

**EUROPEAN  
CURRICULUM VITAE  
FORMAT**



**PERSONAL INFORMATION**

Name  
Address  
Telephone  
Fax  
E-mail  
Website  
  
Nationality  
Date of birth

**PROF. ANDREA MOSTACCI**

**GENERAL RESEARCH INTERESTS**

Physics and Technology of Particle Accelerators, Application of THz radiation, Applied Electromagnetics, Microwave Measurement, RF design

**BIBLIOMETRIC SUMMARY DATA**

- Total international publications 380, source scholar.google.com
  - Total citations 5341, source scholar.google.com
  - Total cited paper 269, source scholar.google.com
  - H-index 39, source scholar.google.com

**EDUCATION AND TRAINING**

- Dates (1997-2001)  
• Name and type of organization providing education and training Sapienza, University of Rome  
• Principal subjects/occupational skills covered Beam physics, Particle Accelerator technology, Microwave Measurements  
• Title of qualification awarded PhD in Applied Electromagnetism and Electro-Physical Science
- Dates (1991-1997)  
• Name and type of organization providing education and training Sapienza, University of Rome  
• Principal subjects/occupational skills covered Modern Electronic Engineering, Applied Electromagnetics  
• Title of qualification awarded Master Degree in Electronic Engineering

**PRINCIPAL POSITIONS**

- Dates (2018 – today)  
• Name and address of employer Sapienza, University of Rome (Italy)
  - Type of business or sector 02/A1 – Fis01
  - Occupation or position held Associate Professor
- Main activities and responsibilities Design of RF devices, Medical accelerators, Plasma based accelerators

- Dates (2006 – 2018)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- Sapienza, University of Rome (Italy)  
02/A1 – Fis01  
Assistant Professor  
THz radiation Sources, Physics of High brightness beam, Beam commissioning
- Dates (2002 – 2006)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- Sapienza, University of Rome (Italy)  
02/A1 – Fis01  
Researcher  
Medical applications, Hadroterapy, Post-acceleration of Plasma generated protons
- Dates (2001 – 2002)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- CERN, European Organization for Nuclear Research (Genève, Switzerland)  
  
Research Fellowship  
Microwave measurements
- Dates (1999 – 2001)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- CERN, European Organization for Nuclear Research (Genève, Switzerland)  
  
Doctoral Student  
Beam wall interaction in the LHC liner
- Dates (1997 – 1998)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- CERN, European Organization for Nuclear Research (Genève, Switzerland)  
  
Technical Student  
Beam coupling impedance of LHC beam screen pumping slots

#### **ADDITIONAL POSITIONS**

- Dates (2021 – today)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- Sapienza, University of Rome (Italy)  
  
Member of the Professor Board of Mechanical Engineering  
Professor of General Physics
- Dates (2016 – today)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- Sapienza, University of Rome (Italy)  
  
Member of the Professor Board of PhD Course in Engineering and Applied Science for Energy and Industry
- Dates (2011 – today)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- Sapienza, University of Rome (Italy)  
  
Member of the Professor Board of Electronic Engineering  
Professor of Microwave measurement laboratory and Accelerator Physics
- Dates (2008 – today)
  - Name and address of employer
    - Type of business or sector
    - Occupation or position held
  - Main activities and responsibilities
- INFN, Istituto Nazionale di Fisica Nucleare  
  
Research appointment renewed yearly on particle accelerators activities  
R&D of novel particle accelerators, THz radiation sources and manipulation

- Dates (2016 – 2021)
- Name and address of employer
  - Type of business or sector
  - Occupation or position held
- Main activities and responsibilities

Sapienza, University of Rome (Italy)

Member of the Professor Board of Electrical Engineering  
Professor of General Physics

#### VISITING POSITIONS

- Dates (2019 – today)
- Name and address of employer
  - Type of business or sector
  - Occupation or position held
- Main activities and responsibilities

CERN, European Organization for Nuclear Research (Genève, Switzerland)

Cooperation Associate (COAS)  
Coupling impedance measurements, Accelerator devices optimization

- Dates (2002 – 2014)
- Name and address of employer
  - Type of business or sector
  - Occupation or position held
- Main activities and responsibilities

Various, non-continuative appointments of about 1 month of duration  
CERN, European Organization for Nuclear Research (Genève, Switzerland)

Visiting Scientist  
Coupling Impedance measurements on LHC device

#### TEACHING

- Current

General Physics II (Electromagnetics) for BD in Mechanical Engineering (2021 – today)  
Multidisciplinary Laboratory of Electronics – RF measurement module for MD in Electronic Engineering (2014 - today)  
Accelerator Physics and Relativistic Electrodynamics for MD in Electronic Engineering (2017 – today)  
Course on RF Engineering at the “Science and technology of Particle accelerators” at the Joint Universities Accelerator School (JUAS) of the European Scientific Institute (2017-today)

- Past

General Physics I (Mechanics and thermodynamics) and General Physics II (Electromagnetics) for BD in Transportation Engineering (2002)  
General Physics II (Electromagnetics) for BD in Environmental Engineering (2003)  
Laboratory of Experimental physics for BD of Aerospace Engineering (2004 – 2009)  
High Frequency measurement laboratory for MD in Electronic Engineering (2011 - 2013)

#### GRANTS & PROJECTS

- Dates (2022 – today)
  - Name of the project
    - Description
    - Total grant

INFN – Fifth National Research Committee  
FLASH radiotherapy with high dose rate particle beams  
Responsible of Work-package  
120k€

- Dates (2019 – today)
  - Name of the project
    - Description
    - Total grant

INFN – Fifth National Research Committee  
Free electron laser (FEL) radiation from plasma accelerated (PWFA) electron beams  
Responsible of Unit  
40k€

- Dates (2018)
  - Name of the project
    - Description
    - Total grant

Sapienza, Research Project  
Beam energy measurement in advanced linear particle accelerators for electrons  
PI  
13k€

- Dates (2017)
  - Name of the project

Sapienza, Research Project  
Advanced beam position monitors for the Compton Gamma Source of the Extreme Light Infrastructure

<ul style="list-style-type: none"> <li>• Description</li> <li>• Total grant</li> </ul>	<p>PI 38k€</p>
<ul style="list-style-type: none"> <li>• Dates (2014 – 2016)</li> <li>• Name of the project <ul style="list-style-type: none"> <li>• Description</li> <li>• Total grant</li> </ul> </li> </ul>	<p>INFN – Fifth National Research Committee Plasma based acceleration at SPARC-LAB Responsible of Unit 40k€</p>
<ul style="list-style-type: none"> <li>• Dates (2013 – 2016)</li> <li>• Name of the project <ul style="list-style-type: none"> <li>• Description</li> <li>• Total grant</li> </ul> </li> </ul>	<p>INFN – Fifth National Research Committee European FEL Design Study (EuroFEL project) Responsible of Unit 300k€</p>
<ul style="list-style-type: none"> <li>• Dates (2012 – 2015)</li> <li>• Name of the project <ul style="list-style-type: none"> <li>• Description</li> <li>• Total grant</li> </ul> </li> </ul>	<p>RBFR12NK5K_002 - FIRB-Futuro in Ricerca 2012 Generation of high brightness electron beams from plasma-based accelerators Responsible of Unit 180k€</p>

