

Curriculum vitae Manuela Boscolo

INFN-LNF, Accelerator Division

Education

1999 Ph.D, department of Engineering, Sapienza University (Rome, Italy) in Applied Electromagnetism and Electro-Physical Science, thesis on beam-beam interaction at DAΦNE

1996 Master in Physics (110/110 cum laude) at University of Milan, Italy, thesis on accelerator physics

Employment:

2020 - today Project Associate member at CERN to lead the FCC-ee MDI group

2019 - today Senior researcher at INFN-LNF

1999 - 2019 Researcher at INFN-LNF

1996 - 1999 Ph.D student at the accelerator division of INFN-LNF

Accelerators and future projects:

2014 - today FCC

2015 - 2020 LEMMA

2007 - 2012 SuperB

1996 - today DAFNE

2001 - 2011 SPARC

Main responsibilities in FCC and FCC related projects:

2014 - today member of the FCC ICB

2014 - today Coordinator of the FCC-ee Machine Detector Interface WG

2020 - today FCCIS-MDI Task leader in WG2, Collider design

2019 - today Member of the FCC PED Coordination group

2020 - today FCCIS-INFN Team leader

2020 - today Member of the FCCIS collaboration board

2015 - 2019 EuroCirCol-INFN Team leader

2015 - 2019 Member of the EuroCirCol Collaboration Board

2015 - 2019 EuroCirCol-LNF team leader

2015 - 2019 EuroCirCol Task leader in WP3 on Experimental Insertion Region

2017 - 2020 RD-FA-LNF team leader, activity on R&D on Future Accelerators funded by CSN1 of INFN

Main responsibilities in other projects:

1999 - today DAFNE run coordinator during commissioning, and operation

1997 - today Member of the DAFNE commissioning and operation team

2006 - 2012 Convener of the MDI WG for the SuperB project

2005 - 2007 Task leader Eurofel project on “Beam dynamics simulations of optimized photoinjectors”

2003 - 2011 INFN responsible for electron beam simulations for the SPARC linac

2001 - 2020 Responsible of the DAFNE MDI

2001 - 2011 Member of the SPARC design and commissioning team

Research activity in FCC. I joined FCC since the beginning of the project in 2013 starting to work on the synchrotron radiation (SR) and beam backgrounds. In 2014 I had the task of coordinating the INFN activities for EuroCirCol (FCC-hh) and my scientific work for FCC-hh was on the SR evaluation for the IR. I also continued my research activity in the FCC-ee IR beam and SR backgrounds. I served as coordinator of the MDI group, leading to the MDI conceptual design as described the CDR. I continue my role as coordinator of the MDI group with this new phase for the project, with the goal of developing a feasible design.

Research activity prior to FCC. In DAFNE I worked on commissioning, beam dynamics and optics measurements, operation, collider performance optimization. I was in charge of the Touschek backgrounds and lifetime simulation; I designed additional scrapers and shielding that allowed successful data taking for all the experiments (KLOE, Finuda, DEAR, SIDDHARTA). I was convener of the MDI group for SuperB and evaluated the main beam background sources and designed the collimation scheme.

I was responsible of the beam dynamics simulations (using PARMELA) of the SPARC high-brightness photoinjector built at LNF in 2001 for SASE-FEL experiments; I found the nominal parameters and benchmarked simulations to the experimental data. Expert in advanced concepts of beam manipulation, I proposed single spike superradiant operation, and the comb technique to produce THz radiation and pump-probe experiments for plasma acceleration R&D.

I was one of the proponents of the muon collider new concept based on a positron driven source option (LEMMA), coordinating the launch phase of the LEMMA accelerator studies.

Reviewer of International projects. I have served and serve as member of Machine Advisory Committee of relevant International future accelerator projects.

Teaching and advanced training. I gave lectures on particle accelerators at INFN Masterclasses for secondary school students (2012-2014), at INFN advanced schools for high school physics teachers (2003) and INFN operators (2007). I gave lectures for Ph.D. students in Accelerator Physics at Sapienza University (Rome) on Muon Accelerators (2018). I gave a course on Particle Accelerators for Ph.D students in Physics at University of Rome Tor Vergata (2008-2011). Responsible of the LNF Seminars Committee (2012-2015).

