

PRESENT POSITION

Associate Professor (L. 240/10) at the Department of Applied Science and Technology (*DISAT*) of the Politecnico of Turin.

PUBLICATION SCORE

Co-author of about 450 publications, with h-index: 54 (Scopus), More than 15 thousand citations (Scopus, excluding self-citations).

CV ET STUDIORUM

- 2004 Master Degree in Physics, Catania University (110/110 cum laude)
- 2007 Ph.D. in Physics at the Department of Experimental Physics, Turin.
- 2008-2010 Post-doc research fellow at the Department of Experimental Physics, Turin.
- 2010-2014 Post-doc research fellow at INFN, Turin. From July 2012 based at CERN with an Associate position at the CERN Physics department
- July 2014 - May 2015: Project Associate Position at CERN (Geneva)
- July 2012 - May 2015 I was based at CERN as a member of the CERN Physics Department
- June 2015 (for 6 months): Marie Curie Research Fellow at the Physics Department of the Turin University
- December 2015 (three years position): Researcher (art. 24 c.3-b L. 240/10, tenure-track position) at the Department of Applied Science and Technology (*DISAT*) of the Politecnico of Turin

GRANT

- June 2015 I obtained a Marie Curie Research Fellow at the Physics Department of the Turin University (agreement "Marie Skłodowska-Curie No 609402-2020 researchers: *TraintoMove (T2M)*"). Title of the project: "Design of high-performance vertexing and tracking algorithms optimized for large data throughput."

RECENT RESPONSIBILITIES:

- Sep. 2020-present: convener of the ALICE 3 Timing Layers Working Group. The group is composed by ~30 members from 6 institutions and it is dedicated to the R&D of silicon sensors with excellent timing resolution to build the timing layers of the ALICE 3 detector. ALICE 3 is a new experiment which has been proposed to run after the Long Shutdown 4 of the LHC. The main focus of the R&D I am coordinating is the study of a CMOS sensor with additional gain that can provide the time of flight measurement with a timing resolution of 20 ps.
- 2017 – 2019: convener of the Light Flavour Physics Working Group (PWG-LF) of the ALICE experiment. The PWG-LF group is composed by ~120 members from 20 institutions.
- 2017-2019: member of the Physics Board of the ALICE experiment

TITLES, AWARDS AND SELECTED PAST RESPONSIBILITIES

- 2013-2017 Convener of the Physics Analysis Group "Nuclei and Exotica" of the ALICE experiment. The group is composed of ~40 members from 10 institutions and it is dedicated to the study anti-nuclei, anti-hypernuclei and exotic baryon states.
- 2015-2016 Shift leader System Run Coordinator
- 2014 -2019: Deputy System Run Coordinator of the Silicon Drift Detector (SDD) of the ALICE Inner Tracking System (ITS).
- 2013 - 2015 System Run Coordinator of the ALICE ITS (~20 people to coordinate).
- November 2012: Period Run Coordinator of the ALICE experiment (~ 80 people to coordinate).

- 2012-2014: expert on call in charge of the maintenance and operations of the ALICE SDD.
- 2008 Special Prize "Antonio Garbasso" of the Italian Physics Society (SIF) given to young researchers for the scientific results achieved after their Master Degree

PRESENTATION AT CONFERENCES

I delivered 45 talks, and these include 11 invited contributions and 6 plenary invited talks. Among these:

- Plenary talk at the XI International Conference on Hypernuclear and Strange Particle Physics (HYP2012, October 2012-Barcelona, Spain).
- Invited talk at the 21th Anniversary International Workshop on Vertex Detectors (VERTEX2012, September 2012, Jeju-Korea).
- Invited talk at the Conference on Advanced Studies Institute Symmetries and Spin” (Prague, July 2013).
- Talk at the 14th ICATPP Conference on Astroparticle, Particle, Space Physics, Detectors for physics Application (Como, Italy - September 2013).
- Plenary talk at the “Fourth annual Conference on Large Hadron Collider Physics”, (LHCP 2016 in Sweden)
- Plenary talk at the XXVIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions (QM2018, Venice, Italy - May 2018).
- Plenary talk at the 22nd Particles and Nuclei International Conference (PANIC2021, in Lisbon), online edition.

