

Curriculum Vitae

Eugenio Nappi

Dirigente di Ricerca

INFN, Unit of Bari
Via G. Amendola, 173
70125 Bari

Professional experience:

Dr. E. Nappi studied physics at the University of Bari. He completed his higher education in 1981 with a thesis in experimental particle physics on the measurement of direct photon production with high transverse momentum in hadron-hadron collisions at the CERN-SPS NA24 experiment. In 1983, he became a staff researcher at the INFN and, since 2002, he has been Director of Research.

Former director of the INFN Unit of Bari from 2006 to 2012 and member of the Executive Committee of INFN from 2012 to 2020, he served as Vice President of INFN from January 2019 to July 2020.

His scientific activity has been carried out primarily at CERN and DESY (Germany). Collaboration with USA groups at BNL (Brookhaven) and TJNAF Laboratory (Virginia) has fruitfully been established in the last years. Since the beginning of his career, he has had a keen interest in the experimental aspects of CERN physics programme of ultra-relativistic collisions of heavy ions. In this field, devoted to the study of the hot and dense medium formed by the coalescence of hundreds of protons and neutrons, he has been active in the NA35, WA97 and NA57 experiments at the SPS and, subsequently, in the conception and development of the ALICE experiment at the LHC. During the thirty years spent in ALICE, he has occupied the highest managerial positions; he has been member of the Management Board of ALICE since 1998, year in which he was the recipient of a two-year scientific associateship at CERN to serve the experiment as deputy-spokesperson. In this role, he played leading responsibilities and the coordination of the international teams involved in the editing of the Technical Design Reports of the ALICE sub-systems.

At the end of his mandate, in 2000, he became the project leader of the Cherenkov system, named HMPID (High Momentum Particle Identification Detector), devoted to the identification of charged hadrons with a transverse momentum above 1 GeV/c. His term of office covered the full construction phase until the installation in the experiment, which successfully came into operation in September 2006. HMPID is the largest CsI Ring Imaging Cherenkov detector (RICH) so far built in the world. The CsI photocathode development carried out under his responsibility paved the way for the approval and construction of other large CsI RICH devices, such as those for the COMPASS and TJNAF-Hall A experiments.

In 2000, he joined the HERMES experiment at HERA-DESY, designed to study, through deep inelastic scatterings, the spin structure of the proton (or neutron). In HERMES, he drove the design of the first aerogel radiator RICH detector ever built in the world and, for related activities, he was the recipient of a grant (RII-CT-2004-506078-JRA9) from EC-FP6 call.

Ten years ago, he conveyed his interest towards the medical imaging by joining the AXPET collaboration at CERN for developing an R&D program focused on a novel geometrical concept of a Positron Emission Tomography (PET) featuring a parallax-free 3D reconstruction of the positron source distribution with high spatial and energy resolution over the complete Field of View. He chaired the Institute Board of the AXPET project until 2012.

As director at the INFN Unit of Bari, he gained additional managerial experience and established many international contacts. The Bari Unit of INFN supports research in nuclear, particle and astroparticle physics, with about 70 staff (researchers, administrators, engineers, technicians) and about 130 associates (mainly university professors).

As member of the Executive Board of INFN, he has overseen the INFN activities in the field of Nuclear Physics and represented the Italian Ministry of Education and Research (MIUR) in the European Spallation Source (ESS) ERIC Council and in the F4E Governing Board.

As Vice President of INFN, he promoted INFN involvement into world-class research facilities, looking forward to high quality scientific achievements and the most inspiring and beneficial prospect into the future for science and technology.

Conscious of the importance of education and communication, he has been particularly attentive to the training of young people. His achievements also include the development of postgraduate education in detector physics and innovative technologies and a number of successful industrial collaborations with hi-tech commercial partners. Moreover, he has launched a successful series of lectures and hands-on laboratory sessions on innovative nuclear instrumentations devoted to INFN researchers and engineers.

He is author and co-author of about 300 papers published in international journals with peer-reviewing and he is reviewer of scientific journals, editor of EPJ Plus and Nuclear Physics News and member of International Scientific Advisory Committees and Organizing Committee in several Conferences and Workshops on Nuclear Physics instrumentation (see the list below).

