OLIVIERO CREMONESI

Date and place of birth:
ORCID: 0000-0003-4374-1346

EDUCATION

1987	PhD in Physics, University of Milan, Italy
1982	Degree in Physics at University of Pavia, Italy

CURRENT POSITION

2006 - present	Research Director (lev. I), INFN Milano Bicocca, Italy

PAST POSITIONS

1995 - 2005	Senior Researcher (lev. II), INFN Milan, Italy
1990 - 1995	Researcher, Physics Department, University of Milan, Italy
1989	Fixed term researcher , INFN Milan, Italy
1987	Post-doc position, INFN Milan, Italy

NATIONAL AND INTERNATIONAL RESPONSIBILITIES

2020 - present	Chair of the INFN National Scientific committee for Astroparticle
2012 - 2020	Spokesperson of the CUORE international collaboration
2010 - 2020	National PI of the CUORE experiment, INFN
2003 - 2012	Technical coordinator of the CUORE international experiment
2003 - 2009	PI (with INFN funds) for the CUORE Milano and Milano-Bicocca group

NATIONAL AND INTERNATIONAL COLLABORATIONS

2005 - 2020	Member of the CUORE and CUORE-0 Collaborations (Europe-USA- China)
2003 - 2008	Member of the Cuoricino Collaboration (Europe-USA)
1989 - 2003	Physics and Data Analysis coordinator of the Milano group pioneering the use of low temperature detectors for rare event searches
1986 - 1998	Member of the GALLEX Collaboration (Europe-USA-Israel)
1985 - 1990	Member of the Gran Sasso experiment on double beta decay of ^{136}Xe
1983 - 1986	Member of the Mont Blanc experiment on double beta decay of ^{76}Ge
1982 - 1983	Member of the NUSEX Collaboration (CERN-Italy)

MEMBERSHIP SCIENTIFIC BOARDS

2023 - present	Member of the DOE panel for Neutrinoless Double Beta Decay
2014 -2019	Member of the USA Department Of Energy (DOE) Review Committee of the Majorana international Project
2013-2016	Chair of the CUPID Steering Committee
2010-2012	Member of the CERN SP and PS Experiment Committee
2004-2009	Observer in the Scientific committee for nuclear physics, INFN.
2003-2009	Member of the INFN Scientific Committee for Astroparticle Physics

TEACHING ACTIVITIES

2012 - present	“Particle physics I”, master’s degree - Milano-Bicocca University, Italy
2013 - 2017	Monographic course on “Double beta Decay”, PhD - Gran Sasso Science Institute, L’Aquila, Italy

2009 - 2011	“Particle physics II”, master’s degree - Milano-Bicocca University, Italy
2003 - 2009	“Digital systems electronics I”, major - Milano-Bicocca University, Italy
2002 - 2010	“Signal acquisition and processing”, major - Milano-Bicocca University, Italy
2000	“Electronics and computing”, complementary course, graduate school in health physics - Milan University, Italy
1999 - 2000	“Experimentations of Physics II”, complementary course, major - Milano-Bicocca University, Italy
1995 - 2000	Courses on Neutrino physics, Particle detectors, Data analysis, PhD - Milan University, Italy
1994 - 2001	“Superior physics”, complementary course, major - Milan University, Italy

TUTORING AND MENTORING

Tutor for several undergraduate and PhD students of the Milan, Milano-Bicocca Universities and GSSI. I have been mentoring tens of young researchers during my participation in international collaborations.

REFEREE/REVIEWER

- Reviewer of scientific journals (Physics Letters B, European Physics Journal C)
- Referee of several experiments for the nuclear and astro-particle physics scientific committees of INFN
- Reviewer of new physics projects for international funding agencies (CNRS, Canadian NSF, USA NSF)

RESEARCH OUTPUT

- 340 publications, h-index 50, 19309 citations(source SCOPUS)
- Almost 40 invited presentation at scientific international conferences, international schools (most of which abroad: Europe, USA, Japan).

MAIN RESEARCH INTERESTS

- nucleon stability
- solar neutrinos
- neutrino properties
- rare nuclear decays and dark matter detection (WIMPS/axions)
- development of phonon mediated single particles detectors (bolometers) with scintillation and thermal read-out
- study of trace radio-contaminants and of techniques for their reduction
- data analysis and Monte Carlo simulations for low energies

Since the beginning of my career, my research interests has led me to study novel approaches, instruments and techniques able to face the demanding experimental requirements typical of the rare event searches.
Indeed, after entering the NUSEX collaboration in 1982 as an undergraduate student at the Milan University, most of the activities of the years following my graduation are devoted to pioneering new experimental strategies.

