

Simone Di Mitri, Curriculum Vitae

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First, Last Name Simone Di Mitri.
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Keywords Particle accelerators. Photonics. Teaching.
Present Position Accelerators Group Coordinator, Elettra Sincrotrone Trieste.
Adjunct Professor, Univ. of Trieste, Dept. of Physics

Educational & Professional Record

2023/02 - to date Accelerators Group Coordinator, Elettra Sincrotrone Trieste
2006/02 - 2023/02 Senior staff scientist, Accelerators Group, Elettra Sincrotrone Trieste
2002/04 - 2006/02 Junior scientist, Accelerators Group, Elettra Sincrotrone Trieste
2008/09 - 2011/10 Ph.D. in Accelerator Physics, Dept. of Mathematics and Natural Sciences, University of Groningen, The Netherlands. Title: *Machine design and electron beam control of a single-pass linac for free electron laser: the FERMI@Elettra case study.*
1995/09 - 2000/10 Master Degree in Nuclear and Sub-Nuclear Physics, University of Pisa, Italy. Experimental Thesis in Accelerator Physics at the INFN-LNF, Rome, Italy. Title: *Single particle dynamics in the presence of sextupole nonlinearities in the electron-positron collider Daphne.*
1990/09 - 1995/07 Bachelor Degree, Senior High School "G. Galilei", Terni, Italy.

Competences

Design Linear, circular, recirculating and energy-recovery accelerators.
Commissioning & Operation TeraFERMI, THz user facility (2016-to date)
FERMI, free-electron laser (2009-to date)
Elettra, synchrotron light source (2002-2006, 2012-to date)
Daphne, e+ / e- collider (1999-2000)

Professional Responsibilities

Without budget

2017 – to date	<i>Elettra2.0</i> : schemes for short photon pulses.
2018 – 2021	<i>CompactLight</i> : concept and facility parameters list.
2022 – 2024	<i>FERMI</i> : task force for the electron beam optics and dynamics.
2009 – 2022	<i>FERMI</i> : commissioning, planning, liason to users.
2003 – 2009	<i>FERMI</i> : facility layout, beam physics.
2002 – 2006	<i>Elettra</i> : injector and transfer lines for the full energy upgrade.

With budget

2020 – 2024	<i>LEAPS-INNOV</i> : coordination of the Elettra workpackages
2019 – 2020	<i>FERMI</i> : upgrade of the Main Beam Dump line (design, Work Director).
2015 – 2017	<i>Industrial stakeholder</i> : ERL-EUV FEL for nano-litography (design, beam time usage at FERMI).

Leading of Collaborations

2018 - 2020	2D Fourier analysis of microbunching instability. <i>Elettra, STFC, ASML.</i>
2017 - 2018	Coherent THz emission in an arc compressor. <i>Elettra, Univ. Rome La Sapienza, Univ. Lille.</i>
2016 - 2018	Three-dimensional effects of coherent synchrotron radiation. <i>Elettra, STFC, Pulsar Physics, ASML.</i>
2015 - 2017	Design of a compact ERL EUV FEL for nano-litography. <i>Elettra, TJNAL, ASML.</i>
2003 - 2006	Start-to-End simulations of FERMI FEL. <i>Elettra, STFC, Univ. Liverpool, LBNL, NIU, ANL, UNM, Univ. Maryland.</i>

Professional Services

Review Committees

2023 - to date	Machine Advisory Committee of MAX IV (Sweden). Machine Advisory Committee of INFN (Italy). Review Committee of EuPraxia (Italy). Scientific Advisory Committee of the DALI THz source (Germany).
2021 - 2023	Review Committee of the SHINE accelerator and FEL (China). Review Panel of the synchrotron ALBA-II lattice (Spain). Referee for the Call of the INFN - CSN5.
2018 - 2021	Scientific Advisory Committee of the Soft X-ray FEL (Sweden). Scientific Advisory Committee of FREIA-X THz source (Sweden).
2011 - 2013	Beam Dynamics Review Committee of the PAL-XFEL (South Korea).

International Program Committees

2016 - 2024	Scientific Advisory Board of IPAC.
2021 - 2023	Scientific Program Committee of the FELs of Europe workshop. Local Organizing Committee of IPAC 2023
2010 - 2022	Scientific Program Committee of the International FEL Conference (co-chair in 2022).