TRAINING OF YOUNG RESEARCHERS

- supervisor of 6 Ph.D. students in Physics at the Politecnico of Turin
- supervisor of one Ph.D. student in electrical, electronics and communications engineering at the Politecnico of Turin
- co-supervisor of 4 Ph.D. students in Physics at the Turin University
- supervisor of 2 Bachelor students in computing engineering and one bachelor student in Electronics engineering at the Politecnico of Turin
- co-supervisor of about 10 Bachelor and Master students in Physics at the Physics Department of the Turin University

WORKSHOP/CONFERENCES ORGANIZATION

- Organizer of 4 international "EMMI Workshop on anti-matter, hyper-matter and exotica production at the LHC", supported by the ExtreMe Matter Institute (EMMI, Darmstadt, Germany) and held at CERN in 2015, in Turin in 2017, in Wraclow in 2019 and in Bologna in 2023. For each workshop I obtained a funding of about 18 kEU.
- October 2017: I was one of the 3 conveners of the "Soft observables physics" session of the Workshop "Secondo incontro sulla fisica con ioni pesanti a LHC" held at the Turin University
- member of the Local Organizing Committee (LOC) of the 2018 European Nuclear Physics Conference held in Bologna (Italy)
- member of the LOC of the 27th International Conference on Ultrarelativistic Nucleus-Nucleus Collisions (2018 in Venice, Italy).
- One of the 3 organizers of the "Workshop on Heavy ion physics" at the 8th International Conference on New Frontiers in Physics" (2019, Crete).

ACTIVITY AS REFEREE

Reviewer of the following international peer-reviewed journals

- Nature Physics
- Advances in High Energy Physics
- Nuclear Physics A
- The European Physical Journal A
- The European Physical Journal Plus

OTHER ACTIVITIES

- 2018 to present: member of the Faculty Board of the Doctoral School for the PhD programme in Physics at the Politecnico of Turin.
- 2018 to present: member of the Focus Group of the Politecnico of Turin for the implementation of the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.
- 2018-2021: lecturer for students from high school in the framework of the “Orientamento” project of the Politecnico of Turin
- 2012-2016 Expert guide for the visit at the ALICE experiment
- 2011 and 2013: International Masterclasses at CERN

Torino, 21/02/2024

Stefania Bufalino

CV di Giorgio Chiarelli

febbraio 2024

Laurea in Fisica, Università di Pisa, marzo 1985 (110 e lode)
Ricercatore presso Rockefeller University (1985-1987)
Ricercatore presso INFN-Laboratori Nazionali di Frascati (1988-1993)
Ricercatore presso Sezione di Pisa INFN (1993-oggi)
Primo Ricercatore INFN 1999-2007
Dirigente di Ricerca dell'INFN (2007 ad oggi)

Lingua italiana: madrelingua. Ottima conoscenza dell'inglese (scritto e parlato).

Researcher-ID: E-8953-2012, Scopus-ID: 35352820900, ORCID-ID: 0000-0001-9851-4816.

Oltre 1400 articoli scientifici, oltre 24,000 citazioni (escludendo le auto-citazioni): fonte Web of Science

Curriculum attività scientifica

La mia attività ha avuto come filone principale lo studio delle interazioni fondamentali in collisioni adroniche di alta energia. Mi sono concentrato sulla ricerca di nuove particelle attraverso l'identificazione di eventi contenenti quark pesanti e sulle problematiche legate alla tracciatura di particelle cariche attraverso l'utilizzazione di rivelatori a semiconduttore. Questo ha rappresentato il filo conduttore di buona parte della mia esperienza professionale nel campo dello sviluppo e costruzione di rivelatori, sia all'interno dell'esperimento Collider Detector at Fermilab (CDF) che ha raccolto dati presso il collisionatore Tevatron che ha operato dal 1985 al 2011, che (dal 2013) nell'esperimento ATLAS. Qui, dopo essermi occupato di problematiche relative al disegno del nuovo tracker per il futuro run ad alta luminosità (HL-LHC), lavoro all'upgrade del calorimetro adronico. Ho fatto parte del gruppo che ha lavorato alla scoperta del quark top (1994-1995), e alle misure relative negli anni a seguire. Mi sono poi dedicato alla caccia al bosone di Higgs, come anche a varie misure di precisione del modello standard delle particelle elementari.

Sono stato relatore di varie tesi (di laurea e dottorato) negli esperimenti ai quali ho preso parte.