Outreach (selected events) Guide for visitors, all level school visits at LNF since 1997. Author of the Podcast episode “Gli Acceleratori di particelle”, Fisicast channel (2021).. Co-organizer of the event at the Auditorium Parco della Musica in Rome “Macchine per scoprire dal bosone di Higgs alla Nuova Fisica”, high patronage of the President of the Republic of Italy, speakers: F. Gianotti, F. Ferroni, M. Mangano, G. Tonelli, A. Zoccoli, S. Bertolucci, M. Florio (during the FCCWEEK 2016).

Highlights:

- About 200 papers in leading journals and international conference proceedings.
- More than 100 invited talks, including plenary talks in accelerator physics conferences and workshops
- Chair and convener in various international accelerator conferences and workshops.
- Member of scientific and advisory program committees of the main international workshops and conferences related to acceleratory physics.

Marina Cobal

Full Professor of Physics
DPIA, University of Udine
INFN Associate

SHORT CV

Marina Cobal is currently Full Professor of Physics at the University of Udine, IT, where she has been employed since 2001, and INFN Associate. She previously held research positions at CERN, Geneva, CH, as Fellow and Staff (1995-2001) and also at Fermilab, Chicago, USA, (1994). She is an experimental physicist whose research activity has been carried out mainly in the field of particle physics, within the framework of scientific projects promoted and financed by the INFN. Marina Cobal is particularly interested in fundamental research in sub-nuclear physics conducted with the use of accelerators and has been part of the CDF and - later on - of the ATLAS and FCC Collaborations. She is author of more than **1250 papers, with an h-index of 126** (Scopus, June 2022).

Within the **CDF experiment**, she was involved in an innovative analysis (only based on the event structure) for the search of the last quark predicted by the Standard Model, the Top quark. Her PhD thesis presented the first evidence of this elementary particle production at the Tevatron (result awarded by the Italian Society of Physics). Later on, she also became active in the hardware activity for the experiment upgrade, developing a test system to monitor the radiation damage for the fibers of the forward calorimeter.

In the **ATLAS Collaboration**, where she has spent by now more than 25 years of activity, she had the chance to contribute in many different areas (physics, detection systems, data acquisition) covering also several positions of responsibility, coordinating physics group but also being part and chairing numerous editorial boards and committees. She is considered a top quark physics expert, and as such has been invited to give numerous talks and seminar in many conferences, universities and institutions. During all these years she has been also a reviewer for European and non-European projects. In Italy since 2001, she has been from 2015 to 2019 the **Italian National Coordinator** of the ATLAS Collaboration, bringing to successful completion many difficult negotiations, building a solid base for the fulfillment of the ATLAS Phase2 project, and creating a collaborative atmosphere within the team, composed by about 250 researchers from 14 institutes and universities.

Since few years, she joined the **FCC Collaboration**, committed to realise the future circular accelerator in Europe, and starting from January 2021, is an **ECFA Plenary member**. She is actively working, with a group of students and collaborators on analysis studies at the FCC-ee and FCC-hh colliders. Finally, Marina Cobal is very active in many outreach activities, also focused on the future of particle physics, with a strong and continuous involvement. This includes the organization of many events, seminars and round tables, which often appear on newspapers, in radio broadcasts and television programs.

EDUCATION AND POSITIONS

Full Professor <i>University of Udine, IT</i>	2018-present
Visiting Professor <i>ICTP Trieste, IT</i>	2015-present
Associate Professor <i>University of Udine, IT</i>	2010-2018
Researcher <i>University of Udine, IT</i>	2001-2010
Staff (EP Division) <i>CERN, CH</i>	1998-2001
PostDoc <i>University of Udine, IT</i> ,	1997-1998
Fellow (PPE Division) <i>CERN, CH</i>	1995-1997

Guest Scientist | *Fermilab, USA*

1994-1995

PhD in Physics (CDF experiment) | *University of Pisa, IT*

1994

MSc in Physics (VIRGO experiment) | *University of Pisa, IT*

1990

RESEARCH ACTIVITY

FCC Collaboration

2018 - Present

Analysis studies for the search of New Physics beyond the Standard Model: Top physics study and dark matter searches at the future circular colliders, also presented at the last 3rd FCC-France / Higgs ElectroWeak Factory workshop. Editing contribution to the FCC Conceptual Design Reports, and authorship of a Phys. Rev. D paper.

