, arXiv:2110.09549
66. M. Y. Elkhshab, C. Porciani and **D. Bertacca**, “The large-scale monopole of the power spectrum in a Euclid-like survey: wide-angle effects, lensing, and the ‘finger of the observer’,” Mon. Not. Roy. Astron. Soc. **509** (2022) 1626, arXiv:2108.13424
67. B. Bahr-Kalus, **D. Bertacca**, L. Verde and A. Heavens, “The Kaiser-Rocket effect: three decades and counting,” JCAP **11** (2021), 027, arXiv:2107.00351
68. A. Ricciardone, L. V. Dall’Armi, N. Bartolo, **D. Bertacca**, M. Liguori and S. Matarrese, “Cross-Correlating Astrophysical and Cosmological Gravitational Wave Backgrounds with the Cosmic Microwave Background,” Phys. Rev. Lett. **127** (2021) no.27, 271301, arXiv:2106.02591
69. M. Zarei, N. Bartolo, **D. Bertacca**, S. Matarrese and A. Ricciardone, “Non-Markovian open quantum system approach to the early universe: I. Damping of gravitational waves by matter,” Phys. Rev. D **104** (2021) no.8, 083508, arXiv:2104.04836
70. G. Tasinato, A. Garoffolo, **D. Bertacca** and S. Matarrese, “Gravitational-wave cosmological distances in scalar-tensor theories of gravity,” JCAP **06** (2021), 050, arXiv:2103.00155
71. A. Garoffolo, M. Raveri, A. Silvestri, G. Tasinato, C. Carbone, **D. Bertacca** and S. Matarrese, “Detecting Dark Energy Fluctuations with Gravitational Waves,” Phys. Rev. D **103** (2021) no.8, 083506, arXiv:2007.13722
72. L. V. Dall’Armi, A. Ricciardone, N. Bartolo, **D. Bertacca** and S. Matarrese, “The Imprint of Relativistic Particles on the Anisotropies of the Stochastic Gravitational-Wave Background,” Phys. Rev. D **103** (2021) no.2, 023522, arXiv:2007.01215
73. E. Barausse, E. Berti, T. Hertog, S. A. Hughes, P. Jetzer, P. Pani, T. P. Sotiriou, N. Tamanini, H. Witek, K. Yagi, N. Yunes, *et al.* (incl. **D. Bertacca**) [LISA

- Collaboration], “Prospects for Fundamental Physics with LISA,” *Gen. Rel. Grav.* **52** (2020), 8, arXiv:2001.09793
74. N. Bartolo, **D. Bertacca**, S. Matarrese, M. Peloso, A. Ricciardone, A. Riotto and G. Tasinato, “Characterizing the Cosmological Gravitational Wave Background Anisotropies and non-Gaussianity,” *Phys. Rev. D* **102**, no.2, 023527 (2020), arXiv:1912.09433
 75. A. Garoffolo, G. Tasinato, C. Carbone, **D. Bertacca** and S. Matarrese, “Gravitational waves and geometrical optics in scalar-tensor theories,” *JCAP* **11** (2020), 040, arXiv:1912.08093
 76. **D. Bertacca**, “Generalisation of the Kaiser Rocket effect in general relativity in the wide-angle galaxy 2-point correlation function,” *Int. J. Mod. Phys. D* **29** (2020) no.12, 2050085, arXiv:1912.06887
 77. M. Maggiore *et al.* (incl. **D. Bertacca**), “Science Case for the Einstein Telescope,” *JCAP* **2003** (2020) no.03, 050, arXiv:1912.02622
 78. F. Oppizzi, A. Renzi, M. Liguori, F. K. Hansen, D. Marinucci, C. Baccigalupi, **D. Bertacca** and D. Poletti, “Needlet thresholding methods in component separation,” *JCAP* **2003** (2020) no.03, 054 arXiv:1911.01298
 79. N. Bartolo, **D. Bertacca**, V. De Luca, G. Franciolini, S. Matarrese, M. Peloso, A. Ricciardone, A. Riotto, G. Tasinato, “Gravitational Wave Anisotropies from Primordial Black Holes,” *JCAP* **2002** (2020) no.02, 028, arXiv:1909.12619
 80. **D. Bertacca**, A. Ricciardone, N. Bellomo, A. C. Jenkins, S. Matarrese, A. Racanelli, T. Regimbau and M. Sakellariadou, “Projection effects on the observed angular spectrum of the astrophysical stochastic gravitational wave background,” *Phys. Rev. D* **101** (2020) no.10, 103513, arXiv:1909.11627
 81. A. Kalaja, N. Bellomo, N. Bartolo, **D. Bertacca**, S. Matarrese, I. Musco, A. Racanelli and L. Verde, “From Primordial Black Holes Abundance to Primordial Curvature Power Spectrum (and back),” *JCAP10(2019)031*, arXiv:1908.03596.
 82. N. Bartolo, **D. Bertacca**, S. Matarrese, M. Peloso, A. Ricciardone, A. Riotto and G. Tasinato, “Anisotropies and non-Gaussianity of the Cosmological Gravitational Wave Background,” *Phys. Rev. D* **100** (2019) no.12, 121501, arXiv:1908.00527
 83. E. Belgacem *et al.* (incl. **D. Bertacca**) [LISA Cosmology Working Group], “Testing modified gravity at cosmological distances with LISA standard sirens,” *JCAP* **1907** (2019) no.07, 024, arXiv:1906.0159
 84. A. Notari and **D. Bertacca**, “On systematic and GR effects on muon $g - 2$ experiments,” *JHEP11(2019)030*, arXiv:1905.03649
 85. B. S. Sathyaprakash *et al.* (incl. **D. Bertacca**) [GWIC-3G Science Case Team (GWIC: Gravitational-Wave International Committee)], “Cosmology and the Early Universe,” *Bulletin of the American Astronomical Society*, Vol. 51, Issue 3, id. 248 (2019), arXiv:1903.09260

86. D. J. Bacon *et al.* (incl. **D. Bertacca**) [SKA Collaboration], “Cosmology with Phase 1 of the Square Kilometre Array: Red Book 2018: Technical specifications and performance forecasts,” *Publ. Astron. Soc. Austral.* **37** (2020) 7, arXiv:1811.02743
87. M. Hashim, C. Giocoli, M. Baldi, **D. Bertacca** and R. Maartens, “Cosmic Degeneracies III: N-body Simulations of Interacting Dark Energy with Non-Gaussian Initial Conditions,” *Mon. Not. Roy. Astron. Soc.* **481** (2018) 2933, arXiv:1806.02356
88. K. Koyama, O. Umeh, R. Maartens and **D. Bertacca**, “The observed galaxy bispectrum from single-field inflation in the squeezed limit,” *JCAP* **1807** (2018) no.07, 050, arXiv:1805.09189
89. L. R. Abramo and **D. Bertacca**, “Disentangling the effects of Doppler velocity and primordial non-Gaussianity in galaxy power spectra,” *Phys. Rev. D* **96** (2017) 12, 123535, arXiv:1706.01834
90. **D. Bertacca**, A. Raccanelli, N. Bartolo, M. Liguori, S. Matarrese and L. Verde, “Relativistic wide-angle galaxy bispectrum on the light-cone,” *Phys. Rev. D* **97** (2018) no.2, 023531, arXiv:1705.09306
91. S. Camera, M. Martinelli and **D. Bertacca**, “Does quartessence ease cosmic tensions?,” *Phys. Dark Univ.* **23** (2019) 100247
92. M. Borzyszkowski, **D. Bertacca** and C. Porciani, “LIGER: mock relativistic light-cones from Newtonian simulations,” *Mon. Not. Roy. Astron. Soc.* **471** (2017) 4, arXiv:1703.03407
93. **D. Bertacca**, A. Raccanelli, N. Bartolo and S. Matarrese, “Cosmological perturbation effects on gravitational-wave luminosity distance estimates,” *Phys. Dark Univ.* **20** (2018) 32, arXiv:1702.01750
94. C. Rampf, E. Villa, **D. Bertacca** and M. Bruni, “Lagrangian theory for cosmic structure formation with vorticity: Newtonian and post-Friedmann approximations,” *Phys. Rev. D* **94** (2016) 2, 083515, arXiv:1607.05226
95. A. Raccanelli, **D. Bertacca**, D. Jeong, M. C. Neyrinck and A. S. Szalay, “Doppler term in the galaxy two-point correlation function: wide-angle, velocity, Doppler lensing and cosmic acceleration effects,” *Phys. Dark Univ.* **19** (2018) 109, arXiv:1602.03186
96. A. Raccanelli, M. Shiraishi, N. Bartolo, **D. Bertacca**, M. Liguori, S. Matarrese, R. P. Norris and D. Parkinson, “Future Constraints on Angle-Dependent Non-Gaussianity from Large Radio Surveys,” *Phys. Dark Univ.* **15** (2017) 35, arXiv:1507.05903
97. N. Bartolo, **D. Bertacca**, M. Bruni, K. Koyama, R. Maartens, S. Matarrese, M. Sasaki, L. Verde and D. Wands, “A relativistic signature in large-scale structure,” *Phys. Dark Univ.* **13** (2016) 30, arXiv:1506.00915
98. A. Raccanelli, F. Montanari, **D. Bertacca**, O. Dorè and R. Durrer, “Cosmological Measurements with General Relativistic Galaxy Correlations,” *JCAP* **1605** (2016) no.05, 009. arXiv:1505.06179

99. D. Duniya, **D. Bertacca** and R. Maartens, “Probing the imprint of interacting dark energy on very large scales,” *Phys. Rev. D* **91** (2015) 063530, arXiv:1502.06424
100. I. Milillo, **D. Bertacca**, M. Bruni and A. Maselli, “Missing link: A nonlinear post-Friedmann framework for small and large scales,” *Phys. Rev. D* **92** (2015) 2, 023519, arXiv:1502.02985
101. S. Camera, A. Raccanelli, P. Bull, **D. Bertacca**, X. Chen, P. G. Ferreira, M. Kunz and R. Maartens *et al.*, “Cosmology on the Largest Scales with the SKA,” *PoS AASKA* **14** (2015) 025, arXiv:1501.03851
102. **D. Bertacca**, N. Bartolo, M. Bruni, K. Koyama, R. Maartens, S. Matarrese, M. Sasaki and D. Wands, “Galaxy bias and gauges at second order in General Relativity,” *Class. Quantum Grav.* **32** (2015) 175019, arXiv:1501.03163
103. M. Hashim, **D. Bertacca** and R. Maartens, “Degeneracy between primordial non-Gaussianity and interaction in the dark sector,” *Phys. Rev. D* **90**, 103518 (2014), arXiv:1409.4933
104. **D. Bertacca**, “Observed galaxy number counts on the lightcone up to second order: III. Magnification Bias,” *Class. Quant. Grav.* **32** (2015) 195011 arXiv:1409.2024
105. **D. Bertacca**, R. Maartens and C. Clarkson, “Observed galaxy number counts on the lightcone up to second order: II. Derivation”, *JCAP* **11** (2014) 013, arXiv:1406.0319
106. **D. Bertacca**, R. Maartens and C. Clarkson, “Observed galaxy number counts on the lightcone up to second order: I. Main result”, *JCAP* **1409** (2014) 09, 037, arXiv:1405.4403
107. A. Raccanelli, **D. Bertacca**, R. Maartens, C. Clarkson and O. Dorè, “Lensing and time-delay contributions to galaxy correlations”, *Gen. Rel. Grav.* **48** (2016) no.7, 84, arXiv:1311.6813
108. A. Raccanelli, **D. Bertacca**, O. Dorè and R. Maartens, “Large-scale 3D galaxy correlation function and non-Gaussianity,” *JCAP* **1408** (2014) 022, arXiv:1306.6646
109. D. Duniya, **D. Bertacca** and R. Maartens, “Clustering of quintessence in relativistic cosmology and its imprint on HI intensity mapping”, *JCAP* **1310** (2013) 015 , arXiv:1305.4509
110. N. Bartolo, E. Bellini, **D. Bertacca** and S. Matarrese, “Matter bispectrum in cubic Galileon cosmologies,” *JCAP* **1303** (2013) 034, arXiv:1301.4831
111. A. Raccanelli, **D. Bertacca**, D. Pietrobon, F. Schmidt, L. Samushia, N. Bartolo, O. Dorè, S. Matarrese and W.J. Percival, “Testing Gravity Using Large-Scale Redshift-Space Distortions”, *Mon. Not. Roy. Astron. Soc.* **436** (2013) 89, arXiv:1207.0500
112. **D. Bertacca**, R. Maartens, A. Raccanelli and C. Clarkson, “Beyond the plane-parallel and Newtonian approach: Wide-angle redshift distortions and convergence in general relativity”, *JCAP* **1210** (2012) 025, arXiv:1205.5221
113. **D. Bertacca**, N. Bartolo and S. Matarrese, “A new approach to cosmological perturbations in $f(R)$ models”, *JCAP* **1208** (2012) 021, arXiv:1109.2082

114. O. Piattella and **D. Bertacca**, “Gravitational potential evolution in Unified Dark Matter Scalar Field Cosmologies: An analytical approach”, *Mod. Phys. Lett. A* **26** (2011) 2277, arXiv:1103.0234
115. **D. Bertacca**, A. Raccanelli, O. Piattella, D. Pietrobon, N. Bartolo, S. Matarrese and T. Giannantonio, “CMB-Galaxy correlation in Unified Dark Matter Scalar Field Cosmologies”, *JCAP* **1103** (2011) 039, e-Print: arXiv:1102.0284
116. **D. Bertacca**, O. Piattella, M. Bruni and D. Pietrobon, “Unified Dark Matter scalar field models with fast transition”, *JCAP* **1102** (2011) 018, e-Print: arXiv:1011.6669
117. S. Camera, T.D. Kitching, A.F. Heavens, **D. Bertacca** and A. Diaferio, “Measuring Unified Dark Matter with 3D cosmic shear”, *Mon. Not. Roy. Astron. Soc.* **415** (2011) 399, e-Print: arXiv:1002.4740
118. **D. Bertacca**, N. Bartolo and S. Matarrese, “Unified Dark Matter Scalar Field Models”, *Adv. Astron.* **2010** (2010) 904379, arXiv:1008.0614
119. O. Piattella, **D. Bertacca**, M. Bruni and D. Pietrobon “Unified Dark Matter with fast transition”, *JCAP* **1001** (2010) 014, arXiv:0911.2664
120. S. Camera, **D. Bertacca**, A. Diaferio, N. Bartolo and S. Matarrese “Weak lensing signal in Unified Dark Matter models,” *Mon. Not. Roy. Astron. Soc.* **399** (2009) 1995, arXiv:0902.4204
121. **D. Bertacca**, N. Bartolo, A. Diaferio and S. Matarrese, “How the Scalar Field of Unified Dark Matter Models Can Cluster,” *JCAP* **0810** (2008) 023, arXiv:0807.1020
122. **D. Bertacca**, N. Bartolo and S. Matarrese, “Halos of Unified Dark Matter Scalar Field,” *JCAP* **0805** (2008) 005, arXiv:0712.0486
123. **D. Bertacca** and N. Bartolo, “ISW effect in Unified Dark Matter Scalar Field Cosmologies: an analytical approach,” *JCAP* **0711** (2007) 026, arXiv:0707.4247
124. **D. Bertacca**, S. Matarrese and M. Pietroni, “Unified dark matter in scalar field cosmologies,” *Mod. Phys. Lett. A* **22** (2007) 2893, arXiv:astro-ph/0703259

Main Collaborations

- Member of Theory Working Group for the Euclid Consortium (2012 - present)
- Member of SKA Cosmology Science Working Group (2014 - present)
- Member of ASKAP-EMU Cosmology Science Working Group (2015-present)
- Member of SKA Synergies Focus Group (2016-today)
- GWIC 3G Science Team - 3GSCT Cosmology Group (2018 - present)
- Member of High-order stats Science Working Group (May 2018 - present)

- LISA Cosmology Group (2018 - present)
- Member of Galaxy Clustering Science Working Group for the Euclid Consortium (November 2018 - present)
- Member of Euclid Science Working Group CMBXC (which deals with cross-correlations between Euclid fields and CMB related fields as measured by Planck and other probes) (November 2018 - present)
- Member of ASI/COSMOS network for Cosmic Microwave Background research. (March 2018 - November 2023)
- Member of SKA GW working group (June 2019 - November 2022)
- Member CMBX Extended Forecast (October 2021 - present)

Lead positions

- Lead of WP9 within Theory Working Group of the Euclid Consortium (April 2019 - November 2024)
- TH WG KP coordinator of the Pre-launch Key Project KP-TH-2 “Relativistic effects” for the Euclid Consortium (April 2021 - December 2024)
- Representative of Padua Group in LiteBIRD Italy (April 2019 - November 2022)
- Co-lead position for the joint Theory WP 9 - GW WP 4 - Joint WP GW between Gravitational waves SWG - Theory SWG of the Euclid Consortium (June 2025 - present)

Referee of various international journals

- ”Physics Reports”
<https://www.sciencedirect.com/journal/physics-reports>
- ”Physical Review Letters (PRL)”
<https://journals.aps.org/prl/>
- “The Journal of Cosmology and Astroparticle Physics (JCAP)”
<http://jcap.sissa.it/jcap/>
- “Physics of the Dark Universe”
<http://ees.elsevier.com/dark/>
- “General Relativity and Gravitation”
<http://www.springer.com/physics/theoretical%2C+mathematical+%26+computational+physics/journal/10714>

- “Physical Review D”
<https://journals.aps.org/prd/>
- “Classical and Quantum Gravity”
<http://iopscience.iop.org/0264-9381>
- “Physics Letters B”
<http://www.journals.elsevier.com/physics-letters-b/>
- “Astrophysics and Space Science”
<http://www.springer.com/astronomy/journal/10509>
- “The European Physical Journal C (EPJ C)”
<http://link.springer.com/journal/10052>
- “Open Physics” [formerly “Central European Journal of Physics (CEJP)”]
<http://www.degruyter.com/view/j/phys>

Visiting Positions

- Visiting Research at ICCUB, University of Barcelona, Spain, 13-18, November, 2022
In collaboration with Prof. Raul Jimenez, studies regarding violation of the Bell inequalities and entanglements of the primordial gravitational waves during the inflation epoch.
- Visiting Research at Institute of Cosmology and Gravitation, University of Portsmouth, UK, 10-16 July 2017.
In collaboration with Prof. Kazuya Koyama, studies regarding Consistency Relations for the observed Bispectrum at large scales.
- Visiting Research at Dipartimento di Fisica e Astronomia “G. Galilei”, Università degli Studi di Padova, Italy, 25 October - 6 November 2015
Studies regarding the effects of primordial non-Gaussianity, General Relativity and Projection terms in the Galaxy Power Spectrum.
- Visiting Research at Department of Physics, University of Western Cape, Cape Town, South Africa, September 2015.
Studies regarding bispectrum of the observed galaxy number overdensity on cosmological scales.
- Visiting Research at Department of Physics and Astronomy, Johns Hopkins University, USA, March 2015.
Studies regarding the Large-scale 3D galaxy correlation function in general relativity and analysis of the skew velocity distribution function on the galaxy correlation at non linear scales.
- Visiting Research at Institute of Cosmology and Gravitation, University of Portsmouth, UK

Visiting Research Associate awarded by a Royal Society (UK)/ NRF (SA) exchange grant, June 2013.

Studies regarding the Large-scale 3D galaxy correlation function in general relativity and nonlinear post-Friedmann framework for structure formation in Λ CDM.

- Visiting Research at Padua University, Physics Department “Galileo Galilei”, Italy, December 2012.

Studies regarding alternative theories of gravity.

- Visiting Research at Padua University, Physics Department “Galileo Galilei”, Italy, July 2012

Studies regarding alternative theories of gravity.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Associate awarded by a Royal Society (UK)/ NRF (SA) exchange grant, June 2012.

Studies regarding Wide-angle redshift distortions and convergence in general relativity, and non-linear post-Friedmann framework for structure formation.

- Visiting Research at Padua University, Physics Department “Galileo Galilei”, Italy, April 2012.

Studies regarding alternative theories of gravity.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Associate awarded by a Royal Society (UK)/ NRF (SA) exchange grant, March 2012.

Studies regarding Wide-angle redshift distortions and convergence in general relativity, and regarding a Weak lensing in UDM adiabatic models with fast transition.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Associate, September 2011.

Studies regarding a new class of Unified Dark Matter Models models and nonlinear post-Friedmann framework for structure formation.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Associate, April-July 2011

Studies regarding a new class of Unified Dark Matter Models models and nonlinear post-Friedmann framework for structure formation.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Associate, October-December 2010.

Studies regarding a new class of Unified Dark Matter Models models and nonlinear post-Friedmann framework for structure formation.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Fellowship, awarded by the Italian Foundation “Ing. Aldo Gini”, February-July 2010.

Studies regarding a new class of Unified Dark Matter Models models, Dark energy models and nonlinear post-Friedmann framework for structure formation.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Fellowship, awarded by the Italian Foundation “Ing. Aldo Gini”, October-December 2009.

Studies regarding a new class of Unified Dark Matter Models models, Dark energy models and nonlinear post-Friedmann framework for structure formation.

- Institute of Cosmology and Gravitation, University of Portsmouth, UK
Visiting Research Fellow, awarded by University of Portsmouth, UK, from April-July 2009.

Studies regarding a new class of Unified Dark Matter Models models, Dark energy models and regarding Post-Newtonian framework for structure formation.

Conference and Workshop contributions as invited speaker

- “ONDE GRAVITAZIONALI: Celebrazione del decennale della prima rivelazione 2015-2025”, Department of Physics and Astronomy “Galileo Galilei”, September 15, 2025

Title of the talk: “Cosmology with gravitational waves in Padova”

- “The Dawn of Gravitational Wave Cosmology”, Benasque Science Center, Apr 27 - May 17, 2025

Title of the talk: “Is it possible to detect the quantum signature of gravitons from the early Universe? Two possible scenarios.”

- “UniVersum VI” Padova, 14th-16th April 2025

Title of the talk: “Is it possible to measure the observer’s velocity from spectroscopic redshift surveys?”

- “Understanding the Galaxy/Matter Connection in the Era of Large Surveys”, 16-17 Sept 2024, Sestri Levante, Italy

Title of the talk: “Is it possible to measure the observer’s velocity from spectroscopic redshift surveys?”

- “The Complexity of the Cosmos” (2nd Edition), on 27th-29th September 2023, Gran Sasso Science Institute, L’Aquila, Italy

Title of the talk: “The Complexity of the Cosmos on very large scales: relativistic, wide-angle and the ‘finger of the observer’ effects”

- Fundamental Physics with Future CMB Probes, 21-31 October 2019, Institute for Fundamental Physics of the Universe, Trieste, Italy

Title of the talk: “Cosmic rulers for gravitational waves”

- The 7th LISA Cosmology Working Group Workshop, from the 23rd to 27th of September 2019, Department of Physics and Astronomy “G. Galilei”, Padua, Italy.

Title of the talk: “Theoretical aspects of SGWB Anisotropies”

- Euclid and beyond: the many faces of modern cosmology Euclid and beyond: the many faces of modern cosmology, 11-13 February 2019, CNR Sala convegni, P.le Aldo Moro 7, Rome, Italy.
Title of the talk: “Light cone effects in the wide-angle galaxy 2-point correlation function”
- Euclid Galaxy Clustering - Weak Lensing SWG joint meeting, December 3-6 2018, Milan, Italy
Title of the talk: “The LIGER method: light-cone using GR”
- Cosmology 2018 in Dubrovnik, 22-27 October 2018, Dubrovnik, Croatia
Title of the talk: “The LIGER method: light-cone using GR”
- Workshop: “General Relativistic effects in cosmological large-scale structure”, Sesto Pusteria (Italy), 20 July 2018, Italy.
Title of the talk: “Relativistic wide-angle galaxy Power Spectrum and Bispectrum on the light-cone: All-sky analysis”
- Workshop: “incontro Padova-Trento” on Gravitational Waves, 25 June 2018, Padua, Italy.
Title of the talk: “Cosmology with Gravitational Waves”.
- Venice Cosmology Workshop 2018: The Island. A workshop to discuss the future of cosmology, 4-7 June 2018, Venice, Italy. Title of the talk: Discussion on “LSS Theory”.
- CosmoBack “From inhomogeneous gravity to cosmological back-reaction: Theoretical opportunity? Observational evidence?” 28-31 May 2018, Marseille, France.
Title of the talks:
1) “Relativistic wide-angle galaxy Power Spectrum and Bispectrum on the light-cone: All-sky analysis”
2) “LIGER (LIght cones using GEneral Relativity) method”
- Conference “UniVersum 2018”, 13 April 2018, Bologna, Italy.
Title of the talk: “Relativistic wide-angle galaxy power spectrum and bispectrum on the light-cone”
- ASI/COSMOS Early Universe meeting, at Dipartimento di Fisica e Astronomia “G. Galilei”, University of Padova, 22-23 February 2018, Padua, Italy.
Title of the talk: “Cosmology with gravitational waves: CMB and interferometer”.
- Workshop on relativistic effects in large scale structure, 6 July 2017, Zurich, Switzerland.
Title of the talk: “Relativistic wide-angle galaxy power spectrum and bispectrum on the light-cone: All-sky analysis”
- Workshop: “Quantum Vacuum and Gravitation: Testing General Relativity in Cosmology”, at Mainz Institute for Theoretical Physics, Johannes Gutenberg University, 14 March 2017, Mainz, Germany.
Title of the talk: “Cosmology with relativistic effects”

- Workshop: “GR effects in cosmological surveys” at Monkey Valley Resort, 14 February 2017, Cape Town, South Africa.
Title of the talk: “Light cone effects in the galaxy two-point correlation function”
- Workshop: “Theoretical Cosmology in the Era of Large Surveys” at Galileo Galilei Institute for Theoretical Physics, April 2016, Florence, Italy.
Title of the talk: “General relativistic corrections in the galaxy two-point correlation function”
- From inflation to galaxies: workshop in honor of Sabino Matarrese, 1 September 2015, Castiglioncello (Livorno), Italy.
Title of the talk: “Relativistic corrections for small and large scales”.
- SKA Postgraduate Bursary Conference Stellenbosch Institute for Advance Study, South Africa, 27 November 2013.
Title of the talk: “Galaxy correlation on very large scales”
- SKA Postgraduate Bursary Conference Stellenbosch Institute for Advance Study, South Africa, 28 November 2012.
Title of the talk: “General relativistic corrections to wide angle redshift distortions in HI surveys”
- SKA Postgraduate Bursary Conference Stellenbosch Institute for Advance Study, 24 November 2011.
Title of the talk: “Unified Dark Matter Models”

Talks given

- The Fourth National Workshop on the SKA Project - Sharpening the Italian science case for the SKAO, Catania (Italy), 30 November 2023
Title of talk: “Large Scale Structure on very large scales: relativistic, wide-angle and the ‘finger of the observer’ effects”
- Theory Colloquia at the Physics Department of Torino (Zoom seminar), Italy, 26 February 2021.
Title of talk: “Cosmology with gravitational waves”
- ITP Cosmology Seminar at University of Heidelberg, Germany, 16 July 2019.
Title of the talk: “GR corrections in Large Scale Structure”
- Euclid Theory Working Group Meeting in Oxford, April 8 April 2019, Oxford, UK.
Title of the talk: “General relativistic effects with LIGER”
- Seminar at Institute of Cosmological Sciences UB-IEEC, University of Barcelona, Spain, 29 November 2017.
Title of the talk: “Relativistic wide-angle galaxy bispectrum on the light-cone: All-sky analysis”

- Seminar at University of Bielefeld, Germany , 18 July 2017.
Title of the talk: “Relativistic wide-angle galaxy bispectrum on the light-cone: All-sky analysis”
- ICG Theoretical Cosmology meeting, Portsmouth, UK, 12 July 2017.
Title of the talk: “Relativistic wide-angle galaxy bispectrum on the light-cone: All-sky analysis”
- AIfA cosmology Seminar at University of Bonn, Germany, 27 June 2017.
Title of the talk: “Relativistic wide-angle galaxy power spectrum and bispectrum on the light-cone: All-sky analysis”
- T-2 Theory Seminar, Nuclear and Particle Physics, Astrophysics and Cosmology, Los Alamos National Security, LLC for the U.S. Department of Energy’s NNSA, 12 January 2017.
Title of the talk: “Cosmology with relativistic effects”
- ITP Cosmology Seminar at University of Heidelberg, Germany, 27 July 2016.
Title of the talk: “ Light cone effects in the galaxy two-point correlation function”
- AIfA cosmology Seminar at University of Bonn, Germany, 24 May 2016.
Title of the talk: “GR corrections at large scales with N-Body simulations”
- AIfA cosmology Seminar at University of Bonn, Germany, 18 November 2014.
Title of the talk: “Correlation function on very large scales”
- ACGC Seminar at University of Cape Town, South Africa, 24 June 2014.
Title of the talk: “Correlation function on very large scales”
- ”OATS-UNI/Ts SEMINAR”, Trieste Astronomical Observatory (INAF/OATS) and the Astronomy Unit of the Physics Dept. of the Trieste University (UNI/Ts), Italy, 12 December 2013.
Title of the talk: “Galaxy correlation on very large scales”
- Seminar at Dipartimento di Fisica e Astronomia, Università di Bologna , Italy, 10 December 2013.
Title of the talk: “Galaxy correlation on very large scales”
- Seminar at ICIC, Imperial College London, Astrophysics, Blackett Laboratory, London UK, June 21 2013.
Title of the talk: “Correlation function on very large scales”
- Seminar in Turin University (Italy), Dipartimento di Fisica Teorica and Dipartimento di Fisica Generale “Amedeo Avogadro”, 19 December 2012.
Title of the talk: “Beyond the plane-parallel and Newtonian approach: Wide-angle redshift distortions and convergence in general relativity”
- Seminar in Dipartimento di Fisica e Astronomia “G. Galilei”, Università degli Studi di Padova, Italy, Tuesday 03 July 2012.
Title of the talk: “Redshift Space Distortions in General Relativity”

- ICG Theoretical Cosmology meeting, Portsmouth, UK, 27 June 2012.
Title of the talk: “RSD in General Relativity”
- ACGC seminar in University of Cape Town, 6 December 2011.
Title of the talk: “ Unified Dark Matter with fast transition”
- ICG Theoretical Cosmology meeting, Portsmouth, UK, 14 July 2010.
Title of the talk: “Unified dark matter and dark energy models”
- Physics Seminar in Oxford University, 26 November 2009.
Title of the talk: “Unified Dark Matter in Scalar Field Cosmologies”
- “UK Cosmology meeting”, King’s College London, UK, 18 November 2009.
Title of the talk; “Unified Dark Matter model”
- Seminar in ICG, Portsmouth, UK, 18 June, 2009 Invited by Prof, Marco Bruni
Title of the talk: “Unified Dark Matter model”
- “The Unity of the Universe”, ICG, Portsmouth, UK, 29th June - 1st July, 2009.
Title of the talk: “Unified Dark Matter model”
- “Interactions in the Dark: physics of Dark Energy-Dark Matter interactions”, Lorentz Center, Leiden, Nederland, April 6-9, 2009.
Title of the talk: “Unified Dark Matter model”
- “SIGRAV School in Cosmology”, GGI, Firenze, Italy, January 26-29, 2009.
Title of the talk: “Unified Dark Matter model” .
- ZEUS Meeting, DESY, Hamburg, Germany, August 2003.
Title of the talk: “Associate production of $J/\psi + \gamma$ at HERA”

Workshop and Conference Organization

- Scientific and local Organising Committee of “Learning the Deep Mysteries of Nature with Cosmology”: A conference in honour of Sabino Matarrese, September 9th to 12th, 2025, Fiera di Primiero (Italy).
- Scientific and local Organising Committee of the Cosmo Classic 2024, 23-26 Sept 2024, in Asiago Astronomical Observatory (Italy).
- Scientific Organising Committee of the “Venice Cosmology Workshop”, in Venice (Italy), September 2022.
- Organising committee of the workshop: “Messengers of the Early Universe: Gravitational Waves and Primordial Black Holes”. Padova (Italy) from December 12th to 14th, 2022

- Scientific Organising Committee of the “1st International PhD School on Physics of the Universe - MultiMessenger Astrophysics”, Asiago Astronomical Observatory (Italy), 14 -23 January 2020
<https://agenda.infn.it/event/17979/>
- Scientific Organising Committee of the 7th LISA Cosmology Working Group Workshop, from the 23rd to 27th of September 2019, Department of Physics and Astronomy ”G. Galilei”, Padua, Italy.
<https://agenda.infn.it/event/19104/overview>
- Scientific Organising Committee of the workshop: “ General Relativistic effects in cosmological large-scale structure”, in Sesto Pusteria (Italy) on 16-20 July 2018.
<http://www.sexten-cfa.eu/en/conferences/2018/details/105-gr-effects-in-cosmological-ss.html>
- Scientific Organizing Committee of the workshop: “The vacuum of the Universe 2018: from cosmology to particle physics”, the Institut de Ciències del Cosmos Barcelona (Spain), 4 - 6 June 2018. The workshop is devoted to ”CMB Anomalies and Tensions”.
<http://icc.ub.edu/congress/Vacuum2018/>
- Scientific Organizing Committee of the following school: “Tenth TRR33 Winter School” Passo del Tonale (Italy) 11 - 16 December 2016
<http://www.darkuniverse.uni-hd.de/view/Main/WinterSchool16>
- Co-Organize “Cosmology Journal Club” meetings at ”Dipartimento di Fisica e Astronomia “G. Galilei”, Università degli Studi di Padova” from March 2018 to now

Academic Teaching

During my career, I realised that the best way to teach and, more in general, to transfer the knowledge is to provide to the bachelor, master or PhD student both a rigorous approach and, at the same time, a intuitive method showing all the key points of the topic. These two ingredients must be combined in a balanced way, guaranteeing a learning environment which is exciting and authentic where student be motivated to pursue learning. Of course, my teaching has to be sufficiently calibrated to the standard of the students of the course.

However, I think that the rigorous approach is very important. In fact, from the academic point of view, a necessary condition is asking the University student a mental effort which is fundamental for his/her intellectual growth and maturation. In this way, the student is challenged and motivated to think, perform, and grow to a level that they were not at previously. She/he should work enough in order to build her/his skill, understanding and capacities so that he/she can achieve at higher and higher levels.

Finally, I consider important to share with my students not only my knowledge of physics and mathematics, but also the enthusiasm I feel about the topic that I am teaching.

Lecture Courses:

- Academic year 2018/2019 (32h), 2019/2020 (64h), 2020/2021 (64h), 2021/2022 (64h), 2022/2023 (64h), 2023/2024 (64h), 2024/2025 (64h). Title of the course: “Modern Physics” for postgraduate study course for MPhil degree in Mathematics at the University of Padua, Italy; e.g. see <https://matematica.math.unipd.it/laureamagistrale/fisicamodernaen.html>
- Academic year 2024/2025. PhD course (12h) in Astronomy with the title “Gravitational Waves”, see <https://www.dfa.unipd.it/didattica/dottorati-di-ricerca/corso-di-dottorato-di-ricerca-in-astronomia/didattica/proposta-didattica-2025-2026/>
- Academic year 2020/2021 (8h), 2021/2022 (8h), 2022/2023 (8h) and 2023/2024 (10h). Within a PhD course (of 24 h) in Physics with the title: “Exploring the Universe with Gravitational Waves” at Padua University, Italy; e.g, for academic year 2020/2021, see <http://www.dfa.unipd.it/didattica/dottorati-di-ricerca/phd-physics/didactics/phd-courses-aa-20202021/>
- December 2021, I did a lecture within a series of GGI Theory web-Lectures. My Th-LYR Lecture (2h) has the title: “Introduction on relativistic projection effects on cosmological scales”, see <https://www.ggi.infn.it/journal.pl>
- July 2019, preparatory lectures (4h) on “Gravitational Lensing” for German-Italian WE Heraeus Summer School ”Astronomy from Four Perspectives” in Jena, Germany, see <http://www.haus-der-astronomie.de/lensing2019>
- During 2010, preparatory lecture on “Quantum Mechanics” for European Masterclass 2010 at Padua, Italy <http://www.pd.infn.it/masterclasses/2010/AgendaPD.htm>

Post Doc

- From May 2025 to today,

Students

Opponent

- During 2025 opponent of Ms.
- During 2024, opponent of MSc theses:
- During 2023, opponent of four MSc theses:
- During 2022, opponent of two MSc theses:

- During 2021, opponent of three MSc theses:
- During 2020, opponent of two MSc theses:
- During 2019, opponent of a MSc thesis: t
- During 2018, opponent of a MSc thesis:
- During 2012, opponent of a MSc thesis:

Outreach

- From February 2013 to Now: I am involved as lead and coordinator (together with Prof. M. Doro and Dr. M. Tosi) on the project: “Scala dell’Universo” in which, according to ‘nudge’ philosophy (gentle push), we embellish the stairs of the Physics and Astronomer Department (DFA) to invite people to take them instead of using the lift. For the artistic part of the project we collaborate with the Modigliani Art School, Padua. The proposal was accepted by 4 high school classes and several professors Prof. Raffaele Barion (architectural address), Profs. Elisa Zilli and Daria Mauri (specialized in graphic design) and Prof. Nicola Uneddu (specialized in portraits). The project is therefore to draw the history of the Universe by climbing along flights of a staircase inside the building in via Lorendan, also of the DFA, University of Padua. Within the DFA, 3 working groups are involved:
 - Primordial Universe: Prof. F. d’Eramo, Prof. M. Peloso, Dr. A. Ravenni;
 - Post-recombination: Dr. Passalacqua, Prof. C. Sirignano, Dr. A. Troja;
 - Modern Era: Dr. R Taverna, Dr. E. Prandini, Dr. S. Ciroi, Prof. G. Rodighiero.
 About funds of the project, in 2021, specific funds were provided for PCTO projects at the University of Padua and Prof. Michele Doro obtained 2k euros in funding.

Other academic merits

- Coordinator of the research group: “Cosmology, Compact Object Astrophysics and Planetary Physics” from March 2025 to now.
- Master’s thesis committee for the degree course: Astrophysics and cosmology from 2024 to now.
- DFA Grant Committee 24-2024 Scientific Responsible Dr. Daniele Bertacca, Selection Announcement for the Awarding of Research Grants (type A) - Dipartimento di Fisica e Astronomia “G. Galilei”.

- DFA Grant Committee 01-2024 Scientific Responsible Prof. Sabino Matarrese, Selection Announcement for the Awarding of Research Grants (type A) - Dipartimento di Fisica e Astronomia "G. Galilei".
- DFA Grant Committee 07-2023, Scientific Responsible Dr. Alvise Raccanelli, Selection Announcement for the Awarding of Research Grants (type A) - Dipartimento di Fisica e Astronomia "G. Galilei".
- DFA Grant Committee 16-2022, Scientific Responsible Dr. Alvise Raccanelli, Selection Announcement for the Awarding of Research Grants (type A) - Dipartimento di Fisica e Astronomia "G. Galilei".
- From February 2020 to September 2022 and from February 2023 to now, I am in PhD Program Committee in Astronomy at Dipartimento di Fisica e Astronomia "G. Galilei", Università degli Studi di Padova.
- From March 2018 to now, two/three/four times per year, I have been a member of the master's or bachelor's thesis committee at Dipartimento di Fisica e Astronomia "G. Galilei", Università degli Studi di Padova.

