

CURRICULUM VITAE

Massimo Ferrario

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Nationality: Italian

Date of birth: August 5th 1960

Position: Senior Researcher (Dirigente di Ricerca) at INFN National Laboratories of Frascati (Roma) – Italy

H-index (Scopus): 29

Main activities:

Massimo Ferrario has got his degree in physics at the University of Milan in 1987 with a thesis on the FEL theory. He has been working at INFN-LNF since 1991 and he is currently Dirigente di Ricerca at INFN-LNF, coordinator of the SPARC_LAB facility and leader of the EuPRAXIA@SPARC_LAB design study. In the last 25 years he has been working in the field of high brightness photoinjectors, free electron lasers and advanced accelerator concepts including plasma accelerators. He has been collaborating in the design of the LCLS and TESLA X_FEL injectors in the years 1999-2004. During that period he has discovered a new effective RF injector working point able to produce high quality electron beams as the one required to drive short wavelength Free Electron Lasers. Such a working point, now known as “Ferrario’s working point”, has been adopted by LCLS and X-FEL collaborations and later by the Swiss_FEL and other FEL projects. It is also on the baseline design for the SPARC_LAB injector. Later, together with L. Serafini, he has developed a new compact scheme to produce ultra-short electron bunches, named “Velocity Bunching” (VB), able to produce ultra-short electron pulses (<100 fs) with low emittance. The first Single Spike FEL operational mode has been demonstrated at SPARC_LAB using such a high quality beam produced with the VB technique. Exploiting further this compression scheme (VB) he has also proposed a new method for the generation of a train of short electron pulses, named COMB scheme. The COMB scheme has been experimentally demonstrated at SPARC_LAB and resulted to be a very effective method to drive Particle Wake Field Acceleration experiments, Two colors FEL and Narrow band THz sources.

He has been chairman of the European Advanced Accelerator Workshop held in Italy in 2013, 2015 and 2017 with more than 300 international attendants. He is author of more than 300 publications and has got several invited talks at international conferences and workshops. He is a member of the CERN Accelerator School (CAS) and the United States Particle Accelerator School (USPAS) where he has given several lectures about the Physics of High Brightness Beams. He is also teaching Accelerator Physics at the University of Roma “La Sapienza” and he is member of the “Collegio Docenti” of the PhD program on Accelerator Physics at the same University.

Current National and International Project Responsibilities:

Head of the SPARC_LAB (Sources for Plasma Accelerators and Radiation Compton with Lasers And Beams) facility at INFN National Laboratories of Frascati, since 2012.

Chairman of the Coordination Board of the H2020 EU Design Study EuPRAXIA (European Plasma Research Accelerator with eXcellence In Applications), since 2016.

Coordinator of the INFN collaboration for the H2020 EU Design Study EuPRAXIA, since 2016.

Workpackage coordinator of the H2020 EU Design Study EuPRAXIA (WP9-“Alternative e-beam driven plasma structures”), since 2016.

Coordinator of the INFN collaboration for the H2020 EU Design Study XLS CompactLight, since 2018.

Workpackage coordinator of the H2020 EU Design Study XLS CompactLight (WP3-“Gun and Injector”), since 2018.

Principal Investigator of the Progetto Premiale PLASMAR (PLASma acceleration, beam Manipulation and Advanced Radiation sources) since 2018.

Previous National and International Project Responsibilities:

Principal Investigator of the Progetto Premiale SPARC_LAB (2013-2016).

Coordinator of the INFN collaboration for the EUROFEL FOE-MIUR Project (2012-2017)

Workpackage coordinator of the FP6 EU Design Study EUROFEL (WP1-“Photoguns and Injectors”), (2005-2008).

Principal Investigator INFN-CSN5 project COMB (Coherent plasma Oscillations excitation by Multiple electron Bunches), (2011-2016).

Teaching experience

Regular Academic lectures:

2001 – 2008 “General Physics 1” (Mechanics and Thermodynamics), 60 hours/years at the University of Roma “La Sapienza”, distaccamento di Rieti.

2009 – 2010 “General Physics 2” (Electromagnetism), 60 hours/years at the University of Roma “La Sapienza””, distaccamento di Rieti.

2007 – 2018 “Physics of High Brightness Electron Beams” 40 hours/years at the University of Roma “La Sapienza”.

International Accelerator Physics Schools:

2004 - “CW & High Brightness Electron Sources” one week course at the University of Wisconsin, Madison, USA for the **US Particle Accelerator School (USPAS)**.

2006 - “High Brightness, Ultra-Fast Electron Sources” one week course at the University of Boston, USA for the **US Particle Accelerator School (USPAS)**.

2003 – 2009 Lectures on “Space Charge Effects” and “Instabilities in Linacs” at the "Intermediate Accelerator Physics School", of the **CERN Accelerator School (CAS)**

2008 – 2010 Lectures on “Linac driven FELs” at the "General Accelerator Physics School", of the **CERN Accelerator School (CAS)**

International advisory committees:

- Member of the Machine Advisory Committee of the European project XFEL.
- Member of the Machine Advisory Committee of the DESY Laboratory (Germany).
- Member of the Machine Advisory Committee of the Cockcroft Institute Laboratory (UK).
- Member of the Machine Advisory Committee of the SWISS-FEL project of the Paul Scherrer Institute (Zurich).
- Reviewer of two proposals for the “Program for X-ray and neutron scattering facilities” of the Office of Basic Energy Science (BES) - Department of Energy (DOE) - USA.

Activity as referee for international journals:

- Physical Review Letters,
- Physical Review Special Topics – Accelerators and Beams,
- Nuclear Instrumentations and Methods A
- IEEE Transactions on Plasma Science.
- Laser and Particle Beams
- Guest Editor for Elsevier of the Proceeding of the International Conference on “Frontiers in Diagnostics Technology”, (Frascati, November 2009).
- Guest Editor for Elsevier of the Proceeding of 3 international workshops of the serie “European Advanced Accelerator Concepts”, (Italy, 2013, 2015 and 2017).