Main publications: What Next: *White Paper of CERN - Proposal for a long term strategy for accelerator based experiments*, Frascati Phys. Ser. 60 (2015) pp. 1-291, ISBN 978-88-864-0999-5 and DOI: 10.1103/PhysRevD.102.035027, 10.1140/epjst/e2019-900087-0, 10.1140/epjst/e2019-900045-4, 10.1140/epjc/s10052-019-6904-3 .

ATLAS Collaboration

1995 - Present

Contributions in the field of physics data analysis: leadership of several analyses, editor of internal notes and papers, coordinator of the international group of top quark cross section studies. Involvement in many Standard Model and non-Standard Model analyses (Top, Supersymmetry and Higgs). Chairing and membership of several editorial boards for ATLAS publications.

Main publications DOI:10.1103/PhysRevD.97.072016, 10.1140/epjc/s10052-012-2039-5, 10.1140/epjc/s10052-011-1577-6, 10.1016/j.physletb.2011.12.055

Involvement in the development and operation of the ATLAS Silicon Pixel tracker and its upgrade. Coordination of the silicon sensors tests in Udine and of the beam test of detector prototypes. Contribution to the online monitoring system used during these tests.

Main publications DOI: 10.1016/S0168-9002(02)00557-0, 10.1088/1748-0221/3/07/P07007, 10.1016/j.nima.2012.03.048

Authorship of several ATLAS pre-data studies with Monte Carlo simulation centered on the identification and study of the quark top in the experiment; coordination of an international working group on top physics for several years.

Main publications: *ATLAS detector and Physics performance Technical Design Report*, ISBN: 9290831413 (1999) DOI:10.1103/PhysRevD.71.073003, 10.1140/epjc/s10052-011-1577-6

Contributions to the construction, test and data analysis of the hadron calorimeter and its prototypes (responsibility of the test beam data taking program of the data acquisition system and of the online software). Responsibility of the tests and data analysis of the first prototype of combined ATLAS calorimetry (electromagnetic+hadronic prototypes). Editor or co-editor of several papers on these subjects (1995-2001).

Main publications: *RD34 final Status Report*, CERN-DRDC-94-12 (1994), *ATLAS Tile Calorimeter Technical Design Report*, CERN-LHCC-96-042, ISBN: 9290830913 (1996), DOI: 10.17182/hepdata.47726, 10.1016/S0168-9002(97)00331-8, 10.1016/S0168-9002(97)00075-2, 10.1016/S0168-9002(99)01020-7, 10.1016/S0168-9002(00)00153-4, 10.1007/s100520100645

CDF Collaboration

1990 - 1994

Contribution to the research and discovery of the top quark, the last fundamental particle predicted by the Standard Model, whose first signal was presented in the PhD thesis which was then rewarded with

the Scientific Award received in 1994 by the Italian Physics Society.
Main publications DOI: 10.1103/PhysRevLett.73.225, 10.1103/PhysRevLett.73.225,
10.1103/PhysRevD.52.R2605, 10.1103/PhysRevLett.74.2626, 10.1103/PhysRevD.51.4623,
10.1103/PhysRevD.52.R2605

R&D activity for the upgrade of the CDF Forward Calorimeter (1991-1993)
Main publication DOI:10.1016/0168-9002(93)90389-Y