INSTITUTIONAL RESPONSIBILITIES

2020 – Today	Member of the Italian delegation in the ELI-ERIC General Assembly
2019 – Today	Chair of the Council of the European Consortium TIARA
2011 – Today	Member of ICFA panel on Instrumentation
2009 – Today	Member of NuPECC
2016 – Today	Associate Member / IUPAP C-11
2016 – 2020	Italian delegate of Ministry of Research and Education, ERIC-ESS Council/Sweden
2015 – 2020	Italian delegate of Ministry of Research and Education, Governing Board of Fusion for Energy/ F4E/ Spain
2014 – 2021	Appointed member / IUPAP C-12
2012 – 2020	Funding Agency representative for INFN, LHC Review Resource Board (RRB) /CERN /Switzerland
2008 – 2020	Representative of INFN, Plenary ECFA/ CERN/ Switzerland
2014 – 2016	Chair of the Accelerator Collaboration Board, European Spallation Source, ERIC-ESS/Sweden
2012 – 2015	Italian Delegate of Ministry of research and Education, Steering Committee of

2010 – 2012 the European Spallation Source Project (ESS-AB) / Sweden
Chair of the Institute Board of the AXPET project / CERN
2000 – 2006 Project leader of HMPID detector / ALICE experiment at the LHC/ CERN
1998 – 2000 Deputy Spokesperson of ALICE Experiment / the LHC/ CERN

COMMISSIONS OF TRUST

2013 – 2018 Editor in Chief, EPJ Plus / SPRINGER/ Germany
2019 – Today Managing Editor, EPJ Plus / SPRINGER/ Germany
2013 Evaluator, ERC Consolidator projects/ EC
2012 – Today Deputy Chair, ECE (Expert Committee for the Experiments)/ FAIR/ Germany
2012 – 2016 Member of CST (Scientific-Technical Committee), IPN Orsay/ CNRS/ France
2012 – Today Editorial Board, NPN (Nuclear Physics News)/ NuPECC
2012 Evaluator of scientific projects/ FCT/ Portugal
2011 Evaluator of scientific projects/ STFC/ UK
2009 Evaluator of scientific projects/ Israel Science Foundation/ Israel

FELLOWSHIPS AND AWARDS

2015 Elected member of the Academia Europaea, London/United Kingdom

JOURNAL REVIEWER

2000 – IEEE - Transaction in Nuclear Science (TNS)
1996 – "Nuclear Instrument and Methods in Physics Research, Section A" by North-Holland.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

1981 – Member, Italian Society of Physics, Bologna / Italy
2015 – Member of "Academia Europaea" (AE)
2018 – Member of the European Society of Physics

BOOK and MONOGRAPH AUTHORSHIP

Book title: Imaging gaseous detectors and their applications,

Publisher: Wiley-VCH; ISBN-10: 3527408983

Authors: Eugenio Nappi and Vladimir Peskov;

Monograph title: Ring Imaging Cherenkov Detectors: The state of the art and perspectives,

Publisher: RIVISTA DEL NUOVO CIMENTO Vol. 28, N. 8-9 2005

Authors: Eugenio Nappi and Jacques Seguinot.

EDITORIAL ACTIVITIES

- Proceedings "Experimental Techniques of Cherenkov Light Imaging", (ISSN 0168-9002), published by North-Holland in 1994, 2011 (RICH2010), 2014 (RICH2013), 2017 (RICH2016) e 2020 (RICH2018).

- Technical Design Report CERN/LHCC 98–19 "Detector for High Momentum PID", ISBN 92-9083-134-0


- Innovative detectors for supercolliders, ISBN 981-238-745-5, published by World Scientific.

EC GRANTS AND FUNDINGS

2005 Principal Investigator of INTAS, CERN Call 2005 # 103, Project 7544.

2004 Leader of Research Activity JRA9 for the grant RII-CT-2004-506078 ("HadronPhysics")

2000 Principal Investigator of INTAS, CERN Call 2000 #350



Bari, November 26, 2021

Dr. Giovanni Passaleva
Istituto Nazionale di Fisica Nucleare
Via G. Sansone 1 – 50019 Sesto Fiorentino
FIRENZE

Sesto Fiorentino, 23 novembre 2021

Curriculum Vitae - GIOVANNI PASSALEVA

Carriera professionale

- **2015 –** : Dirigente di Ricerca – Istituto Nazionale di Fisica Nucleare- Sezione di Firenze.
- **2017 – 2020** : Guest Professor – CERN
- **2006 – 2014** : Primo Ricercatore – Istituto Nazionale di Fisica Nucleare- Sezione di Firenze.
- **1997 – 2005** : Ricercatore – Istituto Nazionale di Fisica Nucleare- Sezione di Firenze.
- **1997 – 1999** : CERN Fellow.
- **1995 – 1997** : Postdoc alla Eidgenössische Technische Hochschule (ETH), Zurich.