Ruoli di responsabilità scientifico-gestionali

Membro del Consiglio Direttivo di APENET (aprile 2022-oggi)
Spokesperson dell'esperimento CDF (giugno 2017-oggi)
Conference Organizer Rencontres de Physique de La Vallée d'Aoste (1997-oggi)
Referee per IEEE e per Nuclear Instruments and Methods A. (1999-oggi)
Membro del Comitato Scientifico degli Incontri di Fisica delle Alte Energie (IFAE)

Project Leader Intermediate Silicon Layer (CDF upgrade, progetto DOE) 1998-2001 (termine progetto).
Responsabile del programma di summer student a Fermilab (2000-2005)
Responsabile dello Speakers Committee di CDF (2004-2012)
Coordinatore locale di CDF Pisa (2006 al 2013, data di chiusura della sigla locale)

Scientific Committee di ICHEP 08 (Philadelphia 2008), [International Conference of High Energy Physics]
Coordinatore Nazionale INFN Gruppi di Lavoro sulla Valutazione (2012-2018)
Coordinatore CETM-B ANVUR (Esperti valutazione terza missione) per la VQR 2011-2014 (2015-2017)
Membro del GEV interdisciplinare per la VQR 2015-2019.
Rappresentate INFN nella Conferenza Regionale Toscana per la ricerca e l'innovazione (2017-2020)
Presidente della Commissione Nazionale Terza Missione dell'INFN (2016-2023)
Abilitazione Scientifica Nazionale al ruolo professore di prima fascia nel SC 02/A1, nell'ASN di cui al DD 222 del 20 luglio 2012.

Incarichi di valutazione

Esperto valutatore MIUR per i PRIN dal 2012
Esperto valutatore per la Commissione Europea dal 2011, programmi quadro: FP7, Horizon 2020, Horizon Europe
Esperto valutatore per la Korean Science Foundation-NRF (2016 e 2022) (programma: Leading Research Program-LRP).
Esperto valutatore per la Swiss National Science Foundation-SNSF (2023).

Pisa, 18 febbraio 2024

Curriculum vitae di Piera Sapienza

1986- laurea in fisica (indirizzo nucleare) presso l'università degli studi di Catania con 110/110 e lode

1990 - consegue a Roma il titolo di dottore di ricerca

1990-1991 borsa post-doc INFN usufruite presso i Laboratori Nazionali del Sud dell'INFN

1991 vincitrice di concorso per ricercatore di III livello presso i Laboratori Nazionali del Sud dell' INFN

2002 vincitrice concorso INFN primo ricercatore

2019 vincitrice concorso INFN Dirigente di Ricerca

La mia attività si è svolta principalmente in progetti di punta strategici per i Laboratori Nazionali del Sud. Gli ambiti di ricerca sono la fisica nucleare (reazioni tra ioni pesanti alle energie intermedie, 1986-2005 e.a.) e la fisica astroparticellare (astronomia con neutrini di alta energia e proprietà de neutrini dal 1999 a oggi).

Funzioni, posizioni di responsabilità e incarichi all'interno dell'INFN, delle collaborazioni e della comunità internazionale

- Coordinatrice del Working Group sulla legal entity di km3net nell'iniziativa europea INFRADEV2
- Rappresentante Ministeriale del MIUR per la costituzione dell'ERIC di km3net
- Membro del Consiglio docenti del Dottorato di Ricerca in Fisica dell'Università di Catania
- Docente del corso "Neutrini" all'interno del Dottorato di Ricerca in Fisica dell'Università di Catania
- Responsabile delle integrazioni delle stringhe di km3net ai Laboratori Nazionali del Sud
- Convener del gruppo dei Radiazione Cosmica in seno all'iniziativa dell'INFN "What Next"
- Referee dell'esperimento Borex in seno alla Commissione 2 dal 2011 al 2022
- Referee dell'esperimento Darkside in seno alla Commissione 2 dal 2012 al 2022
- Referee dell'esperimento Icarus in seno alla Commissione 2 dal 2011 al 2017
- Referee dell'esperimento in seno alla Commissione 2 LVD dal 2011 al 2014
- Referee dell'esperimento Nessie dal 2013 al 2015
- Coordinatore del gruppo 2 dei LNS e Membro del Consiglio di Laboratorio dei LNS dal 2011 al 2018
- Dal 2010 al 2014 membro INFN del Comitato permanente paritetico di raccordo nell'ambito della convenzione quadro INFN-INGV
- Nel 2007 indicata dall' INFN alla Commissione Europea come esperta in 'Experimental astroparticle physics'