## SELECTED PUBLICATIONS AND RESEARCH REPORTS

(out of more than **254** journal publications)

- E. Chiadroni et al., “A versatile THz source from high-brightness electron beams: Generation and characterization”, Condensed Matter 2020  
DOI:10.3390/condmat5020040
- F. Giorgianni et al., “Strong nonlinear terahertz response induced by Dirac surface states in Bi2Se3 topological insulator”, Nature Communications 2016  
DOI:10.1038/ncomms11421
- E. Chiadroni et al., “Characterization of the THz radiation source at the Frascati linear accelerator”, Review of Scientific Instruments 2013  
DOI: 10.1063/1.4790429
- D.B. Durham, et al., “Plasmonic lenses for tunable ultrafast electron emitters at the nanoscale”, Physical Review Applied 2019  
DOI: 10.1103/PhysRevApplied.12.054057
- V. Shpakov, et al., “Longitudinal phase-space manipulation with beam-driven plasma wakefields. Physical Review Letters 2019  
DOI: 10.1103/PhysRevLett.122.114801
- R. Pompili, et al, “Focusing of high-brightness electron beams with active-plasma lenses” Physical Review Letters 2018.  
DOI: 10.1103/PhysRevLett.121.174801
- N. Biancacci, et al, “Impedance simulations and measurements on the LHC collimators with embedded beam position monitors”. Physical Review. Accelerators and Beams 2017  
DOI: 10.1103/PhysRevAccelBeams.20.011003
- A. Petralia, et al. “Two-Color Radiation Generated in a Seeded Free-Electron Laser with Two Electron Beams” Physical Review Letters 2015.  
DOI: 10.1103/PhysRevLett.115.014801
- A. Mostacci, et al, “Beam emittance evolution measurements in a rf photoinjector”, Physical Review Special Topics. Accelerators and Beams 2008  
DOI: 10.1103/physrevstab.11.032801
- A. Mostacci, et al, “Analysis methodology of movable emittance-meter measurements for low energy electron beams”, Review of Scientific Instruments 2008,  
DOI: 10.1063/1.2835715
- A. Mostacci, “Image currents in azimuthally inhomogeneous metallic beam pipes”. Physical Review Special Topics. Accelerators And Beams, 2005.  
DOI: 10.1103/PhysRevSTAB.8.084402
- DISPOSITIVO PER IL TRATTAMENTO RADIOTERAPICO DI MALATI ONCOLOGICI, Italian patent for an electron linear accelerator for ultra-high dose rate cancer treatment based on Flash Radiation Therapy, 2019.

**PERSONAL SKILLS  
AND COMPETENCES**

*Acquired in the course of life and career  
but not necessarily covered by formal  
certificates and diplomas.*

MOTHER TONGUE

ITALIAN

OTHER LANGUAGES

- Reading skills
- Writing skills
- Verbal skills

**ENGLISH**  
excellent  
excellent  
excellent

- Reading skills
- Writing skills
- Verbal skills

**FRENCH**  
basic  
basic  
basic

**ORGANISATIONAL SKILLS  
AND COMPETENCES**

*Coordination and administration of  
people, projects and budgets; at work, in  
voluntary work.*

Coordination of the activity in the Accelerator Laboratory at the SBAI Department of Sapienza University of Rome (2002-today)

Coordination of Work Package on "Accelerator prototyping and experiments at Test facilities" (WP12) of the project "Compact European Plasma Accelerator with superior beam quality" (EUPRAXIA); Horizon 2020 grant agreement No 653782 (2015-2020)

Coordination of diagnostics group for the linear accelerator of the Compton Gamma Source being built in the Extreme Light Infrastructure for Nuclear Physics (ELI-NP), Magruele (Romania) (2015-2018)

Coordination of the Work Package "Accelerators: Novel compact particle sources" (WP6) of the project "Cluster of Research Infrastructures for Synergies in Physics" (CRISP) in the framework of FP7- INFRASTRUCTURES-2011-1 (2012-2014)

Coordination of the data analysis of all the experiments executed on the SPARC photo injector at the LNF-INFN (2006-2013)

ADDITIONAL INFORMATION

References

Prof. Luigi Palumbo, Sapienza, University of Rome

Prof. Mauro Migliorati, Sapienza, University of Rome

Fritz Caspers, CERN, Geneve

I. Papaphilipou, CERN, Geneve

S. De Santis, Lawrence Berkley National Laboratory, USA

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

Rome, 02.05.2022

**Andrea Mostacci**

Signature

September 2022

# Silvia Pisano

## Curriculum Vitæ et Studiorum

### Education

- January 24th, 2007 **Ph.D. in Physics** – “Sapienza” University of Rome (Rome, Italy)  
Thesis topic: “*Electromagnetic form factors of the nucleon in spacelike and timelike regions*”; supervisors Prof. Daniele Prosperi, Prof. Emanuele Pace, Dr. Giovanni Salmè.
- July 17th, 2003 **Physics Degree (M.S.)** – “Sapienza” University of Rome (Rome, Italy)  
Thesis topic: “*Study of the charmless semileptonic B decays with the BaBar experiment*”; supervisors Prof. Fernando Ferroni, Dr. Riccardo Faccini; **final score: 110/110 cum Laude.**
- July 1998 **Diploma di Maturità Classica** – Liceo Ginnasio Statale (Classic Lyceum) “Dante Alighieri” (Rome, Italy); **final score: 60/60.**

## Employment History

- 31/12/2018 - present **Researcher** (Ricercatore a Tempo Indeterminato III Livello Professionale), Museo Storico della Fisica e Centro Studi e Ricerche Enrico Fermi (Rome), Italy and INFN associate at Laboratori Nazionali di Frascati.
- 05/2018 - 12/2018 **Post-doctoral Research Associate** (Borsa di studio *senior*), Museo Storico della Fisica e Centro Studi e Ricerche Enrico Fermi (Rome), Italy and INFN associate
- 4/2017 - 3/2018 **Post-doctoral Research Associate** (Assegnista di Ricerca), Museo Storico della Fisica e Centro Studi e Ricerche Enrico Fermi (Rome), Italy and INFN associate
- 12/2014 - 12/2016 **Post-doctoral Research Associate** (Assegnista di Ricerca), INFN, Laboratori Nazionali di Frascati, Frascati (Rome), Italy
- 9/2012 - 9/2014 **Post-doctoral Research Associate** (Assegnista di Ricerca), INFN, Laboratori Nazionali di Frascati, Frascati (Rome), Italy
- 2/2011 - 3/2012 **Post-doctoral Research Associate** (Assegnista di Ricerca), University of Rome "Tor Vergata" (Rome), Italy
- 10/2008 - 12/2010 **Post-doctoral Research Associate**, Institut de Physique Nucléaire - CNRS, Orsay (Paris), France
- 8/2008 - 9/2008 **Post-doctoral Research Associate**, Instituto Tecnológico de Aeronautica - ITA-CTA, Sao José dos Campos, SP, Brazil (Fellowship "Angelo Dalla Riccia")
- 1/2008 - 7/2008 **Post-doctoral Research Associate**, Karl Franzens University, Graz, Austria (Fellowship from University of Rome "La Sapienza")
- 6/2007 - 11/2007 **Post-doctoral Research Associate (Co.Co.Co)**, "Sapienza" University of Rome; Rome, Italy