Schools, Meetings and Conferences attended

- Theory SWG Meeting, June 4-6, 2025, Porto, Portugal (attended the meeting via remote connection)
- Euclid CMBXC-SWG meeting, 12-13 November 2024, Cambridge UK (attended the meeting via remote connection)
- "The Complexity of the Cosmos" (3rd Edition) on 27th-29th September 2023, Gran Sasso Science Institute, L'Aquila, Italy (attended in person)
- Cosmo Classic 2024, 23-26 Sept 2024, in Asiago Astronomical Observatory (Italy) (attended in person)
- "Understanding the Galaxy/Matter Connection in the Era of Large Surveys", 16-17 Sept 2024, Sestri Levante, Italy (attended in person)
- "The Black Holes Inside and Out" Conference, August 26-30, 2024, Copenhagen Denmark (attended in person)
- Annual Euclid Consortium Meeting held in Rome on June 17th - 21st, 2024 (attended in person)
- Euclid CMBXC Meeting, March 18th, 19th 2024, Nice, France (attended the meeting via remote connection)
- Galaxy Clustering SWG meeting, 29 January- 2 February 2024, Marseille, France (attended the meeting via remote connection)
- Cosmology SWG annual meeting - 15th to 17th January 2024, Porto, Portugal (attended the meeting via remote connection)

- Euclid CMBXC-SWG meeting, 23-24 October 2023, at INAF-IASF Milan (attended the meeting via remote connection)
- Workshop “CMB Day 2”: Roma (ASI), 16-18 October 2023 (attended in person)
- “The Complexity of the Cosmos” (2nd Edition), on 27th-29th September 2023, Gran Sasso Science Institute, L’Aquila, Italy (attended in person)
- Euclid Consortium Meeting 2023, June 19-23, Copenhagen, Denmark (attended in person)
- Euclid Consortium Galaxy Clustering Meeting, 20-24 February 2023, University of Milan (attended the meeting via remote connection)
- UniVersum IV, 1-3 February 2023, Trento (attended in person)
- 6th Meeting Nazionale Euclid, 19-20 January 2023, Rome (attended the meeting via remote connection)
- SKA Cosmology SWG annual meeting, 17-19 January 2023, University of Manchester (attended the meeting via remote connection)
- Euclid CMBXC Meeting, October 6th, 7th, 2022, Venice (attended in person)
- TWG meeting 10-11 October 2022, Bologna (attended in person)
- Euclid Consortium Meeting 2022, 26-29 April, Oslo (attended the meeting via remote connection)
- Euclid CMBXC WG Meeting 24-25 March 2022 (attended the meeting via remote connection)
- Euclid Italia 2022, 23-25 February 2022 (attended the meeting via remote connection)
- SKA Cosmology SWG meeting, 31st of January and Tuesday 1st February 2022 (attended the meeting via remote connection)
- LISA Consortium Meeting, January 25-27, 2022 (attended the meeting via remote connection)
- Gravitational Wave Day @ UniPD, 2 December 2021
- Theory Working Group Annual Meeting, 22-23 November 2021 (attended the meeting via remote connection)
- Euclid CMBXC WG Meeting 7-8 October 2021 (attended the meeting via remote connection)
- The Third National Workshop on the SKA Project, 4-8 October 2021 (attended the meeting via remote connection)
- CosmoClassic meeting, 23 September 2021 (attended the meeting via remote connection)
- The kick-off meeting of the Einstein Telescope Observational Science Board, 22-23 September 2021 (attended the meeting via remote connection)
- Euclid Consortium Meeting 2021, 25-28 May 2021 (attended the meeting via remote connection)

- LISA Gravitational-Wave Primordial Cosmology, 17-19 May 2021 (attended the meeting via remote connection)
- CosmoClassic meeting, 5 March 2021 (attended the meeting via remote connection)
- Euclid Italia 2021, 15-17 February 2021 (attended the meeting via remote connection)
- SKA Cosmology SWG meeting, 13-15 January 2021 (attended the meeting via remote connection)
- LISA Consortium meeting 8, 1-3 December 2020 (attended the meeting via remote connection)
- 11th Einstein Telescope Symposium, 30 November 2020 - 3 December 2020 (attended the meeting via remote connection)
- Euclid CMBXC WG Meeting 18-19 November 2020 (attended the meeting via remote connection)
- Online Trieste meeting - Theory Working Group Annual Meeting, 8-10 June 2020 (attended the meeting via remote connection)
- Euclid Consortium Meeting - Theory WG splinter May 4 (attended the meeting via remote connection)
- Euclid joint meeting: WL + GC + CG SWG + OU-LE3 meeting in Paris, 3-6 February 2020 (attended the meeting via remote connection)
- 3^o Meeting Nazionale Euclid, 10-12 February 2020, CNR - Area della Ricerca di Bologna, Italy
- CosmoClassic 2019, 18-19 November 2019, Barcellona, Spain
- Workshop “Challenges and Opportunities of High Frequency Gravitational Wave Detection”, 14-16 October 2019, Trieste, Italy.
- Toulouse European Hands-on meeting in Toulouse (France) from 12 to 14th of June.
- ASI/COSMOS meeting on "LambdaCDM" - Rome (Italy), the 28th and 29th of May, 2019
- 2019 Annual Euclid Theory Working Group Meeting, 8th and 9th of April, in Oxford, UK.
- 2^o Meeting Nazionale Euclid 14 February 2019 CNR Sala convegni, Pl.e Aldo Moro 7, Rome, Italy
- Workshop “CMB and Large-Scale Structure of the Universe?” - Nicola Vittorio’s 65th birthday, January 21-22 2019, Villa Mondragone, Monte Porzio Catone, Roma
- 6th workshop of the LISA Cosmology Working Group, Universidad Autonoma de Madrid, January 14-18 2019, Madrid, Spain
- Workshop: “Fundamental Physics with LISA”, November 12th-14th, 2018, Firenze, Italy.
- Third-Generation Science-Case Consortium Meeting, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam (Germany), October 1-2, 2018.

- SKA Cosmology SWG meeting, Turin (Italy), 13th - 14th Sept 2018.
- COSMOS meeting on Astroparticle and Fundamental Physics with the CMB, Ferrara (Italy), 26th - 27th June 2018.
- Annual meeting of the Euclid Theory Working Group, Institut Henri Poincaré, Paris (France), 16th - 18th April 2018.
- Annual meeting of the Euclid IST:forecast, Institut Henri Poincaré, Paris (France), 18th - 20th April 2018.
- The international GRAVitational-wave Science & technology Symposium (GRASS 2018), on March 1st and 2nd, 2018, Padova (Italy).
- “Euclid Theory Working Group Meeting,” May 2 & 3 2017, Heidelberg, Germany.
- Large Scale Structures AIFA Journal Club from January 2015 to December 2017.
- UWC Astro Journal Club from October 2011 to September 2014
- “The Unity of the Universe”, ICG, Portsmouth, UK, 29th June - 1st July, 2009.
- “A Joint Conference of the German Academy of Sciences Leopoldina and the DFG Transregional Research Center TRR33 ‘The Dark Universe’ with support from the Munich Excellence Cluster ‘Origin and Structure of the Universe’ and the Alfried Krupp von Bohlen und Halbach-Stiftung, Munich, October 06-12, 2008.
- “Ecole Internationale Daniel Chalonge”, “12th Paris Cosmology Colloquium 2008” “Cosmic Microwave Background Radiation, Dark Matter, Dark Energy, Dark Ages, Large Scale Structures in the standard model of the Universe”, Observatoire de Paris, Paris campus July 17-19, 2008
- “Torino Theory Group’s Journal Club on Fields, Particles, Astrophysics and Cosmology”, University of Turin, 2008.
- “Journal Club on extended/alternative theories of gravity”, University of Turin, 2008.
- “43rd Rencontres de Moriond”, Cosmology Session, La Thuile, Italy, March 15-22, 2008
- “SIGRAV Graduate School in contemporary Relativity and Gravitational Physics VII Edition, “The Dark Side of the Universe”, May 14-18, 2007, Villa Olmo, Como, Italy.
- “XII International Workshop on Neutrino Telescopes”, Venice, Italy, March 6-9, 2007.
- “ISAPP 2006” (International School on Astro-Particle Physics European Doctorate School), “Dark Matter and Dark Energy”, Sorrento, Italy.
- “Key Approaches on Dark Energy”, Barcelona, Spain, August 2006.
- “II International Workshop on: NO-VE Neutrino Oscillations in Venice”, Venice, Italy, 7-10 February 2006.
- Journal Club “Caffè teorico” on Astroparticle Physics of the Department of Physics, University of Padua, 2006.

- XI International Workshop on Neutrino Telescopes, Venice, Italy, 22-25 February 2005.
- Seminars and talks of the Journal Club on theoretical and Astroparticle physics of the Department of Physics, University of Padua, 2005-2007.
- Third Aegean Summer School, “The Invisible Universe Dark Matter and Dark Energy”, Karfas, Chios, Greece, September 2005.

Complementary Information

Languages Italian (native), English (fluently).

Computing Excellent use of Mathematica, \LaTeX and Office.
From 2012 to 2014, familiar with the COSMOS high performance computing cluster in Cambridge.

Padua, Italy 01/12/2025

CV Martina Gerbino

PERSONAL INFORMATION

Family name, First name: Gerbino, Martina, ORCID: <https://orcid.org/0000-0002-3538-1283>,
Webpage: <https://www.fe.infn.it/cosmologia/index.php/martina-gerbino/?lang=en>

CURRENT POSITION

2019 – date Researcher (Prima Ricercatrice), Istituto Nazionale di Fisica Nucleare (INFN), Ferrara Unit, Italy

PREVIOUS POSITIONS

2018 – 2019 Postdoctoral Appointee
High-Energy Physics Division, Argonne National Laboratory, USA
2015 – 2018 Postdoctoral Researcher
Oskar Klein Centre for Cosmoparticle Physics (OKC), Stockholm University, Sweden

EDUCATION

2012 – 2015 PhD in Physics, *Current and future constraints on fundamental physics in light of the results from Planck satellite*, defended in Jan 2016, classification: with honors
“Sapienza” University, Rome, Italy
PhD Supervisor: Prof. Alessandro Melchiorri
2010 – 2012 Master’s degree in Astronomy and Astrophysics, mark: 110/110 cum laude
“Sapienza” University, Rome, Italy
2007 – 2010 Bachelor’s degree in Physics, mark: 110/110 cum laude
“Sapienza” University, Rome, Italy

GRANTS, FELLOWSHIPS AND AWARDS

2023 ERC-Starting Grant “RELiCS – Revealing Elusive Light particles with Cosmic microwave background surveys across cosmological Scales”, PI (1.5M€)
2023 FIS - Fondo Italiano per la Scienza 2021 “CMBNous - The definitive route to constrain neutrino properties from Cosmic Microwave Background experiments”, PI, declined (1M€)
2023 PRIN, Progetti di Ricerca di Interesse Nazionale, “SHIFT – Statistically enHanced Investigation of Tensions in cosmic microwave background data”, national PI (250k€)
2021 – date National scientific habilitation to full professor for the Astronomy and Astrophysics sector and to associate professor for the Theoretical Physics sector of the Italian academic system
2019 Official certificate in recognition of the “important contribution to the final results published by the Planck Collaboration” by Jan Tauber, Planck Project Scientist.
2018 – 2019 Associate Fellow (non-stipendiary), KICP, University of Chicago, USA
2018 Gruber Prize in Cosmology 2018 as a member of the Planck Team; Group Achievement Award (Royal Astronomical Society) as a member of the Planck Team
2016 Grant from Nordic Institute for Theoretical Physics - NORDITA for the organization of a month-long scientific program and a one-week conference (400k SEK)
2015 Best talk, Nordita Day, NORDITA, *A Tale of a Bright Guy: Listening to the CMB old story*
2014 Grant for junior researchers (“Avvio alla ricerca”) from “Sapienza” University (2k€) to carry on research on “Neutrino physics in the era of precision cosmology” (PI)
2012 Corso di eccellenza (award for outstanding Master students), “Sapienza”, Rome
2011 ISSNAF-INAF Fellowship (subsistence and ~400\$/week for research) for a summer internship at NASA Goddard Space Flight Center, USA, supervisor: Dr. Neil Gehrels
2008 – 2010 Corso di eccellenza (award for outstanding Bachelor students), “Sapienza” University

2007 – 2012 Scholarship, Collegio Universitario “Lamaro-Pozzani”, Rome

SUPERVISION OF STUDENTS AND POSTDOCTORAL FELLOWS

Postdoc

PhD

Master

TEACHING ACTIVITIES

- 2020 – date “Neutrino Cosmology”, lectures for the PhD program in Physics, Ferrara University
2019 – date Mentor of junior members (PhD students) of the Simons Observatory collaboration
2013 – 2014 Tutor, “Mathematics pre-courses” and “Mechanics and thermodynamics” (Bachelor, Mathematic Department, “Sapienza” University), “Mechanics” (Bachelor, Physics Department, “Sapienza” University)

ORGANISATION OF SCIENTIFIC MEETINGS

- 2023,2025 “New frontiers in theoretical physics – XXXVII Convegno di Fisica Teorica”, Cortona, Italy, SOC member
2022 LOC member, “From Planck to the future of CMB”, Ferrara, Italy (conference); SOC member, “Simons Observatory Face-to-face 2022”, San Diego, USA (collaboration meeting); Convener of the parallel session “Particle Physics in the Cosmos” of the NOW 2022 workshop, Ostuni, Italy
2021 Invited member of the TAUP 2021, TAUP 2023, TAUP 2025 International Advisory Committee
2021 CMB-S4 Spring Collaboration Meeting, LOC member (fully online event)
2019 “Next-generation Spectroscopy with LSST” workshop, Argonne National Laboratory, USA, SOC and LOC member
2017 “Advances in Theoretical Cosmology in Light of Data” program, Stockholm, Sweden, SOC and LOC member. Main scientific coordinator of the week “Messengers: Astroparticles and Gravitational Waves”; co-coordinator of the conference “Inflation and the CMB”
2017/19/25 Convener of the parallel session “Cosmology” of the “TeVPA 2017” conference, Columbus, USA, “TeVPA 2019” conference, Sydney, Australia, “TeVPA 2025” conference, Valencia, Spain

INSTITUTIONAL RESPONSIBILITIES

- 2022 – date Local coordinator (elected) of the INFN Theory group (CSN4) including budget management, Ferrara Unit
2022 – date Invited member of the Astrophysics Working Group, ASI (Italian Space Agency) Decadal Survey
2021-date Member of the selection committees for INFN postdoc positions in Ferrara, Parma (2022), Frascati National Lab (2024)

2022 INFN Fubini award committee member; SISSA PhD admission committee member
 2021 – date Faculty member, PhD program in Physics, Ferrara University
 2020 Admission committee to the PhD program in Physics, Ferrara University
 2019 – date Organiser of cosmology seminars, weekly journal clubs and cosmology group meetings, Ferrara University
 2018 – 2019 Coordinator of the Cosmic Infrared Background working group, Organiser of HEP division and HEP Lunch seminars, Argonne National Laboratory
 2015 – 2018 PhD student advisor, Stockholm University, Sweden
 2016 – 2018 Organiser of weekly colloquia on behalf of the OKC colloquium committee, Convener of the Cosmology&Gravity working group, OKC, Stockholm University

REVIEWING ACTIVITIES

2016 – date Reviewer for PRD, PRL, JCAP, Annalen der Physik, Int.J.Mod.Phys.D
 2017 – date Invited reviewer for NASA Experimental Program to Stimulate Competitive Research (EPSCoR); Invited panelist of NASA Astrophysics Data Analysis Program (ADAP) and NASA’s ROSES/APRA Program, declined

MAJOR COLLABORATIONS

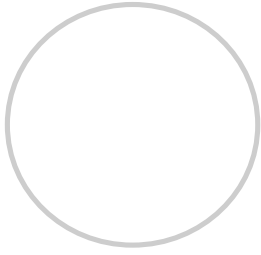
2013 – date Full member of the ESA’s Planck collaboration. Core Team Member since 2016.
 2016 – date Full member, member (elected) of the “Theory and Analysis Committee” since 2023, co-leader (now advisor) of the “Likelihood and Theory” Analysis Working Group in 2018-2025, co-leader of the “Education and Public Engagement” committee in 2017-2021, member of the “Mentorship” committee of the Simons Observatory collaboration since 2021
 2018 – date Full member of the CMB-S4 collaboration, chair of the Governing Board in 2023-24 term (elected member since 2020 for 2 terms) and of the Publication committee since 2018
 2020 – date Full member and member of the Interim Publication Board of the LiteBIRD collaboration; member the Euclid consortium

VISITING

Mar-Sep 2020 Visiting scientist, by invitation of Prof. K. Heitmann, HEP Division, Argonne National Laboratory, canceled due to COVID-19 emergency
 Feb-Jun 2016 Visiting postdoc, by invitation of Prof. K. Freese, University of Michigan
 May-Jul 2015 Visiting PhD student, KICP, University of Chicago, advisor: Prof. E. Kolb

OUTREACH

2020 – date Coordinator of cosmology laboratories for high-school students, Ferrara University
 2019 Selected as a speaker at the Soapbox science event at Chicago Navy Pier
 2017 – date Co-leader of the “Education and Public Engagement” committee, Simons Observatory (SO) collaboration; content creator for the SO public website; SO social media organizer
 2018 Organizer of outreach laboratories for high-school students during the European Researcher Nights in Stockholm (Forskarfredag and FysikFest)
 2018 Interview for the video-documentary “The Eternal Sky” by the Simons Foundation
 2012 Contributed author of S. Semplici, Editrice La Scuola, ISBN 9788835036234



Marco Radici

PRESENTAZIONE

Ricercatore dell'INFN (Istituto Nazionale di Fisica Nucleare), docente di Fisica Nucleare presso il Dipartimento di Fisica dell'Università degli Studi di Pavia

ISTRUZIONE E FORMAZIONE

[1985 – 1988]

Ph.D. in Fisica

Università degli Studi di Pavia

Città: Pavia | Paese: Italia |

[1980 – 1984]

Laurea in Fisica con lode

Università degli Studi di Pavia

Città: Pavia | Paese: Italia |

ESPERIENZA LAVORATIVA

[01/01/2007 – Attuale]

Primo Ricercatore - INFN (Istituto Nazionale di Fisica Nucleare) Sezione di Pavia

- Attività di ricerca in Fisica Adronica teorica, in particolare studio della struttura partonica del protone e degli adroni, svolta sia in ambito di progetti nazionali (INFN, PRIN) che progetti europei

INFN / PRIN

- 01/2017 - oggi: coordinatore locale delle attività del progetto "National Initiative in Physics of HAdrons" (NINPHA) della Commissione INFN per le attività di Fisica Teorica (CSN4)

- 01/2014 - 12/2016: coordinatore nazionale delle attività del progetto NINPHA

- 09/2023 - 09/2025: partecipazione a progetto PRIN2022 "ProtoTaste - Tasting the flavor of the proton in its full dimensions", contratto MIUR n.20225ZHA7W

- 07/2015 - 12/2020: coordinatore nazionale del progetto 3DSPIN della Commissione INFN per le attività di Fisica Teorica (CSN4), connesso al progetto ERC Consolidator "3DSPIN - 3Dimensional map of the spinning nucleon", finanziato dal programma europeo Horizon 2020, contratto n.647981

- 01/2008 - 12/2013: coordinatore nazionale delle attività del progetto AD31 della Commissione INFN per le attività di Fisica Teorica (CSN4)

- 2009 - 2010: partecipazione a progetto PRIN2008 EKLACK "Struttura del nucleone: momento trasverso, spin trasverso e momento angolare orbitale" del programma PRIN 2008.

Progetti europei

- 2019 - 2024: partecipazione a "TMD-Next - 3D structure of the Nucleon in momentum space: opening the next stage" del progetto "STRONG2020: Study of Strongly Interacting Matter" (www.strong-2020.eu) del programma europeo Horizon 2020, contratto n.824093

- 2011 - 2014: partecipazione a "3D-Mom" del progetto "HadronPhysics3: Study of Strongly Interacting Matter" (www.hadronphysics3.eu) del programma europeo FP7, contratto n.283286



- 2008 - 2011: coordinatore locale del network "TMD-Net - Mapping out the Transverse Structure of the Nucleon" nel progetto "HadronPhysics2: Study of Strongly Interacting Matter" (www.hadronphysics2.eu) del programma europeo FP7, contratto n.227431

[2004 – Attuale] **Professore a contratto - Università degli Studi di Pavia**

- a.a. 2021-22 - oggi: docente del corso Fisica Nucleare - Laurea Magistrale in Scienze Fisiche
- a.a. 2012-13 - oggi: docente del corso "Strong Interactions" - Dottorato di ricerca in Fisica
- a.a. 2012-13 - 2020-21: docente del corso Fisica Nucleare II - Laurea Magistrale in Scienze Fisiche
- 2012: abilitazione a Professore Ordinario in Fisica Teorica e delle Interazioni Fondamentali, settore 02/A2 (Decreto Direttoriale n.222 del 20/07/12)
- a.a. 2004-05 - 2011-12: docente del corso Fisica Adronica - Laurea Magistrale in Scienze Fisiche
- correlatore di 10+ laureandi in Scienze Fisiche, supervisore di 5 studenti di dottorato in Fisica

[12/1988 – 12/2006] **Ricercatore - INFN (Istituto Nazionale di Fisica Nucleare) Sezione di Pavia**

- Attività di ricerca in Fisica Nucleare (struttura del nuclei a doppia shell chiusa) e in Fisica Adronica (struttura del nucleone), svolta nell'ambito sia di progetti nazionali (INFN, PRIN) che progetti europei

INFN / PRIN

- partecipazione alle attività del progetto PV31 della Commissione INFN per le attività di Fisica Teorica Nucleare (CSN4)

- 1997 - 2003: partecipazione a progetto "Fisica teorica del nucleo e dei sistemi a molti corpi" dei programmi PRIN 1997, 1999, 2001 e 2003

Progetti europei

- 2004 -2007: coordinatore locale del network "N7 Transversity: exploring the unknown transverse spin structure of the Nucleon" nel progetto "Integrated Infrastructure Initiative in Hadronic Physics" (www.infn.it/eu/i3hp) del programma europeo FP6, contratto n. RII3-CT-2004-506078

- 2000 - 2003: partecipazione a Research Training Network "ESOP: Electron Scattering Off Partons" del programma europeo FP5, contratto n.RTN1-1999-00117

- 1996 - 2000: partecipazione a Training and Mobility of Researchers Network "HaPHEEP" del programma FP4, contratto n.ERBFMRXCT96-0008

[09/1991 – 12/1992] **Visiting Scientist - University of Illinois at Urbana-Champaign (IL - USA)**

- collaborazione con il gruppo del prof. V. Pandharipande (UIUC) nei periodi sett-dic 1991 e sett-dic 1992 per attività di ricerca in Fisica del nucleo, in particolare correlazioni a molti corpi e spettroscopia dei livelli eccitati del nucleo O16

COMPETENZE LINGUISTICHE

Lingua madre: italiano

Altre lingue:

inglese

ASCOLTO C2 LETTURA C2 SCRITTURA C2

PRODUZIONE ORALE C2 INTERAZIONE ORALE C2

francese

ASCOLTO A2 LETTURA B2 SCRITTURA A1

PRODUZIONE ORALE A1 INTERAZIONE ORALE A1

Livelli: A1 e A2: Livello elementare B1 e B2: Livello intermedio C1 e C2: Livello avanzato

PUBBLICAZIONI

Parametri bibliometrici



- Attività scientifica: fenomenologia dell'interazione forte (CromoDinamica Quantistica - QCD), in particolare studio della dinamica confinata di quark e gluoni all'interno del protone e degli adroni.
- pubblicazioni: 206 articoli scientifici di cui 90 su riviste internazionali con peer review, 1 monografia, 6 proposte di esperimento di cui 1 come spokesperson
- elenco completo delle pubblicazioni: <https://inspirehep.net/authors/992464?ui-citation-summary=true>
- 135 seminari e interventi a conferenze/workshops (inter)nazionali, di cui 100+ su invito

- impatto scientifico INSPIRE (inspirehep.net): h-index 44; m-index 1.26; i10-index 88; citazioni 8000+
- impatto scientifico GOOGLE SCHOLAR: h-index 44; m-index 1.26; i10-index 92; citazioni 8900+

COMPETENZE PROFESSIONALI

Incarichi di responsabilità

- 08/2024 - 08/2025: Past Chair dello Steering Committee dell'Electron-Ion Collider Users Group (EICUG)
- 08/2023 - 08/2024: Chair dello Steering Committee dell'Electron-Ion Collider Users Group (EICUG)
- 08/2021 - 08/2023: Vice-Chair dello Steering Committee dell'Electron-Ion Collider Users Group (EICUG)
- 01/2017 - 12/2020: membro dello Steering Committee dell'Electron-Ion Collider Users Group (EICUG)
- 04/2023 - oggi: membro del Collaboration Council della collaborazione sperimentale ePIC (electron-Proton/Ion Collider)
- 04/2021 - 12/2023: convener del Semi-Inclusive Deep-Inelastic Scattering (SIDIS) Working Group della collaborazione sperimentale ePIC
- 2023 - 2028: membro del Program Advisory Committee (PAC) del Thomas Jefferson National Accelerator Facility (Newport News, Virginia - USA)
- 02/2023 - 10/2024: membro del NuPECC Long Range Plan 2024 Working Group 6 "Research Infrastructures"
- 01/2020 - oggi: membro del Collegio dei Docenti della Scuola di Dottorato in Fisica dell'Università di Pavia
- 2019 - oggi: co-coordinatore del Comitato scientifico regionale della Lombardia, e membro del Comitato scientifico nazionale del "Premio Asimov", progetto ASIMOV_C3M della Commissione INFN per le attività di divulgazione (CC3M)
- 06/2005 - 06/2011: coordinatore delle attività di Fisica Teorica dell'INFN - Sezione di Pavia, membro della Commissione INFN per le attività di Fisica Teorica (CSN4)
- 2003 - 2024: membro del Comitato scientifico della Biblioteca delle Scienze - Università di Pavia
- 1993 - 1999: rappresentante dei Ricercatori per la Sezione di Pavia dell'INFN

Incarichi di Revisore

- 2013 - oggi: membro/presidente di Comitati di valutazione per l'attribuzione di assegni di ricerca e borse post-doc per stranieri dell'INFN, e di assegni di ricerca del Dipartimento di Fisica dell'Università degli Studi di Pavia
- 2015 - oggi: revisore di progetti scientifici per Early Career Research Program del Dept. Of Energy (DOE) - Office of Science (USA)
- 2013 - oggi: revisore di progetti scientifici per National Science Foundation (USA)
- 2020: revisore esterno per progetti dell'Agence Nationale de la Recherche (ANR - Francia)



- 2019: esperto esterno del Comitato di valutazione per una promozione a Associate Professor, Dept. of Physics - Univ. of Duquesne (Pittsburgh, PA-USA)
- 2016: esperto esterno del Comitato di valutazione per il Ph.D. in Fisica a Indian Institute of Technology (Bombay, India)
- 2016: esperto esterno del Comitato di valutazione per una promozione a Associate Research Scientist, Dept. of Physics - Univ. of Indiana (Bloomington, IN-USA)
- 2015: membro del Comitato di valutazione per l'assegnazione di borse Ph.D. della Scuola di Dottorato in Fisica, Università di Pavia, ciclo XXXI
- 2013: revisore di progetti di ricerca per programma PRIN - Futuro in Ricerca 2013 del MIUR
- 2012: membro del Comitato di revisione della collaborazione PANDA della Commissione INFN per attività sperimentale di Fisica Nucleare (CSN3)
- 2011 - 2013: revisore di progetti scientifici per Stichting voor Fundamenteel Onderzoek der Materie (FOM) del Nederlandse Organisatie voor Wetenschappelijk Onderzoek (Olanda)
- 2006 - 2011: revisore nazionale dei progetti scientifici di Fisica Teorica Nucleare e Adronica dell'INFN (CSN4)
- 2006 - 2008: membro del Comitato di selezione del premio nazionale INFN "Sergio Fubini"
- 2001: membro del Comitato di valutazione per l'assegnazione di borse Ph.D. della Scuola di Dottorato in Fisica, Università di Pavia, ciclo XVII

Incarichi Editoriali

- 2020 - 2026: membro dell'Editorial Board di Eur. Phys. J. Plus (EPJP), Springer Nature
- 2021: co-editor di "Science requirements and detector concepts for the Electron-Ion Collider: EIC Yellow Report", Nucl. Phys. A1026 (2022) 122447, arXiv:2103.05419
- 2020 - oggi: referee di articoli scientifici per Adv. High Energy Phys., Hindawi Publishing Corp.
- 2015 - oggi: referee di articoli scientifici per Eur. Phys. J. A / C / Plus, Springer Verlag
- 2004 - oggi: referee di articoli scientifici per Nucl. Phys. A e Phys. Lett. B, Elsevier
- 2004 - oggi: referee di articoli scientifici per J. Phys. G e J. Phys. Conf. Series, Institute of Physics Publishing (IOP)
- 2003 - oggi: referee di articoli scientifici per Phys. Rev. D e Phys. Rev. Lett., American Physical Society (APS)
- 2025: referee di articoli scientifici per Physica Scripta, Institute of Physics Publishing (IOP)

COMPETENZE ORGANIZZATIVE E GESTIONALI

Organizzazione di conferenze e workshop internazionali

- membro del comitato organizzatore di "Electron-Ion Collider Users Group Summer Meeting (EICUG)" 2025 (Jefferson Lab, Newport News, VA - USA), 2024 (Bethlehem, PA - USA), 2023 (Varsavia, Polonia), 2022 (Stony Brook, NY - USA), 2021 (online), 2020 (online), 2019 (Parigi, Francia), 2018 (Washington DC, USA)
- membro del comitato organizzatore di "European School on the Physics of the Electron-Ion Collider", II edizione (22/06-02/07/25, Benicàssim, Spagna) e I edizione (18-22/06/23, Corigliano Calabro, Italia)
- membro del comitato organizzatore di "Sardinian Workshop on Spin (SarWorS)", IV edizione (11-13/06/25, Pula (CA), Italia), III edizione (5-7/06/23, Pula (CA), Italia), II edizione (6-8/09/21, Cagliari, Italia), I edizione (8-10/07/19, Cagliari, Italia)



- membro del comitato organizzatore di "International Workshop on Transverse Polarization Phenomena in Hard Scattering (Transversity)", VII edizione (3-7/06/24, Trieste, Italia), VI edizione (23-27/05/22, Pavia, Italia), V edizione (11-15/12/17, INFN-LNF Frascati, Italia)
- membro dell'Int. Advisory Committee di "The 4th EIC-Asia Workshop", 01-05/07/24 Shanghai (Cina)
- membro del comitato organizzatore di "QCD Evolution 2024", 27-31/05/24 Pavia (Italia)
- membro del comitato organizzatore di "International School and Workshop on Probing Hadron Structure at the Electron-Ion Collider", 29/01-09/02/24 ICTS Bangalore (India)
- membro del comitato organizzatore di "1st International Workshop on a 2nd Detector for the Electron-Ion Collider", 17-19/05/23 Philadelphia (PA - USA)
- membro dell'Int. Advisory Committee di "International workshop on Hadron Structure and Spectroscopy 2022 (IWHSS 2022)", 29-31/08/22 CERN Ginevra (Svizzera)
- membro del comitato organizzatore di "INT workshop 21-80W - Fragmentation Functions 2021", Institute of Nuclear Theory (INT) - Seattle (WA - USA), online
- membro del comitato organizzatore di "6th Workshop on Resummation, Evolution, Factorization (REF 2019)", 25-29/11/19 Pavia (Italy)
- membro del comitato organizzatore di "Workshop on novel probes of the nucleon structure in SIDIS, e+e- and pp (FF 2019)", 11-13/03/19 Durham (NC - USA)
- convener della sessione "Hadron Structure, Spectroscopy and Dynamics" a "2018 European Nuclear Physics Conference (EUNPC 2018)", 2-7/09/18 Bologna (Italia)
- membro del comitato organizzatore di "Workshop on Fragmentation Functions (FF2018)", 19-22/02/18 Stresa (VB - Italia)
- convener delle sessioni "TMD fragmentation in e+e- and SIDIS processes, New channel productions" e "SIDIS and New data analysis methods" a "TMD2015 - A path towards TMD extraction", 2-4/09/15 Trieste (Italy)
- membro del comitato organizzatore e scientifico di "Incontri Nazionali di Fisica Nucleare", edizione 2014 (Padova, Italia), edizione 2012 (Catania, Italia)
- convener della sessione "Structure of hadrons and hadronic matter" a "Cortona 2013 - XIV Convegno su problemi di Fisica Nucleare Teorica", 29-31/10/13 Cortona (AR - Italy)
- membro del comitato organizzatore di "Structure of Nucleons and Nuclei", 10-14/06/13 Como (Italia)
- membro del Programme Committee di "International Nuclear Physics Conference 2013 (INPC 2013)", 2-7/06/13 Firenze (Italia)
- membro del comitato organizzatore di "Drell-Yan Scattering and the Structure of Hadrons", 21-25/05/12 ECT* - Trento (Italia)
- membro del comitato organizzatore di "Dihadron Fragmentation Functions (DiFF)", 5-7/09/11 Pavia (Italia)
- membro del comitato organizzatore di "Transversity: New Developments in Nucleon Spin Structure", 14-18/06/04 ECT* - Trento (Italia)

Organizzazione di eventi di divulgazione scientifica

- organizzazione della cerimonia di premiazione regionale del "Premio Asimov" (www.youtube.com/PremioAsimov), X edizione (09/05/25 Liceo Vittorio Veneto, Milano), IX edizione (03/05/24 online), VIII edizione (05/05/23 online), VII edizione (06/05/22 online), VI edizione (22/05/21 online), V edizione (09/05/20 online)
- co-organizzazione della cerimonia di premiazione nazionale del "Premio Asimov" al Salone del Libro di Torino, X edizione (14/05/25), IX edizione (09/05/24), e della presentazione al Salone del Libro di Torino dei cinque libri finalisti della VII edizione (15/10/21)



COMPETENZE

Padronanza del Pacchetto Office (Word Excel PowerPoint ecc) | Gestione autonoma della posta e-mail | Posta elettronica | Utilizzo del browser | Padronanza linguaggi Fortran77, Fortran90, Mathematica, Form | Conoscenza linguaggi C, C++, Python | Google | Gmail | Padronanza di sistemi Unix, Linux, macOSX | Conoscenza tool Neural Network di Machine Learning

ONORIFICENZE E RICONOSCIMENTI

Altro

- 2024: Springer Nature (Berlino, Germania) - certificato di "Distinguished referee of The European Physical Journal"

- 2016: Elsevier (Amsterdam, Olanda) - certificato di "Excellence in Reviewing"

- 2014 - 2016: INFN - coordinatore nazionale di progetto NINPHA, progetto valutato da commissione esterna internazionale tra i migliori della Commissione INFN per le attività di Fisica Teorica (CSN4)

Grant - INFN (Istituto Nazionale di Fisica Nucleare)

- 07/2015 - 12/2020: coordinatore nazionale del progetto 3DSPIN, finanziamento 315 kEuro

- 01/2017 - oggi: coordinatore locale del progetto NINPHA, finanziamento medio 14 kEuro/anno

- 01/2014 - 12/2016: coordinatore nazionale del progetto NINPHA, finanziamento di 100 kEuro

- 10/2014 - 09/2016: borsa post-doc di 80 kEuro per supervisione di dr. X. Xiong presso INFN - Sezione di Pavia

- 01/2008 - 12/2013: coordinatore nazionale del progetto AD31, finanziamento 254 kEuro

- 11/2009 - 11/2011: borsa post-doc di 48 kEuro per supervisione di dr.ssa A. Courtoy presso INFN - Sezione di Pavia

RETI E AFFILIAZIONI

[2016 – Attuale] **Electron-Ion Collider Users Group (EICUG)**

[2002 – Attuale] **Jefferson Lab Users Group**

[1989 – Attuale] **Società Italiana di Fisica (SIF)**

PATENTE DI GUIDA

Motocicletta: A

Automobile: B

Autocarro: C

HOBBY E INTERESSI

Sport

bicicletta su strada e gravel, sci, pallavolo

CV - Barbara Pasquini

DATI PERSONALI Nome e cognome: Barbara Pasquini

AFFILIAZIONE Università degli Studi di Pavia - Dipartimento di Fisica "A. Volta"
via Bassi 6
27100, Pavia, Italy

POSIZIONE ATTUALE Professore Ordinario

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Posizioni e titoli accademici

Feb. 2022 - presente - Università degli Studi di Pavia
Professore ordinario

Giu. 2015 - Gen. 2022 - Università degli Studi di Pavia
Professore associato

Apr. 2007 - Mag. 2015 - Università degli Studi di Pavia
Ricercatore universitario

Gen. 2007 - Mar. 2007 - Institut für Kernphysik - J. Gutenberg Universität in Mainz
Borsa post-doc in fisica adronica

Gen. 2003 - Dic. 2006 - Università degli Studi di Pavia & INFN, Sez. di Pavia
Borsa post-doc

Gen. 2002 - Dic. 2002 - Università degli Studi di Trento in collaborazione con ECT*
Borsa post-doc

Gen. 2000 - Dic. 2001 - ECT* (European Centre for Theoretical Studies in Nuclear Physics and Related Areas) - Trento (Italia)
Borsa post-doc in fisica adronica

Mag. 1999 - Dic. 1999 - Institut für Kernphysik - J. Gutenberg Universität in Mainz
Borsa post-doc in fisica adronica

Mag. 1998 - Apr. 1999 - Institut für Kernphysik - J. Gutenberg Universität in Mainz
Marie Skłodowska-Curie Fellowship
Training Mobility Research program
Contratto N. ERBFMBICT972758

Gen. 1998 - Apr. 1998 - Institut für Kernphysik - J. Gutenberg Universität in Mainz
Fellowship for mobility - sponsorizzata dall'Università degli Studi di Pavia

Ott. 1997 - Gen. 1998 - Institut für Kernphysik - J. Gutenberg Universität in Mainz
Contratto di ricerca

Formazione

Ott. 1994 - Set. 1997 - Università degli Studi di Pavia
Dottorato di ricerca in Fisica

- Tesi: *Scattering Compton da nucleo e da nucleone*
- Tutore: Prof. S. Boffi
- Esame di conseguimento del titolo: 22 Maggio 1998

- Ott. 1989 -** Università degli Studi di Pavia
Lug. 1994 *Laurea in Fisica*
- Tesi: *Scattering Compton nucleare*
 - Relatore: Prof. S. Boffi
 - Votazione: 110/110 cum laude
- Sett. 1989 -** Collegio Universitario S. Caterina da Siena
Sett. 1993 *Alunna di merito*
- 1989** Liceo Classico Arnaldo
Diploma di maturità

Premi e riconoscimenti

- 2020** [APS Fellow](#)
- 1998** Marie Skłodowska-Curie Fellowship
Training Mobility Research program

Attività didattica in corso presso l'Università degli Studi di Pavia

- a.a. 2022-
presente** Corso di Laurea Triennale in Fisica
Introduzione alla Fisica Nucleare e Subnucleare
Ruolo: docente in carica
- a.a. 2021** Corso di Laurea Triennale in Fisica
Introduzione alla Fisica Nucleare
Ruolo: docente in carica
- a.a. 2015-
presente** Corso di Laurea Triennale in Fisica
Metodi Matematici della Fisica I
Ruolo: docente in carica
- a.a. 2011-
presente** Corso di Laurea Magistrale in Scienze Fisiche
Complementi di Fisica Teorica
Ruolo: docente in carica

Attività didattica in scuole di dottorato e post-dottorato

Dal 2011 ad oggi, cicli di lezioni specialistiche in fisica adronica presso 9 scuole nazionali e internazionali per dottorandi e postdoc.

Tesi di Dottorato e di Laurea

- 2015-
presente** Tutore di 9 tesi di Dottorato
Università degli Studi di Pavia
- 2007-
presente** Relatore di 12 tesi di Laurea Magistrale
Università degli Studi di Pavia

- 2005-presente** Correlatore di 3 tesi di Laurea Magistrale
Università degli Studi di Pavia
- 2005-presente** Supervisore di 24 tesi di Laurea Triennale
Università degli Studi di Pavia
- 2015-2016** Supervisore di 3 tesi di Laurea Triennale
Scuola Universitaria Superiore IUSS di Pavia

Referee di tesi di Dottorato

Referee di 17 tesi di Dottorato in Università italiane e straniere.

Responsabilità & incarichi di servizio negli ultimi 5 anni

- 2025-presente** Vicedirettore del Dipartimento di Fisica
Università degli Studi di Pavia
- 2023-2025** Membro del Comitato Tecnico Scientifico del Centro Linguistico
Università degli Studi di Pavia
- 2023-presente** Membro della Commissione paritetica di Tutorato
Dipartimento di Fisica - Università degli Studi di Pavia
- 2022-presente** Membro della Giunta del Dipartimento di Fisica
Università degli Studi di Pavia
- 2020-presente** Associate editor di 'Frontiers in Nuclear physics'
- 2019-2022** Presidente del Consiglio Didattico di Scienze e Tecnologie Fisiche
Università degli Studi di Pavia
- 2017-2019** Membro della Giunta del Dipartimento di Fisica
Università degli Studi di Pavia
- 2018-2019** Membro del Comitato Tecnico Scientifico del Centro Orientamento
Università degli Studi di Pavia
- 2018-presente** Membro dell'editorial board di 'Few Body System'
- 2015-2019** Membro del Gruppo di gestione della qualità della ricerca
Dipartimento di Fisica - Università degli Studi di Pavia
- 2014-2019** Co-responsabile per la "Scheda Unica Annuale per la Ricerca Dipartimentale (SUA RD)"
Dipartimento di Fisica - Università degli Studi di Pavia
- 2011-presente** Membro del Collegio Docenti della Scuola di Dottorato in Fisica
Università degli Studi di Pavia
- 2009-presente** INFN - Sezione di Pavia
Associazione scientifica con incarico di ricerca

Posizioni di responsabilità scientifica negli ultimi 5 anni

- 2025-presente** [Membro del scientific advisory committee del Collaborative Research Center CRC1660 "Hadrons and Nuclei as Discovery Tools", Univ. Mainz](#)
- 2024-presente** [Chair del Scientific Board dell'ECT*](#)
- 2022-presente** [Direttore scientifico della Residenza Biomedica Universitaria della 'Fondazione Collegio Universitario Santa Caterina'](#)
- 2022** [Membro dell'APS Fellowship Committee](#)
- 2021-presente** [Co-Direttore di "The International Light-Cone Advisory Committee"](#)
- 2021-2024** [Membro del Scientific Board dell'ECT*](#)
- 2021** [Membro dell'APS Fellowship Committee](#)
- 2020** [Membro dell'APS Nominating Committee](#)
- Gen. 2020- Feb. 2021** Convener teorico per lo Yellow Report Initiative dell'Electron-Ion Collider User Group
Working group: Exclusive Reactions
- 2018-2020** Membro del Conference and Talks Committee dell'Electron-Ion Collider User Group
- 2017-presente** [Membro dell'International Advisory Committee del Center for Frontiers in Nuclear Science Stony Brook University](#)
- 2014-presente** [Membro di "The International Light-Cone Advisory Committee"](#)

Finanziamenti alla ricerca

- 2019-2023** STRONG2020
Study of Strongly Interacting Matter
European Union's Horizon 2020 programme
Work Package JR4: TMD-next - 3D structure of the nucleon in momentum space: opening the next stage
Ruolo: coordinatore scientifico dell'unità di ricerca di Pavia
- 2012-2014** HADRONPHYSICS3
Study of Strongly Interacting Matter
Seventh Framework Programme of the European Community
Networking activities - Work Package 4: EPOS-Exciting Physics of Strong Interactions
Ruolo: coordinatore scientifico (nodo di 4 università)
- 2012-2014** HADRONPHYSICS3
Study of Strongly Interacting Matter
Seventh Framework Programme of the European Community
Joint Research Activities - Work Package 29: 3D-Mom: Three-dimensional momentum structure of hadrons
Ruolo: coordinatore scientifico (nodo di 5 università)

- 2010-2012** MIUR program PRIN 2008
Structure of the nucleon: transverse momentum, transverse spin and orbital angular momentum
PRIN 2008EKLACK
Ruolo: Mar. 2010-Ott. 2010, partecipante; Nov. 2010-2013, coordinatore scientifico dell'unità di ricerca di Pavia
- 2009-2011** HADRONPHYSICS2
Study of Strongly Interacting Matter
Seventh Framework Programme of the European Community
Networking Activity - Work Package 4: QCDNet:-Hadron physics in non-perturbative QCD
Ruolo: partecipante
- 2009-2011** HADRONPHYSICS2
Study of Strongly Interacting Matter
Seventh Framework Programme of the European Community
Joint Research Activity - Work Package 23: HardEx - Hard Exclusive Reactions
Ruolo: partecipante
- 2004-2007** I3HP
Integrated Infrastructure Initiative in Hadronic Physics
Sixth Framework Programme of the European Community
Network N5: HadronicTh: Structure and Dynamics of Hadrons
Ruolo: partecipante
- 2003-2005** MIUR program PRIN 2003
Theoretical Physics of Nucleus and of many-body systems
Ruolo: partecipante

Attività di referee (per agenzie di finanziamento alla ricerca)

- 2020-presente** Referee per 'Marie Skłodowska-Curie Individual Fellowships'
Comunità Europea
- 2020** Referee per grants finanziati da 'French National Research Agency'
Francia
- 2019** Referee per grants finanziati da 'National Science Centre of Poland'
Polonia
- 2018** Referee per 'ERC Staring Grants - call 2018'
Comunità europea
- 2018-presente** Referee per grants finanziati da 'Deutsche Forschungsgemeinschaft (DFG)'
Germania
- 2017** Referee per grants finanziati da 'Natural Sciences and Engineering Research Council of Canada (NSERC)'
Canada
- 2017** Referee per grants finanziati da 'Enhanced Eurotalents'
FP7 Marie Skłodowska-Curie COFUND Programme
- 2017-presente** Referee per grants finanziati da 'Research Foundation Flanders (FWO)'
Belgio
- 2016** Membro del panel per 'Review of the National Laboratory Nuclear Theory Research Programs'
Office of Nuclear Physics of the U.S. Department of Energy
- 2016** Referee per 'Pegasus² Marie Skłodowska-Curie Fellowship'
Comunità europea

- 2015-presente** Referee per grants finanziati da 'U.S. Department of Energy - Office of Science' Stati Uniti
- 2015-presente** Referee per 'Evaluation of the Institutes of the Czech Academy of Sciences' Repubblica Ceca
- 2013-presente** Referee per 'Grants and fellowships of the Fund for Scientific Research - FNRS' Belgio
- 2012** Referee per 'ERC Advanced Grant 5th Call - 2012' Comunità europea
- 2012** Referee per grants finanziati da 'Portuguese Foundation for Science and Technology (FCT)' Portogallo
- 2007-presente** Referee per grants finanziati dal 'Ministero dell'Istruzione, dell'Università e della Ricerca'

Attività di referee (per riviste scientifiche)

Journal of High Energy Physics, Physical Review Letters, Physical Review C, Physical Review D, Physics Letters B, Nuclear Physics A, Nuclear Physics B, European Physical Journal A, European Physical Journal C, Reports on Progress in Physics, Modern Physics Letters A, Few Body Systems, Journal of Physics G

Relazioni su invito a conferenze e workshop

32 plenary talks, 40 talks su invito o su sottomissione di abstract sullo studio teorico della struttura degli adroni a basse e alte energie, tenuti in conferenze e workshop nazionali e internazionali, 10 seminari su invito in Università italiane e straniere e Centri di ricerca internazionali.