- Responsabile LNS dell'esperimento NEMO dal 2006 al 2012
- Responsabile LNS dell'esperimento KM3 in commissione 2 dal 2013
- Membro del comitato scientifico di "Asimmetrie" dal 2006 al 2011
- Chair del Conference and Outreach Committee della collaborazione KM3NeT dal 2013 al 2018
- Rappresentante LNS nell'Istituto Board di Antares dal 2013 al 2019
- Rappresentante LNS nell' Institute Board della collaborazione europea KM3NeT dal 2013 al 2019
- Membro del Publication Committee di Antares dal 2012 al 2016
- Membro dello Steering Committee del working package "Physics and Analysis" del "Strategie issues and international networking" di KM3NeT Preparatory Phase
- Nel 2009 rappresentante di KM3NeT in ASPERA-outreach per "Magnificent 7"
- Membro dell' Institute Board di NEMO 2006-2012
- Membro dello Steering Committee del working package "Physics and Simulations" del Design Study di KM3NeT (2006-2009)
- Nel 2007 membro dell'editorial team del "Physics and Simulations" del Conceptual Design Report di KM3NeT (Editorial team: Pascal Coyle, Piera Sapienza, Rezo Shanidze e Andrew Taylor)
- Dal 1996 spokesperson dell'esperimento C-96-05 "Hard photons and energetic proton emission presso il Ciclotrone Super Conduttore approvato dal Panel Advisory Committee dei LNS e corrisponding author dei principali articoli

Membro di commissione e Presidente di vari concorsi INFN. Relatrice di numerosi tesi di Laura magistrale e di Dottorato.

Membro di numerosi comitati internazionali, autore di più di 250 pubblicazioni e relatrice di numerose presentazioni scientifiche su invito in conferenze internazionali, referee di riviste internazionali.

Andrea Tesi

Curriculum vitae

Personal Information

Family Name, First Name: Tesi, Andrea

Date of birth:

Nationality: Italian

Research IDs:

Employment

- 2017 – today **Researcher (tenured)**, *Istituto Nazionale di Fisica Nucleare (INFN)*, Florence, Ricercatore di III livello
- 2014 – 2017 **Postdoctoral Fellow**, *University of Chicago*, Chicago, IL, US

Education

- 2011 – 2014 **Ph.D. in Physics**, *Scuola Normale Superiore*, Pisa, 70/70 cum laude
- 2008 – 2011 **Laurea Specialistica (MSc)**, *Università di Firenze*, Florence, 110/110 cum laude
- 2005 – 2008 **Laurea (BSc)**, *Università di Firenze*, Florence, 110/110 cum laude

Institutional Responsibility

- 2018 – today **Adjunct Professor**, *Università di Firenze*, Firenze, [docente a contratto]
- 2017 – today **Research Associate**, *INFN*, Firenze

Awards, Fellowships & Qualifications

- 2023 **Abilitazione Scientifica Nazionale**, *Seconda Fascia*, 02/A2, since 08 JUN 2023
- 2014 – 2017 **Reinhard & Mafalda Oehme Fellowship**, *University of Chicago*
- 2016 **Premio Sergio Fubini 2015**, *INFN*
- 2011 – 2014 **PhD fellowship**, *Scuola Normale Superiore*

Scientific output and bibliometrics

Brief summary of scientific production (up to February 19, 2024)

- 36 published articles (in 02/A2)
- more than 4,800 citations (5,600 from all citable contributions), h-index: 24 (27) [Source: INSPIRE]
- more than 2000 citations, h-index: 20 [Source: Scopus]
- more than 2300 citations, h-index: 20 [Source: WoS]
- more than forty invited seminars at international institutes and workshops

Research Activity and Scientific Publications

I am interested in aspects of theoretical particle physics that are testable at current and future experiments. For this reason, my research activity of the past decade has been focused on extension of the Standard Model (SM), with the aim of identifying patterns of new physics in:

- 1 the origin of the weak and Higgs mass scales;
- 2 the structure of quark and lepton flavor;
- 3 the nature of particle Dark Matter (DM);
- 4 the resolution of the strong-CP problem with the QCD axion;
- 5 the dynamics of cosmological phase transitions and inflation.

The outcome of my research is listed below in the publication list.