## Research Grants and Awards

- 2011 **Winner of the Best Poster competition** at the "9th European Research Conference on Electromagnetic Interactions with Nucleons and Nuclei"
- 2007, November **"Angelo Della Riccia" Fellowship** (*Fondazione Angelo Della Riccia*), awarded to support research projects in the field of Microphysics presented by young scientists (spent in Instituto Tecnológico de Aeronautica - ITA-CTA, Sao José dos Campos, SP, Brazil).
- 2007, January **Fellowship for research activity** (*Rome University "La Sapienza"*) to support 6 months of research work at foreign insitutions (spent in Karl Franzens University, Graz, Austria).

## Scientific responsibilities

- 12/2019 - today **Coordinator of the INFN Scientific Committee 3 (Nuclear Physics) at Laboratori Nazionali di Frascati.**
- 05/20 - today **Referee** for the INFN experiment ULYSSES.
- 12/20 - today **Referee** for the INFN experiment LUNA.
- 2016 **Co-convener** of the session *QCD: partonic phenomena* at INPC2016, the *26th International Nuclear Physics Conference*.
- 2016 **Co-convener** of the session *Spin Physics* at DIS2016, the *24th International Workshop on Deep-Inelastic Scattering and Related Subjects*.
- 6/2015 **Co-spokeperson** of the proposal *Deeply virtual Compton scattering on the neutron with a longitudinally polarized deuteron target* (PR12-06-109a), approved by the *Program Advisory Committee*, to measure DVCS Target-Spin Asymmetry on a longitudinally-polarized  $ND_3$  target in Hall-B at Jefferson Lab.
- 10/2015 - 10/2016 **Coordinator of the rate studies** for the *Calibration and Commissioning* group toward the operations of CLAS12 in Hall-B at Jefferson Lab.
- 10/2014 - 9/2016 **Coordinator of the RICH simulations** in Geant4 to setup and optimize the realization and the operations of the RICH subdetector for CLAS12.
- 6/2014 **Spokeperson (principal investigator)** of the proposal *Higher-twist Collinear Structure of the nucleon on unpolarized hydrogen and deuterium* (E12-06-112A/E12-09-008B), approved by the *Program Advisory Committee*, to measure Di-Hadron Beam-Spin Asymmetry and Fragmentation Functions in Hall-B at Jefferson Lab.
- 6/2010 **Co-spokeperson** of the proposal *Deeply-Virtual Compton Scattering on the neutron with CLAS12 at 11 GeV* (PR12-11-003), approved by the *Program Advisory Committee*, to measure DVCS Beam-Spin Asymmetry on a neutron target in Hall-B at Jefferson Lab.
- 2/2009 **Expert on-call** for the longitudinally-polarized  $^{14}NH_3$  target during the CLAS 2009 data taking for the eg1-dvcs experiment.

## Responsibilities in conference, workshop and school organization

- 7/2022 **Member of the Local Organizing Committee** for *The XX LNF Summer School "Bruno Touschek" in Nuclear, Subnuclear and Astroparticle Physics* at Laboratori Nazionali di Frascati (Italy).
- 2/2018 **Member of the Local Organizing Committee** for the *Alice Physics Week* at Laboratori Nazionali di Frascati (Italy).
- 11/2016 **Member of the Local Organizing Committee** for *3D parton distributions: path to the LHC* (3DPDF) at Laboratori Nazionali di Frascati (Italy).
- 11/2016 **Member of the Local Organizing Committee** for *Terzo Incontro Nazionale di Fisica Nucleare* (INFN2016) at Laboratori Nazionali di Frascati (Italy).
- 11/2014 **Member of the Local Organizing Committee** for *The 4th International Workshop on Nucleon Structure at Large Bjorken x* (HiX2014) at Laboratori Nazionali di Frascati (Italy).
- 11/2013 **Member of the Local Organizing Committee** for the *Second Workshop on Probing Strangeness in Hard Processes* (PSHP2013) at Laboratori Nazionali di Frascati (Italy).



## Responsabilités in journals

10/2020 **Member** of the Editorial Board of *Particles* (MDPI).

## Responsabilités in review activity

**Referee** for the *European Physical Journal A: Hadrons and Nuclei*.

**Referee** for the *European Physical Journal Plus*.

**Referee** for the italian *Giornale di Fisica*.

**Referee** for *SIF, Società Italiana di Fisica* (the Italian Physics Society).

**Chairman** of the CLAS analysis review committee for the measurement "Deeply Virtual Production of the  $\rho^+$  Meson on the Proton" - still under review.

**Member** of the CLAS analysis review committee for the measurement "Single and Double Spin Asymmetries for Deeply Virtual Exclusive  $\pi^0$  production on Longitudinally Polarized proton target at CLAS" (*Phys.Lett.* B768 (2017) 168-173).

**Member** of the CLAS paper review committee for the "First Measurement of the Polarization Observable  $E$  in the  $p(\gamma, \pi^+)n$  Reaction up to 2.25 GeV" (*Phys. Lett.* B750 (2015) 53-58).

**Member** of the CLAS paper review committee for the "First Measurement of the helicity asymmetry  $E$  in eta photoproduction on the proton" (*Phys. Lett.* B 755 (2016) 64).

**Member** of the CLAS paper review committee for the measurement "Cross section for the exclusive photon electroproduction on the proton and Generalized Parton Distributions" (*Phys.Rev.Lett.* 115 (2015) 21, 212003).

## Outreaching activity

In parallel to my research activity, during the last years I was involved in different outreaching projects, devoted to the dissemination of science in schools and to the open public. The projects range from seminars and guiding activity in tours through the *Laboratori Nazionali di Frascati* of INFN to collaboration to *Scienza Per Tutti*, the outreaching website of INFN. In addition to it, since April 2017 I joined the *Extreme Energy Events* (EEE) Project led by Centro Fermi, main goal of which is the dissemination of Science in high-schools by involving students in the management and operations of a network of MRPC-based telescopes for the detection of extensive showers from cosmic rays. Since January 2021 I am the **Outreach Coordinator** of the EEE Project and, in this role, I plan, organize and coordinate several activities for students. In particular, I organize monthly meetings, bi-annual (in the pre-COVID era) workshops in person where students attend masterclasses and participate to measurement campaigns, and coordinate the different research projects carried on by schools. As to the relation between research and industry, in 2006 I attended a master on technology transfer, the goal of which was to form researchers for a better cooperation with industries and an increased sensitivity to the industrial impacts of the technologies developed in fundamental research projects.