LEADERSHIP AND SCIENTIFIC RESPONSIBILITIES

Member of the FCC Steering Committee	2021 - present
Member of the ECFA Plenary	2021 - present
Vice-President of the "Fondazione Internazionale Trieste"	2021 - present
INFN National Coordinator of the ATLAS experiment (>250 researchers)	2015 - 2019
Member of the ATLAS Physics Office Committee	2012 - Present
Coordinator of the ATLAS Udine/ICTP group (12-14 researchers)	2006 - 2021
Coordinator of the ATLAS top cross section working group	2008 - 2010
INFN National Physics Coordinator of the ATLAS experiment	2009 - 2010
Coordinator of the ATLAS simulation strategy group	2007 - 2009
Member and Chair of the ATLAS Authorship Committee	2006 - 2009
Member of the ATLAS Publication Committee	2006 - 2008
Member and Chair of the ATLAS Speakers Committee	2003 - 2009
Coordinator of test beam activities for the ATLAS first full calo and for the Pixel detector prototypes	2003 - 2009
Physics coordinator at the test beam of the ATLAS hadron calorimeter	2003 - 2005
Coordinator of the ATLAS top quark physics group	1999 - 2005

GRANTS

INFN budgetary coordination of the ATLAS projects, 2015 - 2019

ATLAS Phase2 Italy (annual budget \simeq 5 MEuro).

ATLAS Italy (annual budget \simeq 4200 kEuro).

ATLAS Udine (annual budget \simeq 180 kEuro).

TALKS

About 30 invited talks on CDF, ATLAS LHC, and future collider physics results at national and international conferences (between 1995 and 2021), the last one at the 3rd FCC-France / Higgs ElectroWeak Factory workshop (prospects on Z-boson couplings to heavy fermions at the FCC-ee). Numerous seminars in various national and international University and Institutes.

WORKSHOP/CONFERENCES/SCHOOLS SCIENTIFIC ORGANIZATION

Cosmology 2022 Workshop, Duino, Trieste, IT, 2022
11 editions of the ATLAS Italia Workshop, several sites, IT, 2007-2019
Conference on "Interpreting the LHC Run-2 data", ICTP, Trieste, IT, 2018
Cosmology 2018 Workshop, Dubrovnik, HR, 2018
VII Workshop Italiano sulla fisica pp a LHC, Pisa, IT, 2016
INFN Workshop on Future Detectors for HL-LHC, Trento, IT, 2014
XII Int. Symposium on Frontiers for Fundamental Physics and Computation, Udine, IT, 2011
Joint ICTP-INFN-SISSA Conference: "Topical Issues in LHC Physics, ICTP, Trieste, IT, 2011
IX Int. Symposium on Frontiers for Fundamental Physics and Computation, Udine, IT, 2008
Workshop sui Monte Carlo, la Fisica e le Simulazioni a LHC (edition IV), Frascati, IT, 2008
Workshop Top2006, Coimbra, PT, 2006

AWARDS

FFABR ANVUR/MIUR award grant, Italian Ministry of Education and Culture, 3kEuro
In recognition of the research activity of the previous 3 years.
Paul Harris Fellow, Rotary Club of Mestre, Venice IT, 2017
For the outreach activity in the region Friuli Venezia Giulia.
Scientific Operosity, Società Italiana di Fisica, 1994
For the results presented in the PhD thesis.

TEACHING

Courses during the current academic year:

Exp. Nuclear and Subnuclear Physics (48h), MSc in Physics, University of Trieste
Fundamental Particles and Interactions (48h), MSc in Mathematics, University of Udine
Physics I (48h), BSc in Electronic Engineering, University of Udine

SUPERVISION OF STUDENTS

From 2001 to present, supervision of: 7 PhD, 14 BSc and 15 MSc students (four theses on FCC).

OUTREACH

Several **events, seminars and round tables** organized every year for schools and general public on various topics of high energy physics (including future accelerators). Organization of **special days in the occasion of the Higgs discovery**. Responsible of the organization of the **IPPOG Masterclasses** in HEP in Udine for 10 years. Organizer of a **yearly visit at CERN** for Physics, Computing Science and Engineering students of the Udine and Trieste Universities since 2007.