Papers on peer-reviewed international journals

1. M. Redi and A. Tesi, "Neutrinos, Dark Matter and Higgs Vacua in Parity Solutions of the strong CP problem," J. High Energ. Phys. 2023, 211 (2023)
2. C. Accettura, D. Adams, R. Agarwal, C. Ahdida, C. Aimè, N. Amapane, D. Amorim, P. Andreotto, F. Anulli and R. Appleby, *et al.*, "Towards a muon collider," Eur. Phys. J. C **83** (2023) no.9, 864
3. M. Redi and A. Tesi, "The meso-inflationary QCD axion", Phys.Rev.D 107 (2023) 9, 095032
4. M. Redi and A. Tesi, "Jump Starting the dark sector with a phase transition", JHEP 01 (2023) 085
5. M. Redi and A. Tesi, "Dark Photon Dark Matter without Stueckelberg mass", JHEP 10 (2022) 167
6. R. Garani, M. Redi and A. Tesi, "Dark Matter self-interactions in the matter power spectrum", JCAP07 (2022) 07, 012
7. M. Redi and A. Tesi, "General Freeze-in and Freeze-out", JHEP 12 (2021) 060
8. R. Garani, M. Redi and A. Tesi, "Dark QCD matters ", JHEP 12 (2021) 139
9. H. Al Ali *et al.*, "The Muon Smasher's Guide", Rept.Prog.Phys. 85 (2022) 8, 084201
10. M. Redi, A. Tesi and H. Tillim, "Gravitational Production of a Conformal Dark Sector", JHEP 05 (2021) 010
11. R. Mahbubani, M. Redi and A. Tesi, "Dark Nucleosynthesis: Cross-sections and Astrophysical Signals", JCAP 02 (2021) 039
12. L. Delle Rose, G. Panico, M. Redi and A. Tesi "Gravitational Waves from Supercool Axions", JHEP 04 (2020) 025
13. R. Mahbubani, M. Redi and A. Tesi "Indirect detection of composite asymmetric dark matter", Phys.Rev.D 101 (2020) 10, 103037
14. M. Redi and A. Tesi "Cosmological production of Dark Nuclei", JHEP 1904 (2019) 108
15. A. Abada *et al* (FCC collaboration), "FCC Physics Opportunities : Future Circular Collider Conceptual Design Report Volume 4", Eur.Phys.J.ST 228 (2019) 5, 1109-1382
16. A. Abada *et al* (FCC collaboration), "FCC Physics Opportunities : Future Circular Collider Conceptual Design Report Volume 3", Eur.Phys.J.ST 228 (2019) 4, 755-1107
17. A. Abada *et al* (FCC collaboration), "FCC Physics Opportunities : Future Circular Collider Conceptual Design Report Volume 2", Eur.Phys.J.ST 228 (2019) 2, 261-623
18. A. Abada *et al* (FCC collaboration), "FCC Physics Opportunities : Future Circular Collider Conceptual Design Report Volume 1", Eur.Phys.J.C 79 (2019) 6, 474
19. D. Buttazzo, D. Redigolo, F. Sala, A. Tesi, "Fusing vectors into scalars at High Energy Lepton colliders", JHEP 1811 (2018) 144
20. D. Barducci, S. De Curtis, M. Redi, A. Tesi, "An almost elementary Higgs: theory and practice", JHEP 1808 (2018) 017
21. R. Barbieri, A. Tesi "B-decay anomalies in Pati-Salam SU(4)", Eur.Phys.J. C78 (2018)3,193
22. A. Long, A. Tesi and L.T. Wang, "Baryogenesis at a lepton-number breaking phase transition", JHEP 1710 (2017) 095