- 11/2021 **Director** of the *School on ecological gases - 1st Meeting of the EEE Project after COVID shutdown* at the Ettore Majorana Foundation and Centre for Scientific Culture - Erice (Italy).
- 06/2021 **ScienceTogether:** Verso la Notte Europea dei Ricercatori 2021. Presenter at the Urban trekking *Che aria tira a Roma?*
- 05/2021 **Festival Genius Loci - Open City Roma:** organizer of the activities at Centro Fermi for the 2021 edition of *Genius Loci - Dove abita il genio*. In particular, two events have been organized: a guided tour in the historical building together with a visit to the Museum, and a campaign measurement devoted to the study of cosmic rays, performed through scintillator-based portable cosmic ray detectors.
- 01/2021 - present **Outreach coordinator** for the Extreme-Energy Events (EEE) Project.
- 2018, 2020 **Talk** at the *International day of women and girls in science* in the 2018 and 2020 editions - Laboratori Nazionali di Frascati
- 07/2020 **Festival Genius Loci - Open City Roma:** organizer of the activities at Centro Fermi for the 2020 edition of *Genius Loci - Dove abita il genio*, consisting in guided tours in the historical building and visits to the Museum
- 6/2018 - present **Responsible** for the Centro Fermi Project "EEE" for the relations with schools (managing of the monthly meetings and of the bi-annual conferences ("*Conferenze dei Progetti del Centro Fermi/Progetto EEE*"), organization of contests for encouraging independent, scientific activities in the institute, as the *Cosmic Box Contest* ).
- April 2017 - present **Local referent for the Project EEE.** In this role, I am responsible of the maintenance of the 5 *Multigap Resistive Plate Chamber* (MRPC)-based telescopes in the area and of the related activity of the 11 Lazio schools participating to the project. I carried on a consistent outreaching activity organized in lessons, practical demonstrations on the MRPC operations and maintenance and seminars.
- March 2017 **Moderator** for an ALICE masterclass at CERN during the International Masterclasses 2017.
- 2015 - 2018 **Member of the editor committee** of *Scienza per Tutti*, the science communication website of INFN. Beyond the activity as editor, I answered to some of the questions for the section *Chiedi all'Esperto*:

1. <http://scienzapertutti.infn.it/chiedi-allesperto/tutte-le-risposte/2115-0452-cosa-significano-i-valori-2-3-1-3-che-si-accompagnano-ai-quark>
2. <http://scienzapertutti.infn.it/chiedi-allesperto/tutte-le-risposte/2094-0449-terra-e-luna3>
3. <http://scienzapertutti.infn.it/chiedi-allesperto/tutte-le-risposte/2078-0444-perche-il-campo-elettromagnetico-diminuisce-con-la-distanza>
4. <http://scienzapertutti.infn.it/chiedi-allesperto/tutte-le-risposte/2083-0439-fisica-quantistica>
5. <http://scienzapertutti.infn.it/chiedi-allesperto/tutte-le-risposte/1984-0427-luce-polarizzata-e-spin-dei-fotoni>

and wrote some book reviews:

1. <http://scienzapertutti.infn.it/rubriche/un-libro-al-mese/2089-fisica-quantistica-per-poeti>
2. <http://scienzapertutti.infn.it/rubriche/un-libro-al-mese/2121-breve-storia-di-quasi-tutto>

- 2015-present **Invited seminars** on quantum mechanics and fundamental interactions in high-schools.
- 2012-present **Guide** in Laboratori Nazionali di Frascati for schools and open public visits, also taking part to different editions of *La Notte dei Ricercatori* and the LNF-INFN *Open Day*.
- 2006 Participation to the master on **Spin-off accademici, innovazione e trasferimento tecnologico** organized by CERFE and the three universities of Rome ("La Sapienza", "Tor Vergata" and "Roma Tre").

## Research activity

- Electroweak physics** I joined as an undergraduate student the Babar group of the “Sapienza” University of Rome, where I performed my undergraduate thesis. It was devoted to the measurement of the branching ratio of the charmless semileptonic  $B$  decay  $B \rightarrow \omega l \nu$  for the extraction of the  $V_{ub}$  CKM matrix element.
- Hadronic physics** As a graduate student I moved to the field of hadronic physics. For my thesis I developed a phenomenological model for the electromagnetic nucleon form factors  $G_E^N(Q^2)$ ,  $G_M^N(Q^2)$ , based on the Light-Front Hamiltonian Dynamics. Its main result consists in identifying in the interference among *valence* and *non-valence* processes a possible source of the discrepancy experimentally observed in the measured ratio  $G_E^p(Q^2)/G_M^p(Q^2)$ . It led to the publication of the paper Phys. Lett. B **671** (2009) 153. Following the Ph.D. work, during my first years of postdoc (Austria, Brazil) I carried on the modeling of the hadron structure, extending the techniques developed for the nucleon to the vector mesons sector (Nucl. Phys. Proc. Suppl. **199** (2010) 270).
- As a natural extension of my phenomenological work on the hadron structure, in 2008 I joined the CLAS Collaboration at JLab (Virginia, USA) and I started to work on the analysis of data finalized to the extraction of the different functions describing the multidimensional nucleon structure. I spent the first two years working as a postdoc at the IPN (Orsay, France), where I performed the measurement of the single and double-spin asymmetries for the Deeply-Virtual Compton Scattering. The latter represents the cleanest path toward the extraction of the Generalized Parton Distributions, phenomenological functions that relate the information encoded in the one-dimensional parton distribution functions (PDFs) to the electromagnetic form factors. This measurement (published in Phys. Rev. D **91** (2015) 052014 and Phys. Rev. Lett. **114** (2015) 032001) provided a first comparison of the *electric* and *axial* charge distribution inside the nucleon. In view of the upgrade of the CLAS detector toward the  $12\text{-GeV}$  Jefferson Lab operations, I proposed as a **spokeperson** two measurements finalized to the extraction of single and double-spin asymmetries for the Deeply-Virtual Compton Scattering on neutron targets: one on an unpolarized target (*Deeply-Virtual Compton Scattering on the neutron with CLAS12 at 11 GeV* (PR12-11-003)) and one on a longitudinally polarized  $ND_3$  target (*Deeply virtual Compton scattering on the neutron with a longitudinally polarized deuteron target* (PR12-06-109a)).
- In 2011 I joined the INFN group at Laboratori Nazionali di Frascati, keeping my involvement in CLAS. During the years in Frascati I extended my research activity in the field of hadron structure to the *fragmentation* phenomena and to the 3D representation of the nucleon structure in the momentum space, the former being encoded in the *Fragmentation Functions* (FFs) and the latter in the *Transverse Momentum Dependent* distribution functions (TMDs). In this field, I collaborated to the first measurement of the Beam-Spin Asymmetry for the Semi-Inclusive production of hadron pairs, published in Phys. Rev. Lett. **126** (2021) 6, 062002. I also took part to the phenomenological analysis of the data, that led to the first extraction of the higher-twist PDF  $e(x)$  (Phys. Rev. D **106** (2022) 1, 014027). I proposed, as **principal investigator**, a new measurement for the  $12\text{-GeV}$  operations, that aims at the first extraction, in the *valence region*, of the quark fragmentation functions in hadron pairs. In view of the experience matured in the field of quark hadronization and hadron formation mechanisms, in 2015 I was invited by the *European Physics Journal A* to write a review on the subject in cooperation with Dr. Marco Radici (INFN Pavia, Italy). It appears in the special issue "3D Structure of the Nucleon" (*Di-hadron fragmentation and mapping of the nucleon structure*, Eur. Phys. J. A **52** (2016) no.6, 155).