In 1983 I joined the small 'Milan group' at INFN and Milan University which was proposing the use of commercial germanium diodes for the search of neutrino less double beta decay of ^{76}Ge.
The intuition was fruitful: two of them were installed in the Mont Blanc tunnel and provided the most stringent limits to date on neutrino less double-beta decay and paved the way to a true dynasty of proposals which include the recent GERDA and Majorana projects.
In 1986, driven by a desire to extend my interest for the physics of neutrinos, I joined the proposers of a European Collaboration aiming to build a challenging experiment on low energy solar neutrinos: GALLEX. The experiment first demonstrated that energy in the sun is produced by a chain of nuclear fusion reactions and that the solar neutrino puzzle is driven by unexpected properties of the neutrinos. I worked to the development and optimisation of the new sensitive gas counters and gave a substantial contribution to the signal analysis proposing a new approach (optimum filter) that provided an independent validation of the standard analysis method.
In 1986 the Milan group completed the installation of a multi proportional gas chamber at the INFN Gran Sasso National Laboratories (LNGS), to search for neutrino less double beta decay of ^{136}Xe. Together with the Gotthard TPC, this is the first use of Xenon.
The quest for the best technology for rare event searches convinced me to join the Milan group effort, lead by Prof. E.Fiorini, for the development of low temperature detectors in 1989. I soon took the lead of the data analysis and physics program developing all the needed software.
In the 90's we created two different research lines based on bolometers: microbolometers (milligrams to grams) for the study of the end part of the ^{187}Re beta spectrum (direct measurement of the antineutrino mass) and macro-bolometers (kg) for neutrino less double beta decay. In particular we developed the world first large mass bolometers, with energy resolutions comparable (or even better) to those of conventional devices. We realized a number of experiments funded by INFN under the MIBETA abbreviation and paved the way for the ambitious projects like Cuoricino and CUORE. My role as coordinator of the data analysis and my reputation as responsible of the physics program were constantly increasing in these very important years.
At the beginning of the 2000's, based on the longstanding experience with the development of low temperature detectors I started undertaking relevant responsibilities. In 2003 I became responsible for the INFN Milano division funds of Cuoricino and CUORE and turned definitely to macrobolometers, abandoning the development of microbolometers. Based on my experience from the construction and operation of Cuoricino, in the same year I was designated as technical coordinator of the CUORE project. I maintained this leadership for about ten years, covering the design, preparation and construction phases of the experiment. These have been very intense years characterised by frequent visits to all the collaborating groups around the world (Italy, USA and China) and accurate controls on the construction activities at the selected companies. CUORE is the largest bolometric experiment ever built and is today among the most competitive experiments in this field. It represents a true technological challenge characterised by a cryogenic system of unprecedented dimensions.
In 2010 I became national PI of the CUORE activities and funds, increasing my leading role in the experiment and maintaining continuous contacts with INFN management. In 2012 I was eventually elected spokesperson of the whole CUORE Collaboration, which includes about 20 Institutions in Europe, U.S. and China and is funded by INFN, DOE and NSF. CUORE numbers about 150 scientists from Europe and USA. Its total cost has been estimated to be around 30 million Euros of which about two thirds provided by INFN

under my responsibility. Leading the Collaboration to operation in 2017 has been my greatest success. I finally resigned from this role in February 2020 when I was elected chairman of the national scientific committee of INFN (CSN2). Role confirmed for a second 3-year term in February 2023 and which I therefore also hold at present.

The research results beyond the state of the art to which I contributed in my career are highlighted in the list of publications. . In the following, the ten most representative invited presentations to international Conferences:

- **Search for neutrinoless double beta decay with bolometric devices.** 14th Weak Interactions and Neutrinos, July 19-24 1993 - Seul, Korea
- **Low temperature detectors for neutrino physics: results and developments,** 16th Weak Interactions and Neutrinos, June 1997 - Capri, Italy
- **Present and future of low temperature detectors,** 18th International Conference on Neutrino Physics and Astrophysics, June 1998 - Takayama, Japan
- **Double beta decay experiments with thermal detectors,** MEDEX '99, July 1999 - Prague, Czech Republic
- **Cryogenic Detectors for Double Beta Decay**, IX Low Temperature Detectors, July 2001 - Madison (WI) USA
- **Neutrinoless double beta decay: present and future,** 20th International Conference on Neutrino Physics and Astrophysics, June 2002 - Munich, Germany
- **New Cuoricino results and the CUORE project,** 5th Workshop on Neutrino Oscillations and their Origin, February 2004 - Tokyo, Japan
- **Double beta decay: Experiment and theory,** 22nd International Symposium on Lepton-Photon Interactions at High Energy, June 2005 - Uppsala, Sweden
- **Probing Neutrino low energy and mass scales,** Neutrino Oscillation Physics (NOW 2006), September 2006 - Otranto, Italy
- **Neutrino masses and Neutrinoless Double Beta Decay: Status and expectations,** European Strategy for Future Neutrino Physics, October 2009 - CERN, Geneva, Switzerland
- **Double beta decay searches**, 4th Nuclear Physics in Astrophysics, June 2009 - Gran Sasso, Italy
- **Neutrinoless double beta decay searches,** DISCRETE 2010, December 2010 - Rome, Italy
- **Developments on double beta decay search,** 11th Heavy Quarks and Leptons, June 2012 - Prague, Czech Republic
- **Neutrino masses,** The European Physical Society Conference on High Energy Physics, July 2013 - Stockholm, Sweden.
- **Experimental searches of neutrinoless double beta decay,** NOW2012 conference, September 2012 - Conca Specchiulla, Italy
- **Neutrinoless Double Beta Decay,** TAUP 2015, September 2015 - Turin, Italy
- **First results from the CUORE experiment**, TAUP2017, July 2017 - Sudbury, Canada
- **Experimental search of neutrino-less double beta decay in 130Te**, CNNP17, October 2017 - Catania, Italy

Dr. Gabriella CATALDI
First Researcher- INFN Lecce (Italy)
(OrcID: 0000-0001-8066-7718)

SCIENTIFIC INTEREST: Astroparticle Physics, High Energy Physics, Innovative Detectors for Particle Physics, DAQ and electronics for Particle Detectors, Scientific Outreach end dissemination.

Current Position

INFN (Lecce) “First Researcher” sezione di Lecce 01/01/2020-present

Scientific Education

Laurea degree in Physics - Università degli Studi di Lecce (now Università del Salento)	1990
Dottorato di ricerca (PhD) in Physics - Università degli Studi di Bari	1995

Working Experience

July 1990: Laurea degree in Physics 110/110 Università degli Studi del Salento – (previously named “Università degli Studi di Lecce”) Thesis: "Studio di una inner shell per la Crystal Ball dei LNS di Catania"- Supervisor: Prof. R. De Leo;
March 1991 - October 1991: Guest Scientist –exp. E771 at Fermilab-Chicago USA - Supervisor: Prof. S. Conetti.
November 1991-February 1995: PhD program – Dottorato in Fisica "VII ciclo" “Dipartimento di Fisica dell'Università degli Studi di Bari”. Thesis": Il problema della separazione pi/mu nella camera a drift di KLOE", (Supervisor Prof. P. Pistilli; co-supervisor: Dr. F.Grancagnolo)
March 1995- January1996: Fellowship with “Istituto di Fisiologia Clinica del CNR (Pisa)”- reference person Prof. R. Guzzardi. Main topic: "Use of GEANT(3) for simulation PET 3D".
February 1996-August 1997: Post-doc fellow - Graduiertenkolleg Elementarteilchenphysik Universitaet of Karlsruhe (Germany) – reference person Prof. Wolfgang Kluge. –Main topic: KLOE at LNF of INFN.
September 1997-March 2000: Researcher of the Deutsche Forschungsgemeinschaft at the Universitaet Karlsruhe (Germany). Main topic: KLOE at LNF of INFN.
April 2000- December 2019: Researcher at the Istituto Nazionale di Fisica Nucleare (sezione di Lecce)
January 2020- present: First Researcher at the Istituto Nazionale di Fisica Nucleare (sezione di Lecce)