Organizzazione di conferenze e workshop

Ruolo di organizzazione scientifica (chair, vice-chair, membro dell'International Advisory Committee e membro del Local Organization Committee) di 40 conferenze o workshop internazionali nel periodo dal 2001 al 2024.

Attività di ricerca

Ho svolto attività di ricerca dal 1994, principalmente nel campo della fisica adronica. L'attività di ricerca è stata focalizzata sullo studio teorico della struttura di sistemi adronici nel regime non perturbativo della QCD. Enfasi è stata data allo studio della risposta di sistemi adronici a sonde elettromagnetiche a diverse scale di energia e in condizioni cinematiche dove è possibile una chiara interpretazione in termini di costanti di struttura di sistemi adronici. L'attività di ricerca è stata caratterizzata dalla partecipazione sistematica a gruppi di lavoro in laboratori internazionali (JLab, MAMI, TUNL, CERN-COMPASS Coll., EIC User Group). Diversi risultati sono stati importanti per promuovere nuove linee di ricerca sperimentale. I risultati principali dell'attività di ricerca sono stati raccolti in 5 lavori di rassegna su invito.

Elenco delle pubblicazioni

[Lista aggiornata su Inspire](#)

[Lista aggiornata su Scopus](#)

Pavia, 27 Novembre 2025

In fede

Barbara Pasquini

Andrea Signori - *curriculum vitae*

Profile

I am an associate professor in the Physics Department at the University of Turin (IT) and I work in the field of theoretical subatomic physics. My interests focus on quantum chromodynamics (QCD), the theory which describes the strong force and the emergence of hadrons from the elementary degrees of freedom, quarks and gluons. I conduct research in the theory and phenomenology of hadron structure and of the hadronization mechanism, together with their impact on high-energy physics. I can rely on a solid network of collaborations within international groups. I have experience and attitude for teaching and tutoring and I am involved in outreach activities.

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IT skills	10
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Work experience

July 2025 - [University of Turin](#)

Associate professor

Theoretical and phenomenological investigations of Quantum Chromodynamics (QCD), in particular of hadronization, hadron structure, and their impact on high energy physics.

Location: Physics Department and INFN (National institute for nuclear physics)

July 2022 - [University of Turin](#)

June 2025 *Assistant professor (tenure-track researcher - RTDb)*

Location: Physics Department and INFN (National institute for nuclear physics)

Sept. 2019 - [University of Pavia](#)

June 2022 *Marie Curie Global Fellow*

Theoretical and phenomenological investigations of hadronization and hadron structure, multi-dimensional imaging of hadrons, impact on high-energy physics.

Supervisors: prof. Alessandro Bacchetta, prof. Jianwei Qiu.

Location: Theory Center, Jefferson Lab (VA, USA - 2019-2021), and [Physics Department, University of Pavia](#) (IT, 2021-2022)

Aug. 2018 - [Argonne National Laboratory](#)

Aug. 2019 *Postdoctoral researcher*

Member of the Physics Division. Investigations of quantum chromodynamics with perturbative and non-perturbative methods, in support of the scientific program of a future Electron-Ion Collider (EIC).

Supervisor: dr. Ian Cloet.

Location: Physics Division, Argonne National Laboratory (IL, USA)

Nov. 2016 - [Thomas Jefferson National Accelerator Facility - Jefferson Lab](#)

Aug. 2018 *Postdoctoral researcher*

Member of the Theory Center, working on the scientific case of high-energy scattering experiments aimed at improving our understanding of hadron structure.

Main collaborators: prof. Alberto Accardi, prof. L. Gamberg (Penn State U.), prof. Jianwei Qiu (supervisor), prof. Ted Rogers.

Location: Theory Center, Jefferson Lab (VA, USA)

Nov. 2012 - [FOM - Foundation for Fundamental Research on Matter](#)

Oct. 2016 *Junior scientist*

Ph.D. candidate in the FOM team led by prof. dr. P.J.G. Mulders.

Topic: Theoretical subatomic physics.

Research program focused on theory and phenomenology of transverse-momentum-dependent partonic distributions and their impact on high-energy scattering experiments.

Locations:

- Department of Physics and Astronomy, Vrije Universiteit Amsterdam (NL)
- Theory Group, Nikhef - National Institute for Subatomic Physics (NL)

Graduation date: Oct. 17th 2016.

Dissertation: [Flavor and evolution effects in TMD phenomenology](#) (ISBN: 978-94-6233-401-4).

Jul. 2012 - [DESY - Deutsches Elektronen-Synchrotron \(DE\)](#)

Sep. 2012 *Summer Intern*

Phenomenological investigation of quantum chromodynamics at the HERMES experiment, supervised by dr. Gunar Schnell and dr. Aram Movsisyan.

Topic: Transverse double spin asymmetry in inclusive hadron production at HERMES.

Report: see my [list of publications](#) or the [DESY online archive](#).

Education

2012-2016 Ph.D. Theoretical Subatomic Physic

Department of Physics and Astronomy,
[Vrije Universiteit Amsterdam](#), the Netherlands

Topics:

Theory and phenomenology of transverse-momentum-dependent partonic distributions and their impact in high-energy physics processes.

Promotor and supervisor: Prof. dr. P.J.G. Mulders (VU and Nikhef)

Copromotor: Dr. Marco Radici (INFN Pavia)

Final dissertation: Flavor and evolution effects in TMD phenomenology (ISBN: 978-94-6233-401-4).

Graduation date: Oct. 17th 2016.

*Declared equivalent (“**equipollente**”) to the Italian title of “dottore di ricerca” by the Italian Ministry for Education (MIUR) in 2018.*

2009-2012 M.Sc. Physical Sciences - Theoretical curriculum

Faculty of Mathematical, Physical and Natural Sciences
[University of Pavia](#), Pavia (Italy)

Including additional classes on *scientific journalism* (2011)

Final dissertation:

Exploring the flavour dependence of unpolarized transverse-momentum-dependent distributions

Promotors: Prof. dr. A. Bacchetta, Dr. M. Radici (INFN and University of Pavia)

2006-2009 B.Sc. Physics

Faculty of Mathematical, Physical and Natural Sciences
[University of Pavia](#), Pavia (Italy)

Final dissertation: Yang-Lee’s theory of phase transitions (statistical mechanics)

Promotor: Prof. dr. G. Zambotti (University of Pavia)

2001-2006 Scientific high-school diploma (Diploma di maturità scientifica)

[Liceo Scientifico G. Aselli](#), Cremona (Italy)

Awards and grants

- Nov. 2024** [Center for Frontiers in Nuclear Science - Stony Brook University](#)
Joint Postdoctoral Fellow Appointment
The CFNS joint postdoctoral positions aim at seeding research projects on the Electron-Ion Collider science case, while reinforcing the connection with academic institutions.
Title: ***Theoretical issues in the description of Semi-Inclusive Deep-Inelastic Scattering***
Grant amount: 40 k€
- Sept. 2023** [MUR - Italian ministry for university and research](#)
PRIN - progetti di ricerca di rilevante interesse nazionale - call 2022
Participation in a PRIN project devoted to the study of hadron structure and hadronization in a three-dimensional momentum space, with focus on the study of flavor-sensitive observables (grant id 20225ZHA7W).
Title: ***ProtoTaste - Tasting the flavor of the proton in its full dimensions***
Grant amount: 210 k€
- Dec. 2022** [University of Turin](#)
Grant for Internationalization (GFI)
The GFI aims at supporting projects that foster the international dimension of the University of Turin, reinforcing the existing partnerships and nurturing new ones.
Title: ***Improving TMD factorization for the next generation of hadron physics experiments (TMDpro)***
Grant amount: 11 k€
- June 2019** [Jefferson Science Associates, LLC](#)
JSA postdoctoral prize
The JSA postdoctoral prize for distinguished postdocs is run by the Jefferson Lab Users Organization Board of Directors. The award is based, in part, on a record of accomplishment in physics, the originality and quality of the proposed research, its impact on the Jefferson Lab physics program, and the proposed use of the research grant.
Title: ***Unraveling hadronization***
Grant amount: \$ 10k (announcement [here](#))
- Feb. 2018** [European Commission - Horizon 2020 program](#)
Marie Skłodowska-Curie Global Fellowship
The Marie Skłodowska-Curie Actions (MSCA) are a set of major mobility research grants created by the European Commission to support excellent scientific research. The MSCA fellowships are among Europe's most competitive and prestigious awards. The fellowship program aims to foster the career development and further training of researchers at all career stages, promoting interdisciplinary research and international collaborations.
Title: ***SQuHadron - Strategies to tackle the quest for hadronization***
Beneficiary: University of Pavia (IT), 2021-2022. Partner institution: Jefferson Lab (VA, USA), 2019-2021.
Grant amount: 262 k€ (announcement [here](#), fact-sheet [here](#))
- Sept. 2015** [ILCAC - International Light Cone Advisory Committee](#)
Gary McCartor travel award
Prize assigned by ILCAC to allow young scientists to develop their expertise and contribute to forefront physics research. Travel awards are granted to present research topics at the annual light cone conferences.

Research stays and visits

- **Institut de Physique Nucléaire, Orsay (FR)**
Collaboration with Dr. J. P. Lansberg
Mar. 15-18, 2015 / Nov. 2-4, 2014
- **Penn State University - Berks, Reading, PA (USA)**
Collaboration with prof. L. Gamberg, prof. A. Prokudin, dr. D. Pitonyak
Nov. 2-9, 2017
- **Thomas Jefferson National Accelerator Facility - Newport News, VA (USA)**
Collaboration with the Theory Center
Regular visits in 2018-2019
- **University of Michigan - Ann Arbor, MI (USA)**
Collaboration with prof. C. Aidala and her research group
Apr. 9-11, 2019
- **University of Pavia and INFN, Pavia (IT)**
Collaboration with the local "Hadron structure and QCD" group
Dec. 13-21, 2018 / Apr. 24-28, 2017 / Jul. 20-24, 2015 / Dec. 17-20, 2013

Teaching experience and qualifications

University of Turin - IT

The following is a list of the courses that I am teaching at the University of Turin as an associate professor. An [overview](#) is also available from the Physics Department webpage.

- ["Soft skills: how to deliver effective presentations"](#) for the Ph.D. program in Physics (a.y. '24/'25)
- ["Teaching methodologies for modern physics"](#) for [CIFIS](#), the inter-regional training center for high-school teachers (a.y. '23/'24, '24/'25)
- ["Computational neuroscience"](#) for the M.Sc. degree in Biotechnology for Neuroscience (a.y. '23/'24, '24/'25)
In collaboration with prof. M. Caselle (dep. of Physics), T. Brischetto Costa (dep. of Psychology)
- ["Mathematics and physics"](#) for the B.Sc. degree in Biology (a.y. '22/'23, '23/'24, '24/'25)
In collaboration with prof. C. Angelantonj (dep. of Physics)
- ["Quantum Mechanics"](#) for the B.Sc. degree in Physics (a.y. '22/'23, '23/'24, '24/'25)
In collaboration with prof. N. Fornengo (dep. of Physics)
- ["Mathematical methods and quantum mechanics"](#) for the B.Sc. degree in Material Sciences (a.y. '22/'23, '23/'24, '24/'25)
In collaboration with prof. S. Uccirati (dep. of Physics)

University of Pavia - IT

- Teaching assistant for the course *"Quantum Electrodynamics"* in the M.Sc. degree in theoretical physics (a.y. 2021/'22).
References: prof. A. Bacchetta (U. of Pavia)
- Teaching assistant for the course *"Presentation making and public speaking"*, available for students across different disciplines and Master degrees (a.y. 2020/'21, 2021/'22)
References: prof. A. Bacchetta and prof. G. Mainino (U. of Pavia)

- Teaching assistant for the course “*Methods and models for business management*” in the Master degree in Economics (a.y. 2011/’12).
Teacher: prof. F. Francavilla (U. of Pavia).
- Teaching assistant for the course “*Methods and models for economic choices*” in the Master degree in Economics (a.y. 2011/’12).
Teacher: prof. F. Francavilla (U. of Pavia).
- Teaching assistant for the course “*Electromagnetic phenomena*” in the B.Sc. degree in Mathematics (a.y. 2009/’10).
Teachers: prof. G. Giuliani and prof. E. Vitali (U. of Pavia)

Vrije Universiteit Amsterdam (VU) and Universiteit van Amsterdam (UvA) - NL

- Teaching assistant for the “*Electrodynamics and theory of relativity*” course in the B.Sc. program in Physics at VU (a.y. 2012/13 and 2013/14).
Teacher: Prof. H.G. Raven (VU, Nikhef).
- Teaching assistant for the “*Quantum field theory*” course in the joint M.Sc. program in theoretical physics between VU and UvA (a.y. 2012/13 and 2013/14).
Teacher: prof. P.J.G. Mulders (VU, ‘12/’13), prof. A. Castro Anich (UvA, ‘13/’14).

Topical schools

- [Frontiers in Nuclear and Hadronic Physics 2025](#) - Galileo Galilei Institute (GGI), Firenze (IT)
Recitation sessions - 3D hadron structure
Feb. 18-21, 2025
- [International school on probing hadron structure at the Electron-Ion Collider](#) - ICTS, Bangalore (India)
Lectures on “Single spin asymmetries and TMDs - introduction to transverse momentum imaging”
Jan. 29 - Feb. 3, 2024
- [Hampton University Graduate School \(HUGS\) 2021](#) - Jefferson Lab, Newport News (USA)
Lectures on “Transverse Momentum Imaging”
School director: [prof. A. Accardi](#)
- [Hampton University Graduate School \(HUGS\) 2018 and 2019](#) - Jefferson Lab, Newport News (USA)
Recitation sessions - TMD physics
School director: [prof. A. Accardi](#)
- TMD Collaboration Summer School 2017 - Temple University, Philadelphia, PA (USA)
Lectures on “TMD phenomenology” (in collaboration with A. Bacchetta)
June 22-28, 2017

Qualifications

- March 2023** [University of Turin - “IRIDI Start 6” program](#)
Quality teaching in presence and at a distance, evaluation and inclusion
Course dedicated to building innovative teaching, evaluation, and inclusion skills. [Open badge](#) available via the Bestr platform.
- November 2020** [MIUR - Italian Ministry of Education, University, and Research](#)
Abilitazione Scientifica Nazionale
Research and teaching habilitation in theoretical particle physics for the role of Associate Professor (Italy).
Validity: 12 years. Public results available at <https://asn18.cineca.it/pubblico/miur/esito-abilitato/02%252FA2/2/5>

Supervision and mentoring

Supervised students (affiliated with the U. of Turin, unless specified otherwise):

- **Ph.D.**

- 1.

- **M.Sc.**

- 2.

- 1.

- **B.Sc.**

- 7.

- 6.

- 5.

- 4.

- 3.

- 2.

- 1.

I contributed to mentoring the following students and postdocs:

- 6.

- 5.

- 4.

- 3.

- 2.

- 1.

Appointments and scientific services

Peer-review

I serve as a *referee* for the following scientific journals (ranked by impact factor):

- [Physical Review Letters \(PRL\)](#)
- [Physical Review D \(PRD\)](#)
- [The European Physical Journal C - Particles and Fields \(EPJ-C\)](#)
- [Physics Letters B](#)
- [The European Physical Journal A - Hadrons and Nuclei \(EPJ-A\)](#)
- [Chinese Physics C](#)

I was asked to review **grant proposals** by the following funding agencies:

- [U.S. Department of Energy - Office of Science](#) (USA)
- [National Science Center](#) (Poland)
- [FONDECYT](#) (Chile)

Organization of conferences and workshops

- [26th international symposium on spin physics - SPIN 2025](#) (Qingdao, Shandong - China)
Convener for the session "3D structure of the nucleon: TMDs"
- [Electron Ion Collider Users Group - EICUG](#)
Member of the "Electron-Ion Collider Talks Committee" (01/2023 - 12/2024)
- [25th international spin physics symposium - SPIN 2023](#) (Duke U., NC - USA)
Convener for the session "3D structure of the nucleon: TMDs"
- [INT 21-80W: Fragmentation functions and nucleon structure - FF2021](#) (online)
Member of the organizing committee

Workshop hosted by the Institute of Nuclear Theory (INT, Seattle WA, USA). The workshop proposal has been reviewed and accepted by the related [National Advisory Committee](#). See <https://www.int.washington.edu/programs-and-workshops> for a list of the funded workshops and programs.

- [QCD-N 2021: 5th workshop on the QCD structure of the nucleon](#) (Bilbao, ES)
Member of the organizing committee

The main focus of this series of workshops is the investigation of the multi-dimensional nucleon structure and related topics in quantum chromodynamics. This edition emphasizes the recent progress in the field from theory, lattice QCD, phenomenology, as well as new developments coming from synergies with Quantum Information Science.

- [Light Cone 2018 Conference](#) (Jefferson Lab, VA - USA)
Member of the organizing committee and convener

The Light Cone Conferences belong to a series of meetings that started in 1991 and played an important role in promoting the research towards a rigorous description of hadrons and nuclei.

- QCD Evolution workshops
Member of the organizing committee (OC) and convener (C) for the QCD Evolution workshops, a series of meetings aimed at deepening our understanding of hadron structure combining theoretical and experimental efforts.
 4. [OC/C] [QCD evolution workshop 2024](#) - University of Pavia, Italy
 3. [OC/C] [QCD evolution workshop 2019](#) - Argonne National Laboratory, IL - USA
 2. [OC/C] [QCD evolution workshop 2017](#) - Jefferson Lab, VA - USA
 1. [OC/C] [QCD evolution workshop 2016](#) - Nikhef, NL
- Resummation-Evolution-Factorization (REF) workshops
*Member of the organizing committee (2013 - 2015) or advisory committee (2015 - *) for a series of workshops on the connection between transverse-momentum-dependent distributions (TMDs) and unintegrated distributions (uPDFs) and on the role of Resummation, Evolution, Factorization (REF) in high-energy physics.*

Other services

- 2024 - today** - [University of Turin - Physics Department](#)
Reference person for incoming foreign workers in the Physics Department
 Maintain an up-to-date agenda related to the onboarding procedures of the incoming foreign workers.
- 2023 - today** - [University of Turin - Physics Department](#)
Reference person for the computing needs of the theory group in the Physics Department
 Organize the communication with the local [INFN computational division](#).
- Aug. 2017 - Aug. 2018** - [Jefferson Lab - Theory Center](#)
Member of the organizing committee for the Theory Seminars 2017-2018
 Selection of topics, speakers, local support.
- Apr. 2014 - Jun. 2014** - [ProVU - PhDs and postdocs organization at VU](#)
Member of the [organizing committee](#) for the PhD Day 2014 at VU: "Science, connecting people"
 Event held on 25/06/2014 - established contacts with non-academic institutions, e.g. Shell, Roland Berger, Amsterdam University Press, Amsterdam Center for Entrepreneurship.
- Nov. 2013 - Oct. 2016** - [Nikhef Theory Group](#)
Member of the organizing committee of the monthly "Factor Society" meetings
 A series of informal talks and discussions about factorization theorems in QCD, part of the educational activities within the Theory Group at Nikhef.
- Nov. 2013 - Jan. 2014** - [Dutch Research School in Theoretical Physics \(DRSTP\) - Educational Board](#)
Assisting Prof. dr. J.W. van Holten and Prof. dr. S. Ando in organizing the THEP school 2014
 Selection of topics and speakers.
- Nov. 2012 - Nov. 2015** - [Dutch Research School in Theoretical Physics \(DRSTP\)](#)
Member of the Ph.D. council - representative of Vrije Universiteit Amsterdam
 Active participation in the annual meetings of the PhD council, member of the organizing committees for the annual "PhD Day" and the bi-annual "Trends in Theory" meeting.

IT skills

- *Operating systems*: Unix environment, Mac OS, Windows
- *Programming languages*: C/C++, FORM, Fortran, HTML, Mathematica, Python

Languages

- **Italian**: native speaker
- **English**: full working proficiency (C2 level [EF SET certificate](#) - May 2018)
- **Dutch**: first intermediate A2+ level

Courses and certificates

- [EF SET certificate](#): C2 level (May 2018)
- VU-NT2 - Nederlands voor werk en studie. First intermediate level A2+ (May-July 2015)
- First Certificate in English - B level (June 2005 - without expiration)

Outreach

My interests include **scientific writing**, for which I have taken specific classes at University of Pavia, and **outreach presentations**.

Written contributions to websites and magazines:

- *Eureka*, science online issue of Corriere del Ticino, Swiss newspaper
- *Meridiana*, magazine of the Ticinese Astronomical Society
- *Quaderni Borromaici*, Italian magazine of the [Almo Collegio Borromeo](#) in Pavia, IT (title of the contribution: "*Femtostrutture: e pluribus unum*")
- [Quantum Diaries](#), the blog of the [Interactions Collaboration](#), a communication resource from the world's particle physics laboratories

Oral presentations:

- *La forza (più) forte e il cuore della materia* ([slides](#) - Italian only). Outreach presentation to the first year students in the [B.Sc. program in Physics](#) at the University of Turin (Turin, IT) - Sept. 20th, 2024
- *La forza (più) forte e il cuore della materia* ([slides](#) - Italian only). Outreach presentation to high school students in the context of the ["Ten days physics for teenagers" program](#) organized by the University of Pavia (Pavia, IT) - Sept. 9th, 2021
- *The proton in 3D: unravelling the world within* ([video](#) and [slides](#)). Public lecture in the framework of the [STRONG 2020](#) European program, Oct. 1st 2021, Youtube live event
- *Quantum mechanics in micro and macro world* (Ten days physics for teenagers, U. of Pavia), June 20th 2012

Moreover, I contributed to the following **outreach programs**:

- [European Researchers' Night 2024](#) (Turin, IT)
- [European Researchers' Night 2021](#) (Pavia, IT)
- [Nikhef Open Day](#) (Amsterdam, NL), year 2013, 2014, 2015, 2016
- [Ten days physics for teenagers](#) (U. of Pavia, IT), year 2012 and 2021

Other interests

- Supporting **Youth for Understanding**, association advancing intercultural understanding through educational exchanges for youth, families and communities (VA, USA, 2017-2020)
- Volunteering for **Aaneen**, association supporting social integration in the Netherlands (Amsterdam, 2015-2016)
- Experiences with boy scouts and other educational activities involving adolescents (Cremona, Italy)
- Cycling, trekking, cooking, reading, photography

References

(listed in alphabetic order)

Name Alberto Accardi
Institution Christopher Newport University
Jefferson Lab
Position Professor of physics
Contact

Name Christine Aidala
Institution University of Michigan
Position Professor of physics
Contact

Name Alessandro Bacchetta
Institution University of Pavia and INFN
Position Professor of physics
Contact

Name Mariaelena Boglione
Institution University of Turin and INFN
Position Professor of physics
Contact

Name Ian Cloët
Institution Argonne National Laboratory
Position Physics Division
Theory Group leader
Contact

Name Leonard Gamberg
Institution Penn State University
Position Professor of Theoretical Physics
Contact

Name Piet Mulders
Institution Vrije Universiteit and Nikhef
Posizione Professor of Theoretical Physics
(PhD advisor)
Contact

Name Jian Wei Qiu
Institution Jefferson Lab
Position Associate director for Theoretical and Computational Physics and Theory Center Director
Contact

Name Marco Radici
Institution INFN
Position Senior researcher and professor of physics
Contact

CURRICULUM VITAE of STEFANO MANCINI

POSITIONS

Jun21-today	Full Professor of Theoretical physics, mathematical models and methods at the School of Science and Technology, Univ. of Camerino.
Jan20-Jan29	Habilitation as Full Professor of Mathematical Physics.
Sep10-May21	Associate Professor of Theoretical physics, mathematical models and methods at the School of Science and Technology, Univ. of Camerino.
Aug04-Jul10	Long term Researcher (RTD) in Theoretical physics, mathematical models and methods at the School of Science and Technology, Univ. of Camerino.
Jan02-Jul04	Research contract at the Physics Department, Univ. of Camerino.
Set98-Dec01	Post doctoral associate at the Physics Department, Univ. of Milan.
Nov94-Apr98	PhD in Physics at the Univ. of Perugia.

RESEARCH ACTIVITY

Field:

Theoretical and mathematical physics.

Subfields and topics:

Quantum information theory (channels capacities, error correction, quantum cryptography, entanglement characterization); Quantum fields in curved spaces (particle production, cosmological entanglement); Open systems dynamics (decohering maps, control theory); Information geometry (statistical models and networks, entropic dynamics, statistical inference and differential geometry).

Bibliometric data:

275 publications in international journals (with anonymous referee and acknowledged by ISI Web Of Science);

38 other publications (on books, proceedings, etc.);

12,000 citations (Google Scholars);

Hirsch Indexes $h=50$, $m=1.6$, $i-10=183$;

Ranked in the list of Top Italian Scientist in the world (area of physics-mathematics) by VIA-Academy.

Highlights:

The paper Physical Review A 104 (2021) 042402 has been selected as an Editor's Pick on the journal.

The paper Chaos 28 (2018) 032101 has been selected as an Editor's Pick on the journal.

The paper New Journal of Physics 16 (2014) 123049 has been awarded among the best papers of the year by the journal. It also received an editorial note on Phys.Org.

The paper New Journal of Physics 13 (2011) 113012 has been awarded among the best papers of the year by the journal.

The paper Journal Physics A: Mathematical and Theoretical 44 (2011) 045304, has been awarded among the best papers of the year by the journal.

The paper Physical Review Letters 88, (2002) 120401 received an editorial note on Nature.

The paper Europhysics Letters 54, (2001) 559 received an editorial note on Europhysics News.

The paper Physical Review Letters 80, (1998) 688, received an editorial note on Science News.

Invited review articles:

Quantum entanglement in cosmology, Physics Reports (2025)

Quantum channels and memory effects, Reviews of Modern Physics (2014)

Entanglement typicality, Journal of Physics A (2014)

Quantum direct communication, Journal of Selected Topics in Quantum Electronics (2009)

Open loop quantum control, Journal of Physics B (2007)

Quantum teleportation, Laser Physics (2006)

Other activities:

*Co-Editor of nine special issues of international journals: Entropy 2021; Physics Letters A 2020; European Journal of Physics Plus 2020, and 2014; Fortschritte der Physik, 2009; International Journal of Quantum Information 2018, 2008 and 2005; Journal Optics B 2005.

RESEARCH MANAGEMENT AND COORDINATION

*2008-to date leader of Quantum Mechanics & Information Theory group (which always involved one or two postdoctoral fellows, besides PhD and Master students).

Present group members:

two research associate (V. Parisi, M. Rexiti), four PhD students (L. Guglielmi, A. Lapponi, L. Rossetti, S. Tomasi), three master students.

Past members includes:

I. Svampa now at Univ. Koln; M. Gharahi now at Univ. Krakow; F. Revson now at IQM; C. Lupo now at Politecnico Bari; C. Cafaro now at SUNY; L. Memarzadeh now at Sharif Univ.; S. Pirandola now at Univ. York, etc.

International collaborations:

Air Force Research Lab. (P. Alsing); Steklov Inst. Moscow (G. Amosov); UCL (S. Bose); University of York (S. Braunstein); Univ. of Cambridge (N. Datta); Nazarbayev Univ. (M. Good); RIKEN Japan (M. Ha-Quang); MIT (S. Lloyd); Univ. of Nottingham (J. Louko); Lebedev Inst. Moscow (V. I. Man'ko); Aix-Marseille University (M. Pettini); UNAM (H. Quevedo); ETH (R. Renner); Institute of Mathematical Research of Malaysia (J. Shaari); Cornell University (M. Wilde); University of Koln (A. Winter); Griffith University Brisbane (H. M. Wiseman); etc.

FUNDED PROJECTS

RQI Relativistic Quantum Information, COST Action 2024-2027, MC member for Italy.

QUANTUM, INFN 2024-2026 specific initiative, national coordinator.

Learning through and about quantum channels (PRIN 2022), local coordinator.

QUARTET, Quantum Readout Techniques and Technologies (Horizon-2020 ICT 2019), local coordinator.

CANTATA, Cosmology and Astrophysics Network for Theoretical Advances and Training Actions, COST Action 2016-2020, MC Substitute for Italy.

QORW Quantum Observers in a Relativistic World (FQxI 2016), co-Pi.

Specific initiatives "PIECES" and "LINCOLN" (National Institute of Nuclear Physics, 2014-2021), local coordinator

TOPDRIM, Topology Driven Methods for Complex Systems (FP7 ICT 2012), vice-coordinator.

HIP Hybrid quantum Information Processing (FP7 ICT 2008), local coordinator.

CORNER CORrelated quantum Noise Errors (FP7 ICT 2007), local coordinator.

Two-way quantum secure communication (CNISM 2007), coordinator.

Probabilistic character of quantum dynamical systems (INTAS 2007), coordinator.

ACADEMIC ADMINISTRATION AND TEACHING ACTIVITY

- June 2019-Feb 2025: Coordinator of the Physics BSc and MSc Programs at the University of Camerino.

- *June 2015-June 2019: Coordinator of the tutoring activities of the Physics BSc and MSc Programs at the University of Camerino.

- *November 2017-November 2018: Coordinator of the PhD course in Physics at the University of Camerino.

- Promoter of the first Italian academic courses in quantum computation and information theory (University of Milan 2001 and University of Camerino 2002)

- 2010-to date *Mathematical Methods of Physics*, 98 hours (12 cfu) and *Quantum Computation*, 42 hours (6 cfu), yearly alternated to *Quantum Information*, 42 hours (6 cfu), for a total of 140 hours (18 cfu) per year.

- *2004-2010 *Applied Mathematics*, 40 hours (6 cfu), *Quantum Computation*, 42 hours (6 cfu), and *Quantum Information*, 42 hours (6 cfu), for a total of 124 hours (18 cfu) per year.

- *2021/2022, 2018/2019 and 2005/2006 *Quantum Cryptography* (12 hours) for PhD students in Computer Science at Univ. Udine, Univ. Verona and for PhD students in Physics at Univ. of Perugia respectively.

- Supervisor of 17 PhD students, 21 Master students, and 25 Bachelor students in their thesis projects (across the areas of physics, mathematics and computer science).

- Co-Author of three textbooks: "*Teoria della computabilità e della complessità*" C. Toffalori, F. Corradini, S. Leonesi, S. Mancini, McGraw Hill Italia (2005); "*A quantum leap in information theory*" S. Mancini, A. Winter World Scientific (2020); "*Introduzione ai Metodi Matematici delle Scienze Fisiche*" O. Luongo, S. Mancini, McGraw Hill Italia (2022).

INTERNATIONAL VISIBILITY

Erdos number: 3

Number of international co-authors of scientific papers: 71

Membership: International Association of Mathematical Physics; International Society of Relativistic Quantum Information; National Institute of Nuclear Physics.

Visiting in foreigner Institutions: Department of Physics, Louisiana State University at Baton Rouge, 2018; Faculty of Informatics, Masaryk University Brno, 2017; Computer Science Department, University of York, 2016; Research Laboratory of Electronics MIT 2015, 2001; Grupo de Informacio Quantica Universitat Autonoma de Barcelona 2019, 2016, 2014; Centre for Quantum Technologies National University of Singapore 2012; Department of Theoretical Physics ETH Zurich 2011; Department of Physics and Astronomy University College London 2007, 2005; Institute of Mathematical Sciences, Imperial College London 2006; Department of Applied Mathematics University of Cambridge 2003; Lebedev Physical Institute Moscow 1997.

Contributions to conferences: Orally contributed to 66 international conferences, 56 of which as invited speaker.

Participation to Editorial Boards:

2022-to date member of the Editorial Board of "IEEE Transactions on Information Theory" (IEEE Information Theory Society, New York).

2021-to date member of the Editorial Board of "European Physical Journal Plus" (Springer, Berlin).

2019-to date member of the Editorial Board of "Entropy" (MDPI, Basel).

2007-to date member of the Editorial Board of "International Journal of Quantum Information" (World Scientific, Singapore).

2019-2021 member of the Editorial Board of "Quantum Machine Intelligence" (Springer, Berlin).

Referee for Institutes/Publishing Houses:

American Physical Society (Physical Review A, D, L, X)

American Institute of Physics (Chaos, Journal of Mathematical Physics)

IEEE Institute of Electrical and Electronics Engineers (Transactions on Information Theory)

Elsevier (Physics Letters A, Physica A, Physica D, Reports on Mathematical Physics)

I.O.P. Science (Journal of Physics A, New Journal of Physics, Physica Scripta)

Springer (International Journal of Theoretical Physics, Quantum Information Processing)

World Scientific (Open systems and information dynamics, Reviews in Mathematical Physics,

International Journal of Geometric Methods in Modern Physics)

Referee for funding Institutions:

Marie Sklodowska Curie Actions; Air Force Research Lab. US; Austrian Science Fund; Czech Science Foundation; Engineering and Physical Sciences Research Council UK; Fonds de la Recherche Scientifique Belgium; Research Grant Council Hong Kong.

Organizational activity:

- Promoter of the Italian quantum Information Science (IQIS) conference series.
- Organizer of several international scientific conferences, e.g. Quantum Techniques in Machine Learning, 2017; Frontiers of Quantum Information, 2014; Scalable quantum computing, 2009; Quantum/Classical control in quantum information, 2008.
- Director of the school Noise, Information and Complexity at Quantum Scale, Erice -Italy 2013, and 2007 (funded by Office of Naval Research Global, US).
- Member of the program committee of: Quantum Techniques for Machine Learning (yearly held); Quantum Security Conference (yearly held); Asian Conference on Quantum Information Science (yearly held); International Iran Conference on Quantum Information (bi-yearly held); International Conference on Statistical Physics, Crete-Greece 2023 and 2026; IEEE Information Theory Workshop, Sydney - Australia, 2025; Relativistic Quantum Information North, Naples - Italy, 2025; International Conference in Quantum Information, Bukit Gambang -Malaysia 2013; Conference on Theory of Quantum Computation, Guelph - Canada 2013; etc.

CURRICULUM VITÆ et STUDIORUM

Orlando PANELLA

Nationality:

Address: Istituto Nazionale di Fisica Nucleare
Sezione di Perugia
c/o Dip.to di Fisica dell'Università
Via A. Pascoli
I-06123 Perugia

E-mail :

Freign Languages: English, French

EDUCATION

Doctor of Philosophy (Ph.D.) in Physics. Northeastern University, Boston, Ma. (USA) (1992).

Thesis: "Part I - Phenomenology of Particle Physics:

(a) Signals of New Physics at SSC and LHC; (b) Top production at LEP II.

Part II - Casimir Effects for Charged Particles."

Supervisors: Prof. Yogendra N. Srivastava and Prof. Allan Widom.

Master of Science (M.S.) in Physics.

Northeastern University, Boston, Ma. (USA) (1992).

Laurea cum Laude in Fisica.

Università degli Studi di Perugia (1986).

Thesis: "Phenomenology of hadronic jets at high energies and first order perturbative QCD".

Supervisor: Prof. Yogendra N. Srivastava.

High School Diploma "Tecnico-Commerciale".

Istituto Tecnico "G. Spagna" Spoleto, Perugia (1981).

POSITIONS

(May 1996 – present) Permanent researcher with Istituto Nazionale di Fisica Nucleare, Sezione di Perugia.

(October 1995 – April 1996) Researcher (Ex. art. 36) with Istituto Nazionale di Fisica Nucleare, Sezione di Perugia.

(1995) Associated researcher (Chargé de Recherche Associé) CNRS-IN2P3, Laboratoire de Physique Corpusculaire, Collège de France, Paris.

POST-DOCTORAL ACTIVITIES

(1994 – 1995) Physics Department, Università di Perugia (Italia) and “Laboratoire de Physique Corpusculaire, Collège de France”, Paris (France).

(1993 – 1994) Centre de Physique Théorique, CNRS, Marseille, France.

FELLOWSHIPS

(1994) Post-doctoral fellowship, Università degli Studi di Perugia.

(1992 – 1993) Winner of a fellowship from the Università degli Studi di Perugia to do research abroad.

(1987 – 1991) Research assistant. Has continuously received a fellowship from the Department of Energy of the United States to perform research in the field of Elementary Particle Physics within the doctoral program.

(1989 – 1991) Has won three fellowships from the Italo-Swiss Foundation “Angelo della Riccia”, reserved to Italian citizens who do research abroad.

(1980 – 1985) Has won several fellowships “Cav. Remo Stefanelli” from the “Accademia Spoletina”.

ACTIVITIES AS REFEREE

- Reviewer for the following international journals: Physical Review Letters, Physical Review D, Physical Review A, Physical Review E; Physics Letters A, Journal of Mathematical Physics; European Physical Journal C; EuroPhysics Letters (EPL) Foundations of Physics, Physica A, Advances in Mathematical Physics, Journal of Physics A; Annals of Physics.
- Acted as reviewer of the call SIR 2014 (Ministero dell’Istruzione e della Ricerca Universitaria (MIUR) dal titolo: Interacting Particle Systems and Non-equilibrium Dynamics.
- Acted as reviewer of the doctoral thesis of Pedro Naranjo Pérez at the University of Huelva (Spain).

COORDINATION OF RESEARCH ACTIVITIES and TRAINING

(2019-2025) Local Coordinator of the INFN theory group (two mandates).

(2021–2022) Scientific coordinator of the research project “*Theoretical and experimental aspects of searches for new physics in effective theories at the LHC*”, INFN research grant no. 22877. Research fellow Dr. Presilla Matteo. This research grant was subsequently renewed for a second year using CMS funds.

(2017–2019) Scientific coordinator of the research project “*Theoretical and experimental aspects of hadron collider signatures, of composite models with higher iso-spin multiplets*” for which a public competition was announced by INFN (announcement no. 18959/2017) for a research fellowship for collaboration in scientific research activities, later awarded to Dr. ROBERTO LEONARDI.

This research fellowship was subsequently renewed for a second year (order no. 20053 of 15 June 2018).

(2017) Participation in the 2017 Masterclasses.

(2013–2016) Local coordinator of the INFN research project named QU-ASAP within the research line on field theory of the INFN National Scientific Commission IV (formerly specific initiative PG21). This project involved collaboration with the INFN Catania Section. National Coordinator: Dr. Maurizio Consoli.