Spokeperson at EU-Projects

2020 – to date	Co-spokeperson for Light Sources in the <i>League of European Accelerator-based Photon Sources (LEAPS)</i> .
2021 – 2025	Co-leader of LEAPS-INNOV Insertion Devices.
2017 – 2020	Topic co-leader for FELs in <i>LEAPS</i> .
2013 – 2015	Spokeperson for beam microbunching and compression for seeded FELs in <i>FELs of Europe</i> .
2005 – 2008	Spokeperson for particle collective instabilities in FELs for <i>EUROFEL</i> .

Organization of Workshops

2023/10	Chairman of the LEAPS workshop on Longitudinal Electron beam Dynamics for coherent light Sources (LEDS), ENEA Frascati, Italy.
2017/09	Chairman of the Intern. ICFA mini-Workshop on Nonlinear Dynamics and Collective Effects in Particle Beams (NOCE), Arcidosso, Italy.

2007 – 2014 Member of the Organizing and Program Committee of the I–VI International Workshops on Microbunching Instability.

Membership to Scientific Societies

2020 – 2023 American Physical Society (APS)
2018 – 2023 Societ Italiana Luce di Sincrotrone (SILS)
2015 – 2018 Italian Physical Society (SIF)

Editorial Boards

2020 - 2023 Physical Review Accelerators and Beams

Teaching

National Schools

2022–2023 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2021–2022 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2010–2021 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2019–2020 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2018–2019 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2017–2018 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2016–2017 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Physics, FIS/04, 6 CFU, 48 hours.
2015–2016 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Engineering and Architecture, FIS/01, 6 CFU, 48 hours.
2014–2015 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Engineering and Architecture, FIS/01, 6 CFU, 48 hours.
2013–2014 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Engineering and Architecture, FIS/01, 6 CFU, 48 hours.
2012–2013 Contract Professor of Particle Accelerator Physics, Univ. of Trieste, Dept. of Engineering and Architecture, FIS/01, 6 CFU, 48 hours.
2016–2019 Faculty member for the Friuli Venezia Giulia regional project *Pages2-4*, High Schools, 6 hours.

International Schools

- 2023 Instructor at the ICTP Intern. School on Synchrotron Radiation, remote;; 2 hours.
- 2022 Instructor at the Advanced School on Experimental Techniques for Synchrotron Radiation, Lecco, Italy; 2 hours.
Instructor at the SMART-X Innovative Training Network, Trieste, Italy; 2 hours.
- 2021 Instructor at the ICTP Intern. School on Synchrotron Radiation, Trieste, Italy; 2 hours.
Lecture on High Gain FELs, Angstrom Lab., Uppsala Univ. Sweden; 2 hours.
- 2019 Instructor at the Italian School on Synchrotron Light Sources, Trieste, Italy; 2 hours.
- 2016 Instructor at CERN Accelerator School: Advanced Course on ERLs and FELs, Hamburg, Germany; 4 hours.
- 2015 Instructor at U.S. Particle Accelerator School: Linac Design for FELs, Rutgers University, East Brunswick, NJ, U.S.A.; 40 hours.
- 2014 Faculty of Accelerator Physics at the International Nathiagali Summer College, Islamabad, Pakistan; 6 hours.
- 2013 Instructor at U.S. Particle Accelerator School: Linac Design for FELs, Colorado State University, Fort Collins, CO, U.S.A.; 40 hours.
- 2005 Tutor at Cern Accelerator School (Advanced), Trieste, Italy; 4 hours.

Students Supervision & Thesis Referee

- 2017 - 2022 Supervision of 2 PhD students, Univ. of Trieste, Dept. of Physics.
Supervision of 7 graduate students, Univ. of Trieste, Dept. of Physics, of Engineering, and Mathematics.
Supervision of 3 under-graduate students, Univ. of Trieste, Dept. of Physics.
- 2017 - 2023 Referee of 4 PhD thesis, Univ. of Hamburg and Univ. of Rome La Sapienza.