Main Institutional responsabilities

- Coordinator of Software simulation and analysis- group KLOE Karlsruhe (Germany)– from February to march 2000
- Responsible of the computing system for the group KLOE Karlsruhe (Germany) – from February 1996 to march 2000
- Coordinator in ATLAS(CERN) of the reconstruction software of the muons in Object Oriented environment (Moore/MuID) and his applications in the environment of the Event Filter trigger- from January 2003 to September 2005
- Representative of researchers for INFN Lecce from March 2001 to February 2007
- Reference person for the staff training of INFN Lecce from March 4th 2011 to December 31st 2016
- Contact person for the Pierre AUGER Experiment at Tier1 CNAF (Main Computing Centre of INFN) from September 2010 (present).
- Responsible of production and certification site of INFN Lecce for the SSD for the upgrade of the Auger Experiment from September 2016 until 2021.
- Scientific coordinator of the Activity related to Astroparticle and Neutrino Physics in the Commissione Scientifica Nazionale 2 of INFN from 12/04/2018-11/04/2024
- Local coordinator for Lecce of SABRE (CSN2) (since 2023)
- Local coordinator (sezione di Lecce) of Outreach Cosmic Rays activities from June 2018 until December 2021.
- Acting in the organizer team for the activities of outreach for INFN-Lecce to the European Researcher Night since 2018
- Referee of HERD_DMP in Commissione Scientifica Nazionale 2 of INFN since 4/07/2018
- Referee of SPB2 in Commissione Scientifica Nazionale 2 of INFN since 22/07/2019
- Referee of SWGO in Commissione Scientifica Nazionale 2 of INFN since 12/07/2021
- Referee of ISP_C3M in Commissione Terza Missione of INFN since 01/06/2022
- Referee of INFN_KIDS_C3M in Commissione Terza Missione of INFN since 01/06/2024
- Referee of INFN_Festival_C3M in Commissione Terza Missione of INFN since 01/06/2024
- Local coordinator for Lecce of Art&Science across Italy (C3M) (since 2021)
- National coordinator of Art&Science across Italy (C3M) (since 2024)
- Coordinator for INFN Lecce of Outreach activities from 1st September 2020 (present)
- Member of the Collegio dei docenti of PhD in “Fisica e Nanoscienze” of Università del Salento since May 2020
- Local Coordinator of the project MAD (MAD La Metamorfosi Additiva del Design” - codice identificativo ARS01_00717- area di specializzazione Design, Creatività e Made in Italy - CUP B82F20000680005 – CODICE RNA-COR 2839327)

Research Topics

Gabriella Cataldi is a *First Researcher* at INFN Lecce, specializing in **astroparticle physics** and **innovative detectors**. Her research covers the experimental study of high-energy particles at accelerators and cosmic-ray observatories, documented in over **350 refereed publications** (h-index 85, ISI-WoS). She has been an active member of major international collaborations and has worked at leading facilities including the Pierre Auger Observatory (Argentina), GANIL (France), CERN (Switzerland), KIT-FZK (Germany), and several US laboratories.

Within the **SABRE Collaboration**, she contributes to R&D on the production of **NaI crystal scintillators**, the characterization of **photosensors**, and the study of radiopure materials.

As a member of the **Pierre Auger Collaboration**, she has played a key role in detector development, performance monitoring, data analysis, and the observatory's upgrade program. Since 2015 she has coordinated the **construction, calibration, and installation of the Surface Scintillator Detectors (SSD)**, leading INFN Lecce's production efforts and overseeing logistics, quality control, and testing with RPC-based external trackers.

Earlier in her career, she contributed to the **ATLAS RPC muon trigger system** at CERN, gaining extensive expertise in **gas detectors, trigger systems, and simulation environments**.

Outreach and dissemination

Throughout her career, **Gabriella Cataldi** has been actively engaged in **outreach and science communication**, delivering school seminars, guiding laboratory visits, and coordinating projects that connect both students and the public with INFN research. Her activities also explore **cross-disciplinary themes**, such as the relationship between science and art and the use of scientific data by non-experts. Since 2018 she has participated in the **EU-funded ERN_APULIA project**, aimed at bringing the Apulian community closer to academic research. She has coordinated **cosmic-ray outreach activities in Lecce** since June 2018, has been a member of the **INFN National Outreach Committee (CC3M)** since 2020, and since 2021 has led the **Art & Science Across Italy** initiative in Lecce, engaging high school students in projects at the intersection of science and art.

Teaching, Supervision of thesis and other duties- Gabriella Cataldi has been regularly serving as a teaching assistant at the University of Salento, and previously at the University of Karlsruhe, since 1997. The main teaching topic included: Experimental methods, Advanced laboratory, Data analysis and Simulation, Object Oriented Programming. She has supervised several theses (Laurea and PhD). She is a member of "Collegio docenti di dottorato in Fisica e Nanoscienze dell'Università del Salento" since May 2020.

Referee

She is a referee for IEEE Transactions on Nuclear Science (TNS) since 2020.
Inside the national scientific committee for Astroparticle and Neutrino Physics of INFN she acts as scientific referee for the projects: SPB2, DAMPE, HERD and SWGO, and inside the national committee of outreach projects she act as a member of INFN ISP_C3M, INFN_KIDS and FESTIVAL

Autorizzo il trattamento dei miei dati personali ai sensi del Dlgs 196 del 30 giugno 2003

Tommaso Chiarusi, Ph.D.

Curriculum Vitae

Senior Staff Researcher at the National Institute of Nuclear Physics (INFN), Sezione di Bologna.
Adjunct Professor at the School of Science, University of Bologna

Field of interest: Astroparticle Physics and Astrophysics, currently focused on high energy astrophysical neutrinos with underwater neutrino telescopes, gravitational waves interferometers and multi-messenger astrophysics.