BOOKS

Esercizi di fisica, D. Cauz, M. Cobal e C. del Papa, ISB 88-8420-238-8, Editrice Forum, 2004.
Lezioni di fisica, D. Cauz, M. Cobal e C. del Papa, ISB 88-8420-238-8, Editrice Forum, 2003.

LANGUAGES

Italian (native), English (fluent), German (conversational level), French (conversational level)

MAURO MIGLIORATI

Curriculum Vitae

Part I – General Information

Full Name	Mauro Migliorati
Spoken Languages	Italian, English

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
PhD	November 1996	University of Rome “LA SAPIENZA”	Applied Electromagnetism and Electro-physical Science, VIII cycle. Thesis on beam dynamics collective effects in a circular accelerator
Licensure	1993	University of Rome “LA SAPIENZA”	Licensure for the profession of engineer
University graduation	1992	University of Rome “LA SAPIENZA”	Degree in Nuclear Engineering with a dissertation on the study and simulation of the longitudinal beam dynamics in DAΦNE - 110/110 e lode

Part III – Appointments

III A – Academic Appointments

Start	End	Institution	Position
October 2015			Associate Professor at La Sapienza, Department “Scienze di Base e Applicate per l’Ingegneria” (SBAI)
September 1997	September 2015	University of Rome “LA SAPIENZA”	Researcher at University of Rome La Sapienza, Department “Scienze di Base e Applicate per l’Ingegneria” (SBAI)
February 2014		JUAS (Joint University Accelerator School)	Member of the JUAS Advisory Board. JUAS is a school of accelerator physics, technology and applications organized by ESI (European Scientific Institute) and supported by 15 partners European Universities under the patronage of CERN
2012		University of Rome “LA SAPIENZA”	Member of the Academic Board of the PhD in Accelerator Physics of University of Rome La Sapienza
December 2006	November 2009	University of Rome “LA SAPIENZA”, Energetics Department (now SBAI)	Member of the Department Board (Giunta di Dipartimento)
January	January	University of Rome “LA SAPIENZA”	Member of the Department Board (Giunta di Dipartimento)

1999	2001	SAPIENZA”, Energetics Department (now SBAI)	Dipartimento)
		Technische Universität Wien (AT), Universität Rostock (DE), Université Grenoble Alpes (FR), Université Paris-Sud (FR), Université Blaise Pascal Clermont-Ferrand (FR), Ecole Polytechnique Federale de Lausanne (CH), Université Joseph Fourier Grenoble (FR)	Invited member of a PhD commission for the final defense in theses on particle accelerators in several European Universities
		University of Rome “LA SAPIENZA”	Supervisor of PhD theses in Accelerator Physics, master theses in Aerospace and Electronic Engineering, assistant supervisor of PhD thesis in Applied Electromagnetism
			Member of several committees for research grants in the Department of Energetics and SBAI

III B – Research Appointments

Coordination of national and international researcher teams

Start	End	Institution	Position
May 2018	April 2020	CERN	Technical coordinator of a collaboration agreement for the studies of impedance and impedance reduction measures for crystal collimators goniometers in the framework of the High Luminosity upgrade for the LHC at CERN.
January 2018	December 2021	H2020 project Accelerator Research and Innovation for European Science and Society (ARIES)	Coordinator of the task 6.4 of the H2020 project Accelerator Research and Innovation for European Science and Society (ARIES), concerning the study of improved beam stabilization, with the aim of reviewing the existing strategies and methods for beam-impedance assessments and impedance models for future accelerators.
January 2015		CERN – Geneva - CH	Coordinator and responsible of the collective effects group for the Future Circular e+e- Collider (FCC-ee).
November December 2014		CERN – Geneva - CH	Coordinator of a Collaboration Agreement between CERN – Beams Department and SBAI Department aimed at the upgrade of the LHC and its Injectors