**Hadronic physics**

Recently, I started to explore new phenomena that possibly occur inside the nucleon, as the presence of correlated  $q\bar{q}$  pairs. By analyzing the emergence of azimuthal correlations among the *current* and the *target* fragments, the presence of these correlations can be explored. The latter would results, indeed, in a Beam-Spin Asymmetries, a preliminary measurement of which can be found in PoS(DIS2016)214.

Thanks to the experience maturated in the field over the last years, I was invited to several conferences and workshops to give invited talks. In 2016 I also served as *convener* for the "Spin Physics" Working Group at the *24th International Workshop on Deep-Inelastic Scattering and Related Subjects (DIS2016)* and for the session on "QCD and partonic phenomena" at the *26th International Nuclear Physics Conference (INPC2016)*.

**Heavy-ion physics**

As a natural extension of my research activity in the field of the nucleon structure, in December 2016 I joined the Alice Collaboration at CERN, moving my focus to heavy-ion physics. I started working on the *Light-Flavor Working Group*, where I am presently responsible of the analysis for the extraction of the spectra of  $\pi/K/p$  on the  $pPb$  8.16-TeV data. Results on  $pPb$  data will be then compared to measurements on  $pp$  and  $PbPb$  data to test the emergence of possible initial state effects.

**Responsabilities:** I am the analysis coordinator of the three analyses carried on in Frascati: in order to extract the spectra in the broadest momentum range, indeed, analyses with the Inner Tracking System, the Time-Projection Chamber and the Time Of Flight detectors are being performed, so to combine the complementary spectra in the different  $p_T$  regions. Beyond the coordinating activity, I am personally working on the TPC analysis. The preliminary results of the three analyses have been approved and they have been firstly presented at the conference "*Strangeness in Quark Matter 2019*". I then personally presented them at "*Quark Matter 2019*".

Beyond the analysis activity, I took shifts both as *Detector Control System* operator (for which I have the *expert* status for *Heavy-Ion* runs) and *Data Quality Monitor* shifter.

**Cosmic ray physics**

In April 2017, I joined the EEE experiment, a network of MRPC-based telescopes for the detection of *Extreme Energy Events* in cosmic rays. Within the collaboration I am the local responsible for the operations of the 5 telescopes in Lazio region. Together with the hardware activity related to the recommissioning and maintenance of the MRPCs, I work on data analysis for the search of long-distance correlations (Eur.Phys.J.Plus 133 (2018) no.2, 34) and on the simulations of the MRPC telescopes in the Geant4 environment.

**Detector physics**

Parallel to my reasearch activity in data analysis in the hadronic physics field, during my career I took part to different hardware-oriented researches. In particular, during 2007 I joined the H8RD22 collaboration to study *channeling phenomena* of hadron beams through bent crystals, that represent a strategic approach in the beam collimation technology. The collaboration led to two publications (Phys. Rev. A **79** (2009) 012903, Phys. Rev. Lett. **101** (2008) 234801). As to detector-oriented activity, I collaborated to the realization of two of the CLAS12 subdetectors. During my postdoc in Orsay I took part to the design of the *Central Neutron Detector* for CLAS12, finalized to the detection of the large-angle neutron produced in the Deeply-Virtual Compton Scattering processes. In particular, I performed the tests for the optimization of the photon detectors employed to read the scintillator signals.

**Detector physics** Once in Frascati, I joined the efforts for the realization of a RICH detector for CLAS12. It represents a strategic piece for the identification of charged hadrons in the  $3\div 8$ -GeV energy range, *i.e.* the regime where the events of interest for TMD analysis lie. Here I was the responsible for the RICH simulations in the *Geant4* environment, finalized to the optimization of materials, to the analysis of *radiation hardness* effects and to the definition of the event reconstruction procedures. I also took part to measurements at the *Frascati Neutron Generator* (FNG) (ENEA) to test radiation effects on the photo-multipliers and on the read-out electronics and to the ones at the *Beam-test Facility* (BTF) of LNF to test reconstruction algorithms on a prototype. Selected results from these activities appear, *e.g.*, in Eur. Phys. J. A **52** (2016) no.2, 23 and Nucl. Instrum. Meth. A **790** (2015) 28.

Since April 2017 I am part of the EEE Collaboration, where I am the responsible for the operations of the Multigap Resistive Plate Chamber telescopes taking data in Lazio region (5 telescopes). Together with the maintenance and recommissioning activity of the telescopes, on January 2018 I took part to a measurement campaign at CERN aiming at the study of new eco-gas mixtures, participating both to the data taking and analysis, the results of which I presented at *The XIV Workshop on Resistive Plate Chambers and Related Detectors (RPC 2018)*.

**Commissioning** During my years in the CLAS Collaboration I took care of the *Time-Of-Flight* calibration for different data sets, taken both on *unpolarized* liquid-hydrogen targets and on *longitudinally-polarized*  $NH_3$  targets. In preparation for CLAS12 operations, then, I was in charge of the rate analysis for the different processes finalized to the detector commissioning and calibrations. I developed an inclusive and semi-inclusive event generator based on cross-section calculations and a software framework to extract rates and cross-sections in the different kinematic points.

## Schools

- 2011 **Three-dimensional partonic structure of the nucleon** for *International School of Physics "Enrico Fermi"*; Varenna (Italy).
- 2009 **Strong interaction in nuclear medium: new trends** for *Ecole Internationale "Joliot Curie"*; Lacanau (France).
- 2006 **Spin-off accademici, innovazione e trasferimento tecnologico** organized by CERFE and the three Rome universities ("*La Sapienza*", "*Tor Vergata*", "*Roma Tre*"); Rome (Italy).

## Teaching

- 2004/2005 **Assistant** in the physics class for *Biology degree* at Rome University La Sapienza (Italy).

## Languages

<b>Italian</b>	Native.
<b>English</b>	Excellent in oral and written communication.
<b>French</b>	Very good in oral and sufficient in written communication.