Instruction:
Master Degree in Physics - University of Florence (1999)
Ph.D in Physics - University of Bologna (2003)

Work experience and institutional commitments :

2025-**present**	Coordinator of Astroparticle Group in INFN-Sezione di Bologna (from 22/06/2025)
2024-**present**	RUP for INFN-Sezione di Bologna (U-BUY beta-tester)
2023-**present**	RUP for the KM3NeT4RR PNRR project for the procurement of INFN-BO OU laboratory
2022-2024	Principal Investigator for INFN in M2TECH project (HORIZON-INFRA-2022-TECH-01 call)
2019-**present**	Senior Staff Researcher at INFN, Sezione di Bologna, permanent.
2019-2020	Member of LNS User Committee
2011-2019	Staff Research at INFN, Sezione di Bologna, permanent.
2007-2011	2 Research Grants at INFN, Sezione di Bologna and 1 Research Grant at Physics Department of University of Bologna
2007	Physics Teacher (Class 38/A) at Public Secondary Schools, permanent (resigned when starting the permanent position at INFN)
2004-2007	2 Research Grants at INFN Sezione di Roma and Physics Department of La Sapienza University of Rome
2004	Research Grant at INFN, Sezione di Bologna
2001-2004	Research Grant at Agenzia Spaziale Italiana (ASI)

Academic/Teaching experience:

2024-**present**	Lecturer at Ph.D. course in Physics of University of Bologna - Subject: Highlight in Astroparticle Physics 2 - High Energy Neutrinos
2024-**present**	Member of Council of Ph.D. in Physics of University of Bologna
2018	Member of the Ph.D. Selection Committee in Physics, XXXIV Ciclo.
2012-**present**	Adjunct Professor at the School of Science, University of Bologna

2008-2010	- Lecturer at the School of Biology, University of Bologna - Subject: Physics Laboratory and Computational Techniques ; - Lecturer at the School of Engineering, University of Bologna - Subject: General Physics (Electricity and Magnetism).
2004-2007	Lecturer at the School of Physics, La Sapienza University of Rome - Subject: Computational Physics Laboratory I and II
2004	Lecturer at the School of Informatics, University of Bologna - Subject: General Physics (Mechanics)
2003	Lecturer at the Physics Teaching Association, Subject: Geometric and Undulatory Optics

Supervisor of more than 10 Master Degree theses in Physics and Informatics and 4 Ph.D theses in Physics.

Scientific Research Activities and Responsibilities:

Einstein Telescope	**Co-chair of the Local Organising Committee** and member of the Scientific Organising Committee for the XV ET Symposium (26-30/05/2025)
White Rabbit Collaboration	**INFN representative** in the White Rabbit Collaboration Board (since 2024-**present**) ;
ET-Italia	**R&D DAQ coordinator** of ET-Italia (2023-**present**) Local responsible for the INFN Bologna group (01/06/2022 - **present**)
ETIC - PNRR project **MUR code: IR0000004**	**Deputy contact person** for the INFN-BO UO for the Time Synchronisation topic. Member of the Management Team of the CAOS infrastructure
KM3NeT4RR - PNRR project - MUR code: IR0000002	**Contact person** of INFN-Bologna laboratories BB-LAB (for data-taking, sea-environmental monitoring instrumentation) and BILBO (for base-module integration) (1/12/2022 - **present**)
JLAB - Streaming readout (MAECI_EIC - 2020-2022**)**	Porting the experience of Neutrino Telescope data acquisition systems to accelerator experiments, like Class 12 in Hall-B at JLab (2019 - **present**)
KM3NeT 2.0, European Project H2020-INFRADEV-02-2016- GA 739560 CUP I62F16000130006	- participation to Work Package 4 - Open Access - participation to Work Package 7 - Multi-messenger Astronomy
Asterics (Astronomy ESFRI and Research Infrastructure Cluster), European Project n. 653477 call H2020- INFRADEV-1-2014-1 CUP I42I15000050006,	- Production of MonteCarlo simulations with the CORSIKA code for determining the sea-level atmospheric muons flux in the energy range of 200 GeV - 1 EeV flux after primary cosmic rays interaction with the atmosphere - Development of readout/conversion codes for optimised data-handling
KM3NeT (new generation underwater neutrino telescope in the Mediterranean Sea)	- **Member of the Project Steering Committee** (2013 - 2025) - Coordinator of the *DAQ and Readout* Working Group (2013 - 2025) - Manager of the *Bologna Common Infrastructure Laboratory* for DAQ developments and tests - Coordinator of the data-analysis of the Moon and Sun shadow with atmospheric muons for ARCA (2021-**present**) - Member of the Conference Committee (2020 - **present**)

ANTARES (first underwater neutrino telescope in the Mediterranean Sea)	- Data analysis : Moon and Sun shadow with atmospheric muons (2016 - 2018) - Coordinator of the *Neutrino induced shower reconstruction* Working Group (2011-2013) - Montecarlo production for Atmospheric muon simulations - Member of the Institution Board (2015-**present**)
NEMO (R&D project for the realisation of 1 km3 volume underwater neutrino telescope)	- Coordinator of the *Trigger and Data Acquisition System* Working Group (2010-2013)
SLIM (Experiment with Nuclear Track Detectors for the measurement of high-altitude search of massive penetrating radiation)	- Test beam at CERN for measuring the nuclear fragmentation of ^{49}In on PB targets with CR39 and Makrofol Nuclear Track Detectors (NTD) - Data analysis for searching not-integer electric charge particles
MACRO (Astroparticle Underground detector in Gran Sasso Laboratory)	Data analysis: contribution to neutrino oscillation analysis (2000-2001)
CAKE (Balloon-borne experiment with Nuclear Track Detectors for the measurement of primary cosmic rays)	- Development of a new technique for etching the Nuclear Track Detectors CR39 and Lexan/Makrofol sheets; 2000-2002 - Development of the automatic system for NTD scanning and particle tracking; (2000-2003) - Data Analysis (2002-2004) for determining the relative abundances of cosmic nuclei above iron.
L3+Cosmics (Extension of the L3 experiment at LEP, CERN, for the measurement of atmospheric muons)	- Developer of the Time Calibration system with the new scintillator coverage of the top of L3; - Development of a new Atmospheric Muon Montecarlo tool - Data analysis for determining the atmospheric muon flux at L3+Cosmics level