23. M. Farina, F. Rompineve, D. Pappadopulo and A. Tesi, "*The photophilic QCD axion*", JHEP 1701 (2017) 095
24. F. Sannino, A. Strumia, A. Tesi and E. Vigiani, "*Fundamental partial compositeness*," JHEP 1611, 029 (2016)
25. M. Redi, A. Strumia, A. Tesi and E. Vigiani, "*Di-photon resonance and Dark Matter as heavy pions*," JHEP 1605, 078 (2016)
26. M. Low, A. Tesi and L. T. Wang, "*A pseudoscalar decaying to photon pairs in the early LHC Run 2 data*," JHEP 1603, 108 (2016)
27. M. Low, A. Tesi and L. T. Wang, "*Composite spin-1 resonances at the LHC*," Phys. Rev. D 92, no. 8, 085019 (2015)
28. D. Buttazzo, F. Sala and A. Tesi, "*Singlet-like Higgs bosons at present and future colliders*," JHEP 1511, 158 (2015)
29. M. Low, A. Tesi and L. T. Wang, "*Twin Higgs mechanism and a composite Higgs boson*," Phys. Rev. D 91, 095012 (2015)
30. R. Barbieri and A. Tesi, "*Higgs couplings and electroweak observables: a comparison of precision tests*," Phys. Rev. D 89, no. 5, 055019 (2014)
31. R. Barbieri, D. Buttazzo, K. Kannike, F. Sala and A. Tesi, "*One or more Higgs bosons?*", Phys. Rev. D 88 (2013) 055011
32. R. Barbieri, D. Buttazzo, K. Kannike, F. Sala and A. Tesi, "*Exploring the Higgs sector of a most natural NMSSM*", Phys. Rev. D 87 (2013) 115018
33. R. Barbieri, D. Buttazzo, F. Sala, D. M. Straub and A. Tesi, "*A 125 GeV composite Higgs boson versus flavour and electroweak precision tests*", JHEP 1305 (2013) 069
34. G. Panico, M. Redi, A. Tesi and A. Wulzer, "*On the Tuning and the Mass of the Composite Higgs*", JHEP 1303 (2013) 051
35. M. Redi and A. Tesi, "*Implications of a Light Higgs in Composite Models*", JHEP 1210 (2012) 166
36. S. De Curtis, M. Redi and A. Tesi, "*The 4D Composite Higgs*", JHEP 1204 (2012) 042

Reports

- r1. J. de Blas et al., "*The CLIC. potential for new physics*", CERN Yellow Rep.Monogr. 3 (2018)
- r2. R. Contino et al., "*Physics at a 100 TeV pp collider: Higgs and EW symmetry breaking studies*", CERN Yellow Rep. (2017) 3, 255-440
- r3. A. Andreazza et al., "*What Next: White Paper of the INFN-CSN1*", Frascati Phys. Ser. 60 (2015) 1.
- r4. X. Cid Vidal et al, "Beyond the Standard Model physics at the HL-LHC and HE-LHC", CERN Yellow Report. CERN Yellow Rep.Monogr. 7 (2019) 585-865

Conference Proceedings

- c1. A. Tesi, "*Higgs and Electroweak precision data*", contribution to the proceedings of "26th Rencontres des Blois - particle physics and cosmology" , 2014

Other peer-reviewed publications

- o1. A. Fasano, M. Primicerio, A. Tesi "*A mathematical model for spaghetti cooking with free boundaries*" , Networks and Heterogeneous Media, 2011, 6(1): 37-60.

Working groups

INFN "Iniziativa Specifica"

- 2021 – today **"Theoretical Particle Physics and Cosmology"**, [quota 100%]
INFN, sezione di Firenze.
- 2017 – 2021 **"HEPCUBE"**, [quota 100%]
INFN, sezione di Firenze.

International Working Groups

- **Participation.** *"What Next" initiative* of the Istituto Nazionale di Fisica Nucleare. Contribution to the report [r3]. Period: from 17-03-2014 to 31-01-2015
- **Participation.** *"FCC-hh physics programm"*, initiative of CERN. Contribution to the report [r2]. Period: from 01-09-2015 to 30-06-2016
- **Participation.** *"Working Group 3: Beyond the Standard Model physics at the HL-LHC and HE-LHC"* initiative of CERN. Contribution to the report [r4]. Period: from 01-06-2018 to 31-12-2018.
- **Participation.** *"CLIC collaboration"*. Contribution to the report [r1]. Period: from 01-06-2018 to 01-12-2018.

Grants

- **PI of INFN project "STRONG"** (20Keuro).
Grant used to co-fund "asegni di ricerca" for Dr. Luigi Delle Rose, and Dr. Chen Zhang.
INFN Call N. 18221/2016 E N. 18226/2016. Period: from 01-07-2018 to 31-12-2021.
- **Participant** to the PRIN project PRIN 2017L5W2PT.
Grant used to co-fund "assegno di ricerca" for Dr. Chen Zhang.
INFN Call n. 21821/2020 Period: from 01-01-2017.

Mentoring and Supervision

Postdoctoral fellow at the INFN Florence

- **Chen Zhang** (2021-2022)
After: professor at Shenyang, Northeast U. Tech.