(2021–2024) Tutor of the research activity of the Ph.D. student SEHAR AJMAL (36th cycle) at the Ph.D. School in Physics of the Department of Physics and Geology, University of Perugia. SEHAR AJMAL has been included in a joint research project with researchers from Vanderbilt University (USA) on the study of LHC signatures of the composite model with effective Nambu–Jona-Lasinio–type operators.

(2014–2017) Tutor of the research activity of the Ph.D. student ROBERTO LEONARDI (29th cycle) at the Ph.D. School in Physics of the Department of Physics and Geology, University of Perugia. Roberto Leonardi was included in a joint research project with the CMS group of Perugia on an official analysis of the Run II LHC data in connection with composite models featuring Majorana neutrinos.

(2012–2013) National Coordinator of the INFN grant (iniziativa Specifica) PG21 related to the phenomenology research line of INFN National Scientific Commission IV.

(2009) Coordinator of the INFN national training course: “*LC09 e^+e^- physics at the TeV scale and the Dark Matter connection*”. The course, funded by the INFN Training Commission (18,000 Euro), was held at the INFN Perugia Section from 21 to 24 September 2009. The proceedings of the course were published by the Italian Physical Society in **Nuovo Cimento C** (2010).

(2007–2009) Principal investigator of the bilateral research project *The Search for Supersymmetry and Astrophysics*, within the INFN–MICINN collaboration (formerly INFN–MEC) with the University of Huelva (Spain), local responsible Prof. Mario E. Gómez. Project funded under the INFN Specific Initiative PG21 by National Commission IV.

(2004–2008) Supervisor of the research activity of Dr. Mirco Cannoni, holder of a research fellowship at the Department of Physics, University of Perugia.

(2008–2009) Supervisor of the research activity of Dr. Nicola Fabiano, initially holder of a research fellowship at the University of Perugia and, from 2008, recipient of an INFN postdoctoral fellowship funded by external resources from the Fondazione Cassa di Risparmio di Spoleto.

(2001–2002) Within the 5th Framework Programme of the European Union for research and technological development, obtained funding for the research project on signals of new physics at future colliders: “*Like Sign Dileptons Signal and New Physics at the LHC*”, Proposal N° MCFI-2000-00786, and subsequent research contract No. HPMF-CT-2000-0752 (123,000 Euro) (Marie Curie Individual Fellowship). This allowed the recruitment at the Perugia Section of INFN of a young researcher of German nationality (from Heidelberg, MPI für Kernphysik) for a duration of 24 months. Scientific responsible (coordinator) of the project and of the associated research funds, as attested by the documentation in [11] and [12] of the list of submitted documents.

(2002) Obtained the award to the Perugia Section of INFN of a 7,050 Euro fellowship from the CENTRO VOLTA LANDAU NETWORK for a three-month stay in Perugia of Prof. Ilya Ginz-

burg from the University of Novosibirsk (Russia). The stay (September–December 2002) enabled the initiation of a collaboration with the Novosibirsk group, which led to several scientific publications.

(2001–2004) PhD thesis supervisor of Mirco Cannoni at the University of Perugia (XVI cycle). Coordinated the research activity on possible effects of lepton number and/or lepton flavour violation.

LIST OF ALL PUBLICATIONS

For a full list of publication please the following [iNSPIRE-HEP link](#).

WORK EXPERIENCE

- 2022-present Full professor of Theoretical Physics and Mathematical Methods at Dept. of Physics Naples Univ. (UNINA)
- 2020-2025 Member of governing board of DIAS (School of theoretical physics Dublin)
- 2020 -2024 Member of the academic board of the doctorate in Computational and Quantitative Biology Naples U. (UNINA)
- 2024-present Member of the academic board of the doctorate in Physics Naples U. (UNINA)
- 2015-2022 Associate professor Dept. of Physics Naples Univ. (UNINA)
- 2003-present Member of the Editorial board of International Journal of Geometric Methods in Modern Physics (World Scientific Singapore)
- 2011-2012 Visiting professor Univ. Paris XI Orsay
- 2009-2010 Visiting professor Univ. Paris XI Orsay
- 2007 Alexander von Humboldt follow-up Hamburg DESY (Germany)
- 2003-present Research associate of INFN
- 2002-2015 Researcher Dept. of Physics UNINA
- 2000-2002 Research fellow Salerno University
- 1999. Alexander von Humboldt fellow Heidelberg Univ. (Germany)
- 1996-1998 Post-doc Naples Univ. UNINA

EDUCATION AND TRAINING

- 1995 PhD Physics issued by Naples U.
- 1993-1995 PhD studies at Rochester U. (USA) jointly with Naples U. (Theoretical Physics-Conformal Field Theory)
- 1991-1993 PhD student at Naples U. Dept. of Physics
- 1990-1991 Research fellowship at CNR IRECE
- 1984-1990 Laurea degree in physics (BSc+ MSc) 110/110 cum laude
Main subject: Theoretical Physics- Quantum field theory & Quantum Mechanics

PERSONAL SKILLS

Mother tongue(s) ITALIAN

Other language(s) FRENCH, (fluent) ENGLISH (fluent), German (intermediate) Spanish (basic)

Research interests Research activity in quantum field theory and mathematical methods

Digital skills Mathematica; LateX, Word

ADDITIONAL INFORMATION

Publications For a complete list see publication list at <https://orcid.org/0000-0002-5146-410X>

Other information Referee for foreign research funding National Agencies and for the Italian MUR;
Member of the steering committee of Physics Dept. at UNINA from 2016 to 2019;
Coordinator of the Theory Division of the Physics Dept. at UNINA since 2023;
Member of the scientific committee of the Physics Dept. at UNINA since January 2025
(See <https://www.docenti.unina.it/patrizia.vitale> for detailed CV)

Curriculum Vitae

Massimo D'Elia
novembre 2025

* Nato

* 1989-1993: Studente all'Università di Pisa e alla Scuola Normale Superiore (SNS)

* Luglio 1994: Laurea in Fisica (Università di Pisa, 110/110 e lode) e Diploma SNS

* Maggio 1998: Dottorato di Ricerca in Fisica, Università di Pisa

* Novembre 2000 - Dicembre 2011: Ricercatore (FIS/02), Dipartimento di Fisica, Università degli Studi di Genova. * Dicembre 2011 - Dicembre 2019: Professore Associato (FIS/02), Dipartimento di Fisica, Università di Pisa.

* Da Dicembre 2019: Professore Ordinario (FIS/02, PHYS-02/A), Dipartimento di Fisica, Università di Pisa

* ALTRI CONTRATTI:

- 1997 Associate Researcher, Università di Cipro

- 1998 Associate Researcher, Politecnico di Zurigo - 1999-2000 Borsista Postdoc, Università di Pisa

PRODUZIONE SCIENTIFICA

* Autore di circa 120 pubblicazioni su riviste scientifiche internazionali con referee *

Autore di circa 150 contributi scritti a conferenze internazionali;

* Relatore su invito in oltre 50 conferenze internazionali

* PARAMETRI BIBLIOMETRICI

- articoli su rivista ultimi 10 anni: 54

- h-index totale: 46, numero citazioni totali 6700 (fonte SCOPUS)

ALTRA PRODUZIONE

* Co-Autore del volume ``An Introduction to the Basic Concepts of Modern Physics" (C.M. Becchi, M. D'Elia), Springer-Verlag (2007, 2011, 2016);

* Co-Editore del volume ``Sense of Beauty in Physics" (M. D'Elia, K. Konishi, E. Meggiolaro, P. Rossi), Edizioni Plus (2006); * Autore del Volume ``Lezioni di Meccanica Classica", Pisa University Press (2020, 2022)

* Co-Autore del Volume ``Stochastic Methods in Scientific Computing", Taylor & Francis (2024)

ATTIVITÀ DI TUTORAGGIO

* Supervisore di 15 Tesi di Dottorato

* Relatore di 60 Tesi di Laurea Magistrale o Specialistica;

ATTIVITÀ ORGANIZZATIVA E DI SERVIZIO

* 2009-2013 Responsabile Nazionale dell'I.S. dell'INFN "PI12"

* 2014-2016 Responsabile Nazionale dell'I.S. dell'INFN "NPQCD"

* 2019-2021 PI del progetto "Tips in SCQFT" finanziato nell'ambito delle MSC Actions (Horizon 2020)

- * PI di 10 progetti approvati nell'ambito del programma ISCRA del CINECA;
- * PI di 2 progetti approvati nell'ambito del programma PRACE;
- * 2020-2022 PI del Progetto di Ricerca di Ateneo interdipartimentale "QUANTUM COMPUTING, TECHNOLOGIES AND APPLICATIONS", Università di Pisa;
- * 2022- responsabile scientifico locale per UNIPI dello SPOKE 10 del Centro Nazionale 1 HPC

- * 2005-2011 Membro della Giunta del Dipartimento di Fisica, Università degli Studi di Genova;
- * 2011-2012 Coordinatore del Gruppo Teorico, INFN - Sezione di Genova;
- * 2013-oggi Membro del Collegio dei Docenti del Corso di Dottorato in Fisica, Università di Pisa; * 2014-2017, 2020-2022 Membro della Commissione Scientifica di Area 02, Università di Pisa;
- * 2016-2018 Presidente della Commissione Assegni di Ricerca, INFN - Sezione di Pisa;
- * 2017-2020 Referente della Sezione Teorica, Dipartimento di Fisica, Università di Pisa;
- * 2021-oggi Coordinatore del Corso di Dottorato in Fisica, Università di Pisa

- * Organizzatore di oltre 20 Conferenze Scientifiche Nazionali ed Internazionali;
- * Referee per riviste internazionali (PRL, Nucl. Phys. B, PRD, JHEP, EPJC, JPG);
- * Membro IAC delle Conference Lattice 2017, 2018, 2019 e XQCD 2018 -> 2025
- * Referee per agenzie ed enti di ricerca nazionali ed internazionali (MUR, INFN, ERC, PRACE, NFS).

PRINCIPALI INTERESSI DI RICERCA:

Fisica Teorica delle Interazioni Fondamentali e delle Particelle Elementari, Teoria Quantistica dei Campi, proprietà non-perturbative delle Teorie di Gauge non-Abeliane, più in particolare:

- proprietà topologiche della QCD, dipendenza dal parametro topologico theta;
- meccanismi di confinamento del colore e studio della transizione di deconfinamento;
- diagramma di fase della QCD, studio della QCD in condizioni estreme, fenomenologia del primo Universo e delle collisioni fra ioni pesanti ultrarelativistici;
- fenomenologia degli assioni;
- approcci numerici non-perturbativi ad una formulazione di una teoria quantistica della gravità (Causal Dynamical Triangulations); - sviluppi algoritmici nell'ambito dell'High Performance Computing applicato allo studio delle Interazioni Fondamentali;
- sviluppo di algoritmi nell'ambito del Quantum Computing applicato allo studio delle Interazioni Fondamentali.

CURRICULUM VITAE of LAURA ELISA MARCUCCI

Academic history

since 01/12/2020: Full Professor, Physics Department, University of Pisa

12/2015-11/2020: Associate Professor, Physics Department, University of Pisa

01/2015: “Abilitazione Scientifica Nazionale” as Full Professor

01/2014: “Abilitazione Scientifica Nazionale” as Associate Professor

10/2002-12/2015: “Ricercatore”, Physics Department, University of Pisa

10/2000-9/2002: “Assegnista di ricerca”, Physics Department, University of Pisa

6/2000: Ph.D. in *Theoretical Nuclear Physics*, Physics Department, Old Dominion University, Norfolk, Virginia, USA

6/1996-6/2000: *Graduate Research Assistant*, Physics Department, Old Dominion University, Norfolk, Virginia, USA

11/1995: “Laurea” in physics (110/110 *summa cum laude*), Physics Department, University of Pisa

Awards

Since November 2014, **Fellow** of the **American Physical Society**, “*For advancing the understanding of electroweak interactions in nuclei, particularly for precise studies of low-energy radiative and weak capture processes of astrophysical relevance in the few-nucleon systems*”.

Winner of the “Luise Meyer-Schutzmeister” Prize for the year 2000, awarded by the *Association for Women in Science (AWIS) Educational Foundation*, as “*outstanding female graduate student in physics*”.

Publication records (from ISI/WoS, September 11, 2025)

159 articles on peer-reviewed journals

6 review articles

50 conference proceedings

4467 citations (3716 without self citations)

h-index = 36

Talks in the period 2020-2025

1. ***Ab-initio* studies of few-nucleon systems: Recent progress and applications**(*invited talk*), 106^o Congresso Nazionale della Società Italiana di Fisica - SIF106, virtual conference, September 2020
2. **Few-nucleon radiative captures in chiral effective field theory**(*invited talk*), MITP Virtual Workshop: Uncertainties in Calculations of Nuclear Reactions of Astrophysical Interest, December 2020
3. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions** (*invited talk in plenary session*), 107^o Congresso Nazionale della Società Italiana di Fisica - SIF107, virtual conference, September 2021
4. **Momentum Distributions and Short-Range Correlations in Few-Nucleon Systems with Local and Non-Local Interactions** (*invited talk*), 3rd Workshop on Quantitative Challenges in EMC and SRC Research, virtual workshop, March 2021

5. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions**, *invited online colloquium* at the Univ. of Ljubljana, January 2022
6. ***Ab-initio* studies of light nuclei and few-nucleon reactions of astrophysical interest** (*invited talk*), Topical meeting of IReNA - FA1 and ChETEC-INFRA “Nuclear reaction measurements in Underground Laboratories”, Rome, April 2022
7. **WG1 - $^1\text{H}(\text{p}, e^+ \nu)^2\text{H}$, $^3\text{He}(\text{p}, e^+ \nu)^4\text{He}$, electron captures** (*invited talk*), Solar Fusion Cross Sections III, University of Berkeley, Berkeley, USA, July 2022
8. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions** (*invited seminar*), University of Berkeley, Berkeley, USA, July 2022
9. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions** (*invited seminar*), Jefferson Lab, Newport News, USA, August 2022
10. **Recent progress in *ab-initio* studies of light nuclei and few-nucleon reactions**(*invited talk*), Exploring low-energy nuclear properties: latest advances on reaction mechanisms with light nuclei - Workshop in honor of Pierre Descouvemont, Bruxelles, June 2023
11. **Sergio Rosati (May18, 1934 - February 27, 2022)**, (*invited talk*), TNPI2023 - XIX Conference on Theoretical Nuclear Physics in Italy, Cortona, October 2023
12. **Microscopic *ab-initio* approach to few-nucleon systems**, (*invited seminar*), Collaboration meeting with École Polytechnique Fédérale de Lausanne (EPFL) and University of Southampton, virtual seminar, April 2024
13. **Recent progresses in few-nucleon structure and dynamics in chiral effective field theory**, The 11th International Workshop on Chiral Dynamics (CD24), online talk, August 2024
14. ***Ab-initio* studies of few-nucleon reactions of astrophysical interest**, The DPG-Frühjahrstagung, March 2025
15. **Theoretical modeling of deuterium burning rates**, News, EuCAPT workshop: Opportunities and Challenges in Big Bang Nucleosynthesis, May 2025

Conferences and Workshops organization

1. **XI Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2006
2. **The 20th European Conference on Few-Body Problems in Physics**, Pisa (Ital), September 2007
3. **Electron-Nucleus Scattering X**, Marciana Marina (Isola d’Elba - Italy), June 2008
4. **XII Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2008
5. Leader of the *working group* for the *hep* reaction at the workshop **Solar Fusion Cross Sections for the pp chain and CNO cycle**, INT, University of Washington, Seattle, USA, January 2009, (see E.G. Adelberger *et al.*, Rev. Mod. Phys. **83**, 195 (2011))
6. **Electron-Nucleus Scattering XI**, Marciana Marina (Isola d’Elba - Italy), June 2010
7. **XIII Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), April 2011
8. **Electron-Nucleus Scattering XII**, Marciana Marina (Isola d’Elba - Italy), June 2012
9. **XIV Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2013
10. **Electron-Nucleus Scattering XIII**, Marciana Marina (Isola d’Elba - Italy), June 2014
11. **CHIRAL DYNAMICS 2015 - The 8th International Workshop on Chiral Dynamics** (*Co-chair of the organizing committee*), Pisa (Italy), June 2015
12. **EXOTIC 2015 - Re-writing Nuclear Physics textbooks: 30 years of radioactive ion beam physics**, Pisa (Italy), July 2015

13. **XV Convegno su Problemi di Fisica Nucleare Teorica**, Pisa (Italy), April 2016
14. **Lepton-Nucleus Scattering XIV**, Marciana Marina (Isola d'Elba - Italy), June 2016
15. **Summer School 2017: Rewriting Nuclear Physics Textbooks: Basic nuclear interactions and their link to nuclear processes in the cosmos and on earth**, Pisa (Italy), July 2017
16. **XVI Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2017
17. **Lepton Interactions with Nucleons and Nuclei-XV**, Marciana Marina (Isola d'Elba - Italy), June 2019
18. **Summer School 2019: Rewriting Nuclear Physics Textbooks**, Pisa (Italy), July 2019
19. **XVII Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2019
20. **XVIII Convegno su Problemi di Fisica Nucleare Teorica**, Pisa (Italy), October 2021
21. Leader of the *working group* for the *pp* reaction at the workshop **Solar Fusion Cross Sections III**, University of Berkeley, Berkeley, USA, July 2022, (see B. Acharya *et al.*, arXiv:2405.06470)
22. **3rd International Conference on Quantum Gases, Fundamental Interactions, and Cosmology - QFC2022**, Pisa, October 2022
23. **Marciana2023 - Lepton Interactions with Nucleons and Nuclei**, Marciana Marina (Isola d'Elba - Italy), September 2023
24. **XIX Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2023
25. **Marciana2025 - Lepton Interactions with Nucleons and Nuclei**, Marciana Marina (Isola d'Elba - Italy), June 2025
26. **XX Convegno su Problemi di Fisica Nucleare Teorica**, Cortona (Italy), October 2025

- Editor for the *proceedings* of the Cortona workshop series and of the international conference *Chiral Dynamics 2015*
- Member of the **International Program Committee** for the *15th International Symposium on Nuclei in the Cosmos (NIC2018)*
- Member of the **International Advisory Committee** for the *CHIRAL DYNAMICS 2018 - The 9th International Workshop on Chiral Dynamics*, *CHIRAL DYNAMICS 2021 - The 10th International Workshop on Chiral Dynamics*, *CHIRAL DYNAMICS 2024 - The 11th International Workshop on Chiral Dynamics*
- Member of the **International Advisory Committee** for the *International Nuclear Physics Conference - INPC 2019*
- Member of the **International Advisory Committee** for the *4th International Conference on Quantum Gases, Fundamental Interactions, and Cosmology - QFC2024*
- Member of the **International Advisory Committee** for the *14th International Spring Seminar on Nuclear Physics, "Cutting-edge developments in nuclear structure physics" (2025)*
- Member of the **International Advisory Committee** for the conference *"Electromagnetic Interactions with Nucleons and Nuclei" (EINN 2025)*

Editorial and referee activity

- March 2018 - May 2022: **Specialty Chief Editor** for the journal *Frontiers in Physics - Nuclear Physics Section*, ISSN: 2296-424X
- **Referee for the evaluation of grant proposals** for the *Department of Energy* (USA) and the *Natural Sciences and Engineering Research Council* (Canada)
- **Referee for the VQR 2011-2014 and VQR 2015-2019**
- **Referee for the following journals:** Astronomy and Astrophysics, Astrophysical Space Science, European Physical Journal A, Few-Body Systems, Journal of Physics G: Nuclear and Particle Physics, Indian Journal of Physics, International Journal of Modern Physics E, Modern Physics Letters A, Nuclear Physics A, Physical Review C, Physical Review Letters.

Administrative duties

- Member of the **commissione scientifica d'area 02 - scienze fisiche**, University of Pisa, 2009-2012
- Member of the **comitato ordinatore della Scuola di Specializzazione in Fisica Medica**, University of Pisa, 2009-2014
- Member of the **giunta** of the Physics Department at the University of Pisa, 2013-2015
- Member of the **commissione didattica paritetica** of the Physics Department at the University of Pisa, 2013-2015
- **Local Coordinator** for the INFN Pisa branch of the research project **Few-Body Systems: Structure and Reactions with Light Nuclei** (FBS), 2014-2020
- Member of the **commissione per l'accesso aperto alla letteratura scientifica** of the University of Pisa, 2018-2020
- Member of the **collegio del dottorato** of the Physics Department at the University of Pisa, since December 2018
- **Local Coordinator** of the theory group at the INFN Pisa branch, 2020-2021
- **Vice-director** of the Physics Department at the University of Pisa, 2020-2022
- **Rector's delegate for academic guidance**, since November 2022

Teaching Activity

Teaching Activity at the University of Pisa since 2002

Physics major:

“Esercitatore” of the course **Fisica 1**, academic years 2002/2003 – 2005/2006, 2009/2010, 2010/2011, 2016/2017, 2023/2024, 2024/2025, 2025/2026

Lecturer of the course **Fisica 1**, academic years 2017/2018 – 2022/2023

Co-lecturer of the course **Fisica 3**, academic years 2015/2016 and 2016/2017

Lecturer of the course **Reazioni nucleari di interesse astrofisico**, academic years 2004/2005–2006/2007, 2009/2010, 2011/2012–2016/2017. Since the year 2017/2018, I have become co-lecturer, due to other teaching duties

Lecturer of the course **Theory of Nuclear Interaction**, academic year 2025/2026

Others:

Lecturer of the course **Fisica**, *laurea* in Computer Science, academic years 2006/2007 and 2007/2008

Co-Lecturer of the course **Fisica 1 + Esercitazioni**, *laurea* in Chemistry, academic year 2016/2017

Lecturer of the course **Complementi di fisica: modellistica nucleare I**, *scuola di specializzazione* in Medical Physics, academic years 2009/2010–2012/2013, and 2016/2017

Co-Lecturer of the course **Fisica Generale**, *laurea* in Biotechnology, academic years 2023/2024, 2024/2025, 2025/2026

Teaching activity at other institutions

Lecturer for the course **Nuclear Astrophysics** at the Gran Sasso Science Institute - Center of Advanced Studies - (L'Aquila), for the PhD course in Astroparticle Physics, academic years 2013/2014–2016/2017.

Thesis Supervision

Academic year 2003/2004,

Academic year 2005/2006,

Academic year 2005/2006,

Academic year 2007/2008,

Academic year 2009/2010,

Academic year 2015/2016,

Academic year 2015/2016,

Academic year 2016/2017,

Academic year 2016/2017,

Academic year 2016/2017,

Academic year 2017/2018,

Academic year 2017/2018,

Academic year 2019/2020,

Academic year 2020/2021,

Academic year 2019/2020,

Academic year 2022/2023,

Academic year 2023/2024,

Academic year 2023/2024,

Academic year 2024/2025,

Ongoing,

Ongoing,

Ongoing,

Public outreach

19/05/2011, Liceo Scientifico F. Buonarroti, Pisa. Seminar: *A 100 anni dalla scoperta del nucleo: la fisica nucleare, principi e applicazioni*

16/07/2011, Fondazione Silvestro Marcucci ONLUS, Quiesa di Massarosa (LU). Seminar: *A 100 anni dalla scoperta del nucleo: la fisica nucleare, principi e applicazioni*

23/01/2013, Liceo Artistico A. Passaglia, Lucca. Seminar: *La ricerca in fisica oggi: una “chiacchierata”*

21/01/2015, Scuola Media C. Del Prete, Lucca. Seminar: *Il sole, le stelle, l'universo ... e noi: una “chiacchierata”*

21/08/2015, Fondazione Silvestro Marcucci ONLUS, Quiesa di Massarosa (LU). Seminar: *All'improvviso le stelle*, in the occasion of the inaugural day of the painting exhibition of **Antonio Possenti** with the title “All'improvviso le stelle”

28/10/2015, Istituto Tecnico Industriale A. Meucci, Firenze. Seminar: *Il sole, le stelle, l'universo ... e noi: una “chiacchierata”*, (within the project Pianeta Galileo 2015)

07/02/2017, Polo tecnologico A. Manetti - P. Porciatti, Grosseto. Seminar: *Il “nucleare” che fa “paura”: a più di 100 anni dalla scoperta del nucleo* (within the project Pianeta Galileo 2016)

01/03/2017, Istituto delle Suore Mantellate, Pistoia. Seminar: *Il “nucleare” che fa “paura”: a più di 100 anni dalla scoperta del nucleo* (within the project Pianeta Galileo 2016)

03/03/2017, Auditorium of the “Fondazione Banca del Monte di Lucca”. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle*, during the workshop “E le stelle stanno a guardare ...”, organized by the *Federazione Italiana Donne Arti Professioni Affari* (FIDAPA)

10/12/2018, Aula Magna Fratelli Pontecorvo, Pisa. Seminar: *La fisica nucleare dal 1909 al 1934*, within the event “Enrico Fermi: 80 anni dal Nobel”, organized by the *Centro Pontecorvo* of the Physics Department of the University of Pisa, and the local branch of the *Associazione Italiana Studenti in Fisica* (AISF)

22/02/2022, Associazione Culturale La Finestra, Lucca. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle*

25/03/2022, Liceo Scientifico A. Vallisneri, Lucca. Seminar: *Il “nucleare” che fa “paura”: conoscere per decidere*

26/04/2022, Liceo F. Enriques, Livorno. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle* (within the project Pianeta Galileo 2021-2022)

29/04/2022, Scuole paritarie D. Lighieri, Firenze. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle* (within the project Pianeta Galileo 2021-2022)

24/11/2022, Università dell'Età Libera Lucca. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle*

11/01/2023, Associazione Culturale La Finestra, Lucca. Seminar: *Il “nucleare” ... che fa “paura”: conoscere per decidere*

28/06/2023, 117° Corso di Orientamento Universitario organizzato dalla Scuola Normale Superiore di Pisa, Convento Santa Chiara di San Miniato. Seminar: *“Il cielo stellato sopra di me” (I. Kant): un viaggio alla scoperta delle stelle*

06/05/2024 and **31/03/2025**, Liceo Scientifico Majorana, Capannori (Lucca). Seminar: *Fisica nucleare: dagli atomi alle stelle* (within the high school students guidance activities organized by the University of Pisa)

29/01/2024, Fisica al Pub (Pisa). Seminar: *100 anni dalla scoperta del nucleo: cosa manca ancora?*

06/03/2025, Liceo Scientifico Fermi-Giorgi, Lucca. Seminar: *Fisica nucleare: dagli atomi alle stelle* (within the high school students guidance activities organized by the University of Pisa)

Pisa, September 11, 2025

Claudio Bonati

30 ottobre 2025

Dati personali

Istruzione

Diploma di scuola media superiore conseguito presso il Liceo Scientifico Statale “A. Pacinotti”, La Spezia, il 7 Luglio 2001 con votazione finale di 100/100.

Laurea triennale in Fisica conseguita presso l’università di Pisa il 17 Settembre 2004 con votazione finale di 110/110 cum laude. Tesi “La struttura matematica della meccanica quantistica”, relatore prof. L. Bracci.

Laurea specialistica in Scienze Fisiche conseguita presso l’università di Pisa il 24 Luglio 2007 con votazione finale 110/110 cum laude. Tesi “La transizione chirale in QCD con tre flavour”, relatore prof. A. Di Giacomo.

Vincitore di borsa di studio per il concorso di dottorato in Fisica presso l’università di Pisa, XXIII ciclo (2008-2010).

Titolo di Dottore di Ricerca in Fisica conseguito presso l’università di Pisa il 17 Febbraio 2011. Tesi “Confinement, deconfinement and monopoles in gauge theories”, relatore prof. A. Di Giacomo.

Esperienze lavorative

Assegno di ricerca INFN “Lattice QCD su schede GPU” della durata di due anni a decorrere dal 5 Settembre 2011.

Assegno di ricerca INFN “Ricerca in fisica teorica nucleare, subnucleare, dei campi e meccanica statistica” della durata di due anni a decorrere dal 5 Settembre 2013.

Assegno di ricerca presso il Dipartimento di Fisica dell’Università di Pisa sul tema “Teorie di campo quantistiche dalle interazioni fondamentali agli atomi freddi” della durata di un anno a decorrere dal 15 Settembre 2015.

Assegno di ricerca presso il Dipartimento di Fisica e Astronomia dell’Università di Firenze sul tema “Fisica dei fluidi relativistici fortemente interagenti” della durata di un anno a decorrere dal primo Ottobre 2016.

Ricercatore a tempo determinato di tipo A (junior) presso il Dipartimento di Fisica dell'Università di Pisa dal primo Ottobre 2017.

Ricercatore a tempo determinato di tipo B (senior) presso il Dipartimento di Fisica dell'Università di Pisa dal 30 Aprile 2020.

Professore associato presso il Dipartimento di Fisica dell'Università di Pisa dal 30 Aprile 2023.

Abilitazione scientifica nazionale ad esercitare le funzioni di professore universitario di I fascia nel SC 02/A2 valida dal 25/06/2025 al 25/06/2037.

Attività didattica

2011-2015 Supporto alla didattica per il corso “Fisica 3” del terzo anno del corso di laurea in fisica (elettromagnetismo relativistico, interazione radiazione-materia, fisica nucleare e subnucleare, prof. I. Bombaci e F. Costantini).

2017-2020 “Fisica 3” del terzo anno del corso di laurea in fisica (processi d'urto, elettromagnetismo relativistico, interazione radiazione-materia, insieme al prof. G. Batignani).

2017-2020 “Meccanica classica” del secondo anno del corso di laurea in fisica (meccanica analitica, relatività ristretta, fisica statistica, insieme al prof. M. D'Elia).

2020-2021 “Fisica ed Elementi di Radioprotezione” e “Elementi di Radiobiologia” per il primo anno dei corsi di laurea in professioni sanitarie della riabilitazione (Fisioterapia, Logopedia, Podologia, Tecnica delle Riabilitazione Psichiatrica, Terapia della Neuro e Psicomotricità dell'Età Evolutiva) e Tecniche della Prevenzione nell'Ambiente e nei luoghi di lavoro.

2020-2025 “Meccanica quantistica” del terzo anno del corso di laurea in fisica (insieme al prof. P. Rossi fino al 2021/22, poi insieme al prof. L. Gualtieri).

2021-2024 “Fisica 3” del terzo anno del corso di laurea in fisica (processi d'urto, elettromagnetismo relativistico, interazione radiazione-materia, insieme al prof. G. Batignani),

2023- “Metodi Numerici della Fisica/Computational Physics Laboratory” della laurea magistrale in fisica (moduli “Introduzione al Markov Chain Monte-Carlo con applicazioni in meccanica statistica”, “Applicazione di metodi Monte-Carlo allo studio del path-integral in meccanica quantistica”, “Simulazione del path-integral per teorie quantistiche di campo”).

2024- “Fisica Teorica 2/Advanced Quantum Field Theory” della laurea magistrale in fisica (insieme al prof. E. Vicari).

Docente garante di 188 tesi di laurea triennali in Fisica, corelatore di 2 tesi di laurea magistrale in Fisica e relatore di 11 tesi di laurea magistrale in Fisica.

Organizzazione di conferenze

Membro del comitato organizzativo locale di:

GPU Computing in High Energy Physics, Pisa (Italy), 10-12 Settembre 2014.

Extreme QCD 2017 - The 15th international workshop on QCD in eXtreme conditions, Pisa (Italy), 25-28 Giugno 2017.

Responsabilità in progetti di ricerca

Principal investigator del progetto ISCRA B (call IsB18) “Topological properties of trace deformed Yang-Mills theories” presso il CINECA (5.5 milioni di core-hours, dal 30 Novembre 2018 al 30 Novembre 2019).

Principal investigator del progetto ISCRA B (call IsB20) “Trace deformation on the edge” presso il CINECA (3.5 milioni di core-hours, dal 9 Ottobre 2019 al 9 Ottobre 2020).

Principal investigator del progetto PRIN 2022 “Emerging gauge theories: critical properties and quantum dynamics” (identificativo 20227JZKWP) del Ministero dell’Università e della Ricerca (totale 210 Keuro, dal 28 Settembre 2023 al 27 Settembre 2025).

Incarichi amministrativi

03/07/2019-29/04/2023 Rappresentante dei ricercatori nella Giunta del Dipartimento di Fisica dell’Università di Pisa.

01/12/2020-31/10/2024 Componente della Commissione Scientifica d’area 02 dell’Università di Pisa.

01/06/2023- Responsabile nazionale dell’iniziativa specifica NPQCD dell’INFN.

2025- Referente per la Ricerca del Dipartimento (insieme al prof. Pier Giorgio Prada Moroni)

2025- Membro della Commissione paritetica di Dipartimento/Corso di Studio

2025- Membro del collegio dei docenti del dottorato in High Performance Scientific Computing.

Interessi di ricerca

Aspetti non perturbativi delle teorie di gauge: monopoli e loro relazione con il confinamento, proprietà topologiche, dipendenza dall'angolo θ , tubi di flusso, proprietà critiche alle transizioni di fase. Studio su reticolo del diagramma di fase della QCD e delle proprietà di vuoto di QCD, QCD a densità finita ed in presenza di campi magnetici esterni. Fisica statistica e fenomeni critici in modelli di spin classici.

Publicazioni

Articoli su rivista

1. C. Bonati, G. Cossu, M. D'Elia, A. Di Giacomo *Phase diagram of the lattice $SU(2)$ Higgs model* [Nucl. Phys. B **828**, 390 \(2010\)](#) [arXiv:0911.1721](#).
2. C. Bonati, A. Di Giacomo, L. Lepori, F. Pucci *Monopoles, abelian projection and gauge invariance* [Phys. Rev. D **81**, 085022 \(2010\)](#) [arXiv:1002.3874](#).
3. C. Bonati, A. Di Giacomo, M. D'Elia *Detecting monopoles on the lattice* [Phys. Rev. D **82**, 094509 \(2010\)](#) [arXiv:1009.2425](#).
4. C. Bonati, M. D'Elia *Three-dimensional, three state Potts model in a negative external field* [Phys. Rev. D **82** 114515 \(2010\)](#) [arXiv:1010.3639](#).
5. C. Bonati, G. Cossu, M. D'Elia, F. Sanfilippo *Roberge-Weiss endpoint in $N_f = 2$ QCD* [Phys. Rev. D **83**, 054505 \(2011\)](#) [arXiv:1011.4515](#).
6. M. Fagotti, C. Bonati, D. Logoteta, P. Marconcini, M. Macucci *Armchair graphene nanoribbons: PT -symmetry breaking and exceptional points without dissipation* [Phys. Rev. B **83**, 241406\(R\) \(2011\)](#) [arXiv:1102.2129](#).
7. C. Bonati *Finite temperature effective string corrections in $(3+1)D$ $SU(2)$ lattice gauge theory* [Phys. Lett. B **703**, 376 \(2011\)](#) [arXiv:1106.5920](#).
8. C. Bonati, G. Cossu, M. D'Elia, P. Incardona *QCD simulations with staggered fermions on GPUs* [Comput. Phys. Commun. **183**, 853 \(2012\)](#) [arXiv:1106.5673](#).
9. C. Bonati, G. Cossu, M. D'Elia, A. Di Giacomo *Disorder parameter of dual superconductivity in QCD revisited* [Phys. Rev. D **85**, 065001 \(2012\)](#) [arXiv:1111.1541](#).
10. C. Bonati, M. D'Elia, H. Panagopoulos, E. Vicari *Change of θ dependence in $4D$ $SU(N)$ gauge theories across the deconfinement transition* [Phys. Rev. Lett. **110**, 252003 \(2013\)](#) [arXiv:1301.7640](#).
11. C. Bonati, M. D'Elia *Phase diagram of the $4D$ $U(1)$ model at finite temperature* [Phys. Rev. D **88**, 065025 \(2013\)](#) [arXiv:1305.3564](#).

12. C. Bonati, M. D'Elia, M. Mariti, F. Negro, F. Sanfilippo *Magnetic Susceptibility of Strongly Interacting Matter across Deconfinement* [Phys. Rev. Lett. **111**, 182001 \(2013\)](#) [arXiv:1307.8063](#).
13. C. Bonati, M. D'Elia *The Maximal Abelian Gauge in $SU(N)$ Gauge Theories and Thermal Monopoles for $N=3$* [Nucl. Phys. B **877**, 233 \(2013\)](#) [arXiv:1308.0302](#).
14. C. Bonati, M. D'Elia, M. Mariti, F. Negro, F. Sanfilippo *Magnetic susceptibility and equation of state of $N_f = 2 + 1$ QCD with physical quark masses* [Phys. Rev. D **89**, 054506 \(2014\)](#) [arXiv:1310.8656](#).
15. C. Bonati, M. D'Elia *Comparison of the gradient flow with cooling in $SU(3)$ pure gauge theory* [Phys. Rev. D **89**, 105005 \(2014\)](#) [arXiv:1401.2441](#).
16. C. Bonati, M. D'Elia, M. Mariti, M. Mesiti, F. Negro, F. Sanfilippo *Anisotropy of the quark-antiquark potential in a magnetic field* [Phys. Rev. D **89**, 114502 \(2014\)](#) [arXiv:1403.6094](#).
17. C. Bonati, M. D'Elia, E. Vicari *Universal scaling effects of a temperature gradient at first-order transitions* [Phys. Rev. E **89**, 062132 \(2014\)](#) [arXiv:1403.4744](#).
18. D. Logoteta, P. Marconcini, C. Bonati, M. Fagotti, M. Macucci *High-performance solution of the transport problem in a graphene armchair structure with a generic potential* [Phys. Rev. E **89**, 063309 \(2014\)](#) [arXiv:1401.1178](#).
19. C. Bonati, P. de Forcrand, M. D'Elia, O. Philipsen, F. Sanfilippo *Chiral phase transition in two-flavor QCD from imaginary chemical potential* [Phys. Rev. D **90**, 074030 \(2014\)](#) [arXiv:1408.5086](#).
20. C. Bonati, M. D'Elia, M. Mariti, M. Mesiti, F. Negro, F. Sanfilippo *Curvature of the pseudo-critical line in QCD* [Phys. Rev. D **90**, 114025 \(2014\)](#) [arXiv:1410.5758](#).
21. C. Bonati *Topology and θ dependence in finite temperature G_2 lattice gauge theory* [J. High Energ. Phys. **2015** 006 \(2015\)](#) [arXiv:1501.01172](#).
22. C. Bonati, M. D'Elia, A. Rucci *Heavy quarkonia in strong magnetic fields* [Phys. Rev. D **92**, 054014 \(2015\)](#) [arXiv:1506.07890](#).
23. C. Bonati, M. D'Elia, M. Mariti, M. Mesiti, F. Negro, F. Sanfilippo *Curvature of the chiral pseudo-critical line in QCD: continuum extrapolated results* [Phys. Rev. D **92**, 054503 \(2015\)](#) [arXiv:1507.03571](#).
24. C. L. Manganelli, P. Pintus, C. Bonati *Modeling of strain-induced Pockels effect in Silicon* [Optics Express **23**, 28649 \(2015\)](#) [arXiv:1507.06589](#).

25. C. Bonati, M. D'Elia, A. Scapellato *θ dependence in $SU(3)$ Yang-Mills theory from analytic continuation* [Phys. Rev. D **93**, 025028 \(2016\)](#) [arXiv:1512.01544](#).
26. C. Bonati, M. D'Elia, M. Mariti, G. Martinelli, M. Mesiti, F. Negro, F. Sanfilippo, G. Villadoro *Axion phenomenology and θ -dependence from $N_f = 2 + 1$ lattice QCD* [J. High Energ. Phys. **2016** \(2016\) 155](#) [arXiv:1512.06746](#).
27. C. Bonati, M. D'Elia, M. Mariti, M. Mesiti, F. Negro, F. Sanfilippo *Roberge-Weiss endpoint at the physical point of $N_f = 2 + 1$ QCD* [Phys. Rev. D **93**, 074504 \(2016\)](#) [arXiv:1602.01426](#).
28. C. Bonati, M. D'Elia, P. Rossi, E. Vicari *θ dependence of 4D $SU(N)$ gauge theories in the large- N limit* [Phys. Rev. D **94** 085017 \(2016\)](#) [arXiv:1607.06360](#).
29. C. Bonati, M. D'Elia, M. Mariti, M. Mesiti, F. Negro, A. Rucci, F. Sanfilippo *Magnetic field effects on the static quark potential at zero and finite temperature* [Phys. Rev. D **94** 094007 \(2016\)](#) [arXiv:1607.08160](#).
30. C. Bonati, E. Calore, S. Cossutti, M. D'Elia, M. Mesiti, F. Negro, S. F. Schifano, G. Silvi, R. Tripiccione *Design and optimization of a portable LQCD Monte Carlo code using OpenACC* [Int. J. Mod. Phys. C **28** 1750063 \(2017\)](#) [arXiv:1701.00426](#).
31. C. Bonati, M. D'Elia, M. Mariti, M. Mesiti, F. Negro, A. Rucci, F. Sanfilippo *Screening masses in strong external magnetic fields* [Phys. Rev. D **95**, 074515 \(2017\)](#) [arXiv:1703.00842](#).
32. C. Bonati, E. Calore, M. D'Elia, M. Mesiti, F. Negro, F. Sanfilippo, S. F. Schifano, G. Silvi, R. Tripiccione *Portable multi-node LQCD Monte Carlo simulations using OpenACC* [Int. J. Mod. Phys. C **29**, 1850010 \(2018\)](#) [arXiv:1801.01473](#).
33. M. Andreoli, C. Bonati, M. D'Elia, M. Mesiti, F. Negro, A. Rucci, F. Sanfilippo *Gauge-invariant screening masses and static quark free energies in $N_f = 2 + 1$ QCD at non-zero baryon density* [Phys. Rev. D **97**, 054515 \(2018\)](#) [arXiv:1712.09996](#).
34. C. Bonati, M. D'Elia, *Topological critical slowing down: Variations on a toy model* [Phys. Rev. E **98**, 013308 \(2018\)](#) [arXiv:1709.10034](#).
35. C. Bonati, S. Cali, M. D'Elia, M. Mesiti, F. Negro, A. Rucci, F. Sanfilippo *Effects of a strong magnetic field on the QCD flux tube* [Phys. Rev. D **98**, 054501 \(2018\)](#) [arXiv:1807.01673](#).
36. C. Bonati, M. Cardinali, M. D'Elia *θ dependence in trace deformed $SU(3)$ Yang-Mills theory: a lattice study* [Phys. Rev. D **98**, 054508 \(2018\)](#) [arXiv:1807.06558](#).