Attività scientifica

Dal **luglio 2020** sono attivamente coinvolto nel progetto INFN TimeSpot dedicato allo sviluppo di rivelatori “3D” ad altissima risoluzione temporale. Mi occupo in particolare dello sviluppo di rivelatori “3D” al diamante

Dal **1° luglio 2017 al 30 giugno 2020** sono stato **Spokesperson dell’esperienza LHCb** al Large Hadron Collider (LHC) del CERN di Ginevra.

Dal **giugno 2014 al giugno 2017** ho ricoperto il ruolo di **LHCb Upgrade Detector Coordinator**.

Nel **2012** sono stato eletto **Responsabile Nazionale di LHCb**. In questo ruolo ho coordinato l’impegno italiano nella realizzazione dell’upgrade di LHCb che comprende contributi rilevanti al rivelatore di muoni, al RICH, all’Upstream Tracker e al sistema di trigger. Il progetto di upgrade da me sottomesso all’INFN ha ottenuto importanti finanziamenti ed ha consentito di allargare il contributo italiano a LHCb con l’ingresso di nuovi gruppi.

Sono stato **Project Leader del Sistema di rivelazione dei muoni di LHCb (2008 – 2012)** negli anni cruciali della fine del collaudo dell’apparato e i primi anni di presa dati a LHC. In quel periodo ho contribuito anche allo sviluppo del software di controllo del sistema. Nel mio ruolo di Project Leader ho dato un fortissimo impulso all’upgrade del rivelatore di muoni (che è attualmente in fase di collaudo) ed ho collaborato alla stesura del Technical Design Report.

Sono tra i fondatori del gruppo LHCb di Firenze e membro di LHCb dal **2000**. Nell’ambito di LHCb ho inizialmente lavorato ad un programma di R&D su rivelatori Resistive Plate Chambers (**2000 – 2002**) per il rivelatore di muoni dell’esperienza per poi passare alla realizzazione di camere proporzionali multifilo (**2003 – 2008**). Ho proposto infatti Firenze come uno dei siti di produzione delle camere a fili per LHCb ed ho coordinato la produzione di circa un quinto delle 1380 camere per il rivelatore di muoni.

Ho contribuito alle prime misure di LHCb alla partenza di LHC lavorando sul software di ricostruzione dei muoni e alla prima misura della sezione d’urto di produzione di J/ψ a $\sqrt{s} = 7$ TeV. Più recentemente, ho collaborato all’analisi di dati ottenuti tramite il sistema di bersaglio fisso di LHCb, che ha prodotto la prima misura assoluta della sezione d’urto di produzione di antiprotoni in collisioni protone-elio.

Prima di entrare nella collaborazione LHCb ho lavorato all’esperienza **L3 al Large electron-positron Collider (LEP)** del CERN (**1991 – 2000**), dove ho dato un contributo cospicuo al disegno e alla costruzione del rivelatore di vertice al silicio, con responsabilità nel disegno, costruzione, test e collaudo dei sensori al silicio a microstrip e all’elettronica di front-end e di lettura. Dal **1995** fino alla fine delle operazioni del LEP (**2000**) ho **coordinato le attività relative al rivelatore di vertice di L3**. Nell’ambito di L3 ho svolto misure di precisione relative alla fisica elettrodebole, in particolare la misura dei parametri della risonanza Z e delle asimmetrie avanti-indietro nel canale $e^+e^- \rightarrow Z \rightarrow \tau^+\tau^-$, la misura della polarizzazione del leptone tau e la misura delle osservabili R_{bb} e A_{FB}^b nei decadimenti $Z \rightarrow b\bar{b}$.

Nel **1997 – 1999**, come CERN Fellow, ho contribuito al disegno e al test del primo prototipo di un rivelatore a fibre scintillanti per la misura di precisione della vita media del muone (**esperimento FAST**, al PSI di Zurigo.)

Nel periodo **2011 – 2017** ho collaborato ad un grosso progetto europeo denominato ELI-NP (Extreme Light Infrastructure – Nuclear Physics), dedicato alla costruzione di una sorgente ad alta brillantezza di fotoni γ monocromatici con energie di 1 – 20 MeV, per studi di fisica nucleare. Col mio gruppo abbiamo disegnato un

sistema di rivelatori per la diagnostica e il monitoring del fascio di fotoni, con una risoluzione energetica al livello del permille.

Dal **2005** al **2011** sono stato **membro della Commissione Scientifica Nazionale 1 (CSN1)** dell'INFN. Nell'ambito della Commissione sono stato referee degli esperimenti ATLAS e CMS e dei progetti relativi all'International Linear Collider.

Negli anni **2010 – 2013** sono stato membro dell'**ACCU** (Advisory Committee for Cern Users) come delegato Italiano.