Knowledge Transfer - Third Mission:

Public events for XV ET Symposium (26/5-13/6/2025)	Three events in Bologna - Exhibition ET at Manica Lunga of Palazzo d'Accursio - VAN "The Big bang machine" in cooperation with EGO - show at Cinema Modernissimo
SOCIETY Rinascimento (Night of the Researchers 2022) European Project H2020 GA 101036092	- Participation to the project steering committee (2021) and to the events during the Night of the researcher
SOCIETY Next (Night of the Researchers 2020-21) European Project H2020 GA 954949	- National Coordinator of the Society EU Project for INFN (2020) - Participation to the Project steering committee on behalf of INFN (2021)
SOCIETY (Night of the Researchers 2018-19) European Project H2020 GA 819090	- National Coordinator of the Society EU Project for INFN (2018-2019) - Local Responsible in Bologna

Conferences, seminars, workshop last 5 years:

2025	- Workshop ET in Italia: scienza e tecnologia per la candidatura, Cagliari, Italy "*Thinking of DAQ (Online) activities for ET*", **oral contribution**. - Dept. Of Mathematics and Physics of University of Roma Tre, Roma, Italia "*High energy neutrino telescopes: under ice and under water challenges and new findings*", **Invited Seminar**
2024	- 23rd International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN24), Rio de Janeiro, Brazil, "*Underwater and under-ice km-scale detectors: similarities and differences*", **Invited plenary talk** - RICAP2024, Frascati, Italia, - "*White Rabbit FMC mezzanine as an interface for the new 10G WR-NICtoremote WRDAQnodes*", **oral contribution** (with M. Bawaj and R. Travaglini) - "Enabling Industry 4.0 approach in Multi-Messenger Astronomy experiments.", **oral contribution** (with P. Castaldi) - **co-chair** of the "Hardware and Software developments" session
2023	XIV Einstein Telescope Symposium, Maastricht, NL, - "*DAQ ant time synchronisation in the INFN-Bologna group*", **poster contribution** (with R. Travaglini, D. Bonacorsi, G. Balbi, G. Mastropasqua) - "White Rabbit FMC mezzanine as an interface for the new 10G WR-NIC to remote WR DAQ nodes", **poster contribution** (with R. Travaglini, M. Bawaij)
2022	- 6th International Symposium on Ultra High Energy Cosmic Rays, L'Aquila, Italy, "*Recent achievements and scientific results of KM3NeT*", **oral contribution** - RICAP2022, Roma, Italy, "*The KM3NeT data acquisition system, status and evolution*", **oral contribution** (with E. Giorgio, D. Zito)
2021	- 36th ICRC 2019, Madison, WI, USA, "KM3NeT Data Acquisition and and Trigger System ", **poster contribution** (with R. Brujn) - vCHEP 2021 (virtual conference), "*Streaming Readout of the CLAS12 Forward Tagger using TriDAS and JANA2*", **oral contribution**

Publications and activity as reviewer:

Author of more than 180 publications on international scientific journals with referee. According to "Web Of Science" citation report these are the relevant reference parameters :

Publications in the past 5 years (2020-2024)	Citations in the past 15 years (2009-2024)	H Index in the past 15 years (2010-2025)
69	5718	39

Reviewer for Astronomy and Astrophysics (A&A), European Physics Journal (EPJ-C) and Journal of Instrumentation (JINST)

For Italian Administration only: *Il sottoscritto autorizza il trattamento dei dati personali ai sensi del Dlgs 196 del 30/6/2003*.

Bologna , January 16th, 2026

Curriculum Vitae — Luca Pagano

Personal Details

Name: **Luca Pagano**
Present position: Associate Professor, Department of Physics and Earth Sciences, University of Ferrara, Italy
E-Mail:

Research Profile

I am a cosmologist focusing on the analysis and interpretation of Cosmic Microwave Background (CMB) data to probe the early Universe and constrain fundamental physics. From 2008 to 2018 I was a member of the **Planck Collaboration**, where I worked on beam characterization, large-scale polarization analysis, and the development of the likelihood framework. I am currently engaged in next-generation CMB and cosmology experiments, including **LiteBIRD**, **Simons Observatory**, **LSPE**, **Euclid**, and **BISOU**, where I hold various coordination and leadership roles.

Current Positions

2022–present: Associate Professor, University of Ferrara, Italy
2021–present: Associate Researcher, Institut d'Astrophysique Spatiale (IAS), Université Paris-Saclay, France

Previous Positions

2019–2022: Tenure Track Assistant Professor (RTDb), University of Ferrara
2018–2019: Fixed-term Assistant Professor (RTDa), University of Ferrara
2016–2018: CNES Postdoctoral Fellow, IAS, Orsay, France
2016–2018: Long-term Visitor, Institut d'Astrophysique de Paris, France
2012–2015: Postdoctoral Fellow, Sapienza University of Rome
2010–2011: Research Scholar, Caltech / NASA JPL, Pasadena, USA

International Collaborations

LiteBIRD (2018–present): Deputy-chair, Simulation Team; member of the Collaboration Coordination Team; responsible for systematic effects and the simulation framework.
Euclid (2019–present): Member of the CMBX Science Working Group; working on the ISW likelihood and on galaxy clustering $\times$ CMB lensing power spectrum estimation and likelihood.
LSPE (2012–present): Responsible for the simulation pipeline (SWIPE instrument) and systematic characterization.
Simons Observatory (2018–present): Co-leader (2022–2024) and advisor of the Power Spectrum & Likelihood AWG; former Systematic Liaison for SZ and Power Spectrum AWGs.
BISOU (2019–present): Working on observational strategy.
FOSSIL (2022–present): Responsible for the scanning strategy.
Planck (2008–2018): Lead for large-scale polarization analysis and corresponding author of the 2018 likelihood paper; responsible for beam window functions (LFI 2013/2015) and signal Monte Carlo in the 2013 and 2015 analyses.