37. C. Bonati, M. D'Elia, F. Negro, F. Sanfilippo, K. Zambello *Curvature of the pseudocritical line in QCD: Taylor expansion matches analytic continuation* [Phys. Rev. D **98**, 054510 \(2018\)](#) [[arXiv:1805.02960](#)].
38. C. Bonati, M. D'Elia, G. Martinelli, F. Negro, F. Sanfilippo, A. Todaro *Topology in full QCD at high temperature: a multicanonical approach* [J. High Energ. Phys. **2018**, 170 \(2018\)](#) [[arXiv:1807.07954](#)].
39. C. Bonanno, C. Bonati, M. D'Elia *Topological properties of CP^{N-1} models in the large- N limit* [J. High Energ. Phys. **2019**, 3 \(2019\)](#) [[arXiv:1807.11357](#)].
40. C. Bonati, E. Calore, M. D'Elia, M. Mesiti, F. Negro, F. Sanfilippo, S. F. Schifano, G. Silvi, R. Tripicciono *Roberge-Weiss endpoint and chiral symmetry restoration in $N_f = 2 + 1$ QCD* [Phys. Rev. D **99**, 014502 \(2019\)](#) [[arXiv:1807.02106](#)].
41. C. Bonati, P. Rossi *The topological susceptibility of two-dimensional $U(N)$ gauge theories* [Phys. Rev. D **99**, 054503 \(2019\)](#) [[arXiv:1901.09830](#)].
42. N. Battelli, C. Bonati *Color flux tubes in $SU(3)$ Yang-Mills theory: an investigation with the connected correlator* [Phys. Rev. D **99**, 114501 \(2019\)](#) [[arXiv:1903.10463](#)].
43. C. Bonati, P. Rossi *Topological effects in continuum two-dimensional $U(N)$ gauge theories* [Phys. Rev. D **100**, 054502 \(2019\)](#) [[arXiv:1908.07476](#)].
44. C. Bonati, A. Pelissetto, E. Vicari *Phase diagram, symmetry breaking, and critical behavior of three-dimensional lattice multiflavor scalar chromodynamics* [Phys. Rev. Lett. **123**, 232002 \(2019\)](#) [[arXiv:1910.03965](#)].
45. C. Bonati, A. Pelissetto, E. Vicari *Three-dimensional lattice multiflavor scalar chromodynamics: interplay between global and gauge symmetries* [Phys. Rev. D **101**, 034505 \(2020\)](#) [[arXiv:2001.01132](#)].
46. C. Bonati, M. Cardinali, M. D'Elia, F. Mazziotti *θ -dependence and center symmetry in Yang-Mills theories* [Phys. Rev. D **101**, 034508 \(2020\)](#) [[arXiv:1912.02662](#)].
47. C. Bonati, A. Pelissetto, E. Vicari *Two-dimensional multicomponent Abelian-Higgs lattice models* [Phys. Rev. D **101**, 034511 \(2020\)](#) [[arXiv:1912.01315](#)].
48. C. Bonati, A. Pelissetto, E. Vicari *Universal low-temperature behavior of two-dimensional lattice scalar chromodynamics* [Phys. Rev. D **101**, 054503 \(2020\)](#) [[arXiv:2001.07386](#)].
49. G. Clemente, M. Cardinali, C. Bonati, E. Calore, L. Cosmai, M. D'Elia, A. Gabbana, D. Rossini, F. S. Schifano, R. Tripicciono, D. Vadacchino *Quantum computation of thermal averages in the presence of a sign problem* [Phys. Rev. D **101**, 074510 \(2020\)](#) [[arXiv:2001.05328](#)].

50. C. Bonati, S. Morlacchi *Flux tubes and string breaking in three dimensional $SU(2)$ Yang-Mills theory* [Phys. Rev. D **101**, 094506 \(2020\)](#) [arXiv:2003.07244](#).
51. C. Bonati, A. Pelissetto, E. Vicari *Three-dimensional phase transitions in multiflavor lattice scalar $SO(N_c)$ gauge theories* [Phys. Rev. E **101**, 062105 \(2020\)](#) [arXiv:2003.08160](#).
52. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Asymptotic low-temperature behavior of two-dimensional RP^{N-1} models* [Phys. Rev. D **102**, 034513 \(2020\)](#) [arXiv:2006.13061](#).
53. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Asymptotic low-temperature critical behavior of two-dimensional multiflavor lattice $SO(N_c)$ gauge theories* [Phys. Rev. D **102**, 034512 \(2020\)](#) [arXiv:2006.16046](#).
54. C. Bonati, A. Pelissetto, E. Vicari *Higher-charge three-dimensional compact lattice Abelian-Higgs models* [Phys. Rev. E **102**, 062151 \(2020\)](#) [arXiv:2011.04503](#).
55. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Berezinskii-Kosterlitz-Thouless transitions in two-dimensional lattice $SO(N_c)$ gauge theories with two scalar flavors* [Phys. Rev. D **103**, 014510 \(2021\)](#) [arXiv:2010.09412](#).
56. C. Bonati, A. Pelissetto, E. Vicari *Lattice Abelian-Higgs model with non-compact gauge fields* [Phys. Rev. B **103**, 085104 \(2021\)](#) [arXiv:2010.06311](#).
57. C. Bonati, M. Cardinali, M. D'Elia, M. Giordano, F. Mazziotti *Confinement, localization and thermal monopoles in $SU(3)$ trace-deformed Yang-Mills theory* [Phys. Rev. D **103**, 034506 \(2021\)](#) [arXiv:2012.13246](#).
58. C. Bonanno, C. Bonati, M. D'Elia *Large- N $SU(N)$ Yang-Mills theories with milder topological freezing* [J. High Energ. Phys. **2021** 111 \(2021\)](#) [arXiv:2012.14000](#).
59. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Two-dimensional lattice $SU(N_c)$ gauge theories with multiflavor adjoint scalar fields* [J. High Energ. Phys. **2021** 018 \(2021\)](#) [arXiv:2103.12708](#).
60. C. Bonati, A. Pelissetto, E. Vicari *Lattice gauge theories in the presence of a linear gauge-symmetry breaking* [Phys. Rev. E **104**, 014140 \(2021\)](#) [arXiv:2106.02503](#).
61. C. Bonati, A. Pelissetto, E. Vicari *Breaking of the gauge symmetry in lattice gauge theories* [Phys. Rev. Lett. **127**, 091601 \(2021\)](#) [arXiv:2104.09892](#).
62. C. Bonati, M. Caselle, S. Morlacchi *The unreasonable effectiveness of effective string theory: the case of the 3d $SU(2)$ Higgs model* [Phys. Rev. D **104**, 054501 \(2021\)](#) [arXiv:2106.08784](#).

63. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Three-dimensional lattice $SU(N_c)$ gauge theories with multiflavor scalar fields in the adjoint representation* [Phys. Rev. B **104**, 115166 \(2021\)](#) [arXiv:2106.15152](#).
64. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Phase diagram and Higgs phases of 3D lattice $SU(N_c)$ gauge theories with multiparameter scalar potentials* [Phys. Rev. E **104**, 064111 \(2021\)](#) [arXiv:2110.01657](#).
65. C. Bonati, A. Pelissetto, E. Vicari *Critical behaviors of lattice $U(1)$ gauge models and three-dimensional Abelian-Higgs gauge field theory* [Phys. Rev. B **105**, 085112 \(2022\)](#) [arXiv:2201.01082](#).
66. C. Bonati, A. Pelissetto, E. Vicari *Multicritical point of the three-dimensional Z_2 gauge Higgs model* [Phys. Rev. B **105**, 165138 \(2022\)](#) [arXiv:2112.01824](#).
67. C. Bonati, A. Franchi *Color-flavor reflection in the continuum limit of two-dimensional lattice gauge theories with scalar fields* [Phys. Rev. E **105**, 054117 \(2022\)](#) [arXiv:2203.06979](#).
68. C. Bonati, A. Pelissetto, E. Vicari *Scalar gauge-Higgs models with discrete Abelian symmetry groups* [Phys. Rev. E **105**, 054132 \(2022\)](#) [arXiv:2204.02907](#).
69. C. Bonati, A. Pelissetto, E. Vicari *Three-dimensional monopole-free CP^{N-1} models: Behavior in the presence of a quartic potential* [J. Stat. Mech.](#) [2206 \(2022\) 6, 063206](#) [arXiv:2202.04614](#).
70. A. Athenodorou, C. Bonanno, C. Bonati, G. Clemente, F. D'Angelo, M. D'Elia, L. Maio, G. Martinelli, F. Sanfilippo, A. Todaro *Topological susceptibility of $N_f = 2 + 1$ QCD from staggered fermions spectral projectors at high temperatures* [J. High Energ. Phys.](#) **2022** 197 (2022) [arXiv:2208.08921](#).
71. C. Bonati, N. Francini *Non-compact lattice Higgs model with Abelian discrete gauge groups: phase diagram and gauge symmetry enlargement* [Phys. Rev. B **107** 035106 \(2023\)](#) [arXiv:2211.03590](#).
72. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari *Chiral critical behavior of 3D lattice fermionic models with quartic interactions* [Phys. Rev. D **107**, 034507 \(2023\)](#) [arXiv:2212.13932](#).
73. C. Bonati, A. Pelissetto, E. Vicari *Gauge fixing and gauge correlations in noncompact Abelian gauge models* [Phys. Rev. D **108**, 014517 \(2023\)](#) [arXiv:2304.14366](#).
74. C. Bonati, A. Pelissetto, E. Vicari *The Coulomb Higgs phase transition of three-dimensional lattice Abelian-Higgs gauge models with noncompact gauge variables and gauge fixing* [Phys. Rev. E **108**, 044125 \(2023\)](#) [arXiv:2305.15236](#).

75. C. Bonati, A. Pelissetto, E. Vicari *Abelian Higgs gauge theories with multicomponent scalar fields and multiparameter scalar potentials* [Phys. Rev. B **108**, 245154 \(2023\)](#) [arXiv:2310.08504](#).
76. R. Aiudi, C. Bonanno, C. Bonati, G. Clemente, M. D'Elia, L. Maio, D. Rossini, S. Tirone, K. Zambello *Quantum Algorithms for the computation of quantum thermal averages at work* [Phys. Rev. D **108**, 114509 \(2023\)](#) [arXiv:2308.01279](#).
77. C. Bonati, A. Pelissetto, E. Vicari *Diverse universality classes of the topological deconfinement transitions of three-dimensional noncompact lattice Abelian-Higgs models* [Phys. Rev. D **109**, 034517 \(2024\)](#) [arXiv:2308.00101](#).
78. C. Bonati, A. Pelissetto, E. Vicari *Deconfinement transitions in three-dimensional compact lattice Abelian Higgs models with multiple-charge scalar fields* [Phys. Rev. E **109**, 044146 \(2024\)](#) [arXiv:2402.06374](#).
79. C. Bonanno, C. Bonati, M. Papace, D. VDACCHINO *The θ -dependence of the Yang-Mills spectrum from analytic continuation* [J. High Energ. Phys. **2024**, 163 \(2024\)](#) [arXiv:2402.03096](#).
80. C. Bonati, A. Pelissetto, E. Vicari *Three-dimensional \mathbb{Z}_2 -gauge N -vector models* [Phys. Rev. B **109**, 235121 \(2024\)](#) [arXiv:2404.07050](#).
81. C. Bonati, A. Pelissetto, E. Vicari *Strong-coupling critical behavior in three-dimensional lattice Abelian gauge models with charged N -component scalar fields and $SO(N)$ symmetry* [Phys. Rev. E **109**, 064142 \(2024\)](#) [arXiv:2403.12758](#).
82. C. Bonati, A. Pelissetto, E. Vicari *Uncovering gauge-dependent critical order-parameter correlations by a stochastic gauge fixing at $O(N)^*$ and Ising* continuous transitions* [Phys. Rev. B **110**, 125109 \(2024\)](#) [arXiv:2405.13485](#).
83. C. Bonati, A. Pelissetto, I. Soler Calero, E. Vicari *Charged critical behavior and nonperturbative continuum limit of three-dimensional lattice $SU(N_c)$ gauge Higgs models* [Phys. Rev. D **110**, 094504 \(2024\)](#) [arXiv:2409.03595](#).
84. C. Bonati, A. Pelissetto, E. Vicari *Critical relaxational dynamics at the continuous transitions of three-dimensional spin models with \mathbb{Z}_2 gauge symmetry* [Phys. Rev. B **111**, 115129 \(2025\)](#) [arXiv:2501.09575](#).
85. C. Bonati, H. Panagopoulos, E. Vicari *Out-of-equilibrium critical dynamics of the three-dimensional \mathbb{Z}_2 gauge model along critical relaxational flows* [Phys. Rev. E **111**, 054107 \(2025\)](#) [arXiv:2501.09975](#).
86. C. Bonati, A. Pelissetto, E. Vicari *Three-dimensional Abelian and non-Abelian gauge Higgs theories* [Phys. Rep. **1133**, 1 \(2025\)](#) [arXiv:2410.05823](#).

87. C. Bonati, I. Soler Calero *O(5) multicriticality in the 3D two flavor SU(2) lattice gauge Higgs model* [Phys. Rev. E **112**, 024112 \(2025\)](#) [arXiv:2505.03446](#).
88. C. Bonati, H. Panagopoulos, E. Vicari *Critical dynamics of three-dimensional Z_N gauge models and the inverted XY universality class* [Phys. Rev. E **112**, 024125 \(2025\)](#) [arXiv:2505.08236](#).
89. M. Bacci, C. Bonati *Stability of universal properties against perturbations of the Markov Chain Monte Carlo algorithm* [Phys. Rev. E **112**, 034121 \(2025\)](#) [arXiv:2506.18561](#).

Articoli non di ricerca su rivista

1. C. Bonati *Variations on the magnetic torque acting on a wire* [Eur. J. Phys. **33** 987 \(2012\)](#) [arXiv:1205.1035](#).
2. C. Bonati *The Peierls argument for higher dimensional Ising models* [Eur. J. Phys. **35** 035002 \(2014\)](#) [arXiv:1401.7894](#).

Preprints

1. C. Bonanno, C. Bonati, M. D'Elia *Strong CP problem, theta term and QCD topological properties* [arXiv:2510.03059](#).

Presentazioni su invito a conferenze

1. “Tricritical points in field theory and statistical mechanics: from Potts models to finite density QCD”, New Frontiers in Lattice Gauge Theory, Firenze (Italy), August 27 - September 28, 2012.
2. “Across the deconfinement”, Critical Point and Onset of Deconfinement 2016 (CPOD 2016), Wroclaw (Poland), May 30 - June 4, 2016.
3. “The computational challenges of Lattice Quantum Chromodynamics”, Perspectives of GPU computing in Science, Roma (Italy), September 26-28, 2016.
4. “Axion phenomenology from Lattice QCD”, Workshop on Axion Physics and Experiments, Frascati (Italy), March 27-28, 2017.
5. “The topological properties of QCD at high temperature: problems and perspectives”, 35th International Symposium on Lattice Field Theory Granada (Spain), June 19-24, 2017.
6. “QCD phase diagram at small μ/T ”, ECT* Workshop “Phase diagram of strongly interacting matter: From Lattice QCD to Heavy-Ion Collision Experiments”, Trento (Italy), November 27 - December 1, 2017.

7. “Topology and θ dependence in nonabelian gauge theories: recent results from the lattice”, 15th Workshop on Non-Perturbative Quantum Chromodynamics, Paris, 11-14 June, 2018.
8. “Some aspects of color confinement in lattice gauge theories”, Current Problems in Theoretical Physics (PAFT) 2019, XXV Edition, Vietri sul Mare (Italy), 13-17 April, 2019.
9. Roundtable on “QCD Topology and Axions”, The XVth Quark confinement and the Hadron spectrum conference, Stavanger (Norway), 1-6 August, 2022.
10. “Peculiar phase transitions in three dimensional gauge systems”, ECT* Workshop “Bridging analytical and numerical methods for quantum field theory ”, Trento (Italy), 25-29 August, 2025.

Presentazioni a conferenze

1. “Non abelian Bianchi identities, monopoles and gauge invariance” (talk), The XXVIII International Symposium on Lattice Filed Theory (Lattice 2010), Villasimius (Italy), June 14-19, 2010.
2. “Toward a well defined monopole creation operator” (poster), The XXVIII International Symposium on Lattice Filed Theory (Lattice 2010), Villasimius (Italy), June 14-19, 2010.
3. “Staggered fermions simulations on GPUs” (poster), The XXVIII International Symposium on Lattice Filed Theory (Lattice 2010), Villasimius (Italy), June 14-19, 2010.
4. “The magnetic susceptibility in QCD” (talk), 31st International Symposium on Lattice Field Theory (Lattice 2013), Mainz (Germany), July 29 - August 3, 2013.
5. “The θ dependence of $SU(N)$ gauge theories at finite temperature” (talk), XXXIV Convegno Nazionale di Fisica Teorica, Cortona (Italy), May 28 - 31, 2014.
6. “Properties of strong interactions in strong magnetic fields” (talk), Strong and Electroweak Matter (Sewm 2014), Lausanne (Switzerland), July 14 - 18, 2014.
7. “Pseudocritical line from Lattice QCD and comparison with freeze-out curves” (talk) Incontro sulla fisica con ioni pesanti a LHC, Bologna (Italy), May 26 - 27, 2015.
8. “ θ dependence in the deconfined phase of QCD” (talk), XXXV Convegno Nazionale di Fisica Teorica, Firenze (Italy), May 18 - 20, 2016

9. “ θ dependence in the large N limit” (talk), 34th International Symposium on Lattice Field Theory (Lattice 2016), Southampton (UK), 24-30 July 2016
10. “ θ dependence in the deconfined phase of QCD” (talk), The 14th International workshop on QCD in eXtreme conditions (XQCD 2016), Plymouth (UK), Aug. 1-3, 2016
11. “High temperature topological susceptibility in QCD: results and open problems” (talk) ECT* Workshop “Gauge Topology: from Lattice to Colliders”, Trento (Italy), 7-11 November 2016.
12. “From QCD to cosmology: theta dependence, axions and dark matter” (talk) QFC2017 - Quantum gases, fundamental interactions and cosmology, Pisa (Italy), 25-27 October 2017.
13. “The critical line of QCD at small baryon density” (talk) The 16th International Conference on QCD in Extreme Conditions (XQCD 2018) Frankfurt (Germany), 21-23 May 2018.
14. “Topological susceptibility in QCD at high temperature: a status report” (talk) ECT* Workshop “Gauge topology 3: from lattice to colliders” Trento (Italy), 28 May - 1 June, 2018.
15. “Critical properties of three-dimensional lattice multiflavor scalar chromodynamics” (talk) SM& FT 2019 The XVIII Whorkshop on Statistical Mechanics and Nonperturbative Field Theory, Bari, 11-13 December 2019.
16. “Lattice scalar electrodynamics with noncompact gauge fields” (talk) CompPhys20 21st International NTZ-Workshop on New Developments in Computational Physics, Leipzig, 3 - 5 December 2020 (online).
17. “Global symmetry breaking in gauge theories: the case of multiflavor scalar chromodynamics” (talk) 38th International Symposium on Lattice Field Theory, LATTICE2021, Zoom/Gather@Massachusetts Institute of Technology, 26-30 July 2021 (online).
18. “Topological susceptibility in high temperature QCD: a new investigation with spectral projectors” (talk) The XVth Quark confinement and the Hadron spectrum conference, Stavanger (Norway), 1-6 August, 2022.

Partecipazione ad eventi divulgativi

1. “Il calcolo delle masse degli adroni (e cosa sono gli adroni)”, Linux Day 2011, 22 Ottobre 2011, Pisa.
2. “Computer e quark”, BRIGHT2019 (Notte dei Ricercatori) “Speaker’s Corner: pillole di Scienza”, 27 Settembre 2019, Pisa.

3. “Fisica e probabilità: introduzione ai metodi Monte Carlo e applicazioni in fisica statistica” Seminari di Fisica, IV edizione 2020/2021 - Associazione culturale “Scholé” in collaborazione con il Liceo Scientifico “Volta” di Reggio Calabria, 7-9 Aprile 2021 (online).

Curriculum Vitae

PERSONAL INFORMATION **Giulia Maria de Divitiis**

EDUCATION AND TRAINING

08 Jan 2014 - 08 Jan 2023 **Habilitation as Associate Professor in Theoretical Physics**
(sc 02/A2, ssd FIS/02) MIUR, Italian Ministry of Education, Universities and Research

1991-1994 **Ph.D in Physics**
Dept of Physics, University of Rome "Tor Vergata", Italy
Thesis Title: "La determinazione della costante di accoppiamento forte nella formulazione della Cromo Dinamica Quantistica su reticolo: il collegamento con le definizioni utilizzate nelle predizioni sperimentali"
Supervisor: Prof. Roberto Petronzio

29 Nov 1990 **Master degree in Physics**
Dept of Physics, University of Rome La Sapienza, Italy
Grade: 110/110 cum laude
Thesis Title: "Calibrazione del calorimetro elettromagnetico dell'esperimento L3 attraverso l'analisi di muoni cosmici"
Supervisors: Prof. Bruno Borgia and Dr. Marcella Diemoz

PROFESSIONAL EXPERIENCE

02 Nov 2022 - Present **Associate Professor**
Associate Professor at Dept of Physics, University of Rome "Tor Vergata", Italy
settore concorsuale 02/A2: Fisica Teorica delle Interazioni Fondamentali
settore scientifico disciplinare FIS/02: Fisica teorica, modelli e metodi matematici

02 Nov 1998 - 01 Nov 2022 **Researcher**
Researcher at Dept of Physics, University of Rome "Tor Vergata", Italy
RTI Ricercatore a Tempo Indeterminato
settore concorsuale 02/A2: Fisica Teorica delle Interazioni Fondamentali
settore scientifico disciplinare FIS/02: Fisica teorica, modelli e metodi matematici

Feb 1999 - May 1999 **Visiting Researcher**
DESY laboratory, Hamburg, Germany

Aug 1997 - Jul 1998 **Post Doctoral Fellow**
Department of Physics and Astronomy, Southampton, U.K.

Jun 1995 - May 1997 **Technical Assistant**
Fixed-term contract at INFN "Tor Vergata"/Roma2 Unit, Rome, Italy
Tecnologo INFN a tempo determinato

TEACHING EXPERIENCE

1999-present Courses held as lecturer or teaching assistant at the Dept of Physics, University of Rome "Tor Vergata", Italy: Elementi di QCD non perturbativa - Meccanica Quantistica - Quantum Mechanics - Fenomenologia delle Particelle Elementari - Meccanica Quantistica 2 - Fisica Teorica 1 e 2 - Istituzioni di Fisica Teorica

SUPERVISORY EXPERIENCE

2012-present Supervisor of 20 Bachelor students, 3 Master students, 1 PhD student
Co-Supervisor of 1 INFN Postdoctoral Fellow

ADMINISTRATIVE EXPERIENCE

2011-present INFN National Research Networks: QCCLAT - ENP - LQCD123 - QNP - RM123 - RM21
Coordinator of the Rome "Tor Vergata" Unit

2009-2015 Responsible for workplace safety of the APE (Array Processor Experiment) Laboratory, Dept of Physics, University of Rome "Tor Vergata", Italy
(Dirigente per la sicurezza del Laboratorio APE)

MEMBERSHIPS

- INFN, National Institute of Nuclear Physics, Italy (Fellowship, incarico di ricerca scientifica)
- CAST, Centre for Applications of Calculus to Science and Technology, Dept of Physics, University of Rome "Tor Vergata", Italy

REASERCH NETWORKS

2018-2019 "Tor Vergata" University, PLNUGAMMA(PI: prof. N. Tantalo)
2015-2016 "Tor Vergata" University, LIBETOV(PI: prof. R. Frezzotti)
2013-2015 Progetto Premiale INFN, SUMA (SUper MAAssive computing project)
1999-present MIUR National Research Networks
PRIN 1999, PRIN 2001, PRIN 2004, PRIN 2006, PRIN 2009, PRIN 2022

REASERCH INTERESTS

- Theoretical Elementary Particle Physics, Quantum Field Theory
- Lattice Gauge Theories, Lattice QCD, numerical simulations
- Data analysis methods and models
- Flavour Physics, Heavy mesons and baryons
- Isospin Breaking effects from Lattice QCD+QED
- Non-perturbative renormalisation, Non-perturbative improvement

REASERCH ACTIVITY

My research activity is mainly focused on the study of QCD through numerical simulations on the lattice. In particular, in collaboration with the Tor Vergata lattice theory group, I have given significant contributions to:

- Non-perturbative computation of the running coupling constant of strong interactions.
- Determination of coefficients that enter the improvement programme of the QCD Wilson action and operators.
- Non-perturbative study of heavy-flavour physics.
- New techniques have been developed in lattice computations, such as "flavor twisted" boundary conditions for fermionic variables on finite volume.
- Study of isospin breaking corrections to hadronic processes.

Recent activity My on-going long-term project regards lattice determinations of the SM kaon-mixing matrix elements.

PUBLICATIONS AND BIBLIOMETRICS

25 peer-reviewed publications and 16 conference proceedings

Google Scholar Citations of all papers: 1886
h-index= 19
i10-index = 21 (n. publications with more than 10 citations)
https://scholar.google.com/citations?hl=en&user=Zg_4wRMAAAAJ&view_op=list_works&sortby=pubdate

Curriculum Vitae

Francesco Sanfilippo

Education, work experience

- 2020-current **Senior Researcher** at INFN Roma Tre (Italy)
- 2018-2019 **Junior Researcher** at INFN Roma Tre (Italy)
- 2017 **Postdoc** at INFN Roma Tre (Italy)
- 2014-2016 **Postdoc Fellow** at Southampton University (United Kingdom)
- 2012-2013 **Postdoc Fellow** at Laboratoire de Physique Théorique, Université Paris-Sud XI, Orsay (France)
- 2009-2011 **Ph.D Student** at Sapienza University, Rome (Italy). Title of research project: “*Precision flavor physics from Lattice QCD*”, advisor Guido Martinelli.
- 2003-2008 **Undergraduate** at Genoa University (Italy). Title of thesis: “*Thermodynamics of Strong Interactions at finite chemical potential*”, advisor Massimo D’Elia.

Schools and conferences

- Lattice 2025, 01st November-8th November 2025, Liverpool, UK
- Lattice 2024, 28th July-3rd August 2025, Liverpool, UK
- Fifth Plenary Workshop of the Muon $g-2$ Theory Initiative, 5 - 9 September 2022, Edinburgh
- Lattice 2021, 26-30 July 2021 Zoom/Gather@MIT
- SM&FT 2019 - The XVIII Workshop on Statistical Mechanics and nonperturbative Field Theory, 11-13 December 2019, Bari
- Frontiers in Lattice Quantum Field Theory, 21 May - 1 June 2018, Madrid
- Getting to Grips With QCD, 4-6 April 2018, Paris

- Lattice workshop, 27 August-2 September 2017, Santa Fe, New Mexico, US
- XQCD 2017, 26-28 July 2017, Pisa, Italy
- XQCD 2016, 31 July - 3 August 2016, Plymouth, United Kingdom
- Lattice 2016, 24-30 July 2016, Southampton University, United Kingdom
- 66th Lindau Nobel Laureate Meeting, 25 June 2016 - 01 July 2016, Lindau, Germany
- RBC Workshop on Lattice Gauge Theories 2016, 9-11 March 2016, Brookhaven National Laboratory, Upton, New York, US
- The landscape of Flavour Physics towards the high intensity, 9-10 December 2014, Pisa, Italy
- CKM Workshop 2014, 8-12 September 2014, Vienna, Austria
- Lattice 2014 (invited speaker to give a **plenary talk** of review over quark masses), 23-28 June 2014, New York City, US
- Rencontres de Moriond 2014 (invited speaker to give a **plenary talk** of review over heavy flavour phenomenology), 15-22 March 2014, La Thuile, Italy
- UK flavor Workshop, 4-7 September 2013, Durham, UK
- Lattice 2013, 29 July - 3 August 2013, Mainz, Germany
- Quarkonium 2013, 22-26 April 2013, Beijing, China
- Charmonium Workshop, 6-8 March 2013, LAL Orsay, France
- International workshop on " $B \rightarrow D^{**}$ decay and related issues", November 2012, Paris, France
- Xth Quark Confinement and the Hadron Spectrum, 8-12 October 2012, Munich, Germany
- International school of subnuclear physics, 23 June - 2 July 2012, Erice, Italy
- Workshops "New Frontiers in Lattice Gauge Theory", 27-08 to 28-09-2012, GGI institute, Arcetri, Firenze
- IFAE (Incontri di Fisica delle Alte Energie), 7-9 April 2011, Roma
- Lattice 2011, 10-16 July 2011, Lake Tahoe, California, US
- Italian Informal Meeting on Theoretical Physics 2011, 27-29 April 2011, Perugia, Italy
- Lattice 2010, 14-19 June 2010, Villasimius, Italy
- LNF Institute on Frontiers of Strong Interactions, 17 May - 11 June 2010, INFN laboratories Frascati, Italy
- IFAE (Incontri di Fisica delle Alte Energie), 7-9 April 2010, Roma "La Sapienza" University
- Workshop "Indirect Searches for New Physics at the time of LHC", 15-02 to 26-03-2010, GGI institute, Arcetri, Firenze
- Flavianet Summer school on Flavor Physics, 6-18 September 2009, Karlsruhe, Germany
- Italian Informal Meeting on Theoretical Physics 2009, 8-10 June 2009, Sestri Levante

Teaching

- 2022-2025: Data Management, Roma Tre University, Roma (IT)
- 2021: Fisica Teorica I, Roma Tre University, Roma (IT)
- 2014 - 2017: Parallel Linear algebra course at Master in HPC at Sissa/ICTP, Trieste (IT)
- 2014 - 2015: Introductory course on Lattice QCD for graduate students in physics, University of Southampton (UK)
- 2010 - 2011: Demonstrator of General Physics course for Biomedical Engineering at Campus Biomedico, Roma (IT)

Organizational and editorial experience

- Organizer of the workshop "Hot QCD Matters", 17-19 May 2017 Laboratori Nazionali di Frascati
- Referee for Physical Review D, Physical Review Letters, Journal of High Energy Physics, Europhysics Letters, more than 40 publications

Scientific activity

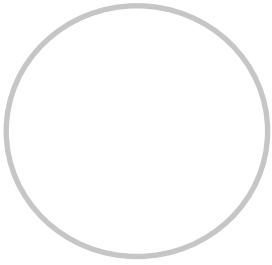
- Author of more than 70 publications on peer reviewed journals
- Proceeding contributions to more than 90 presentation at conferences
- Main research activity: phenomenology of the strong interactions in the nonperturbative regime, in particular the phase diagram of QCD at finite temperature and densities, QCD vacuum and flavor physics matrix elements

Grants

- FIS 2021, *Hadronic Electron-Positron Cross Section From Lattice Quantum Chromodynamics*, 2024-2028 (440k€)
- CA-LAT, *Calculations on the Lattice*, 2018-2021 (20k€)
- INFN manager for Prin 20172LNEEZ, *Precision Searches for New Physics*, 2019-2022 (180k€)

Languages

<i>Italian</i>	mother tongue
<i>English</i>	very good
<i>Spanish</i>	very good
<i>French</i>	good



Nazario Tantalò

WORK EXPERIENCE

 **University of Rome Tor Vergata** – Rome, Italy

City: Rome | Country: Italy | Name of unit or department: Physics

Full Professor in Theoretical Physics

[17/03/2025 – Current]

 **University of Rome Tor Vergata** – Rome, Italy

City: Rome | Country: Italy

Associate Professor In Theoretical Physics

[30/09/2017 – 16/03/2025]

 **University of Rome Tor Vergata** – Rome, Italy

City: Rome | Country: Italy

Research Staff, Permanent

[31/10/2010 – 29/09/2017]

 **CERN Physics Department** – Geneva, Switzerland

City: Geneva | Country: Switzerland

Scientific Associate

[28/02/2014 – 27/02/2015]

 **INFN** – Rome, Italy

City: Rome | Country: Italy

Research Staff, Non Permanent

[30/04/2007 – 30/10/2010]

 **INFN** – Rome, Italy

City: Rome | Country: Italy

Research Fellow

[30/04/2005 – 29/04/2007]

 **Museo Storico della Fisica e Centro Ricerche "E. Fermi"** – Rome, Italy

City: Rome | Country: Italy

Scientific Advisor and Research Fellow

[29/02/2004 – 30/10/2010]

 **University of Rome La Sapienza** – Rome, Italy

City: Rome | Country: Italy

Scientific Fellow

[31/05/2001 – 29/10/2001]

EDUCATION AND TRAINING

Ph.D in Physics

University of Rome Tor Vergata [31/10/2001 – 29/04/2005]

Master Degree in Physics

University of Rome La Sapienza [1996 – 2001]

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PROJECTS

[2019 – Current]

Flavour Lattice Averaging Group (FLAG) member of the international collaboration Flavour Lattice Averaging Group (FLAG), providing ratings and averages of the non-perturbative lattice results for the hadronic observables relevant for flavour physics. More info on

Link: <http://flag.unibe.ch>

[2009 – Current]

RM123 INFN scientific initiative and lattice collaboration I have been one of the founders of the RM123 INFN scientific initiative and lattice collaboration. I'm currently the responsible of the Tor Vergata node of the INFN initiative, recently re-evaluated and funded again, under the name LQCD123

[2022 – Current]

Extended Twisted Mass Collaboration I'm a member of the international ETM lattice Collaboration focused on performing state-of-the-art non-perturbative lattice simulations of the theory of strong interactions and in the calculation of the QED radiative corrections to hadronic processes.

[2014 – Current]

International Collaboration RC* I'm one of the founders and scientific leaders of the International Collaboration RC* focused on QCD+QED lattice simulations

[2024 – Current]

PRIN 2022: Nonperturbative aspects of fundamental interactions, in the Standard Model and beyond Member of the project, funded by MUR, with a local budget for the University of Rome Tor Vergata of 65KEuro.

[2018 – 2021]

Strong Interactions: from Lattice QCD to Strings, Branes and Holography member of the project, funded by the University of Rome Tor Vergata, budget 16KEuro, to study strong-interacting new physics models with lattice and string-theory techniques

[2016 – 2020]

European Joint Doctorate STIMULATE member of the project, funded by the European Commission, Horizon2020, Marie Sklodowska-Curie Action with a budget for the Tor Vergata Unit of 500KEuro. More info on

Link: <http://stimulate-ejd.eu/people>

[2017 – 2019]

PLNUGAMMA PI of the project, funded by the University of Rome Tor Vergata, budget 12KEuro, to perform the first non-perturbative calculation of the QED radiative corrections real-photon-emission contributions to the leptonic decay rates of light and heavy-light pseudoscalar mesons

[2013 – 2016]

LIBETOV member of the project, funded by the University of Rome Tor Vergata, budget 18KEuro, to study leading isospin breaking effects on hadronic observables

[2008 – 2011]

PRIN 2009: Teorie di Campo su Reticolo all'Epoca di LHC I have been a member of the project, funded by the MIUR, with a local budget for the University of Tor Vergata node of about 71KEuro

[2007 – 2011]

APE collaboration and INFN committee for super-computing resources in theoretical physics INFN

[2003 – 2010]

Problemi Interdisciplinari riconducibili a Simulazioni Numeriche su Larga Scala *Museo Storico della Fisica e Centro Studi e Ricerche E. Fermi* I have been a member of the scientific board and I have directed a supercomputing center hosting the E. Fermi PC clusters in a dedicated lab at the University of Rome Tor Vergata.

SKILLS

Parallel computing systems / Knowledge of programming paradigms (object oriented parallel logical and functional) / Advanced Parallel Programming knowledge / Machine Learning

CONFERENCES AND SEMINARS

overview I have given more than 80 talks at international conferences, workshops, universities, labs and research institutions. Here below I list a selection of the invited and plenary talks I have given at international conferences and workshops.

[2025] Cortona, Italy

Hadronic spectral densities from the lattice New Frontiers in Theoretical Physics

[2024] CERN

Smearred R-ratio and applications to g-2 CERN Theoretical Institute LATTICE@TH 2024

[2023] Edinburgh, UK

Converging on QC+ED prescriptions FLAG international workshop on the definition of QCD

[2022] Bonn, Germany

Matching lattice QC+ED to Nature Plenary talk at The XXXIX International Symposium on Lattice Field Theory

[2022] Stavanger, Norway

Non-perturbative calculation of radiative corrections in weak decays Plenary talk at the 14th International Conference on Quark Confinement and the Hadron Spectrum

[2021] Melbourne, Australia

QED radiative corrections to pi and K decays 11th International Workshop on the CKM Unitarity Triangle (CKM 2021)

[2021] Cyprus

Extraction of hadronic spectral densities from lattice correlators International Conference on Multiscale Physics and Biological Systems

[2021] ECT*, Trento, Italy

Numerical approaches to inverse problems International Workshop on Tackling the real-time challenge in strongly correlated systems: spectral properties from euclidean Path integrals

[2019] CERN

QED radiative corrections to hadronic decays Theory colloquium and plenary talk at the Advances in Lattice Gauge Theory 2019 workshop

[2018] Heidelberg, Germany

|Vus/Vud| from $K\mu 2/K\pi 2$ 10th International Workshop on the CKM Unitarity Triangle (CKM 2018)

[2017] Monte Porzio Catone, Italy

International Symposium in honour of Roberto Petronzio Member of the organization committee

[2014] Vienna, AU

Review of the Lattice QCD results 8th International Workshop on the CKM Unitarity Triangle (CKM 2014)

[2013] Mainz, Germany

Isospin Breaking Effects in Lattice QCD Plenary talk at The XXXI International Symposium on Lattice Field Theory

[2012] Cincinnati, USA

Lattice QCD calculations of isospin corrections to K_{l2} and K_{l3} decays 7th International Workshop on the CKM Unitarity Triangle (CKM 2012)

[2011] Grenoble, France

Lattice flavour physics 2011 Europhysics Conference On High Energy Physics: HEP 2011 (EPS-HEP2011)

[2010] Villasimius, Italia

LATTICE 2010 Member of the Organizing Committee of The XXVIII International Symposium on Lattice Field Theory

[2008] Rome, Italy

Future prospects for LQCD form factors calculations 5th International Workshop on the CKM Unitarity Triangle (CKM 2008)

[2008] Philadelphia, USA

Heavy-light meson's physics in Lattice QCD 34th International Conference on High Energy Physics (ICHEP 2008)

[2008] La Biodola, Italy

Lattice QCD in view of the SuperB XVII SuperB Workshop and Kick Off Meeting

[2006] Nagoya, Japan

Lattice calculations for B and K mixing 4th International Workshop on the CKM Unitarity Triangle (CKM 2006)

TEACHING

[2023 – Current]

Ph.D. School in Physics

University of Rome Tor Vergata

member of the Board of Teachers

[2018 – Current]

Quantum Field Theory and Particle Physics

University of Rome Tor Vergata

undergraduate and Ph.D students

[2024 – Current]

Computational Physics

University of Rome Tor Vergata

undergraduate students

[2018 – 2023]

Advanced Quantum Mechanics, Complements

University of Rome Tor Vergata

main course Advanced Quantum Mechanics, Prof. A. Salvio

undergraduate students

[2019 – 2020]

Inverse Problems

STIMULATE European Joint Doctorate Horizon2020

Marie Skodowska–Curie Action

mini course for Ph.D. students

[2019 – 2020]

Finite Volume Effects in Lattice QCD+QED Simulations

EUROPLEX European Joint Doctorate Horizon2020

Marie Skodowska–Curie Action

mini course for Ph.D. students

[2015 – 2018]

Phenomenology of the Elementary Particles

University of Rome Tor Vergata

undergraduate and Ph.D students

[2016 – 2018]

Classical Field Theory

University of Rome Tor Vergata

undergraduate students

[2014 – 2018]

Quantum Field Theory and Particle Physics, Complements

University of Rome Tor Vergata

main course Quantum Field Theory and Particle Physics, Prof. M. Bianchi

undergraduate and Ph.D. students

[2010 – 2018]

Advanced Quantum Mechanics, Complements

University of Rome Tor Vergata

main course Advanced Quantum Mechanics, Prof. E. Pace

undergraduate students

[2003 – 2012]

Lattice Gauge Theories

University of Rome Tor Vergata

undergraduate and Ph.D. students

[2003 – 2012]

Quantum Field Theory and Particle Physics, Complements

University of Rome Tor Vergata

main course: Quantum Field Theory and Particle Physics, Prof. R. Petronzio

undergraduate and Ph.D. students

[2001 – 2002]

Classical Mechanics, Complements

University of Rome Tor Vergata

main course: Classical Mechanics, Prof. G.C. Rossi

undergraduate students

EVALUATION COMMITTEES

[2025 – Current]

INFN HPC Committee

[2004 – Current]

Referee

I'm regularly serving as referee for important scientific journals such as Science, PRL, JHEP, Nuclear Physics B, Physics Letters B.

I have also served as referee for DiRAC (the national HPC resource for the UK astronomy, cosmology, particle physics and nuclear physics communities) and the Rita Levi-Montalcini fellowship programme of the Italian MUR.