Sono da lungo tempo attivo in iniziative di divulgazione scientifica (Guida ufficiale al CERN, organizzazione delle International Masterclasses, seminari e lezioni pubbliche, articoli in riviste di divulgazione scientifica).

Sono stato **membro dell'International Advisory Committee** delle principali conferenze di Fisica delle Alte Energie, tra cui ICHEP, EPS-HEP, LHCP.

Sono (co-)autore di oltre 870 articoli sulle principali riviste scientifiche del mio settore.

Ho un h-index di 86 (Scopus).

Posizioni di Leadership scientifica

- **2017 – 2020**: LHCb Spokesperson.
- **2014 – 2017**: LHCb Upgrade Detector Coordinator.
- **2012 – 2014**: Responsabile Nazionale di LHCb.
- **2012 – 2020**: Membro del Membership Committee di LHCb
- **2008 – 2012**: Project Leader del Muon System di LHCb.
- **2003 – 2006**: Coordinatore del sito di produzione di MWPC per il rivelatore di muoni di LHCb.
- **2000 – 2017**: Responsabile locale del gruppo LHCb di Firenze e, come tale, membro del Collaboration Board di LHCb.
- **1995 – 2000**: Coordinatore delle operazioni del rivelatore di vertice di L3.

Carriera scolastica

- **1994**: Dottorato in Fisica all'Università di Perugia con una tesi su "*Measurement of the $e^+e^- \rightarrow \tau^+\tau^-$ cross section and forward-backward asymmetry at the Z resonance with the L3 detector at LEP*"
- **1990**: Laurea in Fisica all'Università di Firenze.



Giuliana Fiorillo
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Università degli Studi di Napoli "Federico II"
INFN Sezione di Napoli
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Curriculum Vitae

ORCID: <http://orcid.org/0000-0002-6916-6776>

PRESENT POSITION:

Full Professor, Federico II University, Napoli, Italy

EDUCATION:

1995 PhD in Physics, Federico II University, Napoli, Italy

1990 Laurea in Fisica, Università degli Studi di Napoli "Federico II"

RESEARCH INTERESTS

Particle astrophysics, dark matter detection, neutrino physics, experimental elementary particle physics.

INTERNATIONAL RESEARCH PROJECTS: DUNE, DARKSIDE, ARIS, RED, DEAP3600, T2K, SCENE, DARWIN, WARP, ICARUS, OPERA, CHORUS, CHARM II

ORCID: <http://orcid.org/0000-0002-6916-6776>

COORDINATION OF SCIENTIFIC PROJECTS (PI or Co-PI):

- 2021 – now **DUNE** experiment at LBNF, Deep Underground Neutrino Experiment, co-Principal Investigator.
- 2018 – now **DEAP-3600** experiment at SNOLAB, Dark matter Experiment using Argon Pulse-shape discrimination, co-Principal Investigator.
- 2016 – now **ARIA**, "Progetto Premiale FOE 2015", co-Principal Investigator.
- 2016 – 2018 **ARIS** experiment at IPN Orsay, Argon Response Ionization and Scintillation, co-Principal Investigator.
- 2014 – now **RED** experiment, Recoil Directionality in Liquid Argon, Principal Investigator.
- 2011 – now **DARKSIDE** experiment at LNGS, Dark Matter search with Depleted Argon, co-Principal Investigator, Deputy Spokesperson (2016-2021), national PI for INFN (2013-2020).
- 2011 – 2013 **SCENE** experiment at Notre Dame, Measurement of scintillation and ionization yield of nuclear recoils in liquid argon and xenon with a compact, two-phase TPC, co-Principal Investigator.
- 2009 – 2013 **DARWIN** project, EU FP7-ASPERA Design study on a next-generation noble liquid dark matter facility in Europe, co-Principal Investigator, national PI for INFN.
- 2003 – 2011 **WARP** experiment at LNGS, Search for dark matter with the Wimp Argon Programme, co-Principal Investigator.
- 2002 – 2013 **ICARUS** experiment at LNGS, Study of neutrinos from solar, atmospheric and astrophysical origin, neutrinos from long baseline accelerator beams, proton decay, co-Principal Investigator.