Third Mission

- 2020/04 - 2024/04 Co-responsible of LEAPS-INNOV Insertion Devices (funded Horizon2020).
- 2016/03 - 2017/12 Responsible of 1-week scientific-industrial user beam time at the FERMI FEL.
- 2015/09 - 2017/03 Responsible for the magnetic lattice design, simulation and specifications of an energy-recovery UV FEL for industrial application in nano-litography.

Recent Fields of Research

- Linac-FELs* Control of coherent synchrotron radiation and microbunching instability for improved FEL brilliance
Design of a cost-effective X-band linac-driven x-ray FEL.
- ERL, ICS* Arc compressor design for compact recirculating lattices.
- Storage Rings* Production of sub-ps x-ray photon pulses.

Referee for peer-reviewed Journals

Nature Communications, Reviews of Modern Physics, Physical Review Letters, Optica, New Journal of Physics, Journal of Physics B, Journal of Synchrotron Radiation, Physical Review Accel. Beams, Nuclear Instruments and Methods in Physics Research, A and B, Optics Communications, JINST, Frontiers in Physics, Physica Scripta, Radiation Physics and Chemistry, IEEE Transactions on Nuclear Science and Techniques, Nuclear Science and Techniques, Photonics MDPI, Applied Sciences MDPI.

List of Talks

- 05/2024 - Invited IPAC24 (Nashville, Tennessee, USA): *Transverse deflecting cavities for short x-ray pulses at a DLSR: an accelerator-plus-beamlines perspective*
- 09/2023 - Invited 3rd African Conference on Fundamental and Applied Physics (George, South Africa): *Challenges of 4th generation accelerator-driven light sources*
- 09/2023 - Contrib. SILS 2023 (Rome, Italy): *Transverse deflecting cavities for short x-ray pulses at a DLSR*
- 08/2023 - Contrib. FLS, 67th ICFA Adv. Beam Dyn. Workshop on Future Light Sources (Lucerne, Switzerland): *Scaling of beam collective effects with bunch charge in the CompacLight FEL*
- 08/2023 - Contrib. FLS, 67th ICFA Adv. Beam Dyn. Workshop on Future Light Sources (Lucerne, Switzerland): *FERMI FEL upgrade plans*
- 06/2023 - Invited KEK Seminar (Japan, remote): *Lessons learned from the FERMI FEL zone*
- 03/2023 - Invited Seconda Giornata Acceleratori INFN (Catania, Italy): *Accelerators development at Elettra Sincrotrone Trieste*
- 09/2022 - Invited Forum on Advanced FEL Techniques (Hamburg, Germany): *FEL Developments*
- 08/2022 - Contrib. 40th Intern. FEL Conference (Trieste, Italy): *Bridging the gap of storage ring light sources and linac-driven FELs*
- 12/2021 - Invited ACTIS Workshop: *Beam dynamics in arc compressors*
- 10/2021 - Invited MAX IV Lab. (Lund, Sweden): *News from the Elettra zone: Elettra2.0 and FERMI2.0*
- 05/2020 - Invited IPAC20 (Caen, France): *Mitigation of microbunching instability for improved FEL spectral brilliance*
- 11/2019 - Invited Canadian-Italian Workshop on Future light Sources (Trieste, Italy): *Short pulse options at a diffraction limited storage ring.*
- 10/2019 - Invited Uppsala Univ. (Sweden): *On electron beam brightness for compact X-ray sources*