Phd Students at the University of Florence

- **Tommaso Sassi** (cycle XXXVIII), PhD defense expected in 2025

Master Students (Laurea Magistrale) at the University of Florence

- **Alberto Epifani**, expected 2024
- **Chiara Cabras**, April 2023
Thesis: "Scalar Dark Matter from Inflationary fluctuations: models and cosmological signatures"
- **Francesco Verdiani**, October 2022 (co-tutor with Dr. Michele Redi)
Thesis: "Late Time Phase Transitions in Dark Sectors and their Cosmological Signatures"
- **Giulio Barni**, October 2020
Thesis: "Supercooled First Order Phase Transitions"

Bachelor Students (Laurea Triennale) at the University of Florence

- **Eugenia Dallari**, June 2020 (co-tutor with Dr. Stefania De Curtis)
Thesis: "Il destino del falso vuoto"

Teaching Activity

My teaching activity has been done at the University of Florence as adjunct professor (docente a contratto). The details are listed here below:

University of Florence

- Fall 2023 **Theories of the Early Universe**, (24 hours), Master's degree in Physics
Link: <https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2023&afId=678298>
- Spring 2023 **Cosmological tests of dark sectors**, (8 hours), Ph.D. in Physics
Link: https://www.fisica.unifi.it/upload/sub/dottorato/2022_11--corsi_dottorato_2023.pdf
- Spring 2023 **Axions**, (8 hours), Ph.D. in Physics
Link: https://www.fisica.unifi.it/upload/sub/dottorato/2022_11--corsi_dottorato_2023.pdf
- Fall 2022 **Theories of the Early Universe**, (24 hours), Master's degree in Physics
Link: <https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2022&afId=628383>
- Spring 2022 **Dark Sectors: cosmology and phenomenology**, (16 hours), Ph.D. in Physics
- Fall 2021 **Theories of the Early Universe**, (24 hours), Master's degree in Physics
Link: <https://www.unifi.it/p-ins2-2021-590792-0.html>
- Spring 2021 **Theories of the Early Universe**, (24 hours), Master's degree in Physics
Link: <https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2020&afId=568232&lang=0>
- Spring 2020 **Theories of the Early Universe**, (24 hours), Master's degree in Physics
Link: <https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2019&afId=543379&lang=0>
- Spring 2019 **Theories of the Early Universe**, (32 hours), Master's degree in Physics
Link: <https://www.unifi.it/index.php?module=ofform2&mode=1&cmd=3&AA=2018&afId=509200>
- Spring 2018 **Axions**, (10 hours), Ph.D. in Physics
Link: <https://www.fisica.unifi.it/upload/sub/ricerca/dottorato/Corsi%20XXXIII%20ciclo%20.2.pdf>

Organization of Scientific events

International Conferences and Workshops

- 2019 **New frontiers in the search for Dark Matter**, GGI Workshop in Florence, [local organizer]
- 2018 **Beyond the Standard Model: where do we go from here?**, GGI Workshop in Florence, [organizer]
- 2015 **HEFT2015 - Higgs Effective Field Theory Workshop**, Chicago (US), [organizer]

International Schools

2024 **GGI Lectures on the Theory of Fundamental Interactions**, GGI, Florence, [organizer]

Seminar series

2020-2022 **GGI Tea Breaks'**, online international seminar series (hosted by GGI), [organizer]

2020-2021 **Newton 1665**, online international seminar series, [organizer]

Talks and Seminars

Talks at Conferences & International Workshops

- 16/11/2023 **"Cosmology in a symmetric world"**
"The 8th IBS-ICTP-MultiDark Workshop", Madrid, <https://www.ift.uam-csic.es/es/events/8th-ibs-multidark-ictp-workshop>
- 06/09/2023 **"Dark Matter in a symmetric world"**
"PADUA 2023", Padova <https://indico.dfa.unipd.it/event/673/>
- 11/04/2023 **"Dark Dark Sectors"**
"Portoroz 2013", Portoroz (Slovenia), <https://indico.cern.ch/event/1203323/>
- 28/03/2023 **"Dark Matter from inflationary fluctuations"**
"Beyond WIMPs", Liverpool (UK)
- 09/12/2022 **"The meso-inflationary QCD axion"**
"The 7th IBS-ICTP-MultiDark Workshop", Daejeon (South Korea), <https://indico.ibs.re.kr/event/542>
- 03/11/2022 **"Dark Dark Sectors"**
"SAIFR/Principia Workshop on the Nature of Dark Matter", Sao Paulo (Brazil), <https://www.ictp-saifr.org/dm2022/>
- 28/07/2022 **"Gauged Dark Sectors"**
"MITP Workshop", Mainz (Germany), <https://indico.mitp.uni-mainz.de/event/263>
- 29/01/2020 **"Gravitational Waves from Supercool Axions"**
"COST Workshop: Probing BSM physics at different scales", Berlin (Germany), <https://indico.ph.tum.de/event/4408>
- 17/09/2019 **"Indirect Detection of Composite (Asymmetric) Dark Matter"**
"XVth Rencontres du Vietnam", Quy-Nhon (Vietnam), https://www.icisequynhon.com/conferences/2019/BBSM-LHC/?page_id=651
- 10/01/2019 **"Fusing Vectors into Scalars at High Energy Lepton Colliders"**
"IAS program", Hong-Kong IAS, Hong Kong, <https://iasprogram.hkust.edu.hk/hep/2019/>
- 01/11/2017 **"Neutral Naturalness"**
"Workshop on the physics of HL-LHC, and perspectives at HE-LHC", CERN, <https://indico.cern.ch/event/647676>
- 23/06/2017 **"Baryogenesis at a lepton-number breaking first order phase transition"**
"The TEV scale: a threshold to New Physics?", Mainz (Germany), <https://indico.mitp.uni-mainz.de/event/74/>
- 04/05/2016 **"The F particle"**