SCIENTIFIC COMMITTEES, STEERING AND ADVISORY BOARDS

- 2021 – now SNOLAB Science and Technical Review Committee (STRC), Member
- 2019 – 2021 ApPEC, Dark Matter Direct Detection Committee, Member
- 2018 – 2020 CERN, SPS and PS Experiments Committee (SPSC), Member
- 2017 – 2020 TIFPA, Trento Institute for Fundamental Physics and Applications, Steering Group for the coordination of collaborative activities between INFN and FBK (Fondazione Bruno Kessler), Member
- 2015 – 2019 INFN Astroparticle National Scientific Committee (CSN2), Napoli and Salerno groups Coordinator elected

2013 – 2014 Federico II University Physics Department, Scientific Evaluation Committee, Member
2013 – 2014 Federico II University, Project Genovate: Transforming organizational culture for gender equality in research and innovation (FP7-Science-in-Society-2012-1), Institutional Board Chair
2013 – 2014 Federico II University, Polytechnic and Basic Sciences School Steering Board, Member elected
2013 – 2014 Federico II University Physics Department, Executive Board, Member elected
2008 – 2013 Federico II University, Academic Senate, Member elected
2004 – 2013 Federico II University, Physics Department, Teaching Steering Board, Member elected
2004 – 2008 Federico II University, Faculty of Mathematical, Natural and Physical Sciences Executive Steering Board, Member elected
2001 – Several faculty search, graduate student admission, PhD evaluation, postdoc, researcher and other selection committees, Member or President.

TEACHING AND ADVISING DUTIES

Several General Physics, Laboratory and Electronics courses for students of Physics, Engineering, Informatics.
Astroparticle Physics lectures in PhD courses and International Schools.
Advisor of 40 undergraduate students and 9 PhD thesis. External referee for additional 11 PhD thesis.

SUMMARY OF PUBLICATIONS:

Authored or co-authored more than 220 papers, 200 of them citeable.
An h-index of 53 is calculated by <http://inspirehep.net/> on 2021-11-20.

BOOKS:

“La materia oscura e l’energia oscura”, book by Giuliana Fiorillo and Nicolao Fornengo, *Lezioni di Fisica 9*, Corriere della Sera, 159 pages, December 2018, RCS MediaGroup S.p.a. Riedited in 2021.

INVITED TALKS, SEMINARS, COLLOQUIA, CONFERENCE ORGANIZATION

Invited speaker for plenary talks in about forty International Conferences.
Invited to give tens of scientific seminars and colloquia to a larger audience.
Organizer of several International Workshops, chair or convener of Astrophysics sessions at International Conferences.
Member of International Advisory Committees for conferences, workshops and schools of astroparticle physics.
Co-editor of the *XVI International Workshop on Weak Interaction and Neutrinos Proceedings*.

PEER REVIEW ACTIVITIES

Referee of CERN SPSC for MADMAX, PROTODUNE-DP (NP02), PROTODUNE-SP (NP04), CLOUD, UA9, NA62 Experiments.
Referee of INFN CSN2 for SABRE, CUPID and CUORE experiments.
Reviewer for EPL, Physics Letters, JHEP, JINST, Journal of Physics, NIM-A.
Evaluator for UK Particle Physics Grants Panel of the Science and Technology Facilities Council, Swiss National Foundation, EU MSCA Actions in FP6, FP7, Horizon2020.

Curriculum vitae et studiorum
Prof. Francesca Soramel

Education

June 1980 - June 1981

Fellowship for graduating student at Institute für KernPhysik (IKP), Kernforschungsanlage (KFA), Jülich, Germany
18th June 1981

Italian Master degree in Physics at Mathematical, Physical and Natural Sciences Faculty, University of Padua.

Thesis "Spectroscopy of the ^{150}Gd . Isomeric decays studies." Tutors: Prof. O.W.B Schult and Prof. C. Signorini

Work Experience and Responsibility Roles

July 1981 - June 1982

Post-doctoral position at IKP-KFA, Jülich, Germany

May 1983 - December 1983

Fellowship at Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse (C.S.N.S.M.), Orsay, France.

September 1983 - October 1992

Research Assistant at the Mathematical, Physical and Natural Sciences Faculty, University of Padova.

September 1991 - September 1992

Guest scientist at Argonne National Laboratory, Argonne, Illinois, USA

November 1992 - February 2005

Associate Professor of General Physics at the Engineering Faculty, University of Udine, ITALY

October 2003 - September 2008

Member of the Executive Board of the Engineering Faculty, University of Udine, ITALY

February 2004 - September 2006

In charge for the Orienteering and Tutoring programs of the Engineering Faculty, University of Udine, ITALY

February 28th 2005 - September 2008

Full Professor of Experimental Physics at the Engineering Faculty, University of Udine, ITALY

October 1st 2006 - September 30th 2008

Deputy Director of the Engineering Faculty, University of Udine, ITALY

Since October 1st 2008

Full Professor of Experimental Physics at the Engineering Faculty, University of Padova, ITALY