Relevant publications (max 20)

1. Chiadroni, E., Anania, M. P., Bellaveglia, M., Biagioni, A., Bisesto, F., Brentegani, E., Cardelli, F., Cianchi, A., Costa, G., Di Giovenale, D....(2018). Overview of plasma lens experiments and recent results at SPARC LAB. NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH. SECTION A, ACCELERATORS, SPECTROMETERS, DETECTORS AND ASSOCIATED EQUIPMENT, ISSN: 0168-9002, doi: 10.1016/j.nima.2018.02.014
2. Curcio A, Anania MP, Bisesto F, Botton M, Castellano M, Chiadroni E, Cianchi A, Ferrario M, Galletti M, Giulietti D, Henis Z, Petrarca M, Pompili R, Schleifer E, Zigler A (2018). Electro-Optical Detection of Coherent Radiation Induced by Relativistic Electron Bunches in the Near and Far Fields. PHYSICAL REVIEW APPLIED, vol. 9, 024004, ISSN: 2331-7019, doi: 10.1103/PhysRevApplied.9.024004
3. Pompili R, Anania MP, Bisesto F, Botton M, Chiadroni E, Cianchi A, Curcio A, Ferrario M, Galletti M, Henis Z, Petrarca M, Schleifer E, Zigler A (2018). Ultrafast evolution of electric fields from high-intensity laser-matter interactions. SCIENTIFIC REPORTS, vol. 8, 3243, ISSN: 2045-2322, doi: 10.1038/s41598-018-21711-4
4. Pompili, R., Castorina, G., Ferrario, M., Marocchino, A., Zigler, A. (2018). Guiding of charged particle beams in curved capillary-discharge waveguides. AIP ADVANCES, vol. 8, ISSN: 2158-3226, doi: 10.1063/1.5011964
5. CURCIO, ALESSANDRO, ANANIA, Grazia Maria, BISESTO, FABIO, Chiadroni, E., Cianchi, A., FERRARIO, MASSIMO, FILIPPI, FRANCESCO, Giulietti, D., MAROCCHINO, ALBERTO, PETRARCA, MASSIMO...(2017). Trace-space reconstruction of low-emittance electron beams

through betatron radiation in laser-plasma accelerators. *PHYSICAL REVIEW. ACCELERATORS AND BEAMS*, vol. 20, ISSN: 2469-9888, doi: 10.1103/PhysRevAccelBeams.20.012801

6. CURCIO, ALESSANDRO, Anania, M., BISESTO, FABRIZIO GIUSEPPE, Chiadroni, E., Cianchi, A., FERRARIO, MASSIMO, FILIPPI, FRANCESCO, Giulietti, D., MAROCCHINO, ALBERTO, MIRA, FRANCESCO...(2017). Single-shot non-intercepting profile monitor of plasma-accelerated electron beams with nanometric resolution. *APPLIED PHYSICS LETTERS*, vol. 111, ISSN: 0003-6951, doi: 10.1063/1.4998932

7. Marocchino, A., Anania, M. P., Bellaveglia, M., Biagioni, A., Bini, S., Bisesto, F., Brentegani, E., Chiadroni, E., Cianchi, A., Croia, M....(2017). Experimental characterization of the effects induced by passive plasma lens on high brightness electron bunches. *APPLIED PHYSICS LETTERS*, vol. 111, ISSN: 0003-6951, doi: 10.1063/1.4999010

8. Pompili R., Anania M.P., Bellaveglia M., Biagioni A., Bini S., Bisesto F., Brentegani E., Castorina G., Chiadroni E., Cianchi A., Croia M., Di Giovenale D., Ferrario M., Filippi F., Giribono A., Lollo V., Marocchino A., Marongiu M., Mostacci A., Di Pirro G...(2017). Experimental characterization of active plasma lensing for electron beams. *APPLIED PHYSICS LETTERS*, vol. 110, ISSN: 0003-6951, doi: 10.1063/1.4977894

9. Giorgianni Flavio, Chiadroni Enrica, Rovere Andrea, Cestelli-Guidi Mariangela, Perucchi Andrea, Bellaveglia Marco, Castellano Michele, Di Giovenale Domenico, Di Pirro Giampiero, Ferrario Massimo, Pompili Riccardo, Vaccarezza Cristina, Villa Fabio, Cianchi Alessandro, Mostacci Andrea, Petrarca Massimo, Brahlek Matthew, Koirala Nikesh, Oh Seongshik, Lupi Stefano (2016). Strong nonlinear terahertz response induced by Dirac surface states in Bi₂Se₃ topological insulator. *NATURE COMMUNICATIONS*, vol. 7, ISSN: 2041-1723, doi: 10.1038/ncomms11421

10. Ferrario M (2015). Present and future accelerator options beyond the LHC. *ANNALEN DER PHYSIK*, vol. 528, ISSN: 1521-3889, doi: 10.1002/andp.201500240

11. Petralia A, Anania MP, Artioli M, Bacci A, Bellaveglia M, Carpanese M, Chiadroni E, Cianchi A, Ciocci F, Dattoli G, Di Giovenale D, Di Palma E, Di Pirro GP, Ferrario M, Giannessi L, Innocenti L, Mostacci A, Petrillo V, Pompili R, Rau JV...(2015). Two-color radiation generated in a seeded free-electron laser with two electron beams. *PHYSICAL REVIEW LETTERS*, vol. 115, 014801, ISSN: 1079-7114

12. Migliorati M, Bacci A, Benedetti C, Chiadroni E, Ferrario M, Mostacci A, Palumbo L, Rossi AR, Serafini L, Antici P (2013). Intrinsic normalized emittance growth in laser-driven electron accelerators. *PHYSICAL REVIEW SPECIAL TOPICS. ACCELERATORS AND BEAMS*, vol. 16, 11302, ISSN: 1098-4402

13. Petrillo V, Anania MP, Artioli M, Bacci A, Bellaveglia M, Chiadroni E, Cianchi A, Ciocci F, Dattoli G, Di Giovenale D, Di Pirro G, Ferrario M, Gatti G, Giannessi L, Mostacci A, Musumeci P, Petralia A, Pompili R, Quattromini Mr, Rau JV...(2013). Observation of time-domain modulation of free-electron-laser pulses by multi-peaked electron-energy spectrum. *PHYSICAL REVIEW LETTERS*, vol. 111, 114802, ISSN: 1079-7114

14. Antici P, Bacci A, Benedetti C, Chiadroni E, Ferrario M, Rossi AR, Lancia L, Migliorati M, Mostacci A, Palumbo L, Serafini L (2012). Laser-driven electron beamlines generated by coupling laser-plasma sources with conventional transport systems. *JOURNAL OF APPLIED PHYSICS*, vol. 112, ISSN: 0021-8979, doi: 10.1063/1.4740456

15. Giannessi L, Bacci A, Bellaveglia M, Briquez F, Castellano M, Chiadroni E, Cianchi A, Ciocci F, Couprie ME, Cultrera L, Dattoli G, Filippetto D, Del Franco M, Di Pirro G, Ferrario M, Ficcadenti L, Frassetto F, Gallo A, Gatti G, Labat M...(2011). Self-Amplified Spontaneous Emission Free-Electron Laser with an Energy-Chirped Electron Beam and Undulator Tapering. *PHYSICAL REVIEW LETTERS*, vol. 106, ISSN: 0031-9007, doi: 10.1103/PhysRevLett.106.144801

16. Labat M, Bellaveglia M, Bougeard M, Carre B, Ciocci F, Chiadroni E, Cianchi A, Couprie ME, Cultrera L, Del Franco M, Di Pirro G, Drago A, Ferrario M, Filippetto D, Frassetto F, Gallo A,