Integration in the Particle Accelerator international community

Start	End	Institution	Position
June 2021	June 2021	Future Circular Collider Collaboration Week 2021	Invited talk at the Future Circular Collider Collaboration Week 2021 on “Introduction and overview on collective effects, including Full Energy Booster” (online)
November 2020	November 2020	4th FCC Physics and Experiments Workshop	Invited talk at the 4th annual FCC Physics and Experiments Workshop and the Kickoff meeting of the EU Horizon 2020 project “Future Circular Collider Innovation Study” (FCCIS) on “Single-beam collective effects” (online)
March 2020	March 2020	8th Low Emittance Rings workshop 2020	Invited talk at the 8th Low Emittance Rings workshop 2020 (March 2020, postponed due to Covid to October 2020) in Frascati (IT) on “Collective effects in FCC-ee”
September 2019	September 2019	ICFA mini-Workshop on Mitigation of Coherent Beam Instabilities in Particle Accelerators	Invited talk (workshop opening talk) at the ICFA mini-Workshop on Mitigation of Coherent Beam Instabilities in Particle Accelerators held in September 2019 in Zermatt (CH) on “Review of impedance-induced instabilities and possible mitigations”
September 2019	September 2019	ICFA mini-Workshop on Mitigation of Coherent Beam Instabilities in Particle Accelerators	Member of the International Advisory Committee of the ICFA mini-Workshop on Mitigation of Coherent Beam Instabilities in Particle Accelerators held in September 2019 in Zermatt (CH).
June 2019	June 2019	Fifth International Future Circular Collider (FCC) Conference	Invited talk at the Fifth International Future Circular Collider (FCC) Conference held in June 2019 in Brussels, (BE) on “Collective effects in the booster synchrotron”
June 2019	June 2019	Fifth International Future Circular Collider (FCC) Conference	Invited talk at the Fifth International Future Circular Collider (FCC) Conference held in June 2019 in Brussels, (BE) on “Collective effects with ttbar configuration”
December 2018	December 2018	Accelerator Research and Innovation for European Science and Society (ARIES)	Member of the International Advisory Committee of the workshop on Accelerator Performance and Concepts held in December 2018 in Frankfurt am Main (DE).
April 2018	April 2018	Future Circular Collider (FCC)	Chairman of the second FCC-hh accelerator review session on collective effects during the FCC week 2018 held in Amsterdam (NL) in April 2018.
November 2017	June 2018	electron-cloud workshop, ELOUD'18	Member of the International Advisory Committee of the electron-cloud workshop, ELOUD'18, held in Elba (Italy) in June 2018.
September 2017	September 2017	ICFA mini-Workshop on Impedances and	Invited talk at the Workshop on Impedances and Beam Instabilities in Particle Accelerators

		Beam Instabilities in Particle Accelerators	held in Benevento (Italy) in September 2017 on “Impedance and instabilities in lepton machines”
May 2017	May 2017	Future Circular Collider (FCC)	Chairman of the session on FCC-hh machine design - Review: Beam Performance and Specifications during the FCC week 2017 held in Berlin (DE) in May-June 2017.
October 2016	September 2017	ICFA mini-Workshop on Impedances and Beam Instabilities in Particle Accelerators	Member of the International Advisory Committee of the Workshop on Impedances and Beam Instabilities in Particle Accelerators held in Benevento (Italy) in September 2017.
February 2016	May 2017	International Conference on Particle Accelerators	Member of the Scientific Advisory Board of the International Conference on Particle Accelerators held in Copenhagen (Denmark) 14 - 19 May 2017. IPAC is the most important world conference which is held annually in the field of particle accelerators hosting more than 1000 scientists from all over the world.
October 2016	October 2016	ICFA Advanced Beam Dynamics Workshop on High Luminosity Circular e+e- Colliders	Invited talk at the 58 th ICFA Advanced Beam Dynamics Workshop on High Luminosity Circular e+e- Colliders (Daresbury, UK, 24-27/10/2016) on “Collective effects issues for FCC-ee”
April 2016	April 2016	Future Circular Collider (FCC)	Invited talk at the FCC study week 2016 (Rome 11-15/04/2016) on “Single-beam collective effects in FCC-ee”
April 2016	April 2016	Future Circular Collider (FCC)	Member of the Organizing committee of the Future Circular Collider (FCC) study week 2016 (Rome 11-15/04/2016).
September 2015	September 2015	European Network for Novel Accelerators (EuroNNAc2)	Member of the International Advisory Committee for the 2nd European Advanced Accelerator Concepts Workshop, held in Elba Island (Italy) 13-19/09/2015.
February 2013	June 2014	International Conference on Particle Accelerators	Member of the Scientific Advisory Board of the International Conference on Particle Accelerators held in Dresden (Germany) 15 - 20 June 2014. IPAC is the most important world conference which is held annually in the field of particle accelerators hosting more than 1000 scientists from all over the world.
March 2010	March 2010	INFN - LNF	Organizer and co-chairman of the Workshop on Microbunching Instability
			Guest editor of a special issue of the Journal “Coatings” (ISSN 2079-6412; CODEN: COATED) on “Coating Materials and Surface Treatments for Applications in Particle Accelerators” (https://www.mdpi.com/journal/coatings/speci