November 2008 - December 2011

President of the Didactics Committee - Physics Department – University of Padova

December 2009 - December 2011

Deputy Director of the Physics Department - University of Padova

January 2012 - September 2019

Head of the Physics and Astronomy Department - University of Padova

2013 - 2017

CEV for ANVUR

January 2014 - January 2015

Member of the Independent Evaluation Unit (Nucleo di Valutazione) of the University of Udine

October 2014 - September 2019

Member of the Senato Accademico of the University of Padova

Since January 2017

Member of the Executive Board of Con.Scienze as one of the two delegates of the Italian Physics Departments Directors

January 2018 - December 2022

PI of the project “Physics of the Universe” - national call “Dipartimenti di eccellenza”

Since November 2020

President of the Independent Evaluation Unit (Nucleo di Valutazione) of SISSA

December 2020 – December 2022

Member of the Commission for the Supervision of Teaching Quality (CPQD), one of the three entities forming the University Quality Committee

December 15th 2020 - December 31st 2023

Scientific Coordinator of SPES project at Laboratori Nazionali di Legnaro - INFN - Legnaro (Padova)

Scientific activity

My research activity has been carried out in the framework of the projects funded by the National Institute for Nuclear Physics (INFN), the Italian Agency for Nuclear and Subnuclear Physics; in particular, I've been involved in fundamental nuclear physics research programs.

Initially, my main field has been the in-beam gamma spectroscopy of nuclei in the rare earth region, then I moved also towards studies of the nuclear reaction mechanism between two interacting nuclei at energies close to the Coulomb barrier.

In both fields I've been in particular involved in nuclear structure studies performed using a mass spectrometer to identify proton emitting nuclei and to study the nuclear reaction mechanism involving radioactive beams with halo structure.

The wide variety of the research activity I've been involved in, together with the experience acquired during the long term appointments at foreign laboratories, has allowed me to acquire a deep knowledge of the scientific and technical problems of low energy nuclear physics, in particular I've developed a specific knowledge of the experiments performed with mass spectrometers like the Recoil Mass Spectrometer of the Legnaro National Laboratories (LNL) or the Fragment Mass Analyzer (FMA) of the Argonne National Laboratory (ANL).

I've been national spokesperson for the INFN experiment IRIS (1996-2000) devoted to the study of proton emitting nuclei.

In most recent years I moved part of my activity towards relativistic energy nuclear physics, collaborating to the CERN experiments NA57 and ALICE. Both experiments aim to study the Quark Gluon Plasma (QGP) state of the matter. My contribution to NA57 experiment has been mainly concentrated in the data collection during the runs and in the pre-analysis of the data.

For what concerns ALICE (A Large Ion Collider Experiment), I've been involved in the construction of the most inner part of the Inner Tracking System (ITS), i.e. the Silicon Pixel Detector (SPD). In particular I've been involved in the determination of the assembly procedure of the detector and I've tutored three Master Degree and one PhD thesis for the study of the mechanical and thermal stresses that the SPD may undergo.

I'm responsible of the "Dipartimenti di eccellenza" project assigned to the Physics and Astronomy Department of the University of Padova, named Physics of the Universe. The five year project has about 10 M€ budget and has been assigned to five Physics Departments all over Italy following a national call.

I've been member of several Organizing Committees of international Conferences and Workshops and, in some cases, editor of the Proceedings.

I spent quite a bit of time (3.5 years) working in foreign Laboratories (Germany, France, United States) developing specific competencies and skills.

I'm co-author of more than 550 publications in refereed international journals and my h-index is 79 (ISI – WoS, November 2021).

Valter Bonvicini – short CV

November 2021

Contacts

Address 1: Istituto Nazionale di Fisica Nucleare, sezione di Trieste, and Dipartimento di Fisica dell'Università di Trieste, via A. Valerio 2, 34127 Trieste (I).

Address 2: Istituto Nazionale di Fisica Nucleare, sezione di Trieste, Laboratori – Area di Ricerca, Padriciano 99, 34149 Trieste (I).

Phone: (+39) 040 3756233

E-mail: walter.bonvicini@ts.infn.it

Current position

Research Director (“Dirigente di Ricerca”), Istituto Nazionale di Fisica Nucleare (INFN)

Previous positions

1990-1994: Research Associate, INFN-Milan

1994-2002: Researcher, INFN-Trieste

2002-2018: Senior Researcher (“Primo Ricercatore”), INFN-Trieste

2020-present Visiting Professor, Gran Sasso Science Institute (GSSI) - Physics Division, L'Aquila, Italy.