Education

Ph.D. in Physics, Sapienza University of Rome, 2011 — *with honors*
Thesis: *Constraining the Cosmological Scenario with Current and Future CMB Measurements* (Supervisor: Prof. Alessandro Melchiorri)
M.Sc. in Astronomy and Astrophysics, Sapienza University of Rome, 2007 — 110/110 cum laude
B.Sc. in Physics and Astrophysics, Sapienza University of Rome, 2004 — 110/110 cum laude

Teaching Experience

Graduate Level:

- Quantum Mechanics (MSc Physics, 2022–present)
- General Relativity (MSc Physics, 2018–present)
- Modern Physics (MSc Medical Biotechnologies, 2022–present)
- Nuclear and Sub-nuclear Physics (MSc Medical Biotechnologies, 2021–2022)

Undergraduate Level:

- Mathematical Methods for Economics (BSc Economics and Management, 2019–2022)

Doctoral Level:

- Statistical Techniques in Cosmology (PhD course, 2020–present)

Supervision of Students

Institutional Responsibilities

- Faculty Member, PhD Committee, University of Ferrara (2020–present)
- Local Coordinator, LSPE (INFN Ferrara, 2020–present)
- Coordinator, WP "Power Spectrum & Likelihood" (ASI LiteBIRD Phase-A)
- Coordinator, meta-WP "From Data to Science" (ASI LiteBIRD Phase-A)
- Coordinator, INFN Astroparticle Commission (2024–present); referee for KM3Net and RelaQS

Languages

Italian — native
English — advanced (verbal and written)

Scientific Record & Bibliometrics

- 244 total papers (205 published, 59 non-collaboration; 6 first-author)
- 88,000+ citations since 2007
- h-index: 70 (self-citations excluded)
- 80+ invited and collaboration talks

Source: inSPIRE profile

Claudia Tomei

Senior Researcher at Istituto Nazionale di Fisica Nucleare
INFN Sezione di Roma

Education:

2016-2018: National Scientific Qualification as Associate Professor of Physics of Fundamental Interactions (02/A1).
2004: PhD in Physics, University of L'Aquila, Italy and Max Planck Institute for Nuclear Physics, Heidelberg, Germany
2000 Master's Degree in Physics, University of L'Aquila, Italy Grade: 110/110 cum laude.

Foreign languages: English: fluent, Spanish, French: good

Areas of specialisation: Experimental Particle Physics, Rare events search in underground physics laboratories

Scientific positions covered

1999 - 2000: INFN Fellowship for Master Degree students, LNGS (Gran Sasso National Laboratory), Italy
2000 - 2004: PhD Fellowship LNGS (Gran Sasso National Laboratory), Italy and Max Planck Institute for Nuclear Physics, Heidelberg, Germany
2004: LNGS, Italy, scientific information and outreach (temporary position)
2004 - 2006: LNGS, Italy, researcher (temporary position)
2006 - 2010: INFN, Rome, Italy, researcher (temporary position)
2010 - 2020: INFN, Rome, Italy, researcher (permanent position)
2020 - today: INFN, Rome, Italy, senior researcher (permanent position)

Summary of the scientific activity

Dr. Tomei started her scientific work at the University of L'Aquila and LNGS for her Master Degree thesis on the ICARUS experiment, a liquid argon TPC for the detection of atmospheric and beam neutrinos. During her PhD, she joined the Heidelberg-Moscow and GENIUS experiment at LNGS and Max Planck Institute for Nuclear Physics, Heidelberg, Germany, for the search of neutrinoless double beta decay with germanium semiconductors.
Following this experience, she became a member of the GERDA experiment at LNGS, for the search of neutrinoless double beta decay with naked germanium semiconductors in liquid argon and, subsequently, of the CUORE and CUPID experiments at LNGS for the search of neutrinoless double beta decay with cryogenic bolometers. She was among the proponents of the SABRE experiment at LNGS for the search of Dark Matter through the annual modulation effect in NaI(Tl) scintillating crystals.

As researcher at INFN Rome since 2006, Dr. Tomei has been working in the frame of the following experiments:

- CUORE: PI of the INFN Rome group from 2017 to 2021; experimental test of cryogenic bolometers at LNGS, CUORE prototype (CUORE-0) operation, software development and data analysis, CUORE software development; member of the CUORE Physics Board from 2013 to 2016, member of the CUORE executive Board since 2016; mentoring of students and postdocs;
- LUCIFER/CUPID (searchof neutrinoless double beta decay with scintillating cryogenic bolometers at LNGS): experimental test of cryogenic bolometers at LNGS, software development and data analysis, L3 responsibility in CUPID WBS for the copper and PTFE detector's components, growth and characterisation of enriched LMO crystals for CUPID;
- NUCLEUS (search for Coherent Neutrino-Nucleus Scattering with Cryogenic Detector): data analysis and simulations;

- SABRE (Sodium Iodide with Active Background Rejection, for the search of Dark Matter at LNGS): PI of the INFN Rome group from 2016 to 2020; Montecarlo simulations and analysis; mentoring of students and postdocs.

Funding Information

Grant PRIN 2022 from Italian Ministry of University and Research, Sector PE2, 207kEuro total budget, Principal Investigator - Title: Ultra purification of NaI with Zone Refining for dark matter detection.

Scientific production

ORDIC: https://orcid.org/0000-0002-7549-6229
Scopus: 237 documents, 5745 citations, h-index: 43
16 talks at International Conferences.

Outreach activity:

Tutoring for 3 different school outreach projects of INFN (Lab2Go, INFN Kids and Art&Science), seminars in high schools, 1 national radio interview, 2 TV interviews.