- 09/2019 - Contrib. SILS 2019 (Camerino, Italy): *Laser-slicing at a diffraction limited storage ring*
- 05/2019 - Invited HDZR (Dresda, Germany): *Spectro-temporal pulse shaping at FERMI FEL*
- 12/2018 - Invited Time-resolved Experiments at new synchrotron radiation facilities (Trieste, Italy): *Overview of time-resolved schemes for synchrotrons*
- 09/2018 - Invited 8th German-Russian Travelling Seminar (Trieste, Italy): *How do synchrotrons and free-electron lasers work?*
- 04/2018 - Invited Canadian-Italian Workshop on Future light Sources (Saskatoon, Canada): *Elettra 2.0, the machine and FERMI, the machine.*
- 03/2018 - Contrib. FLS18 (Shanghai, China): *Compact Arc Compressor for FEL-Driven Compton Light Source and ERL-Driven UV FEL.*
- 10/2017 - Invited Univ. of Chicago (Chicago, IL): *Benchmarking coherent synchrotron radiation.*
- 09/2017 - Contrib. SIF (Trento, I): *Design study of high gradient, low impedance accelerating structures for the FERMI free-electron laser linac upgrade.*
- 10/2016 - Contrib. NAPAC (Chicago, IL, USA): *Operating Synchrotron Light Sources with a High Gain Free Electron Laser.*
- 09/2016 - Contrib. IRMMTHz Conf. (Copenhagen, DK): *THz Coherent Transition Radiation at TeraFERMI: Commissioning Results.*
- 09/2016 - Contrib. SIF (Padova, I): *The FERMI Seeded FEL Facility: Operational Experience and Future Perspectives; Operating Synchrotron Light Sources with a High Gain Free Electron Laser.*
- 08/2016 - Invited Designing Future X-ray FELs (Daresbury, UK): *Modelling Linacs and their Components.*
- 02/2016 - Contrib. TWIICE-2 (Abingdon, UK): *Operating synchrotron light sources with a high gain free electron laser.*
- 08/2015 - Invited Intern. FEL Conf. (Daejeon, South Korea): *Estimate of free electron laser gain length in the presence of collective effects.*
- 07/2015 - Contrib. SILS (Trento, I): *Operating synchrotron light sources with a high gain free electron laser.*
- 06/2015 - Invited ERL Workshop (Stony Brook Univ., NY): *Transverse emittance-preservign arc compressor.*
- 01/2015 - Invited CLIC Workshop (CERN): *Exotic schemes of electron beam manipulation.*
- 09/2014 - Contrib. SIF (Pisa, I): *Theoretical and experimental advances on Coherent Synchrotron Radiation and Microbunching Instability at FERMI.*
- 02/2014 - Invited ASTEC (Daresbury, UK): *Opportunities for electron beam and FEL studies at CLARA.*
- 09/2013 - Invited ALBA-CELLS (Barcelona, ES): *Introduction to FERMI FEL: Physics Studies. Introduction to elegant.*
- 08/2013 - Invited Intern. FEL Conf. (New York, NY, USA): *Emittance control in the presence of collective effects in the FERMI@Elettra FEL linac driver.*

- 06/2013 - Invited High Gradient Workshop (Trieste, Italy): *Electron beam brightness in NC linac-driven x-ray FELs.*
- 05/2013 - Invited 5th Microbunching Instability Workshop (Pohang, South Korea): *Suppression of microbunching instability with a magnetic chicane at FERMI@Elettra.*
- 05/2013 - Invited 5th Microbunching Instability Workshop (Pohang, South Korea): *Cancellation of CSR kicks with optics balance.*
- 04/2012 - Invited LBNL (Berkeley, CA, USA): *Update on the FERMI@Elettra FEL Commissioning and Initial Operation.*
- 09/2011 - Invited IPAC (San Sebastian, ES): *Commissioning and Initial Operation of FERMI@Elettra FEL.*
- 04/2011 - Invited SPIE Conf., Advances in X-ray FELs (Prague, CZ): *FERMI@Elettra, a seeded free electron laser source for a broad scientific user program.*
- 01/2011 - Invited KVI (Groningen, NL): *The 100 nm to 4 nm Single-pass, Linac-based FERMI@Elettra FEL.*
- 03/2010 - Invited 2nd IRUVX-PP Annual Meeting (Hamburg, D): *FERMI@Elettra is under commissioning.*
- 09/2009 - Invited ICAP (San Francisco, CA, USA): *Design and Simulation Challenges for the FERMI@Elettra project.*
- 09/2009 - Invited KIT (Karlsruhe, D): *The 100 nm to 4 nm FERMI@Elettra FEL project. Introduction to elegant for the TBONE project.*
- 10/2008 - Invited 2nd Microbunching Instability Workshop (Berkeley, CA, USA): *Overview and Recent Progress in Theory and Simulation.*
- 08/2006 - Invited Intern. FEL Conf. (Berlin, D): *How to obtain high quality electron bunches in the presence of normal conducting linac wakefields.*