## Conferences, workshops and seminars

- **2021: Contributed talk** at *The 19th International Conference on Hadron Spectroscopy and Structure (HADRON2021)*, Mexico City (Mexico) - online edition; title: Looking for collective phenomena in small systems with a comprehensive study of light flavour hadron production.
- **2021: Invited talk** at *The Ninth Annual Large Hadron Collider Physics (LHCP2021)*, Paris (France) - online edition; title: EEE - Extreme Energy Events.
- **2019: Contributed talk** at *the XXVIIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions (Quark Matter 2019)*, Wuhan (China); title: Light-flavour hadron production vs. multiplicity in pp and in p-Pb collisions with ALICE.
- **2018: Invited talk** at *Correlations in Partonic and Hadronic Interactions 2018 (CPHI2018)*, Yerevan (Armenia); title: Light Flavors.
- **2018: Contributed talk** at *The XIV Workshop on Resistive Plate Chambers and Related Detectors (RPC 2018)*, Puerto Vallarta (Mexico); title: New Eco-gas mixtures for the Extreme Energy Events MRPCs: results and plans.
- **2016: Invited talk** at *4th Workshop on the QCD Structure of the Nucleon - QCD-N'16*, Getxo (Bilbao), Spain; title: TMDs from Jefferson Lab Hall B.
- **2016: Summary talk** for the Spin Physics Working Group at *24th International Workshop on Deep-Inelastic Scattering and Related Subjects - DIS2016*, Desy, Hamburg, Germany; title: Spin Physics Working Group Summary (proceedings in PoS(DIS2016)284).
- **2015: Invited talk** at *10th Circum-Pan-Pacific Spin Symposium on High Energy Spin Physic - Pac-Spin2015*, Taipei, Taiwan; title: Studies of nucleon GPD properties at JLab.
- **2015: Invited talk** at *Light Cone 2015 - LC2015*, Laboratori Nazionali di Frascati, Frascati, Italia; title: OAM Measurements from DVCS at JLab (proceedings in Few Body Syst. **57** (2016) no.8, 633).
- **2015: Invited talk** at *First Italian Workshop on Hadron Physics and Non-Perturbative QCD - NPQCD2015*, Cortona, Italia; title: GPDs in experiments.
- **2014: Invited talk** at *The Fourth Joint Meeting of the Nuclear Physics Divisions of the American Physical Society and The Physical Society of Japan - Hawaii 2014*, Hawaii Big Island, USA; title: 3D imaging of the nucleon with JLab experiments.
- **2014: Invited talk** at *ELBA XIII Workshop on Electron-Nucleous Scattering*, Isola d'Elba, Italia; title: Experimental investigation of the nucleon transverse structure".
- **2014: Invited talk** at *Fourth International Workshop on Transverse Polarisation Phenomena in Hard Processes - TRANSVERSITY 2014*, Chia, Cagliari, Italia; title: The JLAB 3D program at 12 GeV (TMDs + GPDs) (proceedings in EPJ Web Conf. **85** (2015) 02033).
- **2013: Invited talk** at *Indiana-Illinois Workshop on Fragmentation Functions*, Bloomington, Indiana, USA; title: Spin physics in CLAS6 and plans for CLAS12.
- **2013: Invited talk** at *Second Workshop on Probing Strangeness in Hard Processes - PSHP2013*, Frascati, Italia; title: JLab news on TMD observables.
- **2013: Invited talk** at *13th International Conference on Meson-Nucleon Physics and the Structure of the Nucleon (MENU 2013)*, Roma, Italia; title: Di-hadron SIDIS measurements at CLAS (proceedings in EPJ Web Conf. **73** (2014) 02008).

- **2012: Contributed talk** at *Second European Nuclear Physics Conference - EuNPC2012*, Bucarest, Romania; title: Analyzing nucleon spin structure through SIDIS at Jefferson Lab.
- **2011: Contributed talk** at *9th European Research Conference on Electromagnetic Interactions with Nucleons and Nuclei, EINN2011*, Paphos, Cyprus; title: DiHadron Analysis at CLAS.
- **2011: Contributed talk** at *XCVII Congresso della Società Italiana di Fisica*, L'Aquila, Italia; title: Studio della produzione di due adroni con CLAS12 al Jefferson Lab.
- **2011: Contributed talk** at *DiHadron Fragmentation Functions Miniworkshop*, Pavia, Italia; title: First look at the DiHadron Production with the 6 GeV CLAS data.
- **2011: Contributed talk** at *DIS2011*, Newport News, Virginia, USA; title: Results and Achievements at CLAS.
- **2010: Contributed talk** at *QCD10*, Montpellier, Francia; title: Generalized Parton Distributions at CLAS (proceedings in Nucl. Phys. Proc. Suppl. **207-208**, 69-72 (2010)).
- **2010: Contributed talk** at Les Journées P2I, Parigi, Francia; title: Deeply Virtual Compton Scattering on the neutron at JLab with CLAS12.
- **2009: Contributed talk** at *12th International Conference on Nuclear Reaction Mechanisms*, Varenna, Italia; title: Generalized Parton Distributions at CLAS (proceedings in <https://cdsweb.cern.ch/record/1233497/files/CERN-Proceedings-2010-001-V-2.pdf>).
- **2007: Contributed talk** at *HADRON07 - XII International Conference on Hadron Spectroscopy*, Frascati, Italia; title: Electromagnetic decays of Vector Mesons in a covariant model.
- **2006: Contributed talk** at *XI Convegno su Problemi di Fisica Nucleare Teorica* Cortona, Italia, con il titolo Electromagnetic form factors of the nucleon in spacelike and timelike regions).
- **2008: Invited seminar** at University of Rome Tor Vergata; title: Time- and Spacelike Nucleon Electromagnetic Form Factors beyond Relativistic Constituent Quark Models.
- **2007: Invited seminar** at the “Karl Franzens” University in Graz; title: Electromagnetic form factors of the nucleon in spacelike and timelike regions.
- **2013: Poster** at *10th European Research Conference on Electromagnetic Interactions with Nucleons and Nuclei, EINN2013*, Paphos, Cyprus; title: Di-hadron SIDIS measurements at CLAS.
- **2011: Poster** at *9th European Research Conference on Electromagnetic Interactions with Nucleons and Nuclei, EINN2011*, Paphos, Cyprus; title: DiHadron Analysis at CLAS. As the winner of the Best Poster competition organized by the International Organizing Committee (IOC), I also presented a talk on the subject at the conference, and I have been awarded with the supported invitation to the next edition.

## Habilitations

- 2015 Eligibility for the position of **Ricercatore a Tempo Determinato** (RTD) for the sector *02/A2, PROFILE: SSD FIS/02* at Pavia University (Italy).
- 2018 Idonea non vincitrice al concorso presso il Centro Fermi (Bando n. 9(17) - Concorso pubblico, per titoli ed esami, per l'assunzione di n. 1 unità di personale con contratto di lavoro a tempo pieno e indeterminato) pubblicato sulla Gazzetta Ufficiale della Repubblica Italiana, 4° Serie Speciale - Concorsi ed Esami, n. 5 del 16 gennaio 2018.