Roma, 7 gennaio 2026

INFORMAZIONI PERSONALI

Fabio GARGANO

INCARICHI

01/01/2020 - oggi	**Primo ricercatore** a tempo indeterminato presso INFN Sezione di Bari
04/05/2009 - 01/01/2020	**Ricercatore** a tempo indeterminato presso INFN Sezione di Bari
21/12/2005 - 03/05/2009	**Ricercatore** a tempo determinato presso INFN Sezione di Bari
02/04/2002 - 21/12/2005	**Assegnista di Ricerca** presso l'Università degli Studi di Bari "A.Moro" Dipartimento Interateneo di Fisica
02/01/1999 - 31/12/2001	**Dottorando di Ricerca** in fisica presso l'Università degli Studi di Bari "A.Moro" – Titolo conseguito il 27/03/2002

ATTIVITA' DI RICERCA

2024 - oggi	WP Leader del WP6.5 dello spoke6 del Progetto ASI-MUR SpaceItUp!
2024 - oggi	Referente dell'INFN per lo spoke6 del Progetto ASI-MUR SpaceItUp! (progetto dedicato allo studio degli effetti delle tempeste solari e delle interazioni tra fenomeni spaziali e tecnologie terrestri e allo studio dello space weather)
2022 - 2025	WP Leader del WP3.3 dello Spoke3 del Progetto PNRR ICSC
2022 -2025	Referente scientifico di 4 bandi a cascata nell'ambito del Progetto PNRR ICSC Spoke 3
2022 - 2025	Responsabile locale dello Spoke3 del Progetto PNRR ICSC (progetto per lo sviluppo e all'applicazione di soluzioni avanzate di HPC e Big Data per l'analisi, la gestione e la simulazione dei grandi dati in astrofisica e cosmologia)
2019 - 2020	Responsabile INFN dell'Obbiettivo Realizzativo 2 "Sviluppo e potenziamento impianti centro di calcolo" del progetto PON Ricerca e Innovazione 2014-2020 "IBiSCo Infrastruttura per BIg data e Scientific COmputing" (progetto infrastrutturale di potenziamento del calcolo scientifico)
2019 - 2025	Responsabile locale dell'esperimento HERD_DMP
2019 - 2025	Responsabile del Plastic Scintillator Detector (PSD) di HERD
2018 - 2025	Membro dell'International Board dell'esperimento HERD
2018 - 2025	Membro del "HERD International Joint Working Team"
2018 - 2025	Membro del Progetto HERD (proposta di rivelatore su satellite per lo studio dei raggi cosmici carichi e dei raggi gamma di alta energia)
2018 - 2019	Responsabile Nazionale per l'INFN del progetto ERN Apulia finanziato nell'ambito della Call EU H2020-MSCA-NIGHT-2018
2016 - oggi	Convener del working group sulla analisi dei dati gamma per l'esperimento DAMPE

2016 - 2022	Convener del working group sulla Simulazione e le risorse di calcolo per l'esperimento DAMPE
2016 - 2022	Referente presso il CNAF per il calcolo dell'esperimento DAMPE
2014 - 2018	Responsabile locale esperimento DAMPE
2014 - 2016	Responsabile locale del progetto PON Smart Cities and Communities e Social Innovation "OCP Open City Platform" (progetto per erogazione di servizi cloud)
2013 - oggi	Membro della collaborazione DAMPE (esperimento su satellite per l'osservazione dei raggi cosmici carichi e dei gamma di alta energia)
2012 - 2013	Membro del Council dell'esperimento SuperB
2012 - 2013	Responsabile locale dell'esperimento SuperB (proposta di esperimento per lo studio della fisica dei flavour)
2001 - oggi	Membro della collaborazione FERMI (esperimento su satellite per l'osservazione dei raggi gamma di alta energia)
2006 - 2009	Membro del progetto PICH (sviluppo di rivelatori per la identificazione di particelle mediante bending di silici)
2001 - 2006	Membro del progetto SiTRD (sviluppo di un TRD a silicio)
1999 - 2001	Membro delle collaborazioni NOE ed ICANE (proposta di esperimento per lo studio delle oscillazione dei neutrini su lunga base)

RUOLI

2026 -2029	Presidente Commissione Scientifica Nazionale 2
2025 - oggi	Membro del gruppo di Monitoraggio nell'ambito della convenzione INFN-FBK
2024	Membro del SOC del 5° Gravi-Gamma-Nu workshop
2022 - oggi	Membro della commissione ASI di Review del progetto SPB2
2022 - 2025	Membro del gruppo di Lavoro "Astrofisica – Extrme Universe" dell'Agenzia Spaziale Italiana
2022 - oggi	Membro del collegio dei docenti del Dottorato Nazionale in "Space Science and Technolgy" – Referente del Curriculum 5 "Space sensing and instrumentation"
2022	Membro del comitato locale di "INFN Workshop od Future Detectors -IFD 2022" e convener della sessione "Photon Detectors"
2021 – oggi	Membro del comitato organizzatore della International School "Franco Romano" on Nuclear, Subnuclear and Astroparticle Physics
2021 - oggi	Membro del collegio dei docenti del Dottorato in Fisica dell'Università degli Studi di Bari "A. Moro"
2021 - oggi	Referee dei seguenti progetti di CSN2: LITEBIRD, QUBIC, LSPE, LIMADOU
2021	Convener della sessione "Observations of HE and UHE Cosmic Rays" del Sixteenth Marcel Grossmann Meeting - MG16
2019 - oggi	Relatore di differenti tesi di dottorato
2019 - 2021	Membro della Commissione permanente per il conferimento degli Assegni di Ricerca per la Sezione INFN di Bari

2017 - 2019	Referente locale della Sezione INFN di Bari nel Comitato di Coordinamento della Terza Missione (CC3M)
2016	Referee per il programma per giovani ricercatori “Rita Levi Montalcini”
2013	Referee per i progetti FIRB
2012	Referee per i progetti PRIN
2012 - oggi	Referee per differenti riviste del gruppo Elsevier (NIMA, Nuclear Engineering and Technology,…), APS (Physical Review B, …), MDPI (Particles, Universe, Instruments, …)
2010 - 2017	Rappresentante dei Ricercatori della Sezione INFN di Bari