I'm also regularly serving as referee for the Ph.D programmes of international institutions

[2017 – 2025]

INFN Evaluation Working Group (GLV)

The group has the responsibility of collecting, analyzing and evaluating the research products of the INFN. More info on

[2023 – Current]

Research Quality Committee Physics Department University of Rome Tor Vergata

[2014 – 2015]

INFN Fubini prize

PUBLICATIONS

The full list of my publications can be found at

INSPIRE-HEP

<https://inspirehep.net/literature?sort=mostrecent&size=25&page=1&q=f%20a%20n%20tantalo&ui-citation-summary=true>

GOOGLE-SCHOLAR

<https://scholar.google.com/citations?user=I3o7ZdoAAAAJ&hl=it>

2025 PEER-REVIEWED

[Lattice QCD study of the \$\chi_{c1} \rightarrow J/\psi\$ decay](#)

[Damir Bečirević \(IJCLab, Orsay\)](#), [Roberto Di Palma \(INFN, Rome\)](#), [Roberto Frezzotti \(Rome U., Tor Vergata\)](#), [Giuseppe Gagliardi \(INFN, Rome\)](#), [Vittorio Lubicz \(INFN, Rome\)](#) et al.

e-Print: [2506.17030](#) [hep-lat]

DOI: [10.1016/j.physletb.2025.139811](#) (publication)

Published in: Phys.Lett.B 868 (2025), 139811

[Lattice QCD determination of the radiative decay rates \$hc \rightarrow \eta_{c\gamma}\$ and \$hb \rightarrow \eta_{b\gamma}\$](#)

[D. Bečirević \(IJCLab, Orsay\)](#), [R. Di Palma \(INFN, Rome\)](#), [R. Frezzotti \(Rome U., Tor Vergata\)](#), [G. Gagliardi \(INFN, Rome\)](#), [V. Lubicz \(INFN, Rome\)](#) et al.

e-Print: [2504.16807](#) [hep-lat]

DOI: [10.1103/ysxn-sxj7](#) (publication)

Published in: Phys.Rev.D 112 (2025) 3, 034505

[Kaon radiative leptonic decay rates from lattice QCD simulations at the physical point](#)

[R. Di Palma \(INFN, Rome3 and Rome III U.\)](#), [R. Frezzotti \(Rome U., Tor Vergata and INFN, Rome2\)](#), [G. Gagliardi \(INFN, Rome3 and Rome III U.\)](#), [V. Lubicz \(INFN, Rome3 and Rome III U.\)](#), [G. Martinelli \(U. Rome La Sapienza \(main\) and INFN, Rome\)](#) et al.

e-Print: [2504.08680](#) [hep-lat]

DOI: [10.1103/r55k-cnqg](#) (publication)

Published in: Phys.Rev.D 111 (2025) 11, 114523

[Inclusive Semileptonic Decays of the Ds Meson: Lattice QCD Confronts Experiments](#)

[Alessandro De Santis \(Mainz U. and Darmstadt, GSI\)](#), [Antonio Evangelista \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Roberto Frezzotti \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Giuseppe Gagliardi \(Rome III U. and INFN, Rome3\)](#), [Paolo Gambino \(INFN, Turin and Turin U.\)](#) et al.

e-Print: [2504.06064](#) [hep-lat]

DOI: [10.1103/snc6-cpz6](#) (publication)

Published in: Phys.Rev.Lett. 135 (2025) 12, 121901

[Inclusive semileptonic decays of the Ds meson: A first-principles lattice QCD calculation](#)

[Alessandro De Santis](#) (Mainz U. and Darmstadt, GSI), [Antonio Evangelista](#) (Rome U., Tor Vergata and INFN, Rome2), [Roberto Frezzotti](#) (Rome U., Tor Vergata and INFN, Rome2), [Giuseppe Gagliardi](#) (Rome III U. and INFN, Rome3), [Paolo Gambino](#) (INFN, Turin and Turin U.) et al.

e-Print: [2504.06063](#) [hep-lat]

DOI: [10.1103/3cxg-k322](#) (publication)

Published in: Phys.Rev.D 112 (2025) 5, 054503

[Strange and charm quark contributions to the muon anomalous magnetic moment in lattice QCD with twisted-mass fermions](#)

Extended Twisted Mass Collaboration • [C. Alexandrou](#) (Cyprus U. and Cyprus Inst.) et al.

e-Print: [2411.08852](#) [hep-lat]

DOI: [10.1103/PhysRevD.111.054502](#) (publication)

Published in: Phys.Rev.D 111 (2025) 5, 054502

[Bayesian solution to the inverse problem and its relation to Backus–Gilbert methods](#)

[Luigi Del Debbio](#) (U. Edinburgh, Higgs Ctr. Theor. Phys.), [Alessandro Lupo](#) (Marseille, CPT), [Marco Panero](#) (Turin U. and INFN, Turin), [Nazario Tantalo](#) (Turin U. and INFN, Turin)

e-Print: [2409.04413](#) [hep-lat]

DOI: [10.1140/epjc/s10052-025-13885-9](#)

Published in: Eur.Phys.J.C 85 (2025) 2, 185

[Scattering amplitudes from Euclidean correlators: Haag-Ruelle theory and approximation formulae](#)

[Agostino Patella](#) (Humboldt U., Berlin and DESY, Zeuthen), [Nazario Tantalo](#) (Rome U., Tor Vergata and INFN, Rome)

e-Print: [2407.02069](#) [hep-lat]

DOI: [10.1007/JHEP01\(2025\)091](#)

Published in: JHEP 01 (2025), 091

2024 PEER-REVIEWED

[Inclusive Hadronic Decay Rate of the \$\tau\$ Lepton from Lattice QCD: The \$\tau \rightarrow \pi^0 \tau^+ \nu_\tau\$ Flavor Channel and the Cabibbo Angle](#)

Extended Twisted Mass Collaboration • [Constantia Alexandrou](#) (Cyprus U. and Cyprus Inst.) et al.

e-Print: [2403.05404](#) [hep-lat]

DOI: [10.1103/PhysRevLett.132.261901](#) (publication)

Published in: Phys.Rev.Lett. 132 (2024) 26, 261901

[\$\tau \rightarrow \pi^0 \tau^+ \nu_\tau\$ decay rate at large \$q^2\$ from lattice QCD](#)

[R. Frezzotti](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (Rome U., Tor Vergata and INFN, Rome2), [G. Gagliardi](#) (INFN, Rome3), [F. Sanfilippo](#) (INFN, Rome3), [S. Simula](#) (INFN, Rome3) et al.

e-Print: [2402.03262](#) [hep-lat]

DOI: [10.1103/PhysRevD.109.114506](#) (publication)

Published in: Phys.Rev.D 109 (2024) 11, 114506

2023 PEER-REVIEWED

[Inclusive hadronic decay rate of the \$\tau\$ lepton from lattice QCD](#)

Extended Twisted Mass Collaboration • [Antonio Evangelista](#) (Rome U., Tor Vergata and INFN, Rome2) et al.

e-Print: [2308.03125](#) [hep-lat]

DOI: [10.1103/PhysRevD.108.074513](#) (publication)

Published in: Phys.Rev.D 108 (2023) 7, 074513

[Teaching to extract spectral densities from lattice correlators to a broad audience of learning-machines](#)

[Michele Buzzicotti](#) (Rome U., Tor Vergata and INFN, Rome2), [Alessandro De Santis](#) (Rome U., Tor Vergata and INFN, Rome2), [Nazario Tantalò](#) (Rome U., Tor Vergata and INFN, Rome2)

e-Print: [2307.00808](#) [hep-lat]

DOI: [10.1140/epjc/s10052-024-12399-0](#)

Published in: Eur.Phys.J.C 84 (2024) 1, 32

[Spectral-function determination of complex electroweak amplitudes with lattice QCD](#)

[R. Frezzotti](#) (Rome U., Tor Vergata), [N. Tantalo](#) (Rome U., Tor Vergata), [G. Gagliardi](#) (Rome III U.), [F. Sanfilippo](#) (Rome III U.), [S. Simula](#) (Rome III U.) et al.

e-Print: [2306.07228](#) [hep-lat]

DOI: [10.1103/PhysRevD.108.074510](#) (publication)

Published in: Phys.Rev.D 108 (2023) 7, 074510

[Lattice calculation of the \$\phi\phi\$ meson radiative form factors over the full kinematical range](#)

[R. Frezzotti](#) (Rome U., Tor Vergata), [N. Tantalo](#) (Rome U., Tor Vergata), [G. Gagliardi](#) (Rome III U.), [F. Sanfilippo](#) (Rome III U.), [S. Simula](#) (Rome III U.) et al.

e-Print: [2306.05904](#) [hep-lat]

DOI: [10.1103/PhysRevD.108.074505](#) (publication)

Published in: Phys.Rev.D 108 (2023) 7, 074505

[Probing the Energy-Smeared \$\phi\phi\$ Ratio Using Lattice QCD](#)

Extended Twisted Mass Collaboration (ETMC) Collaboration • [Constantia Alexandrou](#) (Cyprus U. and Cyprus Inst.) et al.

e-Print: [2212.08467](#) [hep-lat]

DOI: [10.1103/PhysRevLett.130.241901](#) (publication)

Published in: Phys.Rev.Lett. 130 (2023) 24, 241901

[Multi-representation dynamics of SU\(4\) composite Higgs models: chiral limit and spectral reconstructions](#)

[Luigi Del Debbio](#) (U. Edinburgh, Higgs Ctr. Theor. Phys.), [Alessandro Lupo](#) (U. Edinburgh, Higgs Ctr. Theor. Phys.), [Marco Panero](#) (Turin U. and INFN, Turin), [Nazario Tantalò](#) (INFN, Rome2 and Rome U., Tor Vergata)

e-Print: [2211.09581](#) [hep-lat]

DOI: [10.1140/epjc/s10052-023-11363-8](#)

Published in: Eur.Phys.J.C 83 (2023) 3, 220

[First results on QCD+QED with \$C\Lambda^*\$ boundary conditions](#)

RCstar Collaboration • [Lucius Bushnaq](#) (Trinity Coll., Dublin) et al.

e-Print: [2209.13183](#) [hep-lat]

DOI: [10.1007/JHEP03\(2023\)012](#)

Published in: JHEP 03 (2023), 012

2022 PEER-REVIEWED

[Lattice QCD study of inclusive semileptonic decays of heavy mesons](#)

[Paolo Gambino](#) (Turin U.), [Shoji Hashimoto](#) (KEK, Tsukuba and Sokendai, Tsukuba), [Sandro Mächler](#) (Turin U. and Zurich U.), [Marco Panero](#) (Turin U., Alessandria), [Francesco Sanfilippo](#) (INFN, Rome3) et al.

e-Print: [2203.11762](#) [hep-lat]

DOI: [10.1007/JHEP07\(2022\)083](#)

Published in: JHEP 07 (2022), 083

[Virtual photon emission in leptonic decays of charged pseudoscalar mesons](#)

[G. Gagliardi](#) (INFN, Rome3), [F. Sanfilippo](#) (INFN, Rome3), [S. Simula](#) (INFN, Rome3), [V. Lubicz](#) (Rome III U. and INFN, Rome3), [E. Mazzetti](#) (Rome III U. and INFN, Rome3) et al.

e-Print: [2202.03833](#) [hep-lat]

DOI: [10.1103/PhysRevD.105.114507](#) (publication)

Published in: Phys.Rev.D 105 (2022) 11, 114507

[Inclusive rates from smeared spectral densities in the two-dimensional O\(3\) non-linear \$\sigma\$ -model](#)

[John Bulava](#) (DESY, Zeuthen), [Maxwell T. Hansen](#) (Edinburgh U.), [Michael W. Hansen](#) (Graz U.), [Agostino Patella](#) (Humboldt U., Berlin), [Nazario Tantalo](#) (INFN, Rome and Rome U.)

e-Print: [2111.12774](#) [hep-lat]

DOI: [10.1007/JHEP07\(2022\)034](#)

Published in: JHEP 07 (2022), 034

FLAG Review 2021

Flavour Lattice Averaging Group (FLAG) Collaboration • [Y. Aoki](#) (RIKEN AICS, Kobe) et al.

e-Print: [2111.09849](#) [hep-lat]

DOI: [10.1140/epjc/s10052-022-10536-1](#)

Published in: Eur.Phys.J.C 82 (2022) 10, 869

2021 PEER-REVIEWED

[Comparison of lattice QCD+QED predictions for radiative leptonic decays of light mesons with experimental data](#)

[R. Frezzotti](#) (Rome U., Tor Vergata and INFN, Rome2), [M. Garofalo](#) (Rome III U. and INFN, Rome3 and Bonn U., HISKP), [V. Lubicz](#) (Rome III U. and INFN, Rome3), [G. Martinelli](#) (Rome U. and INFN, Rome), [C.T. Sachrajda](#) (Southampton U.) et al.

e-Print: [2012.02120](#) [hep-ph]

DOI: [10.1103/PhysRevD.103.053005](#)

Published in: Phys.Rev.D 103 (2021) 5, 053005

[First lattice calculation of radiative leptonic decay rates of pseudoscalar mesons](#)

[A. Desiderio](#) (Rome U., Tor Vergata and INFN, Rome), [R. Frezzotti](#) (Rome U., Tor Vergata and INFN, Rome), [M. Garofalo](#) (Rome III U. and INFN, Rome3), [D. Giusti](#) (Regensburg U. and INFN, Rome3), [M. Hansen](#) (U. Southern Denmark, Odense, DIAS) et al.

e-Print: [2006.05358](#) [hep-lat]

DOI: [10.1103/PhysRevD.103.014502](#)

Published in: Phys.Rev.D 103 (2021) 1, 014502

2020 PEER-REVIEWED

[openQ*D code: a versatile tool for QCD+QED simulations](#)

RC* Collaboration • [Isabel Campos \(Cantabria Inst. of Phys.\)](#) et al.

e-Print: [1908.11673](#) [hep-lat]

DOI: [10.1140/epjc/s10052-020-7617-3](#)

Published in: Eur.Phys.J.C 80 (2020) 3, 195

2019 PEER-REVIEWED

[Light-meson leptonic decay rates in lattice QCD+QED](#)

[M. Di Carlo \(INFN, Rome and Rome U.\)](#), [D. Giusti \(INFN, Rome3 and Rome III U.\)](#), [V. Lubicz \(INFN, Rome3 and Rome III U.\)](#), [G. Martinelli \(INFN, Rome and Rome U.\)](#), [C.T. Sachrajda \(Southampton U.\)](#) et al.

e-Print: [1904.08731](#) [hep-lat]

DOI: [10.1103/PhysRevD.100.034514](#)

Published in: Phys.Rev.D 100 (2019) 3, 034514

[Extraction of spectral densities from lattice correlators](#)

[Martin Hansen \(INFN, Rome2\)](#), [Alessandro Lupo \(Rome U., Tor Vergata\)](#), [Nazario Tantalo \(Rome U., Tor Vergata and INFN, Rome2\)](#)

e-Print: [1903.06476](#) [hep-lat]

DOI: [10.1103/PhysRevD.99.094508](#)

Published in: Phys.Rev.D 99 (2019) 9, 094508

2018 PEER-REVIEWED

[Gauge invariant determination of charged hadron masses](#)

[Martin Hansen \(Southern Denmark U., CP3-Origins\)](#), [Biagio Lucini \(Swansea U. \(main\)\)](#), [Agostino Patella \(CERN and Plymouth U.\)](#), [Nazario Tantalo \(U. Rome 2, Tor Vergata \(main\) and INFN, Rome2\)](#)

e-Print: [1802.05474](#) [hep-lat]

DOI: [10.1007/JHEP05\(2018\)146](#)

Published in: JHEP 05 (2018), 146

[First lattice calculation of the QED corrections to leptonic decay rates](#)

[D. Giusti \(INFN, Rome3 and Rome III U.\)](#), [V. Lubicz \(INFN, Rome3 and Rome III U.\)](#), [G. Martinelli \(INFN, Rome and Rome U.\)](#), [C.T. Sachrajda \(Southampton U.\)](#), [F. Sanfilippo \(INFN, Rome3\)](#) et al.

e-Print: [1711.06537](#) [hep-lat]

DOI: [10.1103/PhysRevLett.120.072001](#)

Published in: Phys.Rev.Lett. 120 (2018) 7, 072001

2017 PEER-REVIEWED

[Leading isospin-breaking corrections to pion, kaon and charmed-meson masses with Twisted-Mass fermions](#)

[D. Giusti \(INFN, Rome3 and Rome III U.\)](#), [V. Lubicz \(INFN, Rome3 and Rome III U.\)](#), [C. Tarantino \(INFN, Rome3 and Rome III U.\)](#), [G. Martinelli \(Rome U. and INFN, Rome\)](#), [F. Sanfilippo \(INFN, Rome3\)](#) et al.

e-Print: [1704.06561](#) [hep-lat]

DOI: [10.1103/PhysRevD.95.114504](#)

Published in: Phys.Rev.D 95 (2017) 11, 114504

[Finite-Volume QED Corrections to Decay Amplitudes in Lattice QCD](#)

[V. Lubicz](#) ([Rome III U.](#) and [INFN, Rome3](#)), [G. Martinelli](#) ([CERN](#) and [INFN, Rome](#) and [Rome U.](#)), [C.T. Sachrajda](#) ([Southampton U.](#)), [F. Sanfilippo](#) ([Southampton U.](#)), [S. Simula](#) ([INFN, Rome3](#)) et al.

e-Print: [1611.08497](#) [hep-lat]

DOI: [10.1103/PhysRevD.95.034504](#)

Published in: Phys.Rev.D 95 (2017) 3, 034504

2016 PEER-REVIEWED

[Charged hadrons in local finite-volume QED+QCD with \$C^{*+}\$ boundary conditions](#)

[Biagio Lucini](#) ([Swansea U.](#)), [Agostino Patella](#) ([CERN](#) and [Plymouth U., Math. Stat. Dept.](#)), [Alberto Ramos](#) ([CERN](#)), [Nazario Tantalo](#) ([CERN](#) and [INFN, Rome2](#) and [Rome U., Tor Vergata](#))

e-Print: [1509.01636](#) [hep-th]

DOI: [10.1007/JHEP02\(2016\)076](#)

Published in: JHEP 02 (2016), 076

2015 PEER-REVIEWED

[QED Corrections to Hadronic Processes in Lattice QCD](#)

[N. Carrasco](#) ([Rome III U.](#) and [INFN, Rome3](#)), [V. Lubicz](#) ([Rome III U.](#) and [INFN, Rome3](#)), [G. Martinelli](#) ([INFN, Rome](#) and [SISSA, Trieste](#)), [C.T. Sachrajda](#) ([Southampton U.](#)), [N. Tantalo](#) ([CERN](#) and [INFN, Rome2](#) and [Rome U., Tor Vergata](#)) et al.

e-Print: [1502.00257](#) [hep-lat]

DOI: [10.1103/PhysRevD.91.074506](#)

Published in: Phys.Rev.D 91 (2015) 7, 074506

2013 PEER-REVIEWED

[Doubly charmed tetraquarks in \$B_c\$ and \$\Xi_{bc}\$ decays](#)

[A. Esposito](#) ([Rome U.](#) and [Columbia U.](#)), [M. Papinutto](#) ([Rome U.](#) and [INFN, Rome](#)), [A. Pilloni](#) ([Rome U.](#) and [INFN, Rome](#)), [A.D. Polosa](#) ([Rome U.](#) and [INFN, Rome](#)), [N. Tantalo](#) ([Rome U., Tor Vergata](#) and [INFN, Rome2](#))

e-Print: [1307.2873](#) [hep-ph]

DOI: [10.1103/PhysRevD.88.054029](#)

Published in: Phys.Rev.D 88 (2013) 5, 054029

[Leading isospin breaking effects on the lattice](#)

RM123 Collaboration • [G.M. de Divitiis](#) ([Rome U., Tor Vergata](#) and [INFN, Rome2](#)) et al.

e-Print: [1303.4896](#) [hep-lat]

DOI: [10.1103/PhysRevD.87.114505](#)

Published in: Phys.Rev.D 87 (2013) 11, 114505

2012 PEER-REVIEWED

[On the extraction of zero momentum form factors on the lattice](#)

[G.M. de Divitiis](#) ([Rome U., Tor Vergata](#) and [INFN, Rome2](#)), [R. Petronzio](#) ([Rome U., Tor Vergata](#) and [INFN, Rome2](#)), [N. Tantalo](#) ([Rome U., Tor Vergata](#) and [INFN, Rome2](#))

e-Print: [1208.5914](#) [hep-lat]

DOI: [10.1016/j.physletb.2012.10.035](#)

Published in: Phys.Lett.B 718 (2012), 589-596

Parameters of Heavy Quark Effective Theory from Nf=2 lattice QCD

ALPHA Collaboration • [Benoit Blossier](#) (Orsay, LPT) et al.

e-Print: [1203.6516](#) [hep-lat]

DOI: [10.1007/JHEP09\(2012\)132](#)

Published in: JHEP 09 (2012), 132

Isospin breaking effects due to the up-down mass difference in Lattice QCD

[G.M. de Divitiis](#) (Rome U., Tor Vergata and INFN, Rome2), [P. Dimopoulos](#) (Rome U. and INFN, Rome), [R. Frezzotti](#) (Rome U., Tor Vergata and INFN, Rome2), [V. Lubicz](#) (Rome III U. and INFN, Rome3), [G. Martinelli](#) (SISSA, Trieste and INFN, Rome) et al.

e-Print: [1110.6294](#) [hep-lat]

DOI: [10.1007/JHEP04\(2012\)124](#)

Published in: JHEP 04 (2012), 124

2010 PEER-REVIEWED

Distance preconditioning for lattice Dirac operators

[G.M. de Divitiis](#) (Rome U., Tor Vergata and INFN, Rome2), [R. Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [1006.4028](#) [hep-lat]

DOI: [10.1016/j.physletb.2010.07.031](#)

Published in: Phys.Lett.B 692 (2010), 157-160

Non-perturbative improvement of quark mass renormalization in two-flavour lattice QCD

[Patrick Fritsch](#) (Southampton U. and Munster U., ITP), [Jochen Heitger](#) (Munster U., ITP), [Nazario Tantalo](#) (Rome U., Tor Vergata and INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [1004.3978](#) [hep-lat]

DOI: [10.1007/JHEP08\(2010\)074](#)

Published in: JHEP 08 (2010), 074

Flavor Physics in the Quark Sector

[Mario Antonelli](#) (Frascati), [David Mark Asner](#) (Carleton U.), [D. Bauer](#) (Imperial Coll., London), [Thomas G. Becher](#) (Fermilab), [M. Beneke](#) (Aachen, Tech. Hochsch.) et al.

e-Print: [0907.5386](#) [hep-ph]

DOI: [10.1016/j.physrep.2010.05.003](#)

Published in: Phys.Rept. 494 (2010), 197-414,

2009 PEER-REVIEWED

Computer simulations of the theory of strong interactions

[N. Tantalo](#)

DOI: [10.1393/ncc/i2009-10417-5](#)

Published in: Nuovo Cim.C 32N2 (2009), 267-271,

Quenched lattice calculation of the vector channel $B \rightarrow D^* l \nu$ decay rate

[G.M. de Divitiis](#) (Rome U., Tor Vergata and INFN, Rome2), [R. Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [0807.2944](#) [hep-lat]

DOI: [10.1016/j.nuclphysb.2008.09.013](#)

Published in: Nucl.Phys.B 807 (2009), 373-395

2008 PEER-REVIEWED

Computing for Lattice QCD: New developments from the APE experiment

[R. Ammendola](#) (INFN, Rome2), [A. Biagioni](#) (INFN, Rome), [S. De Luca](#) (INFN, Rome), [F. Lo Cicero](#) (INFN, Rome), [A. Lonardo](#) (INFN, Rome) et al.

DOI: [10.1393/ncb/i2008-10649-8](#)

Published in: Nuovo Cim.B 123 (2008), 964-968,

Precision for B-meson matrix elements

[Damiano Guazzini](#) (DESY, Zeuthen), [Rainer Sommer](#) (DESY, Zeuthen), [Nazario Tantalo](#) (INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [0710.2229](#) [hep-lat]

DOI: [10.1088/1126-6708/2008/01/076](#)

Published in: JHEP 01 (2008), 076

2007 PEER-REVIEWED

Quenched lattice calculation of the B \rightarrow D l nu decay rate

[G.M. de Divitiis](#) (Rome U., Tor Vergata and INFN, Rome2), [E. Molinaro](#) (SISSA, Trieste), [R. Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [0707.0582](#) [hep-lat]

DOI: [10.1016/j.physletb.2007.08.085](#)

Published in: Phys.Lett.B 655 (2007), 45-49

Quenched lattice calculation of semileptonic heavy-light meson form factors

[G.M. de Divitiis](#) (Rome U., Tor Vergata and INFN, Rome2), [R. Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [0707.0587](#) [hep-lat]

DOI: [10.1088/1126-6708/2007/10/062](#)

Published in: JHEP 10 (2007), 062

QCD with light Wilson quarks on fine lattices. II. DD-HMC simulations and data analysis

[L. Del Debbio](#) (Edinburgh U.), [Leonardo Giusti](#) (CERN), [M. Luscher](#) (CERN), [R. Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (Rome U., Tor Vergata and INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [hep-lat/0701009](#) [hep-lat]

DOI: [10.1088/1126-6708/2007/02/082](#)

Published in: JHEP 02 (2007), 082

QCD with light Wilson quarks on fine lattices (I): First experiences and physics results

[L. Del Debbio](#) (Edinburgh U.), [Leonardo Giusti](#) (CERN), [M. Luscher](#) (CERN), [R. Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [N. Tantalo](#) (Rome U., Tor Vergata and INFN, Rome2 and Enrico Fermi Ctr., Rome)

e-Print: [hep-lat/0610059](#) [hep-lat]

DOI: [10.1088/1126-6708/2007/02/056](#)

Published in: JHEP 02 (2007), 056

2006 PEER-REVIEWED

[Stability of lattice QCD simulations and the thermodynamic limit](#)

[L. Del Debbio \(CERN\)](#), [Leonardo Giusti \(CERN\)](#), [M. Luscher \(CERN\)](#), [R. Petronzio \(INFN, Rome2\)](#), [N. Tantalo \(INFN, Rome2 and Enrico Fermi Ctr., Rome\)](#)

e-Print: [hep-lat/0512021](#) [hep-lat]

DOI: [10.1088/1126-6708/2006/02/011](#)

Published in: JHEP 02 (2006), 011

[Stability and structure of oligomers of the Alzheimer peptide A \$\beta\$ 16–22: from the dimer to the 32-mer](#)

UF Röhrig, A Laio, N Tantalo, M Parrinello, R Petronzio

Biophysical journal 91 (9), 3217-3229

2004 PEER-REVIEWED

[On the discretization of physical momenta in lattice QCD](#)

[G.M. de Divitiis \(Rome U., Tor Vergata and INFN, Rome2\)](#), [R. Petronzio \(Rome U., Tor Vergata and INFN, Rome2\)](#), [N. Tantalo \(Rome U., Tor Vergata and INFN, Rome2\)](#)

e-Print: [hep-lat/0405002](#) [hep-lat]

DOI: [10.1016/j.physletb.2004.06.035](#)

Published in: Phys.Lett.B 595 (2004), 408-413

2003 PEER-REVIEWED

[Heavy light decay constants in the continuum limit of quenched lattice QCD](#)

[G.M. de Divitiis \(Rome U., Tor Vergata and INFN, Rome2\)](#), [M. Guagnelli \(Rome U., Tor Vergata and INFN, Rome2\)](#), [F. Palombi \(Enrico Fermi Ctr., Rome\)](#), [R. Petronzio \(Rome U., Tor Vergata and INFN, Rome2\)](#), [N. Tantalo \(Rome U., Tor Vergata and INFN, Rome2\)](#)

e-Print: [hep-lat/0307005](#) [hep-lat]

DOI: [10.1016/j.nuclphysb.2003.09.013](#)

Published in: Nucl.Phys.B 672 (2003), 372-386

[Heavy quark masses in the continuum limit of quenched lattice QCD](#)

[Giulia Maria de Divitiis \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Marco Guagnelli \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Robert o Petronzio \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Nazario Tantalo \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Filippo Palombi \(Enrico Fermi Ctr., Rome\)](#)

e-Print: [hep-lat/0305018](#) [hep-lat]

DOI: [10.1016/j.nuclphysb.2003.10.001](#)

Published in: Nucl.Phys.B 675 (2003), 309-332

2002 PEER-REVIEWED

[The Lattice scale at large beta in quenched QCD](#)

[Marco Guagnelli \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Roberto Petronzio \(Rome U., Tor Vergata and INFN, Rome2\)](#), [Nazario Tantalo \(Rome U., Tor Vergata and INFN, Rome2\)](#)

e-Print: [hep-lat/0209112](#) [hep-lat]

DOI: [10.1016/S0370-2693\(02\)02819-8](#)

Published in: Phys.Lett.B 548 (2002), 58-62

f(B) and two scales problems in lattice QCD

[Marco Guagnelli](#) (Rome U., Tor Vergata and INFN, Rome2), [Filippo Palombi](#) (Rome U., Tor Vergata and INFN, Rome2), [Roberto Petronzio](#) (Rome U., Tor Vergata and INFN, Rome2), [Nazario Tantalo](#) (Rome U., Tor Vergata and INFN, Rome2)

e-Print: [hep-lat/0206023](#) [hep-lat]

DOI: [10.1016/S0370-2693\(02\)02700-4](#)

Published in: Phys.Lett.B 546 (2002), 237-246

Remarks on the gauge dependence of the RI / MOM renormalization procedure

[Leonardo Giusti](#) (CERN), [S. Petrarca](#) (Rome U. and INFN, Rome), [B. Taglienti](#) (INFN, Rome), [N. Tantalo](#) (Rome U., Tor Vergata)

e-Print: [hep-lat/0205009](#) [hep-lat]

DOI: [10.1016/S0370-2693\(02\)02243-8](#)

Published in: Phys.Lett.B 541 (2002), 350-355

Curriculum Vitae

Current/past positions

- February 2014 – today: permanent researcher at INFN – Torino;
- October 2013 – January 2014: Post-Doc at the University of Santiago de Compostela and Visiting Scientist at the Theory Unit of CERN;
- October 2011 – September 2013: Fellow of the Physics Department - Theory Unit of CERN;
- October 2009 - September 2011: long-term visitor at the CERN Theory Unit, “Centro Fermi” granted;
- November 2008 - March 2011: Post-Doc (assegno di ricerca) at the “Dipartimento di Fisica Teorica” of the University of Torino;
- November 2008: selected as Visiting Scientist at M.I.T. within the INFN-“Bruno Rossi” program;
- January 2007 - October 2008: Post-Doc at the European Center for Theoretical Studies in Nuclear Physics and Related Areas (ECT* - Trento);
- January 2006 - December 2006: Visitor at CEA-SPhT (Saclay) with a “Della Riccia” Foundation grant;
- November 2002 - December 2005: Ph.D. student at the “Dipartimento di Fisica Teorica” of the University of Torino.

Education

- January 2006: Ph.D. in Theoretical Physics at the University of Torino defending the thesis “Mesonic correlations and excitations in the deconfined phase of QCD” (advisor W.M. Alberico and A. Molinari);
- April 2002: Degree in Physics at the University of Torino with 110/110 summa cum laude and honorable mention defending the thesis “Teorie efficaci per un Plasma di Quark e Gluoni a temperatura e potenziale chimico finiti” (advisor W.M. Alberico and A. Molinari).

Research activity

- Study of the deconfined phase of QCD (Quark-Gluon Plasma), collisions with the light thermal partons;
- General topics of many-body physics.

Teaching activity

“Advance Nuclear Physics”, PhD course given each year at the Physics Department of the University of Torino.

Lectures at international schools

- “Heavy quarks and hard probes in relativistic heavy ion collisions”, lectures given at the international school *Frontiers in Nuclear and Hadronic Physics* (Florence - GGI Institute, 20 February - 4 March 2017);

- “Hard probes in A-A collisions” lectures given at the international school *Quark-Gluon Plasma and Heavy Ion Collisions: past, present, future* (Siena, 9-13 July 2013);
- “MC models for Heavy Ions”: invited lecture at the *MCnet-LPCC Summer School on Monte Carlo Event Generators for LHC* (CERN, 23-27 July 2012) ;
- “Heavy Ion Collisions: theory overview”: invited lecture at the international workshop *QCD at Cosmic Energies -V* (Paris, 11-15 June 2012);
- “Collective Dynamics of the QGP”: invited lecture at the international school *Quark-Gluon Plasma and heavy-ion collisions: past present and future* (Torino, 7-12 March 2011) .

Invited talks

- "Hadronization in small and large systems", invited talk at the LHCP 2024 conference (Boston, 3-7- June 2024);
- "Heavy-flavor hadronization mechanism from pp to AA collisions: a theory perspective", invited talk at the Hard Probes 2023 conference (Aschaffenburg 26-31 March 2023),
- “Heavy flavour in high-energy nuclear collisions: results of transport calculations”, invited talk at the *EPS Conference on High-Energy Physics 2017* (Venice, 5-12 July 2017);
- “Relativistic heavy-ion collisions: recent developments”, invited talk at the Società Italiana di Fisica conference (Padova, 26-30 September 2016);
- “Open-charm physics with heavy-ions: theoretical overview”, invited talk at the conference *CHARM 2016* (Bologna, 5-9 September 2016);
- “Medium effects on heavy-flavour observables in high-energy nuclear collisions”, invited talk at the conference *QCD@Work 2016* (Martina Franca, 27-30 June 2016);
- “Heavy-flavor transport”, invited plenary talk at the international conference *Strangeness in Quark Matter 2015* (Dubna, 6-11 July 2015);
- “Dynamics of heavy flavor quarks in high energy nuclear collisions”, invited plenary talk at the international conference *Quark Matter 2014* (Darmstadt, 19-24 May 2014);
- “Heavy flavour spectra in nucleus-nucleus collisions within a Langevin approach”, invited talk at the international conference *INPC 2013* (Firenze, 2-7 June 2013);
- “Heavy flavour transport calculations in nucleus-nucleus collisions”, invited talk at the 8th Physics week of the ALICE Collaboration (Padova, 19-24 May 2013);
- “Perturbative vs non-perturbative aspects of jet quenching: the role of color flow”: invited plenary talk at the conference *Hard Probes 2012* (Cagliari, 27 May - 1 June 2012).

Outreach activity

National Coordinator of the INFN project “AggiornaMenti”, a course on a “learning-by-doing” approach to the teaching of science, devoted to junior high-school teachers (Scuola Media);

Editorial activity

Referee for several international journals: PRD, PRL, JHEP, PLB, NPA and EPJC.
Editor of the journal “Frontiers in Physics”.

Other activities

- National coordinator of the SIM (Strongly Interacting Matter) national INFN initiative.

Marzia NARDI

CURRICULUM SCIENTIFICO

Titoli di Studio

- **Laurea in Fisica:** Università degli Studi di Torino, 12 Marzo 1992, 110/110 con *Lode e Menzione Onorevole*
- **Dottorato di Ricerca in Fisica:** superamento dell'esame finale il 17 ottobre 1996 con la discussione della tesi "Transizione adroni-Quark Gluon Plasma e correlazioni tra quark", supervisionata dalla Prof.ssa W.M. Alberico. Commissione esaminatrice: G. Fogli, G.M. Prospero, S. Zerbini.

Campo di Ricerca

Fenomenologia delle collisioni tra ioni pesanti ultrarelativistici e studio della transizione di fase adroni-plasma di quark e gluoni (QGP).

Esperienze lavorative

- Nel dicembre 1995 ho iniziato la mia collaborazione con il Prof. H. Satz dell'Università di Bielefeld (Germania), usufruendo di una Borsa di Studio dell'Università di Torino per corsi di perfezionamento e attività di ricerca all'estero.
- Dal 1 gennaio 1997 al 30 aprile 2000 ho lavorato, con un contratto di Collaborazione Scientifica, presso il Dipartimento di Fisica Teorica dell'Università di Bielefeld (Germania).
- Dal 1 maggio 2000 al 30 aprile 2004 ho usufruito di un Assegno di Ricerca presso l'Università di Torino.
- Dal 15 maggio 2004 al 15 luglio 2004 ho lavorato presso il Dipartimento di Fisica Teorica dell'Università di Torino con un contratto di Collaborazione Scientifica.
- Dal 1 settembre 2004 al 31 ottobre 2004 ho lavorato presso la Divisione Teorica del CERN (Ginevra) in qualità di "Short Term Visitor".
- Dal 1 novembre 2004 al 23 dicembre 2005 ho lavorato presso la Divisione Teorica del CERN (Ginevra) usufruendo di un Grant del Centro di Studi e Ricerche E. Fermi (Roma).

Dal 29 dicembre 2005 lavoro come Ricercatore presso la sezione INFN di Torino.

