Curriculum Vitae

Achievements Track-Record

Marcello De Matteis graduated in Industrial Engineering from the Polytechnic University of Madrid (UPM), Spain, in 2003 and in Electronic Engineering from the Polytechnic of Milan, Italy, in 2004 (as selected student for Top Industrial Manager for Europe (TIME) double degree program between Polytechnic of Milano and the UPM).

He is currently Assistant Professor with the Department of Physics of the University of Milan-Bicocca (Italy).

He will take up service as an Associate Professor at the same University on October 1st, 2021

In 2016 and 2020 he obtained the Italian National Scientific Qualification (associate professor and full professor level, respectively) for Sector 09/E3 (Electronics).

Since 2005 he has participated to the development of more than 35 Application Specified Integrated Circuits (ASICs). He was the principal designer of >20 ASICs, integrated in various technological processes (from CMOS 0.5 µm, down to 28 nm and FinFet 16 nm) for neuroscience, sensors, 4G/5G/WLAN telecommunications, and physics experiments.

In 2004 he joined the Dept. of Innovation Engineering of the University of Salento (Lecce) as a phd student and later (2008) as **responsible of the Sensors and MEMS Laboratory** within the "Green Engine" project. He collaborated with several international companies and research centres (**Infineon, IMEC, ST, Chipidea MIPS, ReadyTrace Inc., University of Pavia, Marvell**) working on baseband circuits for Telecommunications in sub-1 µm CMOS technologies.

In 2010 he moved to the Department of Physics (University of Milano Bicocca) where he has been formally technical responsible of the ASIC development for **ATLAS Muon Drift Tubes** in IBM CMOS 0.13 µm (definitively mounted on the ATLAS Muon Drift Chamber as part of the High-Luminosity Large Hadron Collider (**HL-LHC**)).

In 2013 he **coordinated the design** of an ASIC for the automatic biasing of low-noise (Amplifiers, LNA) amplifiers based on HEMT (High-electron-Mobility-Transistors) transistors used as analog front-ends of receivers for the observation of cosmic background radiation (Cosmic Microwave Background, CMB) within Large-Scale Polarization Explorer (LSPE) experiment.

Since 2015 **he has been responsible of two Work-Packages** within two projects funded by the Italian Institute of Nuclear Physics (INFN), ScalTech28 and FinFet16 for rad-hard design in CMOS 28 and FinFet 16 nm technologies.

He is member of **Materia Oscura a Bolle (MOSCAB**) experiment about bubble-chamber detectors for Dark Matter, in which he deals with the acquisition of acoustic signals emitted by bubble enucleation process.

Since 2017 he is **Principal Investigator** of the Proton Sound Detector experiment (129.000 kEuros) funded by the National Institute of Nuclear Physics (INFN), which involves 5 research units (INFN Section of Milan-Bicocca, Polytechnic of Valencia, National Center of Oncological Hadron Therapy (CNAO, Pavia), Ludwig Maximilians Universität München (LMU, Germany), INFN Section of Catania).

Today he is responsible of two research activities regarding development of **Neuron-Electronic Junction Biosensors** in CMOS 28 nm technology and **Proton Sound Detectors** for Hadron Therapy.

He published four invited papers at the IEEE Journal of Solid-State Circuits (international leading journal for Microelectronics), after presentation and selection at the European Solid-State Circuits Conference.

He is author and co-author of more than 140 papers in international conferences (>95), journals (46) and 7 book chapters.

He has participated in 32 international conferences as a speaker, including 5 as an invited speaker for his research activity in low-power analog filters design and analog radiation-hardness design.

Scopus h-index: 16. Total Citations: 789.

Curriculum Vitae

Personal Information

Family name, First name: De Matteis Marcello
ORCID: 0000-0003-1061-1262 Date of birth: 31/12/1975
Nationality: Italian. URL for web site: https://www.unimib.it/marcello-de-matteis

- **Education**

2008 PhD in Information Engineering, Dept. of Innovation, University of Salento, Italy
(Name of PhD Supervisor: prof. Andrea Baschirotto)
PhD Thesis Title: sub-1V Analog Circuits for Telecommunications

2003 Master Degree in Industrial Engineering, Universidad Politécnica de Madrid, Spain

2004 Master Degree in Electronic Engineering, Polytechnic of Milano, Italy

- **Current Position**

2014 – Now Assistant Professor, Department of Physics, University of Milano Bicocca, Italy

- **Previous Positions**

2012 – 2014 Post-Doc Researcher in Microelectronics Design for High-Energy Physics Experiments Department of Physics, University of Milano Bicocca, Italy

2010 – 2012 Responsible of Sensors and MEMS Lab in "Green Engine" Research Network Project Department of Innovation, University of Salento, Italy