Garzella D, Gatti G, Giannessi L, Lambert G...(2011). High-Gain Harmonic-Generation Free-Electron Laser Seeded by Harmonics Generated in Gas. PHYSICAL REVIEW LETTERS, vol. 107, ISSN: 0031-9007, doi: 10.1103/PhysRevLett.107.224801

17. Ferrario M, Alesini D, Bacci A, Bellaveglia M, Boni R, Boscolo M, Castellano M, Chiadroni E, Cianchi A, Cultrera L, Di Pirro G, Ficcadenti L, Filippetto D, Fusco V, Gallo A, Gatti G, Giannessi L, Labat M, Marchetti B, Marrelli C...(2010). Experimental Demonstration of Emittance Compensation with Velocity Bunching. PHYSICAL REVIEW LETTERS, vol. 104, ISSN: 0031-9007, doi: 10.1103/PhysRevLett.104.054801

18. M. Ferrario, M. Migliorati, L. Palumbo (2014). Wakefields and Instabilities in Linear Accelerators. In: Proceedings of the CAS-CERN Accelerator School: Advanced Accelerator Physics. p. 357-375, Ginevra:W. Herr, ISBN: 978-92-9083-411-3, doi: <http://dx.doi.org/10.5170/CERN-2014-009> - Contributo in volume (Capitolo o Saggio)

19. Ferrario M (2012). Accelerator physics: basic principles on beam focusing and transport. In: (a cura di): Ferroni F, Gizzi L, Faccini R, International School of Physics "Enrico Fermi", Course CLXXIX - "Laser-Plasma Acceleration" – Varenna - 20 - 25 June 2011. AMSTERDAM:IOS Press Publishing, ISBN: 978-1-61499-128-1, doi: 10.3254/978-1-61499-129-8-41 - Contributo in volume (Capitolo o Saggio)

20. Ferrario M, Shintake T (2010). High Performance Electron Injectors. In: (a cura di): Chao A, Reviews of Accelerator Science and Technology - Accelerators as Photon Sources. vol. 3, Singapore: World Scientific., doi: 10.1142/S1793626810000464 - Contributo in volume (Capitolo o Saggio)

MAURO MIGLIORATI

Curriculum Vitae

Place Rome

Date 27/12/2018

Part I – General Information

Full Name	Mauro Migliorati
Date of Birth	16/06/1966
Place of Birth	Rome (Italy)
Citizenship	Italian
E-mail	mauro.migliorati@uniroma1.it
Spoken Languages	Italian, English

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
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
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

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

January 2017	January 2017	Université Paris-Sud (Fr)	Invited member of a PhD commission on particle accelerators
June 2016	June 2016	Université Blaise Pascal, Clermont-Ferrand (Fr)	Invited member of a PhD commission on particle accelerators
May 2016	May 2016	Ecole Polytechnique Federale de Lausanne (CH)	Invited member of a PhD commission on particle accelerators
January 2015	January 2015	Université Joseph Fourier Grenoble (Fr)	Invited member of a PhD commission on particle accelerators
2012	2012	Ecole Polytechnique Federale de Lausanne (CH)	Invited member of PhD commissions on themes related to particle accelerator
December 2006	November 2009	University of Rome “LA SAPIENZA”, Energetics Department (now SBAI)	Member of the Department Board (Giunta di Dipartimento)
January 1999	January 2001	University of Rome “LA SAPIENZA”, Energetics Department (now SBAI)	Member of the Department Board (Giunta di Dipartimento)
		University of Rome “LA SAPIENZA”	Supervisor of PhD theses in Accelerator Physics, master theses in Aerospace Engineering and assistant supervisor of PhD thesis in Applied Electromagnetisms
			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	December 2018	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
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Integration in the Accelerator Physics international community

Start	End	Institution	Position
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.
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.
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

			Referee of: Physical Review Letters, Physical Review Special Topics - Accelerators and Beams, European Physical Letters, Scientific Reports.
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Research activity in qualified international institutions

Start	End	Institution	Position
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
Since 2015	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

Part V - Society memberships, Awards and Honors

Year	Title
February – July 2018	Awarded as Project Associate by CERN, Geneva – CH, for working on the upgrade of the LHC injectors
February – July 2017	Awarded as Project Associate by CERN, Geneva – CH, for working on the upgrade of the LHC injectors
March – July 2016	Awarded as Project Associate by CERN, Geneva – CH, for working on the upgrade of the LHC injectors
February – July 2014	Awarded as Scientific Associate by CERN, Geneva – CH, for working on the upgrade of the LHC injectors
February – July 2013	Awarded as Scientific Associate by CERN, Geneva – CH, for working on the upgrade of the LHC injectors
February – July 2012	Awarded as Scientific Associate by CERN, Geneva – CH, for working on the upgrade of the LHC injectors
Since 2013	Member of SIF (Società Italiana di Fisica) and EPS (European Physical Society)

Part VI - Funding Information

VI A – Grants as principal investigator

Year	Title	Program	Grant value
2018-21	Accelerator Research and Innovation for European Science and Society (ARIES)	HORIZON 2020	About 56 k€
2018-20	Studies of impedance and impedance reduction measures for crystal collimators goniometers in the framework of the High Luminosity upgrade for the LHC at CERN	Collaboration Agreement KN2489/DG	50 k€
2012-14	Cluster of Research Infrastructures for Synergies in Physics (CRISP project)	FP7-INFRASTRUCTURES	About 468 k€
2005-07	European FEL Design Study (EuroFEL project)	FP6-2003-INFRASTRUCTURE RES-4	About 180 k€
2010-13	Design of C-band accelerating section: simulation and optimization of a prototype (Subcontract with INFN, Scientific Responsible)	Tiara Project (Test Infrastructure and Accelerator Research Area) for FP7-INFRASTRUCTURES	30 k€
2007-10	The evolution of the accelerated particle beam considering ELI laser full performances (Subcontract with INFN, Scientific Responsible)	ELI-PP Project (Extreme Light Infrastructure Preparatory Phase) for Seventh Research and Technological Development Framework Program	30 k€
2015	Beam dynamics and collective effects in the CERN Future Circular Collider electron accelerator	Awards Projects of University of Rome “LA SAPIENZA”	30 k€

2012	Beam dynamics studies of the injection rings of the Large Hadron Collider (LHC) at CERN	Research Project of University of Rome "LA SAPIENZA"	12 k€
2009	Laser-Plasma electron sources: beam dynamics and transport	Research project of the Federated University of Science and Technology of Rome "LA SAPIENZA"	4.6 k€
2006-08	X-rays coherent sources	Research project of the Federated University of Science and Technology of Rome "LA SAPIENZA"	4.9 k€
2005	Coherent and incoherent UV-X-rays sources	Research project of the Engineering Faculty of the University of Rome "LA SAPIENZA"	2.5 k€
2004	Synchrotron radiation source in DAΦNE	Research project of the Engineering Faculty of the University of Rome "LA SAPIENZA"	2 k€
2006-07		Grant for educational trip by the Engineering Faculty of the University of Rome "LA SAPIENZA"	1 k€
2008-10	Electron and proton sources by Laser-Plasma interaction and their applications	Bilateral agreement between University of Rome "LA SAPIENZA" and Université Pierre et Marie Curie Paris VI (FR)	About 6.6 k€
2017-18	Mitigate Instabilities in Circular Accelerators	National Scientific Committee V of INFN	15 k€
2014-15	Innovative Materials and Coatings for Accelerators	National Scientific Committee V of INFN	19.5 k€