Main responsibilities and coordination of research and projects

2020-present: Co-PI of the XRO (X-Ray Observatories) experiment. Leader of the INFN group involved in the eXTP mission (enhanced X-ray Timing and Polarimetry), a science mission designed to study the state of matter under extreme conditions of density, gravity, and magnetism. Primary goals are the determination of the equation of state of matter at supra-nuclear density, the measurement of QED effects in highly magnetized star, and the study of accretion in the strong-field regime of gravity. The INFN group is responsible for the design, characterization, and delivery of the 640 Silicon Drift Detectors (for a total effective area of ~ 3.4 m² between 6 and 10 keV) that will equip the LAD (Large Area Detector), one of the four instruments carried by the mission. The eXTP international consortium includes major institutions of the Chinese Academy of Sciences and Universities in China, as well as major institutions in several European countries and other International partners.

2013-2016: National Responsible for the satellite astroparticle experiment GAMMA-400: study of cosmic gamma sources, DM indirect search in gamma and electron spectra, direct measurement of fluxes and elemental composition of cosmic-ray nuclei at the knee.

2010-2013: PI of the experiment TWICE (Techniques for Wide-range Instrumentation in Calorimetry Experiments): new techniques for total absorption, dual-readout hadronic calorimetry for High Energy Physics and Astroparticle Physics.

2006-2010: PI of the experiment FACTOR (Fiber Apparatus for Calorimetry and Tracking with Optoelectronic Readout): development and application of Silicon PhotoMultipliers (SiPMs) in the field of calorimetry in High Energy Physics.

2006-2009: PI of the experiment CASIS2: development of front-end ASICs (Application Specific Integrated Circuits) with very large dynamic range and “on-chip” A/D conversion.

2003-2005: PI of the experiment CASIS (Calorimetria al Silicio per lo Spazio): development of silicon detectors and large dynamic range integrated front-end electronics for calorimeters for cosmic-ray experiments in space.

1997-2006: In the framework of the space experiment PAMELA (launched in July 2006) for the study of the anti-matter component of cosmic rays, Project Leader of the Si-W imaging calorimeter design, construction, installation, and operation.

2000-2002: Coordinator of the project “Low Noise, High Dynamic Range Detection System based on ASIC CMOS Front-End and Silicon Detectors for Astroparticle Experiments” financed with ASI (Italian Space Agency) contracts nr. I/R/177/01 and I/R/132/02.

1999-2000: Coordinator of the Trieste Unit in the experiment UV-Drift (development of Silicon Drift Detectors for the detection of soft X-rays).

1998: Coordinator of the Trieste Unit in the experiment DSI (Drift-Silicon) for the development of innovative Silicon Drift Detectors.

Professional career, memberships, and institutional responsibilities

2021-present: representative for INFN in the “Comitato Permanente di Raccordo” (CPR) of the Quantum@Trento Consortium.

2019-present: Member of the International Detector R&D Advisory Committee of the CEPC (Circular Electron-Positron Collider).

2014-2021: President of the National Scientific Committee 5 of INFN (technological, interdisciplinary and accelerator research).

2014-2021: Member of the Machine Advisory Committee of INFN.

2014-2021: Member of the Scientific Committee of the Frascati National Laboratory.

2020-2021: Member of the “INFN- Acceleratori” Committee.

May 2021 – October 2021: Member of the “Comitato per le Scienze e le Tecnologie Biomedicali” (INFN4LS).

2013-2016: Member of the INFN National Committee for Technology Transfer.

2001-2016: Scientific responsible of the Detectors and Electronics Laboratory of INFN-Trieste.

Scientific activity

During my experimental physicist career, I have mainly worked on the development of solid-state radiation detectors and low-noise front-end electronics for High Energy Physics and Astroparticle Physics experiments (tracking and calorimetry). In the last 30 years I dedicated a significant part of my research activity to experiments devoted to Antimatter and Dark Matter search in the cosmic radiation, and to the study of the isotopic composition of cosmic rays. In the detector field, I have worked on silicon microstrip and pixel sensors for vertex detectors at collider experiments (DELPHI at LEP), silicon drift detectors for spectroscopy and tracking (ALICE at LHC, LOFT and eXTP in space), silicon-tungsten imaging calorimeters with PID capability (PAMELA), development of Silicon Photomultipliers, design and development of low noise front-end ASICs. I have also worked on the application of the technologies developed for HEP and Astroparticle experiments to interdisciplinary research: medical physics (diagnostic imaging, particularly mammography), dosimetry onboard manned stations in space, effects of the cosmic radiation on the visual and nervous human systems. Since 2014, I chair the National Scientific Committee (CSN5), which coordinates the technological and interdisciplinary research of INFN. In this capacity, I have promoted the R&D in those sectors of Quantum Information Science that are more relevant and strategic to the INFN scientific mission, that is Quantum Computing and Quantum Sensing. CSN5, in recent years, has evaluated several R&D proposals in the field of Quantum Technologies. In particular, projects in the following areas have been financed and are being monitored: Superconducting Single-Photon Detectors (TES, KIDs, Josephson Junctions), quantum sensors based on atomic macro-coherent states for the detection of elusive particles, Atomic gravity sensors, Solid-state single-photon sources, silicon photonics, Quantum algorithms for computing problems relevant for INFN (lattice QCD). In 2020, CSN5 issued a competitive