## Information Technology Skills

- Deep knowledge of the ROOT analysis framework, C, C++, FORTRAN, shell scripting languages.
- Good knowledge of GEANT4, JAVA, PERL, L<sup>A</sup>T<sub>E</sub>X, common office software, Linux, Windows, Android and Mac OS.



## **Publications**

Co-author of more than 200 publications in referred journals (see list of publications for details).

Silvia Pisano

# Curriculum Vitae Alessandro Variola

## Lingue

Italiano: Madre lingua

Inglese: ottimo livello

Francese: ottimo livello

Portoghese: livello parlato intermedio e livello scritto elementare.

## Educazione

**Dottorato di ricerca in fisica sperimentale**, con specializzazione “Grandi Apparati Sperimentali” – Fisica degli Acceleratori, Université Paris-Sud. Tutor: Dr. Robert Chehab.

Titolo della tesi: “Use of Optical Radiation for the study of Electron Beam Spatio-Temporal Characteristics. TTF Application”.

**Laurea in fisica sperimentale**, con specializzazione in fisica degli acceleratori, Università degli Studi di Trieste. Tutor: Prof. Mario Puglisi.

Titolo della tesi: “Teoria elettromagnetica dei campi scia. Interazione fascio-cavità”.

## Incarichi e posizioni ricoperte

**2015 – today** INFN - Italia, posizione permanente, direttore di ricerca

**2004 – 2014** CNRS - Francia, posizione permanente, Ingegnere di ricerca di classe eccezionale.

**2001 – 2004** INFN Italia e University of Wales, posizione a tempo determinato ricercatore associato.

**1998 – 2001** CERN Switzerland. Fellow, posizione a tempo determinato

**1995 – 1998** CNRS France, tesi di dottorato posizione a tempo determinato

**1992 – 1995** ELETTRA Italia, posizione a tempo determinato, ricercatore associato.

## Attività scientifiche

### **2019-presente, Roma1 INFN, Italia**

Responsabile locale della collaborazione UA9. In questo contesto ha proposto di studiare la fattibilità di due nuove misure associate al programma di sviluppo del muon collider. La prima è uno schema di ricombinazione che viola il teorema di Liouville basato su un cristallo curvo, la seconda esplora la possibilità di avere un effetto di raffreddamento sui fasci di muoni tramite un cristallo lineare.

### **2019-presente, LNF INFN Frascati, Italia**

Responsabile per il coordinamento dello sforzo dell'INFN per la proposta del design dello schema LEMMA. In questo ambito ha proposto due differenti schemi di produzione dei muoni che prendano in conto le principali limitazioni della sorgente di muoni basata sulla conversione di un fascio di positroni.

**2022– presente, Roma1 INFN, Italia**

Head del project office di Einstein Telescope. L'incarico prevede la responsabilità dell'introduzione delle pratiche di gestione progettuale e di ingegneria dei sistemi all'interno del futuro progetto di interferometro gravitazionale.

**2015 – presente, LNF INFN Frascati, Italia**

Project e Machine leader della Gamma Beam Source (GBS) del progetto Europeo ELI-NP (da realizzarsi a Magurele, Romania). Questo progetto mira alla realizzazione di una sorgente gamma monocromatica basata sull'effetto Compton, nel contesto del programma europeo ELI nel pillar rumeno di Magurele. Questa sorgente gamma dovrebbe fornire delle performance integrate di quattro ordini di grandezza superiori rispetto allo stato dell'arte, al momento della proposta.

**2008 – 2014, LAL Orsay, Francia**

Thom-X project coordinator: lo scopo di questo progetto è di realizzare e operare un anello Compton, come sorgente di luce per gli users nel campo medico e nel campo della conservazione dei beni culturali. Questa sorgente di raggi X duri deve fornire delle performance di uno-due ordini di grandezza superiori allo stato dell'arte.

Machine leader - SuperB-factory design: SuperB era un progetto per un nuovo acceleratore da costruirsi nel campus dell'Università di Roma-Tor Vergata, basato su due anelli lunghi 1,3 km ed un iniettore. Questo design permetteva di raggiungere l'energia di 11 GeV nel centro di massa. Il design della SupeB includeva lo sviluppo della tecnica di crab waist per poter raggiungere una luminosità di  $10^{36} \text{ cm}^{-2} \text{ s}^{-1}$ , un aumento di due ordini di grandezza rispetto allo stato dell'arte al momento della proposta.

**2004 – 2010**

Coordinatore dell'attività di sviluppo tecnologico degli accoppiatori criogenici di Potenza al LAL. Ha introdotto una nuova procedura di condizionamento che ha permesso di ridurre il tempo di condizionamento degli accoppiatori di tipo TTF da 100 a meno di 20 ore. Questo risultato ha permesso al LAL di ottenere la responsabilità per la produzione e il condizionamento di 800 accoppiatori per il progetto XFEL di DESY, un contratto da 20 M€.

**2004 – 2011**

Group leader dell'attività sulle sorgenti di positroni al LAL, un'attività riconosciuta in diversi progetti internazionali. In questo contesto ha proposto, assieme a R. Chehab e V. Strakhovenko, l'applicazione dello schema ibrido alla sorgente di CLIC che attualmente costituisce la soluzione baseline. Ha proposto anche la tecnica di cattura in una sezione - high order mode – per il progetto SuperB, dando così la possibilità di aumentare l'efficienza di cattura di circa un ordine di grandezza rispetto al disegno convenzionale. Il gruppo del LAL è stato anche l'iniziatore dello studio della sorgente di positroni polarizzati basata su un anello Compton nell'ambito di ILC.

**2008 – 2010**

Responsabile dell'attività nell'ambito del contributo eccezionale della Francia al CERN nel contest dei progetti CLIC e Linac4. Coordinatore dell'apporto tecnico del LAL sui modulatori per il progetto Linac4.

**2001 – 2004, CERN Geneva, Svizzera**

Deputy scientific e run coordinator dell'esperimento ATHENA experiment (produzione di antidrogeno criogenico per test sulla violazione di CPT), ha svolto anche il ruolo di persona di contatto con il personale dell'acceleratore AD. Ha avuto la responsabilità del disegno della trappola di ricombinazione e dell'analisi del meccanismo di raffreddamento degli antiprotoni durante il processo di ricombinazione dell'antidrogeno. L'esperimento ha ottenuto un notevole successo dato che, nell'estate 2002, ha annunciato la prima sintesi di atomi di antidrogeno a temperature criogeniche. (A.I.P. Physics News Update: Top 2 physics stories of the year, with SNO; I.O.P. Physics World: Number 1 Highlight of the year; Discover Magazine: Top 4 Science News of the year; Nature: Highlight of the year).

**1998 – 2001, CERN Geneva, Svizzera**

Responsabile dello sviluppo di vari beam monitors basati sui fenomeni della radiazione di transizione, della luminescenza e della forza di carica spaziale nel contesto dell'acceleratore LHC.

Partecipazione allo sviluppo del RFQ deceleratore per la facility AD.

