

CURRICULUM VITAE

Personal Information

First Name and Surname: Marco Mandurrino
Date and Place of Birth: January 1984, Pinerolo (Torino), Italy
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Education

2017: Ph.D. in Electronic Engineering. Politecnico di Torino, Department of Electronics and Telecommunications
2013: M.Sc. in Engineering Physics. Politecnico di Torino, Faculty of Information Engineering (ICTs)
2009: B.Sc. in Physics. Università degli Studi di Torino, Department of Physics

Personal Skills

Languages	Mother tongue: Italian English: professional (IELTS Certification – British Council) French: intermediate
Informatics	C, C++: high Mathematica, MATLAB: high TCAD Sentaurus: high Tanner L-Edit: high

Work Experience

- Apr 2023 - present: senior research fellow at INFN Torino as developer of monolithic CMOS sensors for timing
- Jun 2020 - May 2022: research fellow at INFN Torino as a silicon particle detectors designer within the *PRIN* no.2017L2XKT and *FARE* Italian grants
- Mar 2018 - Feb 2020: grant holder and principal investigator at INFN Torino for the design and development of a new generation of silicon particle detectors for 4D tracking within the *RSD* experiment (CSN5)
- Jun-Sep 2019: visiting scientist at the SSD laboratory at CERN headed by Dr. M. Moll and supervisor of the PhD student M. Tornago during the testing campaign of the RSD1 run of detectors
- Feb 2017 - Feb 2018: post-doctoral researcher in the field of silicon particle detector design at INFN Torino within the *UFSD* European project
- Sep 2006 - present: professional activity as musician (pianist, composer and conductor)

Collaborations and Responsibility Roles

- 2024: session co-chair at the 2024 IEEE NSS/MIC/RTSD international conference in Tampa (FL, USA)
- 2024: thesis co-supervisor of a graduate student in physics (M. Barbagiovanni) at Università degli Studi di Torino
- From April 2024: nominated Convener of the WG4 (simulation) within the DRD3 collaboration at CERN
- From 2024: leading co-Editor of the Special Topic “High-performance silicon sensors for particle tracking in 4 dimensions” of *Frontiers in Physics*
- From 2023: Member of the Associate Editor Board of the “Radiation Detectors and Imaging” Specialty Section of *Frontiers in Physics*
- From 2019: member of the **ARCADIA** experiment (a project involving several INFN sections, with the aim of realizing a multi-purpose monolithic sensor fabricated with the 65-nm lithography) as an expert of silicon technologies and detectors modeling. As a part of the Work-Package 1, he prepared a 3D numerical setup for the first pixel characterizations. Besides the scientific activity, the theses of a master’s student (N. Cacocciola, 2019)

and of a PhD student in physics (L. De Cilladi, 2020) about the numerical simulations of the ARCADIA detector have been supervised

- From 2019: member of the **RD_MUCOL** project, the Italian division of an international collaboration aiming to develop the silicon tracker for the first muon collider. Detector modeling and characterization activities performed in order to find the detector layout rules that will accommodate the physics requirements of the experiments at the future collider
- From 2017: member of the **RD50 collaboration** (development of radiation hard semiconductor devices for Very High Luminosity Colliders), **CMS** (until 2022) and **ALICE** (from 2023) experiments at CERN, Geneva. These activities concern the study, design and optimization with the TCAD numerical simulation of silicon detectors for high precision timing and radiation-intense environments
- From 2021 to 2023: Guest Associate Editor of the Special Topic on “Physics-based Numerical Modeling and Design of Particle Detectors” of *Frontiers in Physics*
- From 2020 to 2022: member of the **ALICE 3** group as an expert of silicon detector design, working at the R&D of the future ALICE timing layers
- 2019: representative speaker of the RD50 Collaboration at the CTD-WIT 2019 in Valencia, Spain
- From 2018 to 2020: head of the **RSD** experiment (funded by INFN CSN5 and in collaboration with FBK in Trento) with the role of project coordinator and detector designer. So far, two RSD productions have been released (RSD1 in June 2019 and RSD2 in September 2021). Within the RSD1 run characterization activities, the stage/thesis of one undergraduate student in physics (F. Lenta, 2019) has been supervised. The aim of the experiment was the development of an innovative generation of UFSD-based detectors, called Resistive AC-Coupled Silicon Detectors. RSDs benefit from the high timing performances of standard UFSDs and, thanks to a new readout paradigm, allow obtaining an unprecedented precision in the spatial tracking of particles. Recent publications demonstrated that RSDs with 200- μm -pitch pads produce ~ 40 ps and ~ 5 μm in the time and space resolution, respectively
- 2018: local committee member at the 11th Workshop on Picosecond Timing Detectors for Physics and Applications (Torino, 16-18 May 2018)
- From 2017: reviewer for *Applied Physics Letter*, *Journal of Computational Electronics*, *IEEE Transactions on Nuclear Science*, *Physica Status Solidi A*, *Journal of Instrumentation*, *Nuclear Instruments and Methods in Physics Research Section A*, *Frontiers in Physics* and *Micromachines* peer-review journals
- From 2017 to 2022: detector designer at INFN Torino within the **UFSD** project. Study, modeling, optimization and layout design (lithographic masks) of silicon sensors, leading to the UFSD2, UFSD3 and UFSD4 productions
- From 2017 to 2022: reference person for accessing the Torino INFN Computational Cloud for the RSD, UFSD and ARCADIA experiments

Teaching and Dissemination

- 2025: lecturer of a TCAD course at the DRD3-AIDAInnova 1st TCT School at CERN
- 2021: first comprehensive book about fast silicon detectors has been published by Taylor & Francis
- 2020: CERN Detector Seminar “Innovative Silicon sensors for future trackers” about RSD
- 2019: Ph.D. course (16 hours, ~ 12 students) on “Numerical simulation of silicon particle detectors” for physicists at Università degli Studi di Torino
- 2018-2019: seminars on the numerical simulation of silicon particle detectors for master’s students in physics at Università degli Studi di Torino
- 2014: teaching assistant of the laboratories on numerical simulation for master’s students at Politecnico di Torino

Grants

- 2020: recipient of the “2020 IEEE NSS/MIC Trainee Grant” to attend the 2020 IEEE Nuclear Science Symposium in Boston, USA (virtual conference)
- 2019: recipient of the “2019 IEEE NSS/MIC Trainee Grant” to attend the 2019 IEEE Nuclear Science Symposium in Manchester, UK

- 2018: recipient of the “2018 IEEE NSS/MIC Trainee Grant” to attend the 2018 IEEE Nuclear Science Symposium in Sydney, Australia
- 2017: first ranked at the national call “2017 INFN Young Researchers Grant” to award projects funding

Publications

Author and co-author of ~200 publications, including books, patents, journal papers and conference contributions. See the complete list at this link: www.marcomandurrino.com/publications.html