thematic Call on Quantum Technologies for the submission of large projects, with the objective to encourage the community to propose high-impact research in this field. Two proposals (out of four submitted) have been approved, one on the development of high-performance (beyond the state-of-the-art) parametric amplifiers and one on the development of a technological platform based on silicon photonics for Quantum Computing.

Scientific production

I am author or co-author of more than 360 papers including peer reviewed papers on international journals, conference proceedings, and other scientific works.

Number of citations (without self-citations): ~ 12000 (source: INSPIRE)

Average citations per item: 44.5 (source: INSPIRE)

h-index (INSPIRE): 36

Selected publications

1. O. Adriani et al., “An anomalous positron abundance in cosmic rays with energies 1.5-100 GeV”, NATURE, Volume: 45 , Issue: 72 , Pages: 607-609 Published: APR 2 2009 (Citations: 1594)
2. K. Aamodt et al., “The ALICE experiment at the CERN LHC”, JOURNAL OF INSTRUMENTATION, Volume: 3 , Article Number: S08002, Published: AUG 2008 (Citations: 1273)
3. O. Adriani et al., “PAMELA Measurements of Cosmic-Ray Proton and Helium Spectra”, SCIENCE, Volume: 332 , Issue: 6025 , Pages: 69-72 , Published: APR 1 2011 (Citations: 524)
4. B. Alessandro et al., “ALICE: Physics Performance Report, Volume II”, JOURNAL OF PHYSICS G-NUCLEAR AND PARTICLE PHYSICS, Volume: 32 , Issue: 10 , Pages: 1295-2040, Published: OCT 2006 (Citations: 472)
5. O. Adriani et al., “New Measurement of the Antiproton-to-Proton Flux Ratio up to 100 GeV in the Cosmic Radiation”, PHYSICAL REVIEW LETTERS, Volume: 102 , Issue: 5, Article Number: 051101, Published: FEB 6 2009 (Citations: 436).

6. O. Adriani et al., “PAMELA Results on the Cosmic-Ray Antiproton Flux from 60 MeV to 180 GeV in Kinetic Energy”, PHYSICAL REVIEW LETTERS, Volume: 105 , Issue: 12, Article Number: 121101m Published: SEP 13 2010 (Citations: 400)
7. F. Arfelli, V. Bonvicini, et al., “Mammography with synchrotron radiation: Phase-detection techniques”, RADIOLOGY, Volume: 215 , Issue: 1 , Pages: 286-293 , Published: APR 2000 (Citations: 248)
8. M. Feroci et al., “The Large Observatory for X-ray Timing (LOFT)”, EXPERIMENTAL ASTRONOMY, Volume: 34 , Issue: 2 , Special Issue: SI, Pages: 415-444 , Published: OCT 2012 (Citations: 161).

Conferences, Workshops and Schools organization (selection)

- Scientific Committee of the International Workshop “Quantum Technologies within INFN: Status and perspectives”, Padua, 20-21 January 2020.
- Scientific Committee of the Workshop “Radiobiology within INFN”, Trento, 12-13 May 2015.
- Scientific Committee of the International Conference “FISMAT 2015”, Palermo, September 28 – October 2, 2015.
- Scientific Committee Workshop “IFD 2015” (INFN Workshop on Future Detectors), Torino, 16-18 December 2015.
- Scientific and Organizing Committee of “IWORID 2014” (International Workshop on Radiation Imaging Detectors), Trieste, 22-26 June 2014.
- Organizing Committee of the International Workshop “Science with GAMMA-400”, International Centre for Theoretical Physics (ICTP), Trieste, 2-4 May 2013.
- Organizing Committee and Lecturer of the 2nd National School on Innovative Detectors, Trieste, 18-22 October 2010.
- Organizing and Scientific Committee of the International Workshop “Trends in Photon Detectors for Particle Physics and Calorimetry”, Trieste, 3-4 June 2008.