- "New Physics interpretations at the LHC", ANL, Argonne (US), <https://indico.cern.ch/event/509874/>
- 05/12/2015 **"Composite Higgs Theory"**
"PITT PACC Workshop: Higgs and beyond", Pittsburgh (US), <https://indico.cern.ch/event/460471/>
- 24/09/2015 **"Composite Twin Higgs"**
"Gearing up for LHC13", Florence, <https://www.ggi.infn.it/showevent.pl?id=140>
- 28/08/2015 **"Singlet-like Higgs bosons: models and phenomenology"**
"SUSY2015", Lake Tahoe (US) <https://indico.cern.ch/event/331032>
- 24/04/2015 **"The Twin Higgs Mechanism and Composite Higgs"**
"CERN-CKC TH Institute on Neutral Naturalness", CERN <https://indico.cern.ch/event/375526>
- 30/05/2014 **"Higgs versus EW data: a comparison of precision tests"**
"Convegno Nazionale di Fisica Teorica", Cortona (Italy) <https://agenda.infn.it/event/7371/>
- 21/05/2014 **"Higgs and EW precision data"**
"Rencontres de Blois", Blois (France) <https://indico.cern.ch/event/296546/>
- 26/07/2013 **"Exploring the Higgs sector of a most natural NMSSM"**
"Higgs Hunting", Paris (France) <https://indico.ijclab.in2p3.fr/event/2043/>

Service Work

Internal service at the INFN Florence

- 2019-2021 **"Commissione Assegni"**, *Committee member (theory) for selection of postdocs*, INFN Firenze, Period: from 15/05/2019 to 15/05/2021
- 2018 **"Circolo d'ascolto"**, *Committee member*

External service

- Referee for PhD thesis: Rupert Coy (U. of Montpellier, 2019); Elena Venturini (SISSA, 2019).
- Convener for conferences: EPS 2015 22-29 July 2015, Vienna (session: Higgs / New physics:)

Journal Referee

- Referee for: JHEP, EPJC, PLB

Editorial Board

- 2023-present: Review Editor for Frontiers in Physics – High-Energy and Astroparticle Physics

Outreach

- 2022-2024 **"Art&Science across Italy" - IV edition**
co-organizer for Florence of the activities of Art&Science, INFN initiative
- 28/04/2023 **"Art&Science across Italy"**, *"La materia oscura"*, Presentation to high-school classes within the program of "Art&Science"
- 27/04/2023 **"Art&Science across Italy"**, *"Breve storia dell'Universo"*, Presentation to high-school classes within the program of "Art&Science"

- 31/01/2023 **"Liceo Scientifico Rodolico"**, *"Le Frontiere della fisica: l'energia oscura"*, Presentation to high-school students
- 24/01/2023 **"Liceo Scientifico Rodolico"**, *"Le Frontiere della fisica: la materia oscura"*, Presentation to high-school students
- 28/09/2018 **"BRIGHT"**, *"Il primo secondo dell'Universo, 13.8 miliardi di anni fa."*, Short presentation during the "Notte dei ricercatori"

Outreach Publications

- S. De Curtis, A. Tesi *"Le fantastiche quattro"* , *Asimmetrie* 28, DOI: 10.23801/asimmetrie.2020.28.7