2008 – 2010 Post-Doc Researcher in the FIRB Italian National Program "Algorithms, architectures, and CMOS SOCs for wideband wireless applications"
Department of Innovation, University of Salento, Italy

2008 – 2010 PhD Student. Topics: Mixed-signal Integrated Circuits for Telecommunications (major collaborations with Chipidea MIPS Microelectronics, ReadyTrace Inc., IMEC), Department of Innovation, University of Salento, Italy

- **Fellowships and Awards**

2019 1 Gold Award, 1 Bronze Award at 2019 IEEE PhD Research in Microelectronics and Electronics Conference, as Supervisor of a PhD student

2015 Top 10% Paper at IEEE Sensors Conference with the paper:
"De Matteis, M., et al., (2015, November). "A 0.13 μm-CMOS 90μW 51dB-SNR continuous-time accelerometer front-end with 10b SAR-ADC". In 2015 IEEE SENSORS (pp. 1-4).

2009, 2015
2017 First Author of selected papers at the IEEE Journal of Solid-State Circuit Special Issue on IEEE European Solid-State Circuits Conference

2005 – 2008 1 Gold Award, 2 Silver Award and 1 Bronze Award at three different editions of the IEEE PhD Research in Microelectronics and Electronics Conference as PhD Student

2005 – 2006 Fellowship on "Design of Class D Amplifiers for xDSL Transceivers in CMOS 0.13μm" Infineon Technologies, Villach (Austria)

- **Supervision of Graduate Students and Post-Doctoral Fellows**

2020 – Now Supervision of a PhD Student on "Analog and Digital Circuits for Brain-Chip Interfaces", Department of Physics, University of Milano Bicocca, Italy

2018 – 2020 Supervision of a PhD Student on "Proton Sound Detectors", Department of Physics, University of Milano Bicocca, Italy

2006 – Now Tutor and Supervisor of several Bachelor Thesis students and Master Thesis Student in Microelectronics, Information Technology and Physics.

- **Teaching Activities**

2011 – Now Professor – Informatics for Industrial Applications, Department of Informatics, Systems and Communication, University of Milano Bicocca

2014 – Now Assistant Professor - Microelectronics Laboratory, Department of Physics, University of Milano Bicocca

2011 – 2014 Assistant Professor – Informatics for Industrial Applications, Department of Informatics, Systems and Communication, University of Milano Bicocca

2011 – 2014 Assistant Professor – Microelectronics Laboratory, Department of Physics, University of Milano Bicocca

2009 – 2010 Professor – Analog Electronics, Department of Innovation Engineering, University of Salento

2008 – 2010 Professor – Telecommunications Electronics II, Department of Innovation Engineering, University of Salento

2008 – 2010 Professor – Department of Innovation Engineering, Microelectronics Design, University of Salento

- **Organization of Scientific Meetings**

2015 Track Chair in Mixed Signal Circuits and Data for IEEE NEWCAS (Grenoble, France).

2015 Secretary of the 9th IEEE PRIME (Villach, Austria).

2015 Organizer of the Special Session "Deeply Scaled-Down CMOS Integrated Circuits for Physics Experiments" at the IEEE International Conference on Electronics, Circuits, and Systems (ICECS, Cairo, Egypt).

2014 Track Chair in ADC/DAC/Mixed for IEEE PRIME (Grenoble, France).

- **Institutional Responsibilities**

2019 – Now Member of the Panel of the PhD School in Microelectronics, University of Pavia, Italy

2019 – Now Member of the Editorial Board, Dept. of Physics, University of Milano Bicocca, Italy

2014 – Now Member of the Physics Faculty, University of Milano Bicocca, Italy

2014 – Now Member of the Dept. of Physics Board, University of Milano Bicocca, Italy

- **Editorial Board, Committees and Panels**

2021 Guest Editor of the IEEE Transactions on Circuits and Systems II: Express Brief

2021 Associated Editor of the Journal of Low Power Electronics and Applications

2020 Guest Editor of the Journal of Low Power Electronics and Applications

2020 Associated Editor of the International Journal of Circuits Theory and Applications

2020 Technical Program Committee Member for the Special Session "Circuits and Systems for space" at the IEEE International Symposium on Circuits and Systems (ISCAS) 2020

2020 Review panel member, PhD in Microelectronics, University of Pavia, Italy

2020 Review panel member, PhD in Material Sciences and Nanotechnologies, Department of Innovation Engineering, University of Salento, Italy

2018 Review Board, Czech Science Foundation (GACR), Czech Republic

2017 Review Board, Strategic Basic Research (SBO), Research Foundation - Flanders (FWO), Egmontstraat 5, 1000 Brussel, Belgium