VI B – Grants as investigator

Year	Title	Program
2013	Optimization of a plasma-based short pulse laser amplifier	Research Project of University of Rome "LA SAPIENZA"
2012	Generation of high brightness electron beams from plasma-based accelerators	FIRB – Futuro in Ricerca
2012	ELI-NP	MIUR-FOE-INFN
2012	EUROFEL	MIUR-FOE-INFN
2011	ELI-NP	MIUR-FOE
2010	Charged particle beams from laser-plasma sources for medical applications	Research Project of University of Rome "LA SAPIENZA"
2008	Innovative nanomaterials and nanostructures for photo-emission and field emission based devices	FIRB – Futuro in Ricerca
2006	SPARX (phase II)	FIRB - MIUR

2004	SPARX (phase I)	FIRB - MIUR
2002	SPARC	FISR - MIUR
Since 2001	Projects related to particle accelerators	Research Projects of University of Rome "LA SAPIENZA"
Since 2001	Projects related to particle accelerators	National Scientific Committee V of INFN
Since 2001	Projects related to particle accelerators	New techniques of Acceleration NTA - INFN

Part VII – Research Activities

Keywords	Brief Description
Linear and circular particle accelerators, beam dynamics, electromagnetic fields and beam instabilities	<p>The research, which involves studies related to the dynamics of particle beams in accelerators, both linear and circular, is carried out in collaboration with the Accelerator Division of Frascati National Laboratories (LNF) of the National Institute of Nuclear Physics (INFN), with the group of Accelerator Physics SL/AP and ABP of CERN, with the Division of Applied Physics - Research Center Enea Frascati, and with the Laboratoire pour l'Utilisation des Lasers Intenses (LULI) Ecole Polytechnique, Paris.</p> <p>The main aspect of the research is the study of the beam dynamics under the influence of coherent instabilities produced by electromagnetic fields arising from the interaction of a charged beam with the surrounding environment, and which are of fundamental importance especially in the accelerators of the latest generation used for both the research and for medical applications. In particular, the required high current intensity can produce instabilities on both single and multi-bunch beam dynamics, which can not only reduce the performance of a machine, but can result in the loss of the beam itself.</p>
DAΦNE project, CERN Proton Synchrotron, coupled bunch instabilities	<p>The research activity for the DAΦNE project of INFN - LNF concerned the study of the coupled bunch longitudinal dynamics. I've developed a simulation code that has allowed determining the coupled bunch instabilities and an effective suppression system. The study also gave indications for the design of a proper feedback system.</p> <p>The simulation code has then been upgraded and it is currently used to study the coupled bunch instabilities of the CERN Proton Synchrotron, which could cause a severe limitation for the upgrade of LHC.</p>
Single bunch beam dynamics, short range wakefields	<p>The research focuses also on the single bunch beam dynamics. In this context, I have developed a simulation code that allowed predicting the behaviour of the longitudinal beam dynamics in DAΦNE under the presence of short range electromagnetic wakefields. Thanks to the results it was possible to design and build a device for the control of the length of a bunch (third-harmonic cavity) to increase the life-time of the DAΦNE beams.</p>
Beam instabilities and measurements	<p>By participating in a series of measurements on the longitudinal beam dynamics at the Advanced Light Source at Lawrence Berkeley National Laboratory (USA) and during the commissioning phase of the DAΦNE accelerator, at the Frascati National Laboratories of the National Institute of Nuclear Physics, I carried out an experimental activity measuring the</p>

	<p>instabilities of single and multi-bunch produced by electromagnetic wakefields. The model of impedance derived theoretically for DAΦNE allowed to predict the behaviour of single bunch beam dynamics that was confirmed by experimental observations.</p>
<p>Machine impedance measurements, RF measurements, impedance evaluation of accelerator devices</p>	<p>The study of the coherent instabilities of beams is closely related to the electromagnetic wakefields produced in an accelerator. I conducted studies, simulations and experimental measurements to determine the electromagnetic fields and the coupling impedances of devices and of whole accelerators. I worked initially in collaboration with the group of Accelerator Physics SL/AP at CERN, and then I have been awarded as Scientific Associate in the ABP (Accelerators and Beam Physics) group of CERN, during which I measured the longitudinal and transverse coupling impedance of the Proton Synchrotron. I also performed analytical evaluations and 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.</p>
<p>High brightness linear accelerators, SPARC project, photo-injector</p>	<p>With the participation to the SPARC and SPARX projects, co-financed by the Ministry of Education and involving the collaboration of several Italian research institutions including ENEA, INFN and CNR, the activity was focused on the study of the beam dynamics in Linacs and high brightness photo-injectors. Moreover, the measurements made in the first phase of the commissioning of SPARC, which I actively contributed to, have revealed experimentally for the first time the effect of double minimum oscillation of beam emittance, of fundamental importance for the optimization of a photo-injector and for obtaining a high brightness beam. I also studied the collective effects of beams in linear accelerators, such as, for example, in the new project of the European Extreme Light Infrastructure, currently funded and seeking for an innovative machine design for high brilliance Compton-X and Gamma-photon beams</p>
<p>Laser-plasma accelerators, CRISP project (FP7)</p>	<p>A novel technique for the generation and acceleration of charged particle beams exploits the laser-plasma interaction, which arises when an intense laser hits a solid target or a gas jet, producing, respectively, beams of protons and electrons with characteristics almost comparable with those which are obtained today in particle accelerators. The advantage of this new type of source, for which much work is still in progress, is that one can reach very high energies in distances of a few centimeters. In this context, I worked in collaboration with Laboratoire pour l'Utilisation des Lasers Intenses (LULI) Ecole Polytechnique, Paris and I've been scientific responsible of an activity within the CRISP project (FP7 Infrastructures). I have studied the characteristics of the beams produced by laser-plasma interaction, their transport and post-acceleration. This type of beams could be of great importance for the development of accelerators for medical applications at relatively low cost.</p>
<p>Magnetic and RF compression, velocity bunching</p>	<p>One very important aspect in the study of high brightness photo-injectors regards bunch compression schemes to obtain high peak currents. The classic magnetic compression, which is generally used, may deteriorate the quality of the beam due to the phenomenon of micro-bunching instability caused by the effects of space charge and of coherent synchrotron radiation in the bending magnets. This phenomenon can be counteracted by means of a laser heater, using a mechanism similar to that of the FEL in a circular</p>