Curriculum Vitae

updated 31/10/2025

■ Personal info

Full name: Paolo Parotto

Email:

Languages:

Researcher profiles:

■ Education

Academic titles

2015-2019 **Ph.D. in Physics**

Department of Physics, University of Houston, Houston, TX, USA

Thesis: *Characterization of the transition region in the QCD phase diagram*

Supervisor: Prof. Claudia Ratti

2011-2014 **MSc in Physics** (110/110 cum laude)

Dipartimento di Fisica, Università degli Studi di Torino, Torino, Italy

Thesis: *Transport coefficients for charmed mesons in a light hadron gas*

Supervisor: Prof. Wanda Maria Alberico

Co-supervisor: Dr. Andrea Beraudo

2008-2011 **BSc in Physics** (110/110)

Dipartimento di Fisica, Università degli Studi di Torino, Torino, Italy

Thesis: *Hadronic matter at finite temperature and transition to quark gluon plasma*

Supervisor: Prof. Maria Benedetta Barbaro

Co-supervisor: Dr. Claudia Ratti

Other education

02-03/2025 **IRIDI ADVANCED**, Teaching and Learning Center

Università di Torino, Torino, Italy

02-05/2024 **IRIDI START**, Teaching and Learning Center

Università di Torino, Torino, Italy

05/2022 **Evidence Based Teaching Academy – Center for Excellence in Science Education**,

Eberly College of Science, Pennsylvania State University, State College, PA, USA

01-06/2012 **Exchange Program “LLP-Erasmus”**

Stockholm University, Stockholm, Sweden

■ Employment history

2023 - **Fixed-term researcher (Ricercatore a Tempo Determinato di tipo A)**

Dipartimento di Fisica, Torino, Italy

- 2021 - 2023 **Postdoctoral Scholar, Pennsylvania State University**
Eberly College of Science, Department of Physics, State College, PA, USA
- 2019 - 2021 **Postdoctoral Researcher, Bergische Universität Wuppertal**
Fakultät für Mathematik und Naturwissenschaften, Department of Physics, Wuppertal, Germany
- 2016 - 2019 **Research Assistant**
College of Natural Sciences and Mathematics, Department of Physics, Houston, TX, USA

■ Awards and recognition

- 2022 **National Scientific Habilitation** to the functions of Associate Professor, Theoretical Physics of Fundamental Interactions
- 2020 **“RHIC & AGS Thesis Award”** for the best doctoral dissertation, awarded by the RHIC/AGS Users’ Executive Committee, Brookhaven National Laboratory, NY, USA
- 2015 **Presidential Fellowship**, reserved to the best students in the PhD program, awarded by the Department of Physics, University of Houston

■ Teaching and supervision

Teaching activity

- 2025/26 **Lectures: “Nuclear Physics at Low and High Temperatures”** (18h)
 MSc in Physics, Università di Torino
- Lectures and exercise sessions: “Fisica generale I con laboratorio”** (20h)
 BSc in Materials Science, Università di Torino
- Lectures and exercise sessions: “Fisica con elementi di matematica”** (28h)
 MSc in Pharmacy, Università di Torino
- 2024/25 **Lectures: “Advanced Nuclear Physics”** (4h)
 PhD in Physics, Università di Torino
- Exercise sessions: “Fisica II”** (8h)
 BSc in Mathematics, Università di Torino
- Lectures and exercise sessions: “Fisica generale I con laboratorio”** (20h)
 BSc in Materials Science, Università di Torino
- Lectures and exercise sessions: “Fisica con elementi di matematica”** (22h)
 MSc in Pharmacy, Università di Torino
- 2023/24 **Lectures: “Advanced Nuclear Physics”** (4h)
 PhD in Physics, Università di Torino
- Exercise sessions: “Fisica II”** (10h)
 BSc in Chemistry, Università di Torino
- Lectures and exercise sessions: “Fisica generale I con laboratorio”** (20h)
 BSc in Materials Science, Università di Torino
- Lectures and exercise sessions: “Fisica con elementi di matematica”** (24h)
 MSc in Pharmacy, Università di Torino
- 2021 **Lectures: “Standardmodell der Teilchenphysik”** (Standard Model of Particle Physics)
 MSc in Physics, Bergische Universität Wuppertal
- 2020/21 **Exercise sessions: “Mathematik für Physiker”** (Mathematics for physicists), BSc in Physics, Bergische Universität Wuppertal

- 2020 **Exercise sessions: “Theoretical Physics II”** (Electrodynamics)
BSc in Physics, Bergische Universität Wuppertal
- 2019/20 **Exercise sessions: “Theoretical Physics III”**
BSc in Physics, Bergische Universität Wuppertal
- 2015-2016 **Teaching Assistant** (4 semesters)
Physics Labs for BSc students (3 semesters); Tutoring for Quantum Mechanics for PhD students (1 semester), University of Houston

Supervision

- 2023- Supervision of one MSc thesis in Physics (Università di Torino)
- 2023- Supervision of two BSc theses in Physics (Università di Torino)
- 2020- Co-supervision of three PhD theses

- 2020 Co-supervision of two BSc students in Physics (Bergische Universität Wuppertal)
- 2016-2019 Co-supervision of five BSc students in Physics (University of Houston)

■ Other experience

Outreach

- 2024 Seminar: "Quark gluon plasma: esperimenti e simulazioni" for the event "La settimana della Fisica", Torino, Italy
- 2024- Member of Team Torino for Pint of Science, Torino, Italy
- 2015 Student representative for the event “UH Booth for the Houston Energy Day”, Houston, TX, USA
- 2015 Physics Department representative at the event **Research First Look: “Heavy Ions at the Large Hadron Collider: Fundamental science at the forefront of technology”** (poster), University of Houston, Houston, TX, USA

Peer review

- 2020 - **Peer review for:** Phys.Rev.C, Phys.Rev.D, Phys.Rev.Lett., Phys.Lett.B, Universe, Particles, International Journal of Theoretical Physics

Other

- 2017–2019 **Committee member for the “NSM Graduate Students Advisory Board”** (Department of Physics representative), College of Natural Sciences and Mathematics, University of Houston

■ Scientific activity

Peer reviewed publications

- 25. A. Abuali, S. Borsányi, Z. Fodor, J. Jahan, M. Kahangirwe, **P. Parotto**, A. Pásztor, C. Ratti, H. Shah, S. A. Trabulsi, "New 4D lattice QCD equation of state: extended density coverage from a generalized T' -expansion", Phys.Rev.D 112 (2025) 5, 054502, DOI: <https://doi.org/10.1103/2dmh-26yh>
- 24. S. Borsányi, S. Capitani, Z. Fodor, D. Godzieba, **P. Parotto**, R. A. Vig, C. H. Wong, "Taste breaking in the minimally doubled Karsten-Wilczek action and its tree-level improvement", Phys.Rev.D 111 (2025) 7, 074510, DOI: <https://doi.org/10.1103/PhysRevD.111.074510>

23. S. Borsanyi, Z. Fodor, J. N. Guenther, R. Kara, **P. Parotto**, A. Pasztor, L. Pirelli, C. H. Wong, "Chiral and deconfinement properties of the QCD crossover have a different volume and baryochemical potential dependence", Phys.Rev.D 111 (2025) 1, 014506, DOI: <https://doi.org/10.1103/PhysRevD.111.014506>
22. S. Borsanyi, Z. Fodor, J. N. Guenther, **P. Parotto**, A. Pasztor, L. Pirelli, K. K. Szabó, C. H. Wong, "QCD deconfinement transition line up to $\mu_B = 400$ MeV from finite volume lattice simulations", Phys.Rev.D 110 (2024) 11, 114507, DOI: <https://doi.org/10.1103/PhysRevD.110.114507>
21. S. Borsányi, Z. Fodor, J. N. Guenther, S. D. Katz, **P. Parotto**, A. Pásztor, D. Pesznyák, K. K. Szabó, C. H. Wong, "Continuum extrapolated high order baryon fluctuations", Phys. Rev. D 110, L011501 (2024), DOI: <https://doi.org/10.1103/PhysRevD.110.L011501>
20. M. Kahangirwe, S. A. Bass, E. Bratkovskaya, J. Jahan, P. Moreau, **P. Parotto**, D. Price, C. Ratti, O. Soloveva, M. Stephanov, "Finite density QCD equation of state: critical point and lattice-based T' -expansion", Phys. Rev. D 109, 094046 (2024), DOI: <https://doi.org/10.1103/PhysRevD.109.094046>
19. S. Borsányi, R. Kara, R. Vig, Z. Fodor, D. Godzieba, **P. Parotto**, D. Sexty, "Topological features of the deconfinement transition", Phys. Rev. D 107, 054514 (2023), DOI: <https://doi.org/10.1103/PhysRevD.107.054514>
18. T. Dore, J. M. Karthein, I. Long, D. Mroczek, J. Noronha-Hostler, **P. Parotto**, C. Ratti, and Y. Yamauchi, "Critical lensing and kurtosis near a critical point in the QCD phase diagram in and out of equilibrium", Phys. Rev. D 106, 094024 (2023), DOI: <https://doi.org/10.1103/PhysRevD.106.094024>
17. D. Mroczek, M. Hjorth-Jensen, J. Noronha-Hostler, **P. Parotto**, C. Ratti, and R. Vilalta, "Mapping out the thermodynamic stability of a QCD equation of state with a critical point using active learning", Phys. Rev. C 107, 054911 (2023), DOI: <https://doi.org/10.1103/PhysRevC.107.054911>
16. S. Borsányi, Z. Fodor, J. N. Guenther, R. Kara, **P. Parotto**, A. Pásztor, C. Ratti, K. K. Szabó, "Resummed lattice QCD equation of state at finite baryon density: strangeness neutrality and beyond", Phys. Rev. D 105, 114504 (2022), DOI: <https://doi.org/10.1103/PhysRevD.105.114504>
15. S. Borsányi, Z. Fodor, D.A. Godzieba, R. Kara, **P. Parotto**, D. Sexty, "Precision study of the continuum $SU(3)$ Yang-Mills theory: how to use parallel tempering to improve on supercritical slowing down for first order phase transitions", Phys. Rev. D 105, 074513 (2022), DOI: <https://doi.org/10.1103/PhysRevD.105.074513>
14. BEST Collaboration: X. An, M. Bluhm, L. Du, G. V. Dunne, C. Gale, J. Grefa, U. Heinz, A. Huang, J. M. Karthein, D. E. Kharzeev, V. Koch, J. Liao, S. Li, M. Martinez, M. McNelis, D. Mroczek, S. Mukherjee, M. Nahrgang, A. Nava Acuna, J. Noronha-Hostler, D. Oliinychenko, **P. Parotto**, I. Portillo-Vazquez, M. S. Pradeep, S. Pratt, K. Rajagopal, C. Ratti, G. Ridgway, T. Schaefer, B. Schenke, C. Shen, S. Shi, M. Singh, V. Skokov, D. T. Son, A. Sorensen, M. Stephanov, R. Venugopalan, V. Vovchenko, R. Weller, H. U. Yee, Y. Yin, "The BEST framework for the search for the QCD critical point and the chiral magnetic effect", Nucl. Phys. A 1017, 122343 (2022), DOI: <https://doi.org/10.1016/j.nuclphysa.2021.122343>
13. J.M. Stafford, D. Mroczek, A.R. Nava Acuña, J. Noronha-Hostler, **P. Parotto**, D.R.P. Price, C. Ratti, "Strangeness neutral equation of state for QCD with a critical point", Eur. Phys. J. Plus 136, 621 (2021), DOI: <https://doi.org/10.1140/epjp/s13360-021-01615-5>
12. E. McLaughlin, J. Rose, T. Dore, **P. Parotto**, C. Ratti, J. Noronha-Hostler, "Building a testable shear viscosity across the QCD phase diagram", Phys. Rev. C 105, 024903 (2022), DOI: <https://doi.org/10.1103/PhysRevC.105.024903>

11. R. Bellwied, S. Borsányi, Z. Fodor, J. N. Guenther, S. D. Katz, **P. Parotto**, A. Pásztor, D. Pesznyak, C. Ratti, K. K. Szabó, “*Corrections to the hadron resonance gas from lattice QCD and their effect on fluctuation-ratios at finite density*”, Phys. Rev. D 104, 094508 (2021), DOI: <https://doi.org/10.1103/PhysRevD.104.094508>
10. S. Borsányi, Z. Fodor, J. N. Guenther, R. Kara, S. D. Katz, **P. Parotto**, A. Pásztor, C. Ratti, K. K. Szabó, “*Lattice QCD equation of state at finite chemical potential from an alternative expansion scheme*”, Phys. Rev. Lett. 126, 232001 (2021), DOI: <https://doi.org/10.1103/PhysRevLett.126.232001>
9. D. Mroczek, J. Noronha-Hostler, A.R. Nava Acuña, C. Ratti, **P. Parotto**, M.A. Stephanov, “*Quartic cumulant of baryon number in the presence of QCD critical point*”, Phys. Rev. C 103, 034901 (2021), DOI: <https://doi.org/10.1103/PhysRevC.103.034901>
8. P. Alba, V. Mantovani Sarti, J. Noronha-Hostler, **P. Parotto**, I. Portillo-Vazquez, C. Ratti, J. M. Stafford, “*Influence of hadronic resonances on the chemical freeze-out in heavy-ion collisions*”, Phys. Rev. C 101, 054905 (2020), DOI: <https://doi.org/10.1103/PhysRevC.101.054905>
7. S. Borsányi, Z. Fodor, J. N. Guenther, R. Kara, S. D. Katz, **P. Parotto**, A. Pásztor, C. Ratti, K. K. Szabó, “*The QCD crossover at finite chemical potential from lattice simulations*”, Phys. Rev. Lett. 125, 052001 (2020), DOI: <https://doi.org/10.1103/PhysRevLett.125.052001>
6. R. Bellwied, S. Borsányi, Z. Fodor, J. N. Guenther, J. Noronha-Hostler, **P. Parotto**, A. Pásztor, C. Ratti, J.M. Stafford, “*Off-diagonal correlators of conserved charges from lattice QCD and how to relate them to experiment*”, Phys. Rev. D 101, 034506 (2020), DOI: <https://doi.org/10.1103/PhysRevD.101.034506>
5. J. Noronha-Hostler, **P. Parotto**, C. Ratti, J.M. Stafford, “*Lattice- based equation of state at finite baryon number, electric charge and strangeness chemical potentials*”, Phys. Rev. C 100, 064910 (2019), DOI: <https://doi.org/10.1103/PhysRevC.100.064910>
4. **P. Parotto**, M. Bluhm, D. Mroczek, M. Nahrgang, J. Noronha-Hostler, K. Rajagopal, C. Ratti, T. Schaefer, M. Stephanov, “*QCD equation of state matched to lattice data and exhibiting a critical point singularity*”, Phys. Rev. C 101, 034901(2020), DOI: <https://doi.org/10.1103/PhysRevC.101.034901>
3. R. Bellwied, J. Noronha-Hostler, **P. Parotto**, I. Portillo-Vazquez, C. Ratti, J.M. Stafford, “*Freeze-out temperature from net-kaon fluctuations at energies available at the BNL Relativistic Heavy Ion Collider*”, Phys. Rev. C 99, 034912 (2019), DOI: <https://doi.org/10.1103/PhysRevC.99.034912>
2. P. Alba, V. Mantovani Sarti, J. Noronha, J. Noronha-Hostler, **P. Parotto**, I. Portillo-Vazquez, C. Ratti, “*Effect of the QCD equation of state and strange hadronic resonances on multiparticle correlations in heavy ion collisions*”, Phys. Rev. C 98, 034909 (2018), DOI: <https://doi.org/10.1103/PhysRevC.98.034909>
1. P. Alba, R. Bellwied, S. Borsányi, Z. Fodor, J. N. Guenther, S. Katz, V. Mantovani Sarti, J. Noronha-Hostler, **P. Parotto**, A. Pásztor, I. Portillo-Vazquez, C. Ratti, “*Constraining the hadronic spectrum through QCD thermodynamics on the lattice*”, Phys. Rev. D 96, 034517 (2017), DOI: <https://doi.org/10.1103/PhysRevD.96.034517>

Preprints

3. “*Finite density QCD phase structure from strangeness fluctuations*”, S. Borsányi, Z. Fodor, J. N. Guenther, P. Kumar, P. Parotto, A. Pásztor, C. H. Wong, 2510.26455 [hep-lat]
2. “*High-precision baryon number cumulants from lattice QCD in a finite box: cumulant ratios, Lee-Yang zeros and critical endpoint predictions*”, A. Adam, S. Borsányi, Z. Fodor, J. N. Guenther, P. Kumar, P. Parotto, A. Pásztor, C. H. Wong, 2507.13254 [hep-lat]

1. "Lattice QCD constraints on the critical point from an improved precision equation of state", S. Borsanyi, Z. Fodor, J. N. Guenther, P. Parotto, A. Pásztor, C. Ratti, V. Vovchenko, C. H. Wong, 2502.10267 [hep-lat]

■ Presentations

Invited presentations

- 10/2025 **The QCD Phase Diagram: from Theory to Experimental Signatures**, Dalian University of Technology, Dalian, China
"Finite density QCD phase structure from strangeness fluctuations". Invited talk.
- 05/2025 **ETHZ/UZH Theoretical Particle Physics Seminars**, ETH Zurich, Zurich, Switzerland
"Finite density QCD equation of state: critical point and a lattice-based expansion". Invited seminar.
- 02/2024 **Sesto Incontro Nazionale di Fisica Nucleare**, INFN Trento-TIFPA, Trento, Italy
"Recent theory developments on the physics of Quark-Gluon Plasma". Invited overview talk.
- 11/2022 **Nuclear Particle Astrophysics (NPA) Seminar**, Yale University, New Haven, CT, USA
"QCD equation of state at finite chemical potential: present and future". Invited seminar.
- 10/2022 **MUSES Seminar Series**, MUSES Project, Online
"Resummed lattice QCD equation of state at finite baryon density: strangeness neutrality and beyond". Invited seminar.
- 06/2022 **BESTea Seminar Series**, BEST Collaboration, Online
"Equation of state of QCD from the lattice: recent results from an alternative expansion scheme". Invited seminar.
- 05/2022 **FAIR next generation scientists - FAIRness 2022**, Paralia, Greece
"Lattice QCD at finite temperature and density: present and future". Invited overview talk.
- 10/2020 **Joint University of Houston & University of Illinois at Urbana-Champaign Journal Club**, Online
"Quartic cumulant of baryon number in the presence of QCD critical point". Invited seminar.
- 09/2020 **ALICE EbyE Workshop**, Hybrid (CERN and Online)
"Off-diagonal correlators of conserved charges in lattice QCD and how to relate them to experiment". Invited talk.
- 09/2020 **STAR Juniors' Day**, Online
"Parametrized QCD equation of state matching lattice QCD and containing a critical point". Invited seminar.
- 08/2020 **From heavy-ion collisions to neutron stars**, Online
"Lattice QCD equation of state (EoS) and beyond". Invited talk.
- 05/2020 **Joint University of Houston & University of Illinois at Urbana-Champaign Journal Club**, Online
"The QCD crossover at finite chemical potential from lattice simulations". Invited seminar.
- 12/2019 **EMMI - 3rd workshop on anti-matter, hyper-matter and exotica production at the LHC**, Wrocław, Poland
"Multi freeze-out scenarios and exotica". Invited talk.
- 02/2019 **Sam Houston State University, Physics Department**, Huntsville, TX, USA
"Understanding Strong Interactions through Relativistic Heavy-Ion Collisions". Colloquium.

Gabrijela Zaharijas

Associate Professor at the University of Nova Gorica, Slovenia

Education

- Ph.D. in Physics (September 26, 2005), **New York University**, Department of Physics. Thesis: Alternative Approaches to the Dark Matter Puzzle. Advisor: Prof. Glennys R. Farrar
- Master of Science (January 28, 2002), **New York University**, Department of Physics.
- Bachelor in Science (October 28, 1998), **University of Belgrade**. Advisor: Prof. Aleksandar Bogojević

Employment

- 2025 – present Full Professor - Center for Astrophysics and Cosmology (CAC), University of Nova Gorica (UNG), Slovenia
- 2018 – 2025 Associated Professor at CAC, UNG
- 2014 - 2018, Assistant Professor at CAC, UNG
- 2012 - 2014, Postdoc - International Centre for Theoretical Physics (ICTP), Trieste, Italy
- 2009 - 2011, Postdoc - Institut de Physique Théorique, CEA-Saclay, France
- 2008 - 2009, Postdoc - Oskar Klein Center, Stockholm University, Sweden
- 2007 - 2008, Assistant Physicist - Argonne National Laboratory, Argonne (IL), USA
- 2005 - 2007, Visiting Scientist - Center for Particle Astrophysics, Fermi National Accelerator Laboratory, Batavia (IL), USA

Research areas

- indirect search for dark matter (with the focus on gamma rays, but also cosmic rays, studies of dark matter clustering on small scales, N-body simulations etc)
- gamma-ray astrophysics (diffuse gamma ray emission and physics of Galactic cosmic rays)
- machine learning application to high-energy astrophysics

International experimental collaborations

- Vera C. Rubins Dark Energy Science Collaboration: member since 2020
- CTA collaboration: member since 2014, coordinator of the DMFP working group, 2018-20
- Fermi-LAT: member since 2008, coordinator of the DMNP working group, 2017-19

Management and organizational roles

- Project manager of the COFUND MSCA project SMASH: Machine learning for science and humanities (2023-2028)
- Member of the steering committee of the European Coalition for AI in Fundamental physics (EUCAIF), since 2023
- Member of the SOC for the organization of CTA Summer Schools, since 2023
- Slovenian representative in the council of the European Consortium for Astroparticle Theory (EuCAPT)

- Member of the executive Board of the International Doctorate Network in Particle Physics, Astrophysics and Cosmology (IDPASC), member since 2020
- Director of Graduate studies in Physics at the UNG, since 2019
- Convener at ICRC 2023 Conference, at European CR conference 2023, etc

Prices, Fellowships & Grants

- COFUND Marie Grant, SMASH, PI, 10 ME 2023-2028
- ERASMUS + grant for exchange with the University of Chicago, 2022-2025
- Awarded by the President of the Republic of Slovenia Borut Pahor, 'Jabolko Navdiha', in 2019.
- ARRS Research Project (Small Basic Project), Preparing for dark matter search with the Cherenkov Telescope Array using machine learning, 2019-2021.
- Bilateral grants: Slovenia - USA, 2018-2020, Slovenia-France (PROTEUS), 2017-2018; Slovenia-Serbia, 2016-2017

Student mentoring

- PhD supervisor
 - *[Faint text]*
 - *[Faint text]*
 - *[Faint text]*
 - *[Faint text]*
- Co-advisor of MS Students: *[Faint text]*
- Co-advisor of BSc Thesis project, *[Faint text]*

Invited Lectures (since 2020)

- Latin-American School on CTA Science, ICTP-SAIFR, Sao Paolo, Brazil, March 27-31, 2023
- IDPASC School, Granada, 18-28 September 2023
- Otranto School, 3–10 Jun 2022
- Lecturer at the European Doctorate School: International School on AstroParticle Physics (ISAPP), Madrid, June 2021.

Selected recent review & plenary talks at international meetings

since 2020, in addition to about 40 contributions to international meetings and about 25 invited seminars

- Plenary talk at the TeVPA Conference, Valencia, 2025
- Plenary talk at the CTA Symposium, Bologna, 2024
- Invited talk at Cosmo2023, Madrid, 11-15 September 2023
- Invited talk at the FlipPhysics, Valencia, 21-25 March 2022.
- Invited talk at DarkMatters, ULB, Brussels, November 30 - December 2, 2022

- Invited talk at 1st Pan-African Astro-Particle and Collider Physics Workshop (PACP2022), 21-23 March 2022.
- Invited talk at IFT Xmass Workshop, Madrid, 2021
- Invited talk at TAUP, 30 August -3 September 2021

Curriculum Vitae

David Marzocca

INFN Trieste

16/12/2025

PERSONAL INFORMATION

Name	David Marzocca
Position	INFN First Researcher
Work Address	INFN Trieste, SISSA Via Bonomea 265, 34136 Trieste (TS), Italy
Nationality	
Website	

EDUCATION AND ACADEMIC CAREER

2020 - Today	INFN First Researcher (<i>Istituto Nazionale di Fisica Nucleare</i>), Trieste, Italy.
2017 - 2020	INFN Researcher (<i>Istituto Nazionale di Fisica Nucleare</i>), Trieste, Italy.
2019	Abilitazione Scientifica Nazionale di II fascia.
2014 - 2017	Postdoc at the Physik Institut, Universität Zürich, Switzerland.
April - July, 2013	Recipient of a 4-months grant as Early-Stage Researcher under the Marie Curie Initial Training Network <i>UNILHC</i> for a research stay at CERN.
PhD: 2010 - 2014	SISSA, <i>International School for Advanced Studies</i> , Trieste, Italy. PhD cum laude in astroparticle physics.
MSc: 2008 - 2010	<i>Sapienza</i> , University of Rome, Italy. 110/110 cum laude in physics with the thesis
BSc: 2005 - 2008	<i>Sapienza</i> , University of Rome, Italy. 110/110 cum laude in physics with the thesis

BIBLIOMETRIC DATA

Publications	70 publications, of which 46 published in high-impact refereed international scientific journals. [Inspire page].
Citations	Citations according to InspireHEP: 7918 citations, average 113.1 citations per paper, <i>h</i> -index 36.

GRANTS

2023	Research-unit coordinator of the project <i>Charting unexplored avenues in Dark Matter</i> , 283k€, funded by the Italian PRIN grant.
2019	Research-unit member of the project <i>The consequences of flavour</i> , 480k€, funded by the Italian PRIN grant.
2018	Recipient and PI of the INFN Starting grant for young researchers with the project <i>SESAMO</i> (Synergies of Flavour and Dark Matter), for 60k€.
2016	Recipient of the 2016 Forschungskredit (Research Grant) of the University of Zurich for the academic year 2016-2017 with the project titled <i>New Physics at the LHC: the Higgs and beyond</i> , for 108639 CHF.

PRIZES

2015	Winner of the 2014 edition of the “ <i>Best Ph.D. thesis in physics</i> ” award at SISSA.
2009	Winner of the 1st edition of the ARAP (Roman Association for Astroparticle Physics) prize for students in Elementary Particles Physics.

COORDINATION AND ORGANIZATION EXPERIENCES

Sep. 2024	Organizer of the international conference ‘LFC24 - Fundamental Interactions at Future Colliders’, SISSA.
2022-2025	Convener of the Flavour physics group of the European Committee for Future Accelerators (ECFA) Working Group 1.
2021-2024	Coordinator of the INFN Theory Group in Trieste.
From 2019	Local coordinator of the INFN initiative (iniziativa specifica) APINE.
2017 - 2019	Theory Convener of the <i>LHC Higgs Cross Section Working Group</i> dedicated to the studies of the Higgs boson properties (WG2): organization of the activities of the working group, coordination of the theory and experimental collaboration, organization of several workshops and conferences.
2017	Theory convener of the <i>New Physics Searches</i> session of the international conference EPS 2019 in Ghent (Belgium).
2018	Winner of a MITP (Mainz Institute for Theoretical Physics) grant for the organization of the workshop ‘MODEL’ (LHCb and Belle II Opportunities for Model Builders), from 28/01/2019 to 01/02/2019.
2017	Theory convener of the <i>Electroweak Physics</i> session of the international conference LHCP 2017 in Shanghai (China).
2015-2016	Organizer of the Journal Club activity for the High Energy groups of the Zurich University and ETH.

TEACHING EXPERIENCES

2022 - 2025	Lecturer of the “ <i>Standard Model of Fundamental Interactions</i> ” course at the University of Trieste.
2020 - 2022	Lecturer of the “ <i>Quantum Field Theory II</i> ” course at the University of Trieste.
2018 - 2021	Teaching assistant to SISSA PhD “ <i>Quantum Field Theory</i> ” course.
July 2018	Invited teacher at the <i>Petnica Summer Institute’s Summer School on High Energy Physics</i> for the course “ <i>Symmetries and Group Theory</i> ”.
2017	Teaching assistant to the joint UZH and ETH course on “ <i>Advanced Field Theory</i> ”.
2015 & 2016	Teaching assistant to the joint UZH and ETH course on “ <i>Quantum Field Theory I</i> ”.
2015 & 2016	Teaching assistant to the joint UZH and ETH course on “ <i>Quantum Field Theory II</i> ”.
August 2013	Invited lecturer at the first Petnica School of Cosmology (Serbia) for the courses “ <i>Particle Physics and the Early Universe</i> ” and “ <i>The Higgs Boson</i> ”.
2012 - 2013	Divulgative seminars for High School students on “ <i>The LHC and the Higgs Boson</i> ” as part of the initiative <i>SISSA for School</i> .
2009	Scholarship holder for collaboration at the <i>Bruno Pontecorvo Laboratory</i> , Rome.

SUPERVISION EXPERIENCES

PhD students:	
Postdocs:	
Master thesis:	

PERSONAL SKILLS AND COMPETENCES

Mother tongue	Italian
Other languages	Very good English proficiency, good knowledge of Polish.
Computer skills	Good knowledge of Mathematica and related packages. Good knowledge of programming languages C and Python. Basic knowledge of HTML and CSS.

Curriculum vitae
ed attività scientifica e didattica

Piero Ullio

Aggiornato al 1 Settembre 2025

POSIZIONE ATTUALE

Dal 1 Gennaio 2015:
Professore di Prima Fascia,
Scuola Internazionale Superiore di Studi Avanzati, Area di Fisica,
Settore Concorsuale 02/A2 - Fisica Teorica delle Interazioni Fondamentali.

INDIRIZZO

DATI ANAGRAFICI

TITOLI ACCADEMICI CONSEGUITI

- Titolo di “Doctor of Philosophy in Theoretical Physics” (Ph.D. in Fisica Teorica), conseguito presso la Stockholm University, Stoccolma, Svezia, in data 17 Agosto 1999. Relatore: Prof. Lars Bergström, Dipartimento di Fisica, Stockholm University, Svezia.
- Titolo di “Filosofie Licentiatexamen in Theoretical Physics” (Master in Fisica Teorica), conseguito presso la Uppsala University, Uppsala, Svezia, in data 10 Dicembre 1997. Relatore: Prof. Héctor Rubinstein, Dipartimento di Fisica Teorica, Uppsala University, Svezia.
- Titolo di Laurea in Fisica, conseguito presso l’Università degli Studi di Torino, Torino, Italia, in data 15 marzo 1996. Relatore: Prof. Alessandro Bottino, Dipartimento di Fisica Teorica, Università degli Studi di Torino, Italia. Votazione finale: 110/110 e lode e menzione onorevole.

ALTRI INCARICHI ACCADEMICI E DI RICERCA

- Professore di Seconda Fascia presso il Settore di Particelle Elementari e successivamente l'area di Fisica, SISSA, Trieste, Italia, nel periodo 1 Luglio 2006 – 31 Dicembre 2014.
- Ricercatore a tempo determinato presso il Settore di Particelle Elementari, SISSA, Trieste, Italia, nel periodo 1 Luglio 2003 – 30 Giugno 2006.
- Assegnista di ricerca presso il Settore di Particelle Elementari, SISSA, Trieste, Italia, nel periodo 1 Novembre 2000 – 30 Giugno 2003.
- Post-doc presso il Dipartimento di Astrofisica Teorica, California Institute of Technology, Pasadena, USA, nel periodo 1 Ottobre 1999 – 30 Ottobre 2000.

BORSE DI STUDIO E PREMI

- Assegno di ricerca, SISSA, 2000-2003.
- Borsa di Post-dottorato, Caltech, 1999-2000.
- "Stipedium högskoleföreningen", premio per la miglior tesi di Ph.D. in un argomento scientifico, relativo ai Ph.D. conseguiti in Svezia durante l'anno accademico 1998/1999, conferito dall'Accademia della Scienza, Stoccolma, Svezia.
- Borsa di studio per studenti di dottorato, Stockholm University, 1997-1999.
- Borsa di studio di perfezionamento all'estero per giovani laureati, conferita dalla Facoltà di Fisica dell'Università degli Studi di Torino, Torino, Italia, utilizzata per studi di perfezionamento presso la Uppsala University, Uppsala, Svezia, nel periodo 1996-1997.
- Vincitore della borsa di Studio Fulbright, conferita dalla Fulbright Italian Commission, 1996.

ATTIVITÀ SCIENTIFICA E DIDATTICA

ATTIVITÀ DI INSEGNAMENTO

- Docente del corso “Early Universe Cosmology and Dark Matter”, nell’ambito dei programmi di Ph.D. in Teoria delle Particelle Elementari e Fisica Astroparticellare presso la SISSA, Trieste, Italia; 32 ore complessive, corso tenuto negli anni accademici 2022-2024;
- Docente del corso “Beyond the Standard Model in Early Universe”, nell’ambito dei programma di Ph.D. Fisica Astroparticellare presso la SISSA, Trieste, Italia; 40 ore complessive, corso tenuto negli anni accademici 2018-2020;
- Docente del corso “Early Universe Cosmology”, nell’ambito dei programmi di Ph.D. in Teoria delle Particelle Elementari e Fisica Astroparticellare presso la SISSA, Trieste, Italia; 20 ore complessive, corso tenuto negli anni accademici 2015-2018;
- Docente del corso “Cosmic Ray Physics”, nell’ambito dei programmi di Ph.D. in Fisica Astroparticellare presso la SISSA, Trieste, Italia; 15 ore complessive, corso tenuto negli anni accademici 2014-2018 e 2022-2024;
- Docente del corso “Materia Oscura”, nell’ambito dei programma di Ph.D. in Fisica Astroparticellare presso il Gran Sasso Science Institute, L’Aquila, Italia; 12 ore complessive, corso tenuto nell’anno accademico 2013-2019;
- Docente del corso “Cosmology”, nell’ambito dei programmi di Ph.D. in Teoria delle Particelle Elementari e Fisica Astroparticellare presso la SISSA, Trieste, Italia; 32 ore complessive, corso tenuto negli anni accademici 2006-2015;
- Docente del corso “Fisica Astroparticellare”, nell’ambito del programma congiunto Università degli Studi di Trento - SISSA Master Physics, Trento; 10 ore complessive, corso tenuto nell’anno accademico 2014-2015;
- Docente del corso “Beyond the Standard Model in Early Universe”, nell’ambito dei programma di Ph.D. Fisica Astroparticellare presso la SISSA, Trieste, Italia; 16 ore complessive, corso tenuto negli anni accademici 2011-2013;
- Docente del corso “The first three minutes”, nell’ambito dei programmi di Ph.D. in Teoria delle Particelle Elementari e Fisica Astroparticellare presso la SISSA, Trieste, Italia; 32 ore complessive, corso tenuto negli anni accademici 2004-2010;
- Docente del corso “Introduction to Quantum Field Theory”, nell’ambito del programma di Ph.D. in Fisica Astroparticellare presso la SISSA, Trieste, Italia; 24 ore complessive, corso tenuto negli anni accademici 2004-2005;

- Docente del corso “Astroparticle Physics”, nell’ambito del programma di Ph.D. in Teoria delle Particelle Elementari presso la SISSA, Trieste, Italia; 48 ore complessive, corso tenuto negli anni accademici 2002-2004;
- Docente del corso “Cosmologia e Fisica Astroparticellare”, nell’ambito del Corso di laurea specialistica in Fisica Computazionale Università degli Studi di Udine, Udine; 24 ore complessive, corso tenuto nell’anno accademico 2002-2003;
- Docente del corso “Astroparticle Physics II”, nell’ambito del programma di Ph.D. in Teoria delle Elementari Particelle presso la SISSA, Trieste, Italia; 44 ore complessive, corso tenuto nell’anno accademico 2001-2002;
- Docente del corso “Particle physics and Cosmology”, nell’ambito del programma di Ph.D. in Astrofisica presso la SISSA, Trieste, Italia; 8 ore complessive, corso tenuto negli anni accademici 2001-2004;
- Docente del corso “Dark matter detection”, nell’ambito del programma di Ph.D. in Fisica Teorica, Università degli Studi di Roma “Tor Vergata”, Roma, Italia; 10 ore complessive, corso tenuto nell’anno accademico 2000-2001.

ATTIVITÀ DI SUPERVISIONE DI STUDENTI

- Co-supervisore ()
- Co-supervisore
- Supervisore di
- Supervisore di
- Supervisore di
- Supervisore di

- Supervisore di
- Supervisore di
- Supervisore di
- Co-supervisore
- Co-supervisore
- Supervisore
- Co-supervisore

ALTRE INFORMAZIONI SULLA DIDATTICA

- Incarichi didattici attuali:
 - Vice Coordinatore del Collegio docenti del Ph.D. in Fisica Astroparticellare presso la SISSA.

- Controrelatore di tesi di dottorato in Fisica all'Università di Pisa, all'Università di Roma "Tor Vergata" e all'Università dell'Aquila; controrelatore di tesi di Ph.D. in Fisica Teorica presso l'Institut de Physique Thorique di CEA/Saclay, Francia, e presso l'Universiteit van Amsterdam, Olanda.

ATTIVITÀ PROFESSIONALI

- Incarichi amministrativi:
 - Membro del Nucleo di Valutazione della SISSA, dal Luglio 2024;
 - Membro del Consiglio Direttivo dell'Institute for Fundamental Physics of the Universe, Trieste, Italia, dal Maggio 2024;
 - Direttore dell'Institute for Fundamental Physics of the Universe, Trieste, Italia, Novembre 2018 - Aprile 2024;
 - Responsabile dell'attività di Fisica Astroparticellare presso la SISSA, e coordinatore del corso di Ph.D. in Fisica Astroparticellare, Ottobre 2007 - Febbraio 2012 e Ottobre 2016 - Aprile 2018;
 - Vice capo settore, Settore di Particelle Elementari, SISSA, Ottobre 2007 - Febbraio 2012.
- Progetti di ricerca e fondi esterni:
 - Responsabile locale del nodo SISSA nel progetto "Addressing systematic uncertainties in searches for dark matter" nell'ambito dei programmi di ricerca di interesse nazionale PRIN 2022, finanziato dal Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), 2023-2025;
 - Partecipante al progetto europeo "Hidden" nell'ambito del programma Horizon 2020, 2020-2024;
 - Responsabile locale del nodo SISSA nel progetto "The Dark Universe: A Synergic Multimessenger Approach" nell'ambito dei programmi di ricerca di interesse nazionale PRIN 2017, finanziato dal Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), 2019-2022;
 - Partecipante ai progetti europei "Elusives" e "InvisiblePlus" nell'ambito del programma H2020, 2016-2020;
 - Partecipante al progetto europeo ITN "Invisibles" nell'ambito del programma People del FP7, 2012-2016;
 - Partecipante al progetto europeo di Training and Mobility of Researchers (TMR) "UniverseNet: The origin of our Universe", 2006-2010;
 - Partecipante al progetto europeo European Network of Theoretical Astroparticle Physics (ENTApP), parte del progetto ILIAS, 2004-2008;
 - Coordinatore nazionale del progetto ASI-INAF "Studio di Astrofisica dell'Alte Energie", progetto TH-023 denominato "Materia oscura e ammassi di galassie", finanziato dall'Agenzia Spaziale Italiana (ASI) e dall'Istituto Nazionale di Astrofisica (INAF), 2007-2008;
 - Partecipante al progetto "Fisica Teorica Astroparticellare" nell'ambito dei programmi di ricerca di interesse nazionale PRIN 2012, finanziato dal Ministero

- dell'Istruzione, dell'Università e della Ricerca (MIUR), 2014-2017;
- Partecipante al progetto "Asimmetria Materia-Antimateria, Materia Oscura ed Energia Oscura all'Epoca di LHC" nell'ambito dei programmi di ricerca di interesse nazionale PRIN 2008, finanziato dal Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), 2009-2011;
 - Partecipante al progetto "Costituenti Fondamentali dell'Universo" nell'ambito dei programmi di ricerca di interesse nazionale PRIN 2006, finanziato dal Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), 2007-2009; partecipante ad altri progetti PRIN nel campo della fisica astroparticellare nel periodo 2001-2006;
 - Partecipante al progetto congiunto tra il Yukawa Institute for Theoretical Physics di Kyoto, Giappone e la SISSA "Fundamental Interactions and the Early Universe", 2005-2010;
 - Membro affiliato dell'Istituto Nazionale di Fisica Nucleare (INFN) e partecipante alle iniziative specifiche TASP e FA51 in Fisica Astroparticellare, e Fermi;
 - "Affiliated Scientist" nella collaborazione internazionale del Fermi Gamma-ray Space Telescope.
- Organizzatore di conferenze e scuole a livello nazionale ed internazionale, tra le quali:
 - Scuola "Invisibles School 2016", SISSA, Trieste, 2016;
 - Workshop "Off-the-Beaten-Track Dark Matter", International Center for Theoretical Physics (ITCP), Trieste, 2015;
 - Conferenza "Dark Side of the Universe 2013", SISSA, Trieste, 2013;
 - Workshop "Future of Dark Matter Astro-Particle Physics: Insights and Perspectives", International Center for Theoretical Physics (ITCP), Trieste, 2013;
 - Galileo Galilei Institute Workshop "Dark Matter, Its Origin, Nature and Prospects for Detection", Firenze, Aprile-Giugno 2010;
 - "Summer school in Cosmology", International Center for Theoretical Physics (ITCP), Trieste, 2008;
 - "ENTApP DARK MATTER workshop 2006", SISSA, Settembre 2006;
 Convener in sessioni parallele di conferenze nazionali ed internazionali.
 - Referee per le seguenti riviste:
 - Physical Review Letters
 - Physical Review D
 - Journal of High Energy Physics
 - Journal of Cosmology and Astroparticle Physics
 - Nuclear Physics B
 - Astroparticle Physics
 - Physics Letters B.

Lorenzo Di Pietro

Personal Information

Employment

- Oct. 2022– present **Associate Professor**,
Dipartimento di Fisica, Università di Trieste
- Oct. 2019– Sept. 2022 **Research Associate**,
Dipartimento di Fisica, Università di Trieste
- Sept. 2016– Aug. 2019 **Research Associate**,
Perimeter Institute for Theoretical Physics, Waterloo, Canada
- Oct. 2013– Aug. 2016 **Research Associate**,
Department of Particle Physics & Astrophysics, Weizmann Institute of Science,
Rehovot, Israel

Education

- 2010–2013 **Doctoral Studies**,
International School for Advanced Studies (SISSA), Trieste
Supervisor: Matteo Bertolini
Thesis: “Supersymmetry Breaking, Gauge Mediaton and Holography”
Grade: “cum laude” (graduated with distinction)
- 2005–2010 **Diploma in Physics**,
Scuola Normale Superiore, Pisa
- 2008–2010 **M.Sc. in Theoretical Physics**,
University of Pisa
- 2005–2008 **B.Sc. in Physics**,
University of Pisa

Publications

[Google Scholar](#)

[Inspire Hep](#)

Selected Invited Seminars

- 02/2024 Workshop, “50+ ϵ years of the Conformal Bootstrap”, Pisa, “*Taming Mass Gap with Anti-de Sitter Space*”.
- 11/2023 Rencontres Théoriciennes, Paris, “*BCFT one-point functions of Coulomb branch operators*”.
- 09/2023 Workshop, “Cosmology, Quantum Gravity, Holography: the Interplay of Fundamental Concepts”, CERN, Geneva, “*Cosmological Correlators at Finite Coupling*”.
- 05/2022 CERN, Geneva, “*Factorization and global symmetries in holography*”.
- 05/2022 Princeton University, online seminar, “*Factorization and global symmetries in holography*”.
- 07/2019 Workshop “Bootstrap 2019”, Perimeter Institute, Waterloo, “*Boundary conditions for free fields*”.
- 11/2018 Simons Center, Stony Brook, “*Quantum Field Theory in AdS at finite coupling*”.
- 04/2018 Caltech, Pasadena, “*Perturbative approaches to QED in 3d*”.
- 11/2017 Princeton University, Princeton “*Loops in AdS from Hamiltonian approach*”.
- 07/2015 International Congress on Mathematical Physics, Santiago, “*QED in $d = 3$ from the ϵ -expansion*”.

Teaching

Courses

- 2022-2024 Undergraduate course
“*Teoria dei Campi 2*” at Università di Trieste.
- 2020-2024 PhD course
“*Advanced QFT*” at Università di Trieste.
- 2020-2024 Undergraduate course
“*Metodi Matematici della Fisica*” at Università di Trieste.
- 2019 Perimeter Institute, Graduate Course “*AdS/CFT Correspondence*”.
- 01/2017 GGI Lectures on the Theory of Fundamental Interactions, tutor for the course
“*Advanced Topics in Quantum Field Theory*”.
- 07/2014 Summer School on Particle Physics, Petnica Science Center, Petnica, Serbia, series of lectures “*Introduction to Quantum Field Theory*”.

Mentoring

- 2020-2023
- 2021-2024

Curriculum Vitae

Dr. Alessandra Gnecci

Researcher

Research Positions

- 11/2022 Permanent Researcher at INFN, Padova Division, Italy.
- 10/2020 - 11/2022 Senior Postdoctoral position, *Max-Planck-Institut für Physik*, Munich (DE)
- 04/2017 - 03/2020 H2020 “Marie Skłodowska-Curie” Researcher (04/2017-02/2019) and Fellow (04/2019-03/2020), *CERN*, Geneva, (CH)
- 10/2014 - 03/2017 Postdoctoral fellow, *KU Leuven* (BE)
- 10/2012 - 09/2014 Postdoctoral researcher, *Utrecht University* (NL)
- 02 - 09/2012 Postdoctoral researcher, *Padua University* (IT)

Education

- 01/2009 - 02/2012 *Padua University*, Italy, Ph.D. - Advisor: Prof. Gianguido Dall’Agata. Thesis title: “Ungauged and gauged Supergravity Black Holes: results on U-duality”
- 09/2006 - 07/2008 *Pisa University*, Italy, Master Degree in Theoretical Physics, final grade 110/110 Cum Laude. Advisor: Prof. Sergio Ferrara (CERN, Geneva CH)
- 09/2003 - 06/2006 *Pisa University*, Italy, Bachelor degree in Physics, final grade 110/110 Cum Laude.