2017 Review panel member, PhD in Neurosciences, Department of Biomedical Science, University of Padova, Italy

2017 Review panel member, XXVI and XXVII PhD in Information Engineering, University of Salento, Lecce, Italy

2017 Review panel member, PhD in Design, Manufacturing e Management di Industrial Projects, Final Evaluation, Polytechnic of Valencia, Spain

2014 – Now Member of the Technical Program Committee of the IEEE NEWCAS Conference
2013 – Now Member of the Technical Program Committee of the IEEE PRIME Conference
2013 – Now Member of the Technical Program Committee of the IEEE ICICDT Conference
2013 – Now Associated Editor of the Journal of Circuits, Systems, and Computers.
2014 – 2019 Member of the Technical Program Committee of the IEEE ESSCIRC

- **Membership of Scientific Societies**

2015 – Now Member of the LHC ATLAS Collaboration

- **Major Collaborations**

2019 – Now Linear Beam (https://linearbeam.com, Via Antonio Labriola Z.I. snc, 70037 Ruvo di Puglia (BA) Italy) and Ludwig Maximilians Universität München (LMU, Germany) on Proton Range Verification in Hadron-therapy by Acoustic Techniques
2016 – Now Responsible of the analog design WPs within the project "Advanced Nanometer IC Technologies for Next Generation Transceivers (ANIThiNG)"
2016 – Now Responsible of the analog design WPs within the experiment "SclaTech28", founded by National Institute for Nuclear Physics
2015 – Now NeuroChip Lab on "Analog and Digital Design for Brain-Chip Interfaces" (Biomedical Science Department, University of Padova)
2013 – 2021 Max-Planck-Institut-für-Physik (Werner-Heisenberg-Institut – München, Germany) on "Analog Front-End for LHC ATLAS Muon-Drift-Tubes detectors in CMOS 0.13μm"
2014 Research Institute Company Limited "Design of Bluetooth Low-Energy Receivers", (Hong Kong Applied Science and Technology, Shatin, Hong Kong, P. R. China)
2012 – 2013 CERN (Geneva, Switzerland) on "Analog/digital integrated circuits for LHC CMS Tracker Monitoring System".
2011 – 2015 Pirelli Tyres and Tronchetti-Provera Foundations (Milano, Italy) on "Design of CMOS accelerometer front-end for Vehicle Dynamic Tyre (Cyber-tyre)".
2011 – Now Large-Scale Polarization Explorer (LSPE) balloon experiment on "Design of an Application-Specified-Integrated-Circuit for HEMT LNAs Automatic Biasing".
2008 – 2010 ReadyTrace Inc. on "Low Power AM low-IF Receiver in CMOS 0.18μm (Chino, CA, USA)".
2006 – 2008 Chipidea® MIPS Technologies (Lisbon, Portugal) on "GSM and UWB RX Baseband Design in CMOS 90nm", (The developed integrated circuits are in the IP portfolio of Chipidea® and Readytrace®)
2008 – 2009 IMEC on "Design of analog baseband circuits for UWB" (Leuven, Belgio)

- **Current and Past Research Grants**

2021 Principal Investigator of "Ultra-low-power ADC Hybrid Architecture for medical applications", research contract funded by IC'ALPS (https://www.icalps.com), 165 kEuro
2020 Analog and Digital Circuits for Sensors, Fondo di Ateneo Quota Competitiva (University of Milano Bicocca, 15 k)
2018 Principal Investigator of the Proton Sound Detector experiment, funded by the National Institute for Nuclear Physics (INFN, 129 k)
2017 Analog and Digital Circuits for Brain-Chip Interfaces, Fondo di Ateneo Quota Competitiva (University of Milano Bicocca, 25 k)

- **Invited Talks**

2019 28th - Workshop on Advances in Analog Circuit Design (AACD) Milan, Italy. April 1st–3rd, 2019A. Talk Title: "1-GRad-TID Effects in 28-nm Device Study for Rad-Hard Analog Design"

2019	23rd Workshop on Advances in Analog Circuit Design (AACD) Lisbon, Portugal. April 8th–10th, 2014. Talk Title: "Continuous-Time Analog Filters in CMOS Nanoscale Era"
2014	10th IEEE Conference on PhD Research in Microelectronics and Electronics (PRIME) 2014 - Grenoble, France, June 30th – 3rd July. Talk title: "Continuous-Time Analog Filters Design in nm-scale CMOS technologies"
2014	8th IEEE Topics on Microelectronics (ToM) 2014, Pavia, Italy. Sept. 3rd – 5th. Talk Title: "Analog Filters for Telecommunications"
2008	IEEE Design, Automation and Test (DATE) 2008, Munich, Germany. March 10th – 14th. Talk Title: "Advanced Analog Filters for Telecommunications".