	<p>machine. However, there is another compression scheme, called RF compressor, or velocity bunching compressor, which exploits the difference in speed between the head and the tail to shorten the bunch. The technique of velocity bunching was demonstrated during a measurement campaign performed at SPARC.</p>
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Mauro Migliorati

SARA CASALBUONI

Curriculum vitae

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PERSONAL DATES:

Date of Birth: 5 September 1970
Place of Birth: Florence, Italy
Citizenship: Italian
Marital status: Married, 1 child

MOTHER TONGUE:

Italian

OTHER LANGUAGES:

English, German

EDUCATION:

'*Laurea in Fisica*', University of Florence, September, 1995
'*Scuola di Perfezionamento in Fisica*', University of Pisa, 1995-96
Ph.D. in Physics, University of Bern, April, 2000

PRESENT POSITION:

Group leader insertion devices
and project leader for the development of superconducting undulators
at KIT

PREVIOUS POSITIONS:

12/2007-5/2010

Project leader for the development of superconducting undulators
at the Research Center Karlsruhe

10/2005-11/2007

Scientist at the Research Center Karlsruhe

11/2003-9/2005

DESY Fellowship in Hamburg

1/2002-10/2003

DFG Fellowship at the Institute of Applied Physics, University of Hamburg

1/2001-12/2001

Fellowship “Angelo Della Riccia”

at the Institute of Applied Physics, University of Hamburg

PH.D. THESIS:

Superconducting properties of superheated superconducting granules

Advisor: Prof. K. Pretzl

University of Bern, Switzerland

THESIS FOR THE ITALIAN LAUREA:

A model for the fine structure of the solar wind (in Italian)

Advisor: Prof. C. Chiuderi

University of Florence, Italy

SERVICE FOR THE COMMUNITY:

- Board Member of the Accelerator Group in the European Physical Society
- Referee for: Physical Review Accelerator and Beams, Physical Review A, Physical Review B, Journal of Physics B, Nuclear Instruments and Methods, IEEE Transactions on Magnetics, Journal of Magnetism and Magnetic Materials, IEEE Transactions on Applied Superconductivity, Superconductor Science and Technology
- Reviewer for proposals submitted to DOE
- Member of the Scientific Programme Committee of the IPAC20, Caen, France, 2020
- Member of the Scientific Advisory Board of the IPAC19, Melbourne, Australia, 2019
- Member of Scientific Committee Workshop on 'KfB-Perspektiven-Workshop Strahlungsquellen' 2018, Karlsruhe, Germany
- Co-chair of Workshop on 'Beam Dynamics meets Vacuum, Collimations, and Surfaces' 2017, Karlsruhe, Germany
- Member of International Advisory Committee of Workshop on 'Beam Dynamics meets Diagnostics' 2016, Florence, Italy
- Member of Review Committee for the Argonne Superconducting Undulator Program 2018, ANL, Chicago, USA
- Member of Review Committee for the SHINE Undulators Technical Review 2018, SINAP, Shanghai, China
- Member of Review Committee for the Director's Review of the LCLSII 2015, SLAC, Menlo Park, USA
- Member of Review Committee for the Superconducting Undulator R&D Review 2014, SLAC, Menlo Park, USA
- Member of Review Committee for the NGLS Technical Review 2013, LBNL, Berkeley, USA
- Member of Advisory Committee for the Insertion Device Design Reviews for the APS Upgrade at the Argonne National Laboratory 2011, ANL, Chicago, USA
- External Referee PhD Thesis: *Collective effects in FCC-ee* E. Belli, University of Rome La Sapienza, Rome, Italy, to be discussed in 2019

- External Referee Master Thesis: *Characterisation and Modelling of In-Vacuum Undulators of a Free Electron Laser* C. Camenzuli, University of Malta, Malta 2017.
- Member of PhD Thesis Committee and External Referee: *Longitudinal diagnostics for comb-like electron beams by means of Electro-Optic Sampling* R. Pompili, University of Rome Tor Vergata, Rome, Italy 2013.
- Member of PhD Thesis Committee: *Experimental Investigations on Superconducting Niobium Cavities at Highest Radiofrequency Fields* L. Lilje, University of Hamburg, Hamburg, Germany 2001.

ORGANIZATION OF WORKSHOPS:

- Mini-Workshop on a Cold Vacuum Chamber for Diagnostics 2008, Karlsruhe, Germany
- EuroCirCol Workpackage WP4 (Cryogenic beam vacuum system) Meeting, 2017, Karlsruhe, Germany
- Beam Dynamics meets Vacuum, Collimations, and Surfaces 2017, Karlsruhe, Germany
- KfB-Perspektiven-Workshop Strahlungsquellen 2018, Karlsruhe, Germany
- EuroCirCol Meeting, 2018, Karlsruhe, Germany

STUDENTS:

- Lars von Sawilski (partially advised), Diploma Thesis at the University of Hamburg (2002), Title: *Charakterisierung von Niob proben mittels DC-Magnetometrie und AC-Suszeptometrie mit dem SQUID- Magnetometer*
- Bernd Steffen (partially advised), Diploma Thesis at the University of Würzburg, DESY external (2003), Title: *Bestimmung der kritischen Felder von oberflächen- und temperaturbehandelten Niob durch Wechselfeld-Suszeptometrie*, DESY-THESIS-2003-014
- Bernd Steffen (partially advised), PhD Thesis at the University of Hamburg, DESY external (2007), Title: *Electro-optic methods for longitudinal bunch diagnostics at FLASH*, DESY-THESIS-2007-020
- Barbara Kostka (partially advised), PhD Thesis at the University of Erlangen (2007), Title: *Test eines supraleitende Undulators kurzer Periode im ANKA-Speicherring*

- Norman Suttinger (partially advised), Bachelor Thesis at the University of Applied Science Karlsruhe (2010), Title: *Magnetdesign supraleitender Undulatoren*
- Robert Stierlen, Bachelor Thesis at the Karlsruhe Institute of Technology (2012), Title: *Simulationen des Magnetfelds eines supraleitenden Racetrack-Undulators*
- Felix Metzner, Bachelor Thesis at the Karlsruhe Institute of Technology (2012), Title: *Optimization of a superconducting racetrack undulator model*
- Stefan Gerstl, PhD Thesis at the Karlsruhe Institute of Technology (2013), Title: *A COLD Vacuum Chamber for Beam Heat Load DIAGnostics (COLDDIAG)*
- Robert Voutta, PhD Thesis at the Karlsruhe Institute of Technology (2016), Title: *Beam heat load investigations with a cold vacuum chamber for diagnostics in a synchrotron light source*
- Christian Meuter, PhD Thesis at the Karlsruhe Institute of Technology, in progress

TEACHING EXPERIENCE:

- Summer 02 Exercises for Electrodynamics, University of Hamburg
 August 2005 Invited lectures on
Electrodynamics of superconductors and superconducting cavities
 at The 6th SCENET School of Superconducting Materials and
 Applications, Turku, Finland
- July 2006 Invited lectures on
Electrodynamics of superconductors and superconducting cavities
 at The Jan Evetts and 7th SCENET School of Superconducting
 Materials and Applications, Camerino, Italy

REFERENCES:

- Prof. Dr. P. Schmüser, DESY Hamburg, Germany (Peter.Schmueser@desy.de)
 Dr. F. Zimmermann, CERN, Geneva, Switzerland (Frank.Zimmermann@cern.ch)
 Prof. Dr. R. Walker, Diamond Light Source, Didcot, UK
 (richard.walker@diamond.ac.uk)
 Prof. Dr. A.-S. Müller, KIT, Karlsruhe, Germany (anke-susanne.mueller@kit.edu)

TALKS AT INTERNATIONAL WORKSHOPS AND CONFERENCES:

1. *Improvement of the phase transition homogeneity of superheated superconducting tin granules*
The 8th International Workshop on Low Temperature Detectors, Dalfsen, The Netherlands (1999)
2. *Surface superconductivity as a tool to characterize niobium for RF cavities*
Frühjahrstagung des Arbeitskreises Festkörperphysik (AKF) der DPG, Dresden, Germany (2003)
3. *Superconductivity above H_{c2} as a probe for Niobium RF-cavity surfaces*
The 11th Workshop on RF-Superconductivity, SRF 2003, 8-12 Sept. 2003
Travemünde, Germany
4. *THz generation and transport*
ICFA Future Light Sources Subpanel Miniworkshop on XFEL Short Bunch Measurement and Timing, 26-30 July 2004, Stanford Linear Accelerator Center, California USA
5. *Measurements of the Beam Induced Heat Load at the ANKA Superconductive Undulator*
Workshop on Applications of Superconducting Technologies in Synchrotron Light Sources, 5-6 June 2006, Hsinchu, Taiwan
6. *Beam heat load in the ANKA superconducting undulator*
Mini-Workshop on Electron Cloud Clearing, Electron Cloud Effects and Technological Consequences, 1-2 March 2007, CERN, Switzerland
7. *Beam heat load measurements in the cold bore superconductive undulator installed at ANKA*
Frühjahrstagung der DPG Fachverband Teilchenphysik, 5-9 March 2007, Heidelberg, Germany
8. *Beam heat load and pressure rise in a cold vacuum chamber*
International Workshop on Electron-Cloud Effects, ECLOUD07, 9-12 April 2007
Daegu, Korea
9. *Thermal heat load induced by the electron beam-theory and experiment,*
Joint Research Activities 4 within the I3 Project ELISA (European LIght Sources Activities) Workshop, 14-15 July 2007, Karlsruhe, Germany
10. *Heat load and pressure rise in the superconducting undulator at ANKA*
Mini-Workshop on a Cold Vacuum Chamber for Diagnostics,
31 January-1 February 2008 Karlsruhe, Germany

11. *Scientific objectives of COLDDIAG*
Mini-Workshop on a Cold Vacuum Chamber for Diagnostics, 31 January-1 February 2008 Karlsruhe, Germany
12. *Summary on the technical discussion for the design of COLDDIAG*
Mini-Workshop on a Cold Vacuum Chamber for Diagnostics, 31 January-1 February 2008 Karlsruhe, Germany
13. *Direct detection of the electron cloud at ANKA,*
Frühjahrstagung der DPG Fachverband Teilchenphysik, 3-7 March 2008, Freiburg, Germany
14. *A summary of the Mini-Workshop on a Cold Vacuum Chamber for Diagnostics Karlsruhe, 31st January- 1st February 2008,*
The Fifth International Workshop on Mechanical Engineering Design of Synchrotron Radiation Equipment and Instrumentation and The Fifteenth Pan-American Synchrotron Radiation Instrumentation, 10-13 June 2008, Saskatoon, Canada
15. *Design of a Cold Vacuum Chamber for Diagnostics,*
The 5th International Workshop on Mechanical Engineering Design of Synchrotron Radiation Equipment and Instrumentation and The Fifteenth Pan-American Synchrotron Radiation Instrumentation, 10-13 June 2008, Saskatoon, Canada
16. *Electron cloud observations & activities at ANKA,*
Electron Cloud Mitigation Workshop, 20-21 November 2008, Geneva, Switzerland
17. *Status and R&D of superconducting insertion devices at ANKA,*
The 10th International Conference on Synchrotron Radiation Instrumentation, 27 September- 2 October 2009 Melbourne, Australia
18. *Training and magnetic field measurements of the ANKA superconducting undulator,*
Applied Superconductivity Conference ASC 2010, 1-6 August 2010, Washington, D.C., USA
19. *Progress on the superconducting undulator for ANKA and on the instrumentation for R&D,*
Workshop on Superconducting undulators and other new ID sources, 21-22 September 2010, Argonne National Laboratory, Argonne, USA
20. *Can electron multipacting explain the pressure rise in the ANKA cold bore superconducting undulator?,*
The 49th ICFA Advanced Beam Dynamics Workshop on Electron Cloud Physics ECLLOUD10, 8-12 October 2010, Cornell University, Ithaca, USA

21. *Progress on the superconducting undulator for ANKA and on the instrumentation for R&D*,
International Workshop on Linear Colliders IWLC2010, 18-22 October 2010,
Geneva, Switzerland
22. *Progress on the superconducting undulator for ANKA and on the instrumentation for R&D*,
Workshop IDMAX2010, Insertion Devices for Rings and Linacs, 9-10 November
2010, Lund, Sweden
23. *Development of superconducting undulators at ANKA* ,
invited at the Eastern Forum of Science and Technology on Superconducting and
Cryogenic Undulator Technology, 13-14 December 2011, Shanghai, China
24. *Recent progress with superconducting undulators at ANKA*,
ICFA Workshop on Future Light Sources, 5-9 March 2012, Thomas Jefferson
National Accelerator Facility Newport News, VA, USA
25. *Beam heat load of superconducting wigglers*,
Joint INFN-CERN-EuCARD-AccNet Workshop on Electron-Cloud Effects
ECLLOUD12, 5-9 June 2012, La Biodola, Isola d'Elba, Italy
26. *Beam heat load due to geometrical and resistive wall impedance in COLDDIAG*,
Workshop Simulation of Power Dissipation and Heating from Wake Losses in
Accelerator Structures, 30 January 2013, Diamond Light Source, Didcot, UK
27. *Test of short mockups for optimization of superconducting undulator coils*,
The 23rd International Conference on Magnet Technology MT23, July 14 - 19, 2013,
Boston, USA
28. *ANKA ID status and development*,
The 21st European Synchrotron Light Source Workshop, 21-22 November 2013,
Karlsruhe, Germany
29. *Status Report for ANKA-KIT*,
Superconducting Undulator Workshop, 28-29 April 2014, STFC Rutherford
Appleton Laboratory, Oxfordshire, UK, 28 - 29 April, 2014
30. *Vacuum diagnostics*,
Workshop ALERT 2014, Advanced Low Emittance Rings Technology, 5-6 May
2014, Valencia, Spain
31. *Superconducting undulators: experience from ANKA*,
Workshop Beam Dynamics meets Magnets II, 1-4 December 2014, Bad Zurzach,
Switzerland