**1995 – 1998, LAL Orsay, Francia**

Partecipazione allo sviluppo del preiniettore della Tesla Test Facility, in particolare ha lavorato sullo sviluppo delle diagnostiche del fascio. Durante questo periodo il gruppo del LAL ha anche sviluppato la teoria e le misure sperimentali per determinare la risoluzione degli schermi OTR ad alta energia.

**1991 – 1995 ELETTRA – Sincrotrone, Trieste, Italia**

Partecipazione al commissioning del Linac e agli studi sui sistemi SLED.  
Studi sull'interazione fascio cavità.

## Programmi Europei

### **2004 – 2007 CARE.**

Coordinatore per l'istituto IN2P3/CNRS. Questo ha implicato il coordinamento dei differenti istituti dell'IN2P3 per un programma di circa 2 M€.

Technical coordinator per i Task che riguardano l'attività di R&D sui nuovi couplers e il deposito di Nitruro di Titanio sulle finestre ceramiche del programma JRA1 SRF (~0.5 M€).

### **2007 – 2011 Eucard.**

Coordinatore per l'istituto IN2P3/CNRS. Questo ha implicato il coordinamento dei differenti istituti dell'IN2P3 per un programma di circa 1.8 M€.

Co-coordinator del WP AccNet (con Frank Zimmermann).

Technical coordinator della task 10.8, riguardante le tecniche di pulizia dei couplers di potenza prima dell'integrazione in cavità.

### **2007 – 2010 ILCHigrate**

Coordinatore per l'istituto IN2P3/CNRS per la partecipazione al programma ILCHigrate.

## Gestione Finanziaria

ELI NP GBS: Responsabile del budget INFN EGS (~30 M€).

Progetto ThomX: Responsabile per il budget (~12 M€).

Programmi EU: Responsabile per il budget di differenti programmi tecnici (~2 M€).

LAL Couplers activity: Responsabile per il budget (~4 M€).

Contributo eccezionale della Francia al CERN: Responsabile per il budget (~2.4 M€).

## Esperienze Manageriali

### **Gestione del personale**

#### **2008 – 2014, LAL Orsay, Francia**

Responsabile del dipartimento acceleratori del LAL. Questo ruolo prevedeva il coordinamento dell'attività di oltre 60 FTE tra ingegneri, ricercatori, professori universitari e tecnici.

#### **2006 – 2008, LAL Orsay, Francia**

Deputy leader del gruppo acceleratori.

### **Coordinamento di progetto**

#### **2015 – presente, Progetto ELI-NP-GBS, LNF INFN Frascati, Italia**

##### **Project e Machine Leader**

La realizzazione della sorgente gamma (GBS) è stata affidata al consorzio internazionale EUROGAMMAS composto da tre importanti istituzioni scientifiche (INFN e Università La Sapienza - Rome "Sapienza", Italia, CNRS, Francia) e quattro industrie (ACP S.A.S. e Alsylom S.A.S., Francia, Comeb S.r.l., Italia e ScandiNova Systems AB, Svezia).

#### **2008 – 2014, Project ThomX, LAL Orsay, Francia**

##### **Project Coordinator**

Questa importante infrastruttura è integrata nel polo IGLEX dell'Università di Parigi Sud ed è realizzata da una collaborazione tra sette importanti laboratori francesi (LAL CNRS UPS Orsay, SOLEIL Saint Aubin, ESRF Grenoble, Institut Neel Grenoble, INSERM Grenoble, CELIA Bordeaux, LAMS UPMC Paris) e da un partner industriale (THALES).

#### **2012 – 2013, Project SuperB design, LNF INFN Frascati, Italia**

##### **Machine Leader**

Questo progetto era costituito da una collaborazione internazionale tra vari importanti istituti scientifici e laboratori: INFN, Italia, SLAC Stanford, USA, BINP Novosibirsk, Russia, Cockcroft Institute, UK e CNRS, Francia.

### **2001 – 2004, Project ATHENA CERN (INFN Genua) Geneva, Switzerland**

#### **Deputy Scientific Coordinator, Run Coordinator**

La collaborazione ATHENA era composta da undici importanti istituzioni scientifiche: Aarhus University, Danimarca, Università di Brescia, Università di Genova, Università di Pavia e INFN, Italia, CERN e Università di Zurigo, Svizzera, Università di Riken e Tokyo, Giappone, Università federale di Rio de Janeiro, Brasile, Università di Swansea, Galles.

## **Comitati e gruppi di lavoro**

### **Attuali**

- Coordinatore del Comitato Nazionale per il Project Management dell'INFN
- LINAC International Conference, Membro dell' International Organization Committee

### **Precedenti (i più significativi)**

- Chair del MAC (Machine Advisory Committee) dell'INFN.
- Membro invitato del consiglio scientifico dei LNF INFN
- Coordinatore del gruppo di lavoro sul project management dell'INFN responsabile per la redazione e integrazione del PM framework a del piano qualità dell'istituto.
- Co fondatore e membro dello Scientific Advisory Board della serie di workshops POSIPOL sulla tematica dei positroni polarizzati
- LAL Orsay Scientific Committee - membro
- LPSC Grenoble Scientific Committee- membro
- IPAC international conference Scientific Board - membro
- IAC Jefferson Lab positron conference Scientific Board -membro

## **Premi - Riconoscimenti**

**2013** “Targa dell'Eccellenza” (Excellence Award), Premiazioni del Lavoro e Progresso economico, Camera di Commercio Industria Artigianato Agricoltura di Udine.

**2011** Cristallo del CNRS Crystal, Francia, per i contributi eccezionali nel campo della fisica degli acceleratori.

## **Pubblicazioni**

INSPIRE HEP database record: <http://inspirehep.net/search?ln=it&p=find+a+variola%2C+a>

## **Insegnamento**

- |                      |                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>2020</b>          | Corso “Sorgenti di particelle” presso il dottorato in fisica degli acceleratori dell'Università la Sapienza, Roma        |
| <b>2016 – today</b>  | Membro del comitato scientifico della scuola di dottorato in fisica degli acceleratori dell'Università la Sapienza, Roma |
| <b>2015 – 2018</b>   | Corso, “Fisica Moderna”, al dipartimento SBAI dell'Università la Sapienza, Roma.                                         |
| <b>2016</b>          | Co-Organizzatore della scuola internazionale sulle interazioni laser fascio ELIS (Brasile).                              |
| <b>2008 – 2015</b>   | Professore a contratto, corso “Fisica degli Acceleratori” nel master M2 NPAC dell'Università di Parigi Sud.              |
| <b>2008&amp;2013</b> | Corso ‘Fisica degli Acceleratori’ alle scuole Franco Ukraine TES HEP                                                     |
| <b>2013</b>          | Membro del consiglio della scuola di dottorato PHENIICS (Università Parigi XI)                                           |
| <b>2012</b>          | Direttore di tesi di dottorato di Iryina Chaikovska                                                                      |

**2004** Università di Bari, scuola di dottorato del dipartimento di fisica. Lezioni dal titolo «Brillerà l'antimateria?».

Roma, 11 febbraio, 2020