RICONOSCIMENTI

2025	Premio “Giuseppe e Vanna Cocconi 2025” assegnato alle collaborazioni Fermi-LAT e Fermi-GBM per aver rivoluzionato il campo dell’astronomia nei raggi gamma
2019 - oggi	Membro della Accademia Pugliese delle Scienze
2016	Abilitazione Scientifica Nazionale ASN 2016 nel settore concorsuale 02/A1 - I Fascia
2016	Abilitazione Scientifica Nazionale ASN 2016 nel settore concorsuale 02/C1 - II Fascia
2011	Premio "Bruno Rossi" assegnato dalla divisione di Astrofisica delle Alte Energie della American Astronomical Society al team Fermi Gamma Ray Space Telescope LAT
2010	NASA Personal Certificate of Appreciation - In recognition of your outstanding contribution and dedication of the successful development of the Gamma-ray Large Area Space Telescope (GLAST)
2010	NASA Group Achievement Award - For the successful launch and early operation of the Fermi mission and discovery of new high energy gamma ray sources
2008	NASA Group Achievement Award - For outstanding collective effort over many years which produced a preeminent scientific instrument that will advance the NASA's space science mission

PUBBLICAZIONI

Autore di oltre 360 pubblicazioni su riviste scientifiche nazionali ed internazionali

ORCID: https://orcid.org/0000-0002-5055-6395

h-index: 116 (Dati da Web of Science, ottobre 2025)

BREVE DESCRIZIONE DELLA ATTIVITA' DI RICERCA

La mia carriera si è sviluppata nel campo della fisica delle astroparticelle, con un percorso che coniuga attività di ricerca scientifica, sviluppo tecnologico e responsabilità gestionale. Fin dagli inizi mi sono dedicato alla progettazione di rivelatori per esperimenti spaziali, maturando un'esperienza che unisce competenza tecnologica e scientifica ad una visione sistemica dei progetti. La costante interazione con gruppi internazionali mi ha permesso di crescere in contesti stimolanti e al contempo sfidanti, sviluppando capacità di coordinamento e gestione delle risorse scientifiche e tecnologiche.

Attualmente sono membro attivo delle collaborazioni DAMPE, Fermi-LAT e HERD, esperimenti di riferimento per l'osservazione dell'Universo mediante rivelatori di raggi cosmici nello spazio. In ognuno di questi contesti ho ricoperto ruoli di crescente responsabilità, sia nella direzione scientifica che nella gestione tecnica e organizzativa, seguendo da vicino le fasi di sviluppo, integrazione e analisi dei dati.

Nell'ambito del progetto HERD (High Energy Cosmic Radiation Detector) ho coordinato il disegno e lo sviluppo del Plastic Scintillator Detector (PSD), un rivelatore essenziale per la discriminazione dei raggi gamma e la misura della carica dei raggi cosmici. Il mio contributo ha riguardato la progettazione, la definizione dei requisiti, la realizzazione di prototipi e la validazione delle prestazioni in laboratorio e su fascio. Ho proposto soluzioni innovative per ottimizzare la raccolta della luce ed estendere il range dinamico di operazione. Ho collaborato direttamente con FBK alla realizzazione di un SiPM (Silicon PhotoMultiplier) progettato su mie specifiche, in grado di massimizzare la sensibilità e le performance del PSD.

Nel progetto DAMPE (DArk Matter Particle Explorer) ho contribuito allo sviluppo dei codici di simulazione e ricostruzione e coordino il gruppo di analisi dei fotoni gamma. Durante la fase di costruzione mi sono occupato dei test su fascio dei prototipi del rivelatore, curando la configurazione e la calibrazione dei sistemi ancillari necessari per la caratterizzazione del fascio stesso.

All'interno della collaborazione Fermi-LAT (Large Area Telescope) ho sviluppato competenze specifiche nell'analisi dell'emissione gamma da sorgenti galattiche ed extragalattiche, tra cui pulsar, resti di supernova e nuclei galattici attivi (AGN). Ho ideato e implementato un codice di analisi "phase-resolved", poi adottato dalla collaborazione, che ha consentito di studiare in modo dettagliato l'evoluzione temporale dell'emissione gamma delle pulsar, fornendo nuove chiavi di interpretazione sulla struttura della magnetosfera e sui meccanismi di accelerazione delle particelle. Per lo studio degli AGN, ho inoltre sviluppato strumenti per la correlazione multi-frequenza, contribuendo a chiarire i legami tra diversi processi di emissione e a rafforzare il collegamento tra osservazioni gamma e ottiche.

Parallelamente, ho mantenuto un interesse costante per la ricerca e sviluppo di nuove tecnologie, maturando competenze che spaziano dall'integrazione di rivelatori alla progettazione dell'elettronica di front-end e dei sistemi di acquisizione dati (DAQ). Ho partecipato a diversi progetti di R&D finanziati dalla CSN5 (SiTRD, PITCH) e dalla CSN2 (HERD, ADAPT), oltre a iniziative promosse in collaborazione con università, centri di ricerca e imprese high-tech, come il progetto SPACEITUP!.

Negli ultimi anni ho esteso la mia attività verso il calcolo scientifico e le applicazioni dell'intelligenza artificiale nella fisica delle astroparticelle, con l'obiettivo di integrare metodologie di machine learning nei processi di ricostruzione e identificazione delle particelle. Sono co-leader del Work

Package 3 “Astrofisica – Extreme Universe” all’interno dello Spoke 3 di ICSC, dove coordino iniziative di ricerca interdisciplinare tra fisici, informatici e ingegneri. In qualità di referente scientifico di quattro progetti (Bandi a cascata), ho avviato e guidato attività su tematiche da me proposte, in collaborazione con università e aziende tecnologiche, volte a sviluppare algoritmi di tracciamento e classificazione basati su AI, ottimizzati per dispositivi a basso consumo come FPGA e GPU embedded.

Accanto all’attività di ricerca, ho sempre considerato fondamentale il ruolo della divulgazione scientifica e della formazione, elementi centrali della cosiddetta Terza Missione. Ho ideato e coordinato numerose iniziative di public engagement su scala locale, nazionale ed europea, tra cui la Fermi-Masterclass, la Notte Europea dei Ricercatori e progetti didattici rivolti a studenti e insegnanti delle scuole superiori di primo e secondo grado.

Infine, ho partecipato in modo attivo alla vita della Sezione INFN di Bari, assumendo incarichi di rappresentanza, coordinamento e partecipazione a commissioni e gruppi di lavoro, contribuendo alla definizione delle strategie di sviluppo scientifico e tecnologico della sezione.