32. *Recent developments on superconducting undulators at ANKA*,
The 6th International Particle Accelerator Conference (IPAC15) 2015, 3-8 May 2015, Richmond, USA
33. *Overview of the superconducting undulator development program at ANKA*,
The 12th International Conference on Synchrotron Radiation Instrumentation (SRI 2015), 6-10 July 2015, New York, USA
34. *Diagnostics with undulator radiation*,
Workshop Beam Dynamics meets Diagnostics, 4-6 November 2015, Florence, Italy
35. *FCC-hh Synchrotron Radiation Effects: The new ANKA facility for desorption measurements*,
FCC Week 2016, 11-15 April 2016, Rome, Italy
36. *Operation of the new superconducting undulator SCU15 in the ANKA storage ring*,
invited at The 50th Applied Superconductivity Conference ASC'16, September 4-9, 2016, Denver, USA
37. *Superconducting undulators at KIT*,
invited at The ID2017 Undulator Workshop for Multibend Achromat Rings and Free Electron Lasers, May 4-5, 2017, Berkeley, USA
38. *Insertion devices and magnet technology*,
KfB-Perspektiven-Workshop Strahlungsquellen, April 26-27, 2018, Karlsruhe, Germany
39. *Commissioning of a full scale superconducting undulator with 20 mm period length at the storage ring KARA*,
The 13th International Conference on Synchrotron Radiation Instrumentation (SRI 2018), 10-15 June 2018, Taipei, Taiwan

SEMINAR TALKS:

- 15/05/97 *A model for the fine structure of the solar wind,*
University of Bern, Bern, Switzerland
- 10/11/98 *Superconducting Properties of Superheated Superconducting Granules,*
CERN, Geneva, Switzerland
- 03/06/99 *Search for dark matter,*
University of Bern, Bern, Switzerland
- 19/06/01 *Low frequency characterization of Nb samples for TESLA cavities,*
University of Hamburg, Hamburg, Germany
- 22/01/02 *Critical fields and AC conductivity of Nb materials prepared for TESLA cavities,*
University of Hamburg, Hamburg, Germany
- 25/06/02 *Superconducting and magnetic properties of Nb materials for TESLA cavities,*
University of Hamburg, Hamburg, Germany
- 13/12/02 *Dynamical conductivity of Nb near H_{C2} ,*
University of Hamburg, Hamburg, Germany
- 6/05/04 *Simulation of wave front propagation with ZEMAX,*
with R. Ischebeck, DESY, Hamburg, Germany
- 19/07/04 *Surface superconductivity in Niobium for superconducting microwave cavities,*
University of Karlsruhe, Karlsruhe, Germany
- 9/05/05 *A THz beam line for coherent transition and diffraction radiation
at the VUV-FEL,*
Research Center of Karlsruhe, Karlsruhe, Germany
- 25/04/06 *One year operation of the first superconducting undulator
in the storage ring ANKA,*
Research Center of Karlsruhe, Karlsruhe, Germany
- 9/11/07 *Thermal heat load induced by the electron beam-theory and experiment,*
Babcock Noell GmbH, Würzburg, Germany
- 05/08/08 *Current status of SCU15 project,*
BMBF meeting-Undulator Collaboration
Research Center of Karlsruhe, Germany
- 05/08/08 *Design of a cold vacuum chamber for diagnostics,*
BMBF meeting-Undulator Collaboration
Research Center of Karlsruhe, Germany
- 11/11/08 *A COLD Vacuum Chamber for DIAGnostics COLDDIAG,*
Meeting on possible installation of ANKA COLDDIAG
at Diamond, Didcot, UK

- 09/06/09 *COLDDIAG: a COLD vacuum chamber for DIAGnostics*,
National Laboratory Frascati, Frascati, Italy
- 21/09/09 *COLDDIAG Project: Motivation, objectives, project deliverables*,
2nd Meeting on possible installation of ANKA COLDDIAG
at Diamond, Didcot, UK
- 30/06/10 *R&D of superconducting insertion devices*,
Talk for ANKA Machine Advisory Committee, KIT, Karlsruhe, Germany
- 06/07/10 *Progress on the superconducting undulator for ANKA
and on the instrumentation for R&D*, CERN, Geneva, Switzerland
- 05/10/10 *COLDDIAG Project: Science and planned measurements*,
2nd Meeting on status of ANKA COLDDIAG at Diamond, Didcot, UK
- 05/10/10 *COLDDIAG Project: Status and timeplan*,
2nd Meeting on status of ANKA COLDDIAG at Diamond, Didcot, UK
- 14/10/10 *Progress on the superconducting undulator for ANKA ,
and on the instrumentation for R&D*, Cornell University, Ithaca, USA
- 30/06/11 *Superconducting undulator development at ANKA ,*
DESY, Hamburg, Germany
- 11/04/13 *Insertion device program*,
Talk for ANKA Machine Advisory Committee, KIT, Karlsruhe, Germany
- 10/10/13 *COLDDIAG: a COLD vacuum chamber for DIAGnostics ,*
ESRF, Grenoble, France
- 21/01/15 *Insertion devices for ANKA*,
Talk for ANKA Machine Advisory Committee, KIT, Karlsruhe, Germany
- 05/12/17 *Superconducting undulators at KIT*,
IBPT seminar, KIT, Karlsruhe, Germany
- 14/02/18 *Superconducting undulator technology for present and future light sources*,
Talk for Scientific Evaluation MATTER, KIT, Karlsruhe, Germany
- 03/07/18 *Superconducting undulators at KIT*,
SINAP, Shanghai, China
- 12/09/18 *Superconducting undulators at KIT*,
ANL, Chicago, USA
- 08/10/18 *Superconducting undulators at KIT*,
PSI, Villigen, Switzerland

PUBLICATIONS:

1. *Supersymmetric dark matter*
S. Casalbuoni
Florence internal report DFF 275/03/97 (in Italian).
2. *Coronal plumes and the expansion of pressure balanced structures in the fast solar wind*
S. Casalbuoni, L. Del Zanna, S.R. Habbal, M. Velli
J. Geophys. Res. **104 A5** (1999) 9947-9961.
3. *Status report on the ORPHEUS dark matter detector and on its SQUID readout system*
B. van den Brandt, S. Casalbuoni, G. Czapek, U. Diggelmann, T. Ebert, F. Huber, S. Janos, K. U. Kainer, K. M. Knoop, J. A. Konter, S. Mango, U. Moser, V.G. Palmieri, K. Pretzl
Nuclear Physics B (Proceedings Supplements) **70** (1999) 101-105.
4. *Status report on the ORPHEUS dark matter detector based on superconducting granules*
S. Casalbuoni, G. Czapek, U. Diggelmann, F. Hasenbalg, M. Hauser, S. Janos, U. Moser, V. G. Palmieri, K. Pretzl, B. van den Brandt, J. A. Konter, S. Mango, T. Ebert, K. U. Kainer, K. M. Knoop
Proceedings of the 2nd International Workshop on: The Identification of Dark Matter, Buxton, England, September 7th–11th, 1998. Edited by N. J. C. Spooner and V. Kudryvtsev. (World Scientific, Singapore, 1999), p. 377.
5. *Improvement of the phase transition homogeneity of superheated superconducting tin granules*
S. Calatroni, S. Casalbuoni, G. Czapek, T. Ebert, F. Hasenbalg, M. Hauser, S. Janos, K.U. Kainer, K.M. Knoop, U. Moser, V.G. Palmieri, K. Pretzl, B. Sahli, S. Sgobba, W. Vollenberg, Ch.P. Wyss
Nuclear Instruments and Methods in Physics Research A **444** (2000) 285-288.
6. *The ORPHEUS dark matter experiment*
B. van den Brandt, S. Casalbuoni, G. Czapek, T. Ebert, F. Hasenbalg, M. Hauser, S. Janos, K. U. Kainer, K. M. Knoop, J. A. Konter, S. Mango, U. Moser, K. Pretzl, B. Sahli
Nuclear Physics B (Proceedings Supplements) **87** (2000) 117-119.
7. *Phase transition study of superheated planar arrays of tin cylinders*
S. Casalbuoni, G. Czapek, F. Hasenbalg, M. Hauser, S. Janos, K. Pretzl, S. Calatroni, S. Sgobba, W. Vollenberg
Nuclear Instruments and Methods in Physics Research A **459** (2001) 469-474.

8. *The Orpheus Dark Matter Experiment*
S. Casalbuoni, G. Czapek, F. Hasenbalg, M. Hauser, S. Janos, U. Moser,
K. Pretzl, B. Sahli, B. van den Brandt, J. A. Konter, S. Mango, T. Ebert,
K.U. Kainer, K.M. Knoop
Proceedings of the Carolina Symposium on Neutrino Physics in honor of Frank
Avignone, Columbia, USA ed. by J. Bahcall et al.; World Scientific, Singapore
(2001) 310-314.
9. *Superconductivity above H_{c2} as a probe for Niobium RF-cavity surfaces*
S. Casalbuoni, L. von Sawilski, and J. Kötztler
Proceedings of the 11th Workshop on RF-Superconductivity, SRF 2003, 8-12 Sept.
2003 Travemünde, Germany, cond-mat/0310565.
10. *Surface Superconductivity of Niobium: Onset on long-range coherence*
L. von Sawilski, S. Casalbuoni and J. Kötztler
Proceedings of the 11th Workshop on RF-Superconductivity, SRF 2003, 8-12 Sept.
2003 Travemünde, Germany.
11. *Susceptibility measurements on surface treated Niobium samples*
B. Steffen, E.A. Knabbe, L. Lilje, P. Schmüser, S. Casalbuoni, J. Kötztler,
L. von Sawilski
Proceedings of the 11th Workshop on RF-Superconductivity, SRF 2003, 8-12 Sept.
2003 Travemünde, Germany.
12. *Evidence for a percolation-driven transition to coherent surface superconductivity*
J. Kötztler, L. von Sawilski and S. Casalbuoni
Physical Review Letters **92** (2004) 067005.
13. *Surface Superconductivity in Niobium for Superconducting RF Cavities*
S. Casalbuoni, E.A. Knabbe, J. Kötztler, L. Lilje, L. von Sawilski, P. Schmüser,
B. Steffen
DESY 04-027; TESLA 2004-06;
Numerical Instruments and Methods in Physics Research A, **538** (2005) 45-64.
14. *Bunch length measurements at the SLS Linac using Electro-optical Techniques*
A. Winter, M. Tonutti, S. Casalbuoni, P. Schmüser, S. Simrock, B. Steffen,
T. Korhonen, T. Schilcher, V. Schlott, H. Sigg, D. Sütterlin
Proceedings of the 9th European Particle Accelerator Conference (EPAC2004)
2004 Lucerne, Switzerland
15. *The Synchrotron Radiation Beamline at TTF2*
O. Grimm, S. Casalbuoni, L. Fröhlich, O. Peters, J. Rossbach
Proceedings of the 9th European Particle Accelerator Conference (EPAC2004)
2004 Lucerne, Switzerland

16. *Bunch length measurements at the SLS Linac using Electro Optical Sampling*
B. Steffen, S. Casalbuoni, P. Schmüser, S. Simrock, M. Tonutti, A. Winter,
T. Korhonen, T. Schilcher, V. Schlott, H. Sigg, D. Sütterlin
Proceedings of the 26th International Free-Electron Laser Conference and the 11th
FEL User-Workshop, FEL2004, 29 August-3 September, 2004 Trieste, Italy.
17. *Numerical Studies on the Electro-Optic Sampling of Relativistic Electron Bunches*
S. Casalbuoni, H. Schlarb, B. Schmidt, P. Schmüser, B. Steffen, A. Winter
TESLA 2005-01.
18. *Far-Infrared Transition and Diffraction Radiation - Part I: Production, Diffraction
Effects and Optical Propagation*
S. Casalbuoni, B. Schmidt, P. Schmüser
TESLA 2005-015.
19. *Numerical Studies on the Electro-Optic Sampling of Relativistic Electron Bunches*
S. Casalbuoni, H. Schlarb, B. Schmidt, B. Steffen, P. Schmüser, A. Winter
Proceedings of the 21st Particle Accelerator Conference (PAC2005) Knoxville
Tennessee, USA
20. *Electro Optic Bunch Length Measurements at the VUV-FEL at DESY*
B. Steffen, S. Casalbuoni, E.-A. Knabbe, H. Schlarb, B. Schmidt, P. Schmüser,
A. Winter
Proceedings of the 21st Particle Accelerator Conference (PAC2005) Knoxville
Tennessee, USA
21. *Spectral Decoding Electro-Optical Measurements for Longitudinal Bunch
Diagnostics at the DESY VUV-FEL*
B. Steffen, S. Casalbuoni, E.-A. Knabbe, B. Schmidt, P. Schmüser, A. Winter
Proceedings of the 27th International Free Electron Laser Conference, Palo Alto,
USA.
22. *Far-Infrared Transition and Diffraction Radiation - Part II: The THz Beamline at
the VUV-FEL Linac*
S. Casalbuoni, B. Schmidt, P. Schmüser, B. Steffen
TESLA 2006-004.
23. *Generation of x-ray radiation in a storage ring by a superconductive cold-bore
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