			al issues/part accel).
			Referee of: Physical Review Letters, Physical Review Special Topics - Accelerators and Beams, European Physical Letters, Scientific Reports, Journal of Instrumentation

Research activity in qualified international institutions

Start	End	Institution	Position
August 2021	July 2022	CERN – Geneva – CH	Cooperation Associate
August 2020	July 2021	CERN – Geneva – CH	Cooperation Associate
August 2019	July 2020	CERN – Geneva – CH	Cooperation Associate
February 2019	July 2019	CERN – Geneva – CH	Project Associate working on the upgrade of the LHC injectors
February 2018	July 2018	CERN – Geneva – CH	Project Associate working on the upgrade of the LHC injectors
February 2017	July 2017	CERN – Geneva – CH	Project Associate working on the upgrade of the LHC injectors
February 2016	July 2016	CERN – Geneva – CH	Project Associate working on the upgrade of the LHC injectors
February 2014	July 2014	CERN – Geneva – CH	Scientific Associate working on the upgrade of the LHC injectors
February 2013	July 2013	CERN – Geneva – CH	Scientific Associate working on the upgrade of the LHC injectors
February 2012	July 2012	CERN – Geneva – CH	Scientific Associate working on the upgrade of the LHC injectors
August 2014	July 2015	CERN – Geneva – CH	Visiting Scientist
February 2000	February 2000	CERN – Geneva - CH	Unpaid Scientific Associate
October 2000	October 2000	CERN – Geneva – CH	Scientific Collaboration
February	March	Advanced Light Source Centre of	Invited Scientific Collaboration

1997	1997	University of California, Lawrence Berkeley National Laboratory - USA	
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Research activity in qualified national institutions

Start	End	Institution	Position
September 1992	August 1997	Laboratori Nazionali di Frascati dell'Istituto Nazionale di Fisica Nucleare	Research activity in the DAΦNE project regarding study and simulations of particle beams in the group of the Accelerator Division.
2012		INFN - Roma1	Research appointment renewed yearly on particle accelerators activities
2008	2011	INFN - LNF	Research appointment renewed yearly on particle accelerators activities
1998	2007	INFN - LNF	Association appointment renewed yearly on particle accelerators activities

Part IV – Teaching experience

PhD and International teaching experience

Year	Institution	Lecture/Course
2015-2019	PhD in Accelerator Physics of University of Rome La Sapienza	Longitudinal and Transverse Beam Dynamics in Circular Accelerators
2013-2015	PhD in Accelerator Physics of University of Rome La Sapienza	Wakefields and Instabilities
Since January 2010	JUAS (Joint University Accelerator School)	Space charge and instabilities

National teaching commitments

Year	Institution	Lecture/Course
Since 1998-99	AA University of Rome La Sapienza	Courses of General Physics and Physics Laboratories for the first two years of the Engineering Faculty (Aerospace, Electronics, Telecommunications, ...)
Since 2017-18	AA University of Rome La Sapienza	Course of Medical Physics for Medicine and Surgery (B channel)

Part V – Research Activities

Keywords	Brief Description
<ul style="list-style-type: none"> • Beam dynamics in LINACS • Proton beam 	<ul style="list-style-type: none"> • Participation to SPARC and SPARX projects of INFN-LNF, co-financed by the Ministry of Education and involving the collaboration of several Italian research institutions including ENEA, and CNR.

