MAURO MIGLIORATI
Curriculum Vitae

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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	Member of the Department Board (Giunta di

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, ECLOUD'18	Member of the International Advisory Committee of the electron-cloud workshop, ECLOUD'18, held in Elba (Italy) in June 2018.
September 2017	September 2017	ICFA mini-Workshop on Impedances and Beam Instabilities in Particle Accelerators	Invited talk at the Workshop on Impedances and 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 hold 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 58th 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/special_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 1997	March 1997	Advanced Light Source Centre of University of California, Lawrence Berkeley National Laboratory - USA	Invited Scientific Collaboration

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 Instabilitites
Since January 2010	JUAS (Joint University Accelerator School)	Space charge and instabilities

National teaching commitments

Year	Institution	Lecture/Course
Since AA 1998-99	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 AA 2017-18	University of Rome La Sapienza	Course of Medical Physics for Medicine and Surgery (B channel)

Part V – Research Activities

Keywords	Brief Description
• Beam dynamics in LINACS • Proton beam transport of post-accelerated particles • Applications to:	• 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. • Participation to the commissioning of SPARC photoinjector. • Beam dynamics studies in high brightness photo-injectors. • Participation to the European Extreme Light Infrastructure project for

diagnostics, medicine, material science. [2, 10, 11, 12]	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.
• Electron beam transport of laser-driven plasma accelerators [8, 9]	• 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.
• Beam dynamics and collective effects in circular accelerators • Accelerators: DAΦNE, CERN PS, LHC, Future Circular Collider [5, 6, 13, 14, 15, 16]	• 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.
• Machine measurements [3, 7]	• 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. • Machine measurements at CERN related to collective effects and beam instabilities.
• Wake fields and	• Studies, simulations and experimental measurements to determine the

impedance evaluation of accelerator devices [1, 4]	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.

Number of publications: 220
Citations: 2158
H-index: 21
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