– Publications –

ORCID number: 0000-0002-4925-8008, <https://orcid.org/0000-0002-4925-8008>

- [1] F. Billiato and **A. Gnecci**, *Entanglement surfaces for rotating cylindrical black holes*, e-Print: 2512.04193 [hep-th].
Preprint
- [2] N. Cribiori, **A. Gnecci**, D. Lüst, M. Scalisi, “*On the correspondence between black holes, domain walls and fluxes*”, JHEP 05 (2023), 033, arXiv:2302.03054 [hep-th].
10.1007/JHEP05(2023)033
- [3] S. Demulder, **A. Gnecci**, I. Lavdas D. Lüst, *Islands and Light Gravitons in type IIB String Theory*, JHEP 02 (2023) 016, arXiv:2204.03669 [hep-th].
10.1007/JHEP02(2023)016
- [4] N. Cribiori, M. Dierigl, **A. Gnecci**, D. Lüst, M. Scalisi, “*Large and Small Non-extremal Black Holes, Thermodynamic Dualities, and the Swampland*”, JHEP 10 (2022) 093, arXiv:2202.04657

- [hep-th].
10.1007/JHEP10(2022)093
- [5] A. Amariti, **A. Gneccchi**, “ τ_{RR} minimization in presence of hypermultiplets”, JHEP 03 (2022), 166, arXiv:2107.01195 [hep-th].
10.1007/JHEP03(2022)166.
- [6] F. Apruzzi, G. B. de Luca, **A. Gneccchi**, G. Lo Monaco, A. Tomasiello, “On AdS_7 stability”, JHEP 07 (2020) 033, arXiv:1912.13491 [hep-th].
10.1007/JHEP07(2020)033
- [7] G. B. de Luca, **A. Gneccchi**, G. Lo Monaco, A. Tomasiello, “Holographic duals of 6d RG flows”, JHEP03 (2019) 035 , arXiv:1810.10013 [hep-th].
10.1007/JHEP03(2019)035
- [8] A. Bzowski, **A. Gneccchi**, T. Hertog, “Interactions resolve state-dependence in a toy-model of AdS black holes”, JHEP06 (2018) 167, arXiv:1802.02580 [hep-th].
10.1007/JHEP06(2018)167
- [9] **A. Gneccchi**, U. Gursoy, O. Papadoulaki, C. Toldo, “A magnetically induced quantum critical point in holography”, JHEP 09 (2016) 090, arXiv:1604.04221 [hep-th].
10.1007/JHEP09(2016)090
- [10] A. Amariti, **A. Gneccchi**, “3D τ_{RR} -minimization in AdS_4 gauged supergravity”, JHEP07 (2016) 006, arXiv:1511.08214 [hep-th].
10.1007/JHEP07(2016)006
- [11] N. Gaddam, **A. Gneccchi**, S. Vandoren and O. Varela, “R holography, Black Holes and Scherk-Schwarz”, JHEP06, 058 (2015), arXiv:1412.7325 [hep-th].
10.1007/JHEP06(2015)058
- [12] **A. Gneccchi**, C. Toldo, “First order flow for non-extremal AdS black holes and mass from holographic renormalization”, JHEP10, 075 (2014), arXiv:1406.0666 [hep-th].
10.1007/JHEP10(2014)075
- [13] **A. Gneccchi**, N. Halmagyi, “Supersymmetric Black Holes in AdS_4 from Very Special Geometry”, JHEP04, 173 (2014), arXiv:1312.2766 [hep-th].
10.1007/JHEP04(2014)173
- [14] **A. Gneccchi**, K. Hristov, D. Klemm, C. Toldo, O. Vaughan. “Rotating black holes in 4d gauged supergravity”, JHEP01, 127 (2014), arXiv:1311.1795 [hep-th].
10.1007/JHEP01(2014)127
- [15] **A. Gneccchi**, C. Toldo. “ On the non-BPS first order flow in $N=2$ $U(1)$ -gauged Supergravity”, JHEP03, 088 (2013), arXiv:1211.1966 [hep-th].
10.1007/JHEP03(2013)088
- [16] A. Ceresole, S. Ferrara, **A. Gneccchi**, A. Marrani, “ d -Geometries Revisited”, JHEP02, 059 (2013), arXiv:1210.5983 [hep-th].
10.1007/JHEP02(2013)059

- [17] G. Dall'Agata, **A. Gnecci**, “*Flow equations and attractors for black holes in $N=2$ $U(1)$ gauged supergravity*”, JHEP03, 037 (2011), arXiv:1012.3756 [hep-th].
10.1007/JHEP03(2011)037
- [18] A.Ceresole, S.Ferrara and **A.Gnecci**, “*5d/4d U-dualities and $N=8$ black holes*”, Phys. Rev. D 80, 125033 (2009), arXiv:0908.1069 [hep-th].
10.1103/PhysRevD.80.125033
- [19] A.Ceresole, S.Ferrara, **A.Gnecci** and A.Marrani, “*More on $N=8$ Attractors*”, Phys. Rev. D 80 (2009) 045020, arXiv:0904.4506 [hep-th].
10.1103/PhysRevD.80.045020
- [20] S. Ferrara, **A. Gnecci**, A. Marrani, “ *$d=4$ Attractors, Effective Horizon Radius and Fake Supergravity*”, Phys. Rev. D 78, (2008) 065003, arXiv:0806.3196 [hep-th].
10.1103/PhysRevD.78.065003

Dissemination, outreach publications

- Encyclopedia entry: “*Gravità quantistica*” (*Quantum Gravity*), in *X Appendice dell'Enciclopedia Italiana di Lettere, Scienze e Arti*, già *Parole del XXI Secolo*, published by “Istituto della Enciclopedia Italiana Treccani” (Italian Encyclopedia Institute Treccani), 2020, ISBN 978-88-12-00876-6.
- e-book: The same work “*Gravità quantistica*” has been selected to be published in e-book form (October 2021, ISBN:978-88-12-00960-2) part of the series *Echi*, available online at:
www.treccanilibri.it/catalogo/gravita-quantistica/

Proceedings and reports

- Luca Buoninfante (Nijmegen U., IMAPP), Benjamin Knorr (U. Heidelberg, ITP), K. Sravan Kumar (Portsmouth U., ICG), Alessia Platania (Bohr Inst.), Damiano Anselmi (Pisa U. and INFN, Pisa) et al. “*Visions in quantum gravity*”, Published in: SciPost Phys.Comm.Rep. (2025), 011, e-Print: 2412.08696 [hep-th].
- A. Gnecci, “*Rhology, black holes and Scherk-Schwarz*”, Proceedings of Fourteenth Marcel Grossmann Meeting - MG14, University of Rome “La Sapienza”, July 12-18, 2015. Ed. by M. Bianchi, R. T Jantzen, R. Ruffini. World Scientific, Singapore, 2016.
- A. Gnecci, “*Duality invariance for black holes in $N=2$ gauged Supergravity*”, “Proceedings of 12th Hellenic School and Workshops on Elementary Particle Physics and Gravity”, Proceedings of Science, Corfu2012 (2013) 116.
- A. Gnecci, “*Fake Supergravity and Black Hole Evolution*”, “Proceedings of the International School of Subnuclear Physics”, World Scientific Publishing Co., Subnucl. Ser. 46 (2011) 619-629.

– Teaching –

02/2024

PhD Course “String Theory part II” at Padua University, 12 hours

2019/2020 & 2020/2021

Adjunct Lecturer - Professore a contratto

Università Cattolica, Brescia (Italy), course for the 3rd year out of 3 of Italian Bachelor Degree:
Nuclear and Particle Physics (in Italian “Fisica dei Nuclei e delle Particelle”).

also

Teaching assistant, KU Leuven

2016/2017 Quantum Field Theory I

2015/2016 Quantum Mechanics II

2014/2015 Quantum Mechanics II

2014/2015 Quantum Field Theory I

Tutor, Padua University

2011/2012 Physics I& II

2010/2011 Algebra for Computer Science

2010/2011 Statistical Physics for Molec. Biology

– Supervision and referee appointments –

- PhD defense committees

- Students

- Referee for the Academic Journals: JHEP, European Physics Journal C., MDPI Universe.

– Institutional Appointments –

Committee member for the selection procedure of INFN BOOST fellowships at Galileo Galilei Institute, Florence, Italy.

- Selection committee for 2025 grants

- Selection committee for 2026 grants

Committee member for the selection procedure of a research fellowship in the INFN call 27076/2024 in Genova division of INFN.

Member of the INFN *Comitato Unico di Garanzia* (CUG) June 2024 - . Deputy member with effective role as member, as customary for CUG. Working groups *Multimedia, Statistics, International projects*.

Contact person for CUG INFN at the Padova Division, from October 2024.

Deputy Gender Equality Officer at MPI for Physics, May 2021 - November 2022. Max Planck Institute for Physics, Munich, Germany. The appointment required:

- Shared participation with the Gender Equality Officer to the hiring committees of the Max Planck Institute for Physics.
- Organization of periodic Gender Equality meeting open to all staff of Max Planck Institute for Physics.
- Participation to meetings between Gender Equality representative from Max Planck Society and Managing director of Max Planck Institute for Physics, to discuss gender equality plan of the institute and propose additional initiatives/measures to promote gender equality and inclusivity.

– Outreach –

Outreach lectures

- | | |
|---------|---|
| 02/2024 | Lecture “Relatività e Meccanica Quantistica” for high school students at <i>Liceo Giorgio Dal Piaz</i> , Feltre (BL), Italy. |
| 03/2023 | Lecture “CERN e la fisica fondamentale”, for high school students at <i>Liceo Scientifico Copernico</i> , Brescia, Italy. |
| 07/2019 | CERN International High School Teacher Program 2019, Lecture “A glimpse into theoretical physics” |
| 02/2019 | “International day of women in science” initiative - Lectures to three classes of elementary school students, age 9-10 years old, in the local Geneva area (in French): “Le CERN” |
| 08/2018 | CERN International High School Teacher Program 2018, Lecture “A glimpse into theory” |
| 08/2018 | S’Cool LAB Summer Camp 2018, Lecture “Fundamental theories and Gravitational Waves” |
| 07/2018 | CERN International Teachers Week 2018, Lecture “A glimpse into theory” |
| 03/2018 | CERN Italian Teachers Program, Lecture “Andiamo in onda - Viaggio tra le onde gravitazionali” |
| 11/2017 | CERN Italian Teachers Program, Lecture “Andiamo in onda - Viaggio tra le onde gravitazionali” |

10/2017 CERN Italian Teachers Program, Lecture “Buchi neri - Quando la gravità si fa potente”

Other outreach activities

- 09/2025 Science 4All at Padua U. Rustle activity at Gazebo.
- 09/2024 Science 4All at Padua U. Rustle activity at Gazebo.
- 11/2023 Science Week at Padua U. Rustle activity with classes of 12 years old, 15-16/11/2023.
- 09/2023 Science4All day at Padua University. Support to video recording of escape rooms and Rustle activity at the gazebo for kids.
- 07/2023 Revision of two chapters for the book “Ci vuole un fisico bestiale” by Vincenzo Schettini, Mondadori edition, acknowledged.
- 01/2023 doc.schools meet art event by Universität Wien *Science and Art - a desirable symbiosis?* (<https://vds-physics.univie.ac.at/activities-benefits/activities/vds-meets/docschools-meet-arts/>).
- 11/2022 Event *Dreaming quantum futures* as part of the *Living in a quantum state* series organized by Goethe Institut, London (<https://www.goethe.de/prj/lqs/en/eve/lon.html>).
- 02/2022 International Day of Women and Girls in Science, 11 February 2022. Co-production of the video: “Women in Physics” (www.youtube.com/watch?v=sWc4OiuCq5I), distributed by Max Planck Institute for Physics, Germany.
- 02/2021 International Day of Women and Girls in Science. Proposal and co-production of the outreach video for Max-Planck-Institut für Physik, München. Link to video.
- 07/2020 Moderator for the Strings 2020 special session “Inclusivity in String Theory”.
- 2020 Author of the entry “Gravità Quantistica” (*Quantum Gravity*) of the Special Volume “Lessico del XXI Secolo” “*Lexicon of the XXI Century*”, published by I.E.I. Treccani (Italy), ISBN 978-88-12-00876-6.
- 09/2018 “1st Workshop on High Energy Theory and Gender”, CERN, local organizer. Co-organizers from CERN: Gian Giudice, Gavin Salam, Andrea Thamm.
- 2018 - Collaborator of the GenHET working group: website and events organization.
- 2018-2019 Arts at CERN: Scientific partner of Suzanne Treister, winning artist for Collide International 2018.
- 2017-2018 Advisor of the scientific committee for the Outreach video projects developed by Dr. A. Sfondrini (ETH) and Kurzgesagt: “In a Nutshell” series, videos:
- Why Black Holes Could Delete The Universe – The Information Paradox
 - String Theory Explained – What is The True Nature of Reality?

– Scientific activities –

- 9-14 September 2025 Organizer of the CORFU workshop on Quantum Gravity and Strings <https://www.physics.ntua.gr/corfu2025/>.
- 3-9 September 2024 Organizer of the CORFU workshop on Quantum Gravity, Strings and the Swampland <https://www.physics.ntua.gr/corfu2024/>.
- 23-28 June 2024 Organizer of the String Phenomenology 2024 International Conference, Padova, Italy.

- 21-22 Sept 2023 Organizer of the Supergravity 2023 Workshop, Padova, Italy.
- 21-25 Aug 2023 Convener of the Quantum Fields and Strings session of the EPS-HEP conference, Universität Hamburg and DESY, Hamburg, Germany.
- 21-24 Sept 2021 Convener of the Strings and Mathematical Physics parallel session of the 2021 DESY Theory Workshop at DESY, Hamburg, Germany.
- 17-19 March 2021 Organizer of the Online Workshop on Quantum Gravity, Holography and Quantum Information, together with Saskia Demulder, Ioannis Lavdas and Dieter Lüst, formally hosted by Max-Planck-Institut für Physik and Ludwig-Maximilians-Universität, Arnold Sommerfeld Center, München.
- 18-22 March 2019 Organizer of “Quantum gravity and quantum information” TH Institute, CERN, together with Raphael Bousso (UC Berkeley) and Steve Giddings (UCSB and CERN).
- 20-31 Aug 2018 Organizer of the TH Institute, 2 weeks workshop at CERN, “Black holes, quantum information and spacetime reconstruction”, CERN, co-organizers Kyrriakos Papadodimas (CERN), Monica Guica (CEA Saclay), Andrea Puhm (Ecole Polytechnique).
- 26-28 Sept 2018 Organizer of the “1st Workshop on High Energy Theory and Gender”, held at CERN. Co-organizers from CERN: Gian Giudice, Gavin Salam, Andrea Thamm (full list of organizers at the linked webpage).
- 2014-2015 Organizer of the Hep-Th Joint Belgian Seminars for the Leuven Group for 2014/2015.
- 1-3 Sept 2014 Organizer of “BOBS Black Objects Beyond Supersymmetry” Workshop, Utrecht, 1-3 September 2014.
- 2013-2014 Organizer of the String Theory Seminar series for the Utrecht Group for 2013/2014.

– Fellowships, personal grants and funding –

Fellowships

- 2016 EU Council Individual Fellowship, H2020 Program: H2020-MSCA-IF-2015 Marie Skłodowska-Curie action, title “GaugedBH”, grant n. 702548
- 2009 ”CARIPARO” foundation PhD fellowship University of Padua, January 2009-February 2012 (Amount of funding determined by Italian Ministry of Education and Research, equivalent to a 3-years Italian PhD public fellowship)
- 2009 Padua University PHD fellowship, refused.

Travel grants

- 2015 COST program “The String Theory Universe”, support fellowship for “Short Term Scientific Mission” at Turin University, April 2015 (Euro 1K)
- 2011 “Ing. Aldo Gini” (private foundation in Padua, Italy) fellowship for a visit to Harvard University, March-August 2011 (Euro ~ 4K)
- 2008 University excellence Fellowship for Master Thesis at CERN, by Pisa University, March-June 2008 (Euro 1K)

Funding

- 2018 CERN TH Department funding of a 2 weeks Workshop “Black holes, quantum information and spacetime reconstruction”, CERN, 20-31 August 2018, co-organizers Kyriakos Papadodimas (CERN), Monica Guica (CEA Saclay), Andrea Puhm (Ecole Polytechnique) (40K CHF)
- 2014 Delta-ITP workshop grant for the organization of “BOBS: Black Objects beyond Supersymmetry”, Utrecht, 1-3 September 2014, co-organizer Dr. Bert Vercoe (Euro 5K)
- Awards**
- 2009 “FRANCO BASSANI” award by SIF, Italian Physical Society (Euro 1000).

– Talks –

- 03/2024 “A low energy perspective on Quantum Gravity” Online Seminar for *Amplitudes’ Lounge on Womens’ day, 2024*, Padua University.
- 01/2024 “A low energy perspective on Quantum Gravity” Online Seminar for University of Chile, Valparaiso.
- 06/2023 “Meet the Jury” seminar, 21 June 2023, KUL, Leuven, Belgium.
- 05/2023 PRIN Meeting Scuola Normale Superiore, “Swampland constraints & black hole entropy in N=2 supergravity”
- 06/2022 Würzburg Seminar on Quantum Field Theory and Gravity, “Islands and light gravitons in IIB String Theory”
- 05/2022 Perimeter Institute QFStrings Seminars, “Islands and light gravitons in IIB String Theory” - *Online seminar*
- 05/2022 London-Oldenburg Relativity Seminar Series, “Large and Small Non-extremal Black Holes, Thermodynamic Dualities, and the Swampland” - *Online seminar*
- 03/2022 String Phenomenology seminar series, “Large and Small Non-extremal Black Holes, Thermodynamic Dualities, and the Swampland” - *Online seminar*.
- 09/2021 University of Tennessee at Knoxville (USA), talk “Low energy perspectives on quantum gravity” - *Online seminar*.
- 06/2020 Nordita, Stockholm (Sweden), talk “On AdS₇ stability” - *Online seminar*.
- 03/2020 Vienna University (Austria) talk “On AdS₇ stability” - *Online seminar*.
- 03/2019 Tokyo IPMU (JP), talk “Holographic RG Flows from 7D gauged Supergravity”.
- 01/2019 Southampton University (UK), talk “Holographic RG flows in 7D gauged Supergravity”.
- 10/2018 Università degli Studi di Torino, (IT), talk “Holographic RG flows in 7D gauged Supergravity”.
- 05/2018 Università Milano Bicocca, Milan, talk “How interactions resolve state-dependence in a holographic toy model for black holes”.
- 03/2018 Boğaziçi University, Istanbul, Turkey, talk “How interactions resolve state-dependence in a holographic toy model for black holes.”
- 09/2017 ITP Universität Bern (CH), talk “Aspects of black holes and holography in gauged Supergravity”.
- 05/2017 University of Southampton (UK), “Aspects of AdS black holes and holographic applications”.
- 06/2016 “Solstice Meeting”, IUAP Belgian University Network, Louvain La Neuve (BE), “Black holes in AdS and holographic applications”.
- 05/2016 AEI, Max Planck Institute, Potsdam (DE), “ τ_{RR} minimization in AdS₄ gauged Supergravity”.

- 02/2016 ITF, Utrecht University (NL), String Seminars, “Aspects of black holes and holography in gauged Supergravity”.
- 02/2016 Brussels-Leuven-Mons Joint String Seminars (BE), “Gauged Supergravity for AdS and flat space”.
- 01/2016 Milano Bicocca University (IT), “Gauged Supergravity for AdS and flat space”.
- 07/2015 CERN (CH), String Theory Seminars, “R holography, black holes and Scherk- Schwarz”.
- 04/2015 Turin University, Torino (IT), “A rholography proposal”.
- 09/2014 UvA, Amsterdam (NL), “Revisiting black holes in gauged Supergravity”.
- 11/2013 Turin University, Torino (IT), “New perspectives on Black Holes in gauged Supergravity”.
- 10/2013 LPHT Jussieu, Paris (FR), U-duality properties of gauged and ungauged Supergravity black holes”.
- 04/2013 CEA Saclay, Paris (FR), “New perspectives on Black Holes in gauged Supergravity”.
- 04/2013 ULB, Brussels (BE), “New perspectives on Black Holes in gauged Supergravity”.
- 04/2012 ITF Utrecht University, Utrecht (NL), “N=8 Supergravity Black Holes and U- duality”.
- 04/2011 MCTP Michigan Center for Theoretical Physics, Ann Arbor, MI, USA, “Flow equations for AdS4 black holes in N=2 Supergravity”.

– Conference and Workshop presentations –

- Belgrade Strings Meeting “Black Holes and Chaos ”, talk “Black Holes, swampland, and one form symmetry breaking”, 4-6 September 2024, Belgrade, Serbia.
- NORDITA Workshop ”Quantum Gravity: From Gravitational Effective Field Theories to Ultraviolet Complete approaches”, talk “Gravity through the (quantum) black hole lenses”, 12-16 August 2024, Stockholm, Sweden.
- Workshop on Holography and the Swampland, 12-19 September 2023, Corfu, Greece. Talk “Extremal surfaces and graviton masses in type IIB String Theory”.
- Mini-Workshop *Gravity and Black Holes - Moving beyond the paradigm*, 11-12 April 2023, Max Planck Institut for Physics, Munich, Germany. Talk “A road to the UV properties of gravity and back”.
- Workshop on Holography and the Swampland, 4-10 September 2022, Corfu, Greece. Talk “Islands and Light Gravitons in type IIB String Theory”.
- Review speaker for the *SCGSC 2022 - Strings, Cosmology and Gravity Student Conference*, May 2021, Amsterdam, The Netherlands.
- *Geometry, Strings and the Swampland* Workshop, November 2021, Ringberg Castle, Germany. Talk “A playground for black hole evaporation from type IIB string theory”.
- Corfu Summer Institute, “Conference on Recent Developments in Strings and Gravity”, September 2019, Corfu, Greece. Talk “6D holographic RG flows”.
- “International School of Subnuclear Physics 2017”, June 2017, Ettore Majorana Foundation and Center for Scientific Culture, Erice, Trapani, Italy. Talk “BPS black holes in AdS and a magnetically induced quantum critical point”.
- COST “String Theory and Fundamental Interactions” program final workshop, February 2017, Milano Bicocca, Italy. Talk “Aspects of AdS black holes and holography”.

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- PAFT16 Conference, March 2016, Vietri Sul Mare, Salerno, Italy. Talk “Black branes in AdS₄ and a quantum critical point”.
 - XI Avogadro Meeting, December 2015, Bologna, Italy. Lecture “Gauged Supergravity: applications”.
 - Strings and Supergravity Workshop, October 2015, University of Padua, Italy. Talk “R holography”.
 - XIV Marcel Grossmann Meeting, University “La Sapienza”, 13-17 July 2015, Rome, Italy. Talk “R holography, black holes and Scherk-Schwarz”.
 - Theory@sea 2015, meeting of the Flemish Theoretical Physics groups, 21-22 May 2015, Ostende, Belgium. Gongshow talk “Black holes and Supersymmetry: a window on their microscopics”.
 - 2nd COST MP1210 Meeting and 20th European Workshop on String Theory and Conference of the MITP program “String Theory and its Applications”, 22-26 September 2014, JGU Mainz. Talk “New perspectives on Black Holes in gauged Supergravity”.
 - XVIII European Workshop on String Theory, 19 - 27 September, 2012, Corfu, Greece. Talk “Duality invariance for black holes in N=2 gauged Supergravity”.
 - STRINGS 2012 Conference, 23-28 July 2012, Ludwig-Maximilians-Universität München. Gongshow talk “Duality invariance for black holes in N=2 gauged Supergravity”.
 - SCGSC Strings, Cosmology and Gravity Student Conference, November 2011, Institut Henri Poincaré, Paris, France. Talk “Dyons in U(1) gauged Supergravity”.
 - 2010 PiTP program “Aspects of Supersymmetry”, July 19-30 2010, IAS Institute for Advanced Study, Princeton, New Jersey, USA. Presentation at the student talks “Aspects of supersymmetric black holes”.
 - “PAFT 2010” conference - Problemi Attuali di Fisica Teorica (Current problems in theoretical physics), March 2010, Vietri sul Mare, Salerno, Italy. Talk “Duality properties of extremal black holes in N=8 Supergravity”.
 - School ending the workshop “New Perspectives in String Theory”, June 17, 2009, GGI Galileo Galilei Institute, Arcetri, Florence, Italy. Presentation at the student talks “Attractor Flows and Maximal Supergravity”.
 - “46th Erice school, ISSP08”, August 29 -September 7 2008, Erice, Sicily (Italy). Presentation among the student talks “Fake Supergravity and black hole evolution”.

– **Programming Languages** –

Wolfram *Mathematica*, \LaTeX , basics of MATLAB, Python, HTML.

– **Language Skills** –

Italian: Mother Tongue, English: Fluent, French: Fluent, German: Beginner

Curriculum Vitae

Prof. Roberto Valandro

Dati personali

Luogo e data di nascita: Trieste, 23/03/1978

Nazionalità: Italiana

Lingue straniere: Inglese (fluente), Tedesco (base).

Indirizzo: Dipartimento di Fisica, Università di Trieste, Strada Costiera 11, Miramare, Trieste 34014, Italia.

Telefono: +39 040 2149111

E-mail: valandro@units.it

Posizione accademica

Settore Scientifico Disciplinare: FIS/02 - Fisica teorica modelli e metodi matematici.

Qualifica: Professore Associato

Anzianità nel ruolo: 01/12/2017

Sede Universitaria: Università degli Studi di Trieste, Dipartimento di Fisica.

Educazione e Formazione

[1998-2003] **Laurea in Fisica:** Università degli Studi di Padova, 24 Marzo 2003 (110/110 *cum laude*).

Relatore: Prof. Antonio Bassetto.

[2003-2007] **PhD program in Theoretical Physics:** Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste, 18 Settembre 2007. *Relatore:* Prof. Bobby Samir Acharya.

Attività professionale

[2007-2009] PostDoctoral Fellowship presso **Institute for Theoretical Physics**, Heidelberg University, Germania (gruppo del Prof. Arthur Hebecker).

[2009-20012] PostDoctoral Fellowship presso **II Institute for Theoretical Physics**, Hamburg University, Germania (gruppo del Prof. Jan Louis).

[2012-2014] PostDoctoral Fellowship presso **International Center for Theoretical Physics (ICTP)**, Trieste, Italia (gruppo del Prof. Fernando Quevedo).

[Dic 2014 - Nov 2017] Ricercatore (RTDb) presso **Dipartimento di Fisica dell'Università degli Studi di Trieste**, Trieste, Italia.

[Dic 2017 - Presente] Professore Associato presso **Dipartimento di Fisica dell'Università degli Studi di Trieste**, Trieste, Italia.

Riconoscimenti

- **Vincitore del "Programma per Giovani Ricercatori "Rita Levi Montalcini""** (Bando Decreto n. 539 del 27 novembre 2012).
- **Abilitazione Scientifica Nazionale (ASN) per professore di seconda fascia.** Dal 28 Marzo 2017.
- **Abilitazione Scientifica Nazionale (ASN) per professore di prima fascia.** Dal 13 Luglio 2018.

Responsabilità accademiche:

- **Presidente della Commissione Paritetica Studenti Docenti (CPSD)** per il corso di Laurea in Fisica. (Membro da settembre 2018, presidente da luglio 2024).
- Comitato di Coordinamento e Indirizzo del Dipartimento di Fisica di UniTs. Dal 2018.
- VPA per l'area 02 nella campagne di valutazione CVR 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025.
- **Vice-coordinatore della scuola di Dottorato** in Fisica dell'Università di Trieste, 2019-2025.

ATTIVITÀ DIDATTICA

Corsi universitari:

- **Titolare** del corso “Teoria dei Gruppi” per la *Laurea specialistica* in Fisica, indirizzo teorico (48 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anni accademici 2024/25, 2025/26 (2 volte).
- **Titolare** del corso “Teoria dei Campi III” per la *Laurea specialistica* in Fisica, indirizzo teorico (48 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anni accademici 2024/25, 2025/26 (2 volte).
- **Titolare** del corso “Metodi avanzati di teoria quantistica dei campi” per la *Laurea specialistica* in Fisica, indirizzo teorico (48 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anno accademico 2020/21, 2021/22, 2022/23 (3 volta).
- **Titolare** del corso “Introduzione alla fisica teorica” per la *Laurea triennale* in Fisica (64 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anni accademici 2017/18, 2018/19, 2019/20, 2020/21, 2021/22, 2022/23, 2023/24, 2024/25 (8 volte).
- **Titolare** del corso “Integrale di cammino in fisica classica e quantistica” per la *Laurea specialistica* in Fisica, indirizzo teorico (48 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anno accademico 2019/20 (1 volta).
- **Titolare** del corso “Teoria dei Campi II” per la *Laurea specialistica* in Fisica, indirizzo teorico (48 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anni accademici 2015/16, 2016/17, 2017/18, 2018/19 (4 volte).
- **Assistente** del corso “Meccanica Quantistica” per la *Laurea triennale* in Fisica (24 ore), presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia), anno accademico 2018/19 (1 volta).
- **Assistente** del corso “Fisica Generale I” per la *Laurea triennale* in Ingegneria Navale (24 ore), presso il Dipartimento di Ingegneria e Architettura, **Università degli Studi di Trieste** (Italia), anno accademico 2016/17 (1 volta).
- **Partecipazione alle commissioni per gli esami di profitto** dei corsi sopra indicati; in aggiunta, negli anni accademici 2014/15 e 2015/16, per il corso “Introduzione alla fisica teorica” tenuto dal dott. Spallucci.

Corsi al dottorato di ricerca:

- Corso “Advanced topics in Quantum Field Theory” per il *Dottorato di Ricerca* in Fisica presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia). [Anni 2017 (12 ore), 2018 (20 ore) e 2020, 2021, 2023, 2024 (8ore)] (6 volte).
- Corso “Singular spaces and physics” per il *Dottorato di Ricerca* in Fisica (16 ore) presso il Dipartimento di Fisica, **Università degli Studi di Trieste** (Italia). [Anno 2019]

- Corso monografico su invito “M-theory compactification and model building” per gli studenti del *Dottorato di Ricerca* in Fisica (12 ore) presso IFT - Universidad Autonoma de Madrid - Madrid (Spagna). [Marzo 2015]

Relatore di Studenti di Laurea Magistrale in Fisica (UniTS)

Relatore di Studenti di Laurea Triennale in Fisica (UniTS)

Supervisore di Studenti di Dottorato (UniTS)

Diversi Tirocini per la Laurea Magistrale e per la Laurea Triennale.

ATTIVITÀ DI RICERCA

Principali campi di ricerca: teoria delle stringhe e teorie efficaci a basse energie, aspetti geometrici di compattificazione di teorie di stringa, teorie di campo supersimmetriche e geometrie singolari in teoria M e teorie di stringhe, dualità tra diverse teorie di stringa.

Pubblicazioni:

Autore di 49 pubblicazioni. La lista completa è raggiungibile attraverso INSPIRE al seguente link:

http://inspirehep.net/search?ln=en&p=f+a+valandro&of=hb&action_search=Search

Citation record su Inspire (a Dicembre 2025):

Total number of citations 2172, h=25, 8 “very well-known papers” with more than 100 citations.

ORCID ID: orcid.org/0000-0003-2958-388X

Organizzatore di Workshop e Conferenze

- Organizzatore della conferenza “*VIII Avogadro meeting on strings, supergravity and gauge theories*” presso la Scuola Normale Superiore (SNS), Pisa, Italia. (Organizzatori: D. Francia, M. Caldarelli, M. Cirafici, V. Forini, E. Tonni, R. Valandro.) [Dic 2012]
- Organizzatore della conferenza “*IX Avogadro meeting on strings, supergravity and gauge theories*” presso la Scuola Internazionale di Studi Avanzati (SISSA), Trieste, Italia. (Organizzatori: D. Francia, M. Caldarelli, M. Cirafici, V. Forini, E. Tonni, R. Valandro.) [Dic 2013]

- Organizzatore della conferenza "*String Phenomenology 2014*" conferenza presso l'International Center for Theoretical Physics (ICTP), Trieste, Italia. (Organizzatori: B. Acharya, L. Aparicio, M. Cicoli, F. Quevedo, R. Valandro.) [Lug 2014]
- Organizzatore della conferenza "*X Avogadro meeting on strings, supergravity and gauge theories*" presso la Scuola Normale Superiore (SNS), Pisa, Italia. (Organizzatori: D. Francia, M. Caldarelli, M. Cirafici, V. Forini, E. Tonni, R. Valandro.) [Dic 2014]
- Organizzatore della conferenza "*Aspects of String Phenomenology and Cosmology*" conferenza presso l'International Center for Theoretical Physics (ICTP), Trieste, Italia. (Organizzatori: B. Acharya, M. Cicoli, P. Creminelli, A. Dabholkar, K. Narain, G. Thompson, R. Valandro, G. Villadoro.) [Mag 2016]
- Organizzatore della conferenza "*Physics and Geometry of F-theory*" conferenza presso l'International Center for Theoretical Physics (ICTP), Trieste, Italia (Attività ammessa al finanziamento sulla base di una selezione compiuta dai responsabili del "Scientific Programmes and Outreach" dell'ICTP). (Organizzatori A. Collinucci, S. Giacomelli, R. Valandro.) [Feb 2017]
- Partecipazione al comitato organizzatore della Conferenza "*IFAE 2017*" (Incontri di Fisica delle Alte Energie) presso l'Università degli Studi di Trieste, Italia. [Apr 2017]
- Organizzatore locale della conferenza "*PATRAS 2021*" (online conference) presso l'Università degli Studi di Trieste, Italia. [Giu 2021].
- Organizzatore della conferenza "*String Phenomenology 2014*" conferenza presso l'Università degli Studi di Padova. (Organizzatori: M. Cicoli, L. Martucci, R. Savelli, R. Valandro.) [Giu 2024]
- Organizzatore della conferenza "*Strings and Geometry 2025*" conferenza presso l'IGAP/ICTP, Trieste. (Organizzatori: A. Collinucci, R. Savelli, R. Valandro.) [Apr 2025]

Partecipazione come relatore a convegni di carattere scientifico in Italia o all'estero

- Partecipazione come relatore del seminario "Statistics of M-theory vacua" alla conferenza "String Cosmology Workshop" presso Uppsala (Svezia). [Apr 2005]
- Partecipazione come relatore del seminario "Fixing D7-branes configurations by fluxes in F-theory on $K3 \times K3$ " alla conferenza "XX Workshop - Beyond the Standard Model" presso Bad Honnef (Germania). [Mar 2008]
- Partecipazione su **invito** come relatore del seminario "Warped Models on intersecting D7-branes" alla conferenza "XXI Workshop - Beyond the Standard Model" presso Bad Honnef (Germania). [Mar 2009]
- Partecipazione su **invito** come relatore del seminario "F-theory Phenomenology" alla conferenza "V Avogadro Meeting on Strings, Supergravity and Gauge Theories" presso la SISSA, Trieste (Italia). [Dic 2009]
- Partecipazione come relatore del seminario "Weierstrass meets Enriques" alla conferenza "XXII Workshop - Beyond the Standard Model" presso Bad Honnef (Germania). [Mar 2010]
- Partecipazione su **invito** come relatore del seminario "Voisin-Borcea Manifolds and Heterotic Orbifold Models" alla conferenza "Nordic String Theory Meeting 2011" presso la Humboldt University di Berlino (Germania). [Feb 2011]
- Partecipazione come relatore del seminario "Algebraic description of 4-form flux in F-theory: New techniques for F-theory phenomenology" alla conferenza "XVII European Workshop on String Theory 2011" presso l'Università degli Studi di Padova (Italia). [Set 2011]
- Partecipazione su **invito** come relatore del seminario "Moduli Stabilisation in Explicit Global Constructions" alla conferenza "String Phenomenology Workshop" presso SCGP, Stony Brook (USA). [Apr 2012]
- Partecipazione su **invito** come relatore del seminario "Global models with moduli stabilisation in type IIB/F-theory" alla conferenza "Recent Developments in String and Field Theory" presso Akademie Berlin-Schmoeckwitz, Berlin (Germania). [Ago 2012]
- Partecipazione su **invito** come relatore del seminario "Global type IIB models with moduli stabilization" alla conferenza "4th Bethe Center Workshop on Unification and String Theory" presso Bad Honnef (Germania). [Ott 2012]

- Partecipazione come relatore del seminario “Global models with D-branes at singularities and moduli stabilization” alla conferenza “XXV Workshop - Beyond the Standard Model” presso Bad Honnef (Germania). [Mar 2013]
- Partecipazione su **invito** come relatore del seminario “Fluxes in type IIB/F-theory duality” alla conferenza “String Phenomenology 2013” presso DESY e l’Università di Amburgo (Germania). [Lug 2013]
- Partecipazione su **invito** come relatore del seminario “Fluxes and U(1)s from stable Sen limit” alla conferenza “Geometry and Physics of F-theory” presso Heidelberg (Germania). [Feb 2014]
- Partecipazione su **invito** come relatore del seminario “Review talk: SUSY breaking and moduli stabilization” alla conferenza “Supersymmetry Breaking in String Theory” presso l’Isaac Newton Institute for Mathematical Sciences di Cambridge (UK). [Mar 2014]
- Partecipazione su **invito** come relatore del seminario “U(1)’s in F-theory/type IIB duality” alla conferenza “String Theory and its applications” presso il Mainz Institute for Theoretical Physics (MITP) a Mainz (Germania). [Set 2014]
- Partecipazione su **invito** come relatore del seminario “U(1)s, MF and Sen limit” alla conferenza “Physics and Geometry of F-theory 2015” presso MPI di Monaco di Baviera (Germany). [Feb 2015]
- Partecipazione su **invito** come relatore del seminario “De Sitter minima in type IIB flux compactifications from the hidden sector” alla conferenza “String-Pheno-Cosmo 2015” presso GGI, Firenze (Italy).[Ott 2015]
- Partecipazione su **invito** come relatore del seminario “T-brane and 3d mirror symmetry” alla conferenza “F-theory at 20” presso Caltech, Pasadena (USA). [Feb 2016]
- Partecipazione su **invito** come relatore del seminario “F-theory with quivers” alla conferenza “String Phenomenology 2017” presso Virginia Tech, Blacksburg (USA). [Lug 2017]
- Partecipazione su **invito** come relatore del seminario “Abelian gauge symmetries and higher charge states from Matrix Factorization” alla conferenza “Physics and Geometry of F-theory” presso Madrid (Spagna). [Mar 2018]
- Partecipazione su **invito** come relatore del seminario “High charges in M-theory/F-theory” alla conferenza “String Geometry and String Phenomenology” presso CERN, Ginevra (Svizzera). [Giu 2019]
- Partecipazione su **invito** come relatore del seminario “Branes at singularities” al workshop “Future Challenges of String Phenomenology” presso DAMPT, Cambridge (UK). [Sep 2023]

Visite scientifiche con presentazione di seminari

- *ICTP* - Trieste (Italia) “Suppressing Proton Decay in M-theory”. [Mar 2006]
- *Harvard University* (USA) “Warped Models in String Theory”. [Nov 2006]
- *Rutgers University* (USA) “Warped Models in String Theory”. [Nov 2006]
- *ICTP* - Trieste (Italia) “Warped Models in String Theory”. [Feb 2007]
- *Universität Bonn* (Germania) “Fixing D7-brane Positions by F-theory Fluxes”. [Nov 2008]
- *ASC - Munich University* (Germania) “Fixing D7-brane Positions by F-theory Fluxes”. [Dic 2008]
- *University of Oxford* (UK) “Fixing D7-brane Positions by F-theory Fluxes”. [Gen 2009]
- *ITP - Universität Heidelberg* (Germania) “Singular CY 4folds, G-flux and Chirality”. [Set 2011]
- *IPhT CEA/Saclay* (Francia) “Moduli Stabilization for Chiral Global Models”. [Nov 2011]
- *ASC - Munich University* (Germania) “Moduli Stabilization for Chiral Global Models”. [Dic 2011]
- *CERN* - Geneve (Svizzera) “Heterotic–Type II duality in the hypermultiplet sector”. [Feb 2012]
- *ITP - Universität Heidelberg* (Germania) “D-branes at singularities: global embedding and transitions among quivers”. [Mar 2013]
- *ITP - Universität Heidelberg* (Germania) “Progress on G-flux in F-theory”. [Ott 2013]
- *Institut Henri Poincare*, Paris (Francia) - ‘Rencontres Theoriciennes’ “Fluxes in Type IIB/F-theory duality”. [Dic 2013]
- *University of Oxford* (UK) “De Sitter flux vacua with moduli stabilisation and chiral matter”. [Ott 2014]
- *ITP - Universität Heidelberg* (Germania) “De Sitter minima in type IIB flux compactifications”. [Ott 2015]

- *ITP - Universität Heidelberg* (Germania) “T-branes and 3d mirror symmetry”. [Set 2016]
- *KU Leuven* (Belgio) “T-branes and 3d mirror symmetry”. [Ott 2016]
- *IFT - Universidad Autonoma de Madrid* (Spagna) “T-branes and monopole deformations”. [Giu 2017]
- *TU Wien* (Austria) “De Sitter vacua from anti-D3-branes in type IIB LVS compactifications”. [Dec 2020] (zoom talk)
- *Imperial College*, London (UK) “5d Higgs Branches from Simple Flops and quasi-homogeneous cDV 3-folds”. [Ago 2022] (zoom talk)
- *Virginia Tech* (USA) “Flops of any length, Gopakumar-Vafa invariants and 5d Higgs branches”. [Nov 2022] (zoom talk)

Altre attività di ricerca

- **Visiting Scientist** presso l'**ICTP** nei periodi Feb 2015 - Nov 2015, Feb 2016 - Nov 2016, Feb 2017 - Lug 2017, Ott 2017 - Mar 2018 e Mag 2018 - Ott 2018.
- Incarico di **associazione** alle attività di ricerca presso l'Istituto Nazionale di Fisica Nucleare (**INFN**), sezione di Trieste, Gruppo 4, iniziativa STEFI, dall'1 Marzo 2015 a oggi.
- **Revisore** per la riviste scientifiche **Journal of High Energy Physics (JHEP)**, ISSN 1029-8479 (pubblicata da Springer), **Nuclear Physics B**, ISSN 0550-3213 (pubblicata da Elsevier) e **Physical Review D**, ISSN 1550-7998 (pubblicata da American Physical Society).
- **Summerstudent** presso *Fermi National Accelerator Laboratory*, Chicago, USA (supervisore: Tommaso Dorigo), dall'1 Agosto al 30 Settembre 2001.