<p>transport of post-accelerated particles</p> <ul style="list-style-type: none"> • Applications to: diagnostics, medicine, material science. 	<ul style="list-style-type: none"> • Participation to the commissioning of SPARC photoinjector. • Beam dynamics studies in high brightness photo-injectors. • Participation to the European Extreme Light Infrastructure project for developing an innovative machine design for high brilliance Compton-X and Gamma-photon beams: Beam dynamics and collective effects in LINACS. • Activity on laser generated protons: it is a novel technique for the generation and acceleration of proton beams, which arises when an intense laser hits a solid target. The advantage of this new type of source, for which much work still needs to be done, is that one can reach very high energies in short distances. Laser generated proton beams could be of great importance for the development of accelerators for medical applications at relatively low cost. I've worked on the study of the characteristics of the beams produced by laser-plasma interaction, their transport and post-acceleration. • Design of LINACS for medical applications. A collaboration with Sordina IORT Technologies (SIT), a world leader in manufacturing dedicated electron linear accelerators for IOeRT (Intra-Operative electron Radiation Therapy) is in progress and a patent for an S-band LINAC for FLASH therapy has been requested by the collaboration. A grant has been received from La Sapienza for the design of a compact C-band Linac for FLASH therapy.
<ul style="list-style-type: none"> • Electron beam transport of laser-driven plasma accelerators 	<ul style="list-style-type: none"> • Activity on laser generated electrons: when an intense laser hits a gas jet, under some conditions it produces electrons with characteristics almost comparable with those which are obtained today in particle accelerators. The accelerating field of conventional accelerators is limited by breakdown issues, which leads to maximum accelerating gradients currently slightly higher than 100 MeV/m (at a reasonable breakdown rate and using standing wave structures). Laser-driven plasma accelerators can generate accelerating electric fields up to hundreds of GV/m, producing high energy electron beams in distances of a few centimeters. In this context, I've been scientific responsible of an activity within the CRISP project (FP7 Infrastructures): electron beam transport and its characterization.
<ul style="list-style-type: none"> • Beam dynamics and collective effects in circular accelerators • Accelerators: DAΦNE, CERN PS, LHC, Future Circular Collider 	<ul style="list-style-type: none"> • Collaboration with two main institution: the Accelerator Division of Frascati National Laboratories (LNF) of the National Institute of Nuclear Physics (INFN), and the group of Accelerator Beam Physics (ABP) of the Beam Department at CERN. • Study of the beam dynamics under the influence of coherent instabilities produced by electromagnetic fields (wakefields) arising from the interaction of a charged beam with the surrounding environment. The high intensity beams can produce instabilities which can compromise the performance of a machine. • Development of several simulation codes taking into account self-induced wakefields, that have been used in different machines: DAΦNE, CERN Proton Synchrotron, Future Circular Collider.
<ul style="list-style-type: none"> • Machine measurements 	<ul style="list-style-type: none"> • Participation to a series of measurements on the longitudinal beam dynamics at the Advanced Light Source at Lawrence Berkeley National Laboratory (USA) • Participation to the commissioning of the DAΦNE accelerator, at the Frascati National Laboratories of the National Institute of Nuclear Physics • Measurements of single and multi-bunch instabilities produced by electromagnetic wakefields.

	<ul style="list-style-type: none"> • Machine measurements at CERN related to collective effects and beam instabilities.
<ul style="list-style-type: none"> • Wake fields and impedance evaluation of accelerator devices 	<ul style="list-style-type: none"> • Studies, simulations and experimental measurements to determine the electromagnetic fields and the coupling impedances of devices and of whole accelerators. • Measurements for the characterization of electromagnetic devices found in the vacuum chamber of accelerators and for diagnostics, also using instrumentation of our RF and microwave laboratory in the SBAI Department. • Analytical evaluation of coupling impedance and wakefields of accelerators devices.

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