

Curriculum Vitae – Francesco Maria Puglisi

Francesco Maria Puglisi
Dipartimento di Ingegneria “Enzo Ferrari”
Università di Modena e Reggio Emilia
Via P. Vivarelli 10/1, 41125 Modena (MO), Italy

email: francescomaria.puglisi@unimore.it (work)

Website: <http://www.elettronica.unimore.it/site/home/people/francesco-maria-puglisi.html>

ORCID: <https://orcid.org/0000-0001-6178-2614>

Scholar: <https://scholar.google.it/citations?user=UzGQKOIAAAAJ>

Scopus: <https://www.scopus.com/authid/detail.uri?origin=resultslist&authorId=55512692700>

BIOGRAPHY AND SHORT C.V.

Francesco Maria Puglisi was born in Cosenza (CS), Italy, on June 9th, 1987.

- [2008] Bachelor Degree in Electronic Engineering from “Università della Calabria”, full marks with honors. Thesis title: “Sistema di Ausilio per Persone Ipoudenti Easywearable Basato su Filtri Digitali Programmabili: Microcontrollore e DAC”. Advisor: Prof. Gregorio Cappuccino.
- [2010] Visiting Master Student at imec, Belgium. Supervisor: Dr. Emanuele Cornagliotti (imec, Belgium).
- [2010] Master Degree in Microelectronic Engineering from “Università della Calabria”, full marks with honors. Thesis title: “Separation of Bulk Lifetime and Surface Recombination Velocities in Silicon Solar Cells: an In-Line, Low-Cost, and Non-Destructive Technique”. Advisors: Prof. Felice Crupi (Università della Calabria), Dr. Emanuele Cornagliotti (imec, Belgium).
- [2011] Professional Practice Exam (“Esame di Stato”) – I.C.T. Engineer.
- [2012] Admitted to the Ph.D. school (XXVII cycle) in Information and Communication Technology (I.C.T.) – Electronics and Telecommunications at “Università di Modena e Reggio Emilia”. Advisor: Prof. Paolo Pavan.
- [2013] Visiting Ph.D. Student at “SEMATECH”, Albany (N.Y.), U.S.A. Advisor: Dr. Gennadi Bersuker.
- [2015] Ph.D. degree in I.C.T. from “Università di Modena e Reggio Emilia”, full marks. Thesis title: “A Unified Understanding of HfO₂-RRAM Operations: Modeling and Reliability”. Advisor: Prof. Paolo Pavan.
- [2015] (to 2018) Post-Doc Researcher (“Assegnista di Ricerca”) at “Università di Modena e Reggio Emilia”.
- [2016] Adjunct Professor, “Advanced Electron Devices” course, “Università di Modena e Reggio Emilia”, academic year 2015-2016.
- [2017] Adjunct Professor, “Micro and Nano Electronics” course, “Università di Modena e Reggio Emilia”, academic year 2017-2018.
- [2017] National Academic Qualification as Associate Professor (“Abilitazione Scientifica Nazionale alle Funzioni di Professore di Seconda Fascia”), S.C. 09/E3 Elettronica.
- [2018] Associate Professor of Electronics at “Università di Modena e Reggio Emilia”.
- [2023] National Academic Qualification as Full Professor (“Abilitazione Scientifica Nazionale alle Funzioni di Professore di Prima Fascia”), S.C. 09/E3 Elettronica.

RESEARCH INTERESTS

- **Device characterization**, electrical characterization of RRAM devices (operation, variability, and reliability); noise characterization and advanced data analysis in RRAM, silicon FinFETs, and ultra-thin dielectric films; electrical measurements for defects characterization; characterization for reliability of silicon FinFETs, compound semiconductor devices, and advanced bipolar transistors; characterization of 2D devices.

- **Device and circuit modeling and simulation**, physics-based and compact modeling of RRAM devices, with emphasis on Random Telegraph Noise (RTN); simulations of charge transport, charge trapping, and breakdown in dielectrics; TCAD simulations for variability and reliability of compound semiconductor devices for logic; simulation of advanced devices with 2D materials.
- **Circuits and architectures for new computing paradigms**, circuit design for advanced non Von-Neumann computing architectures; Logic-in-Memory (LiM) computing architectures; RTN-based truly random number generator circuits; brain-inspired circuits for ultra-low power, energy-efficient computing and neural networks.

AWARDS AND SCIENTIFIC SOCIETY MEMBERSHIPS

- Recipient of the **A.I.C.I. (Associazione Italiana Coniugi Ingegneri) “E. Loizzo Memorial Award”** assigned at the best graduate student in Engineering at the “Università della Calabria” during the 2010-2012 timeframe.
- Recipient of the **“Best Student Paper Award” at the IEEE ICICDT (International Conference on IC Design and Technology) 2013**, Pavia (Italy), 29-31.05.2013, for the paper “A Compact Model of Hafnium-Oxide-Based Resistive Random Access Memory”.
- Recipient of the **“Distinguished International Researcher Certificate”** assigned twice by the Rector of the “Università di Modena e Reggio Emilia”, Prof. A. Andrisano, on January 13th 2014 and on December 15th 2017.
- Recipient of the **“Best Ph.D. Dissertation Award 2015” for the best Ph.D. Thesis in I.C.T.** at the “Università di Modena e Reggio Emilia” discussed in 2015.
- Recipient of the **“Best Paper Award” at the ESSDERC (46th European Solid-State Device Research Conference) 2016**, Lausanne (Switzerland), 12-15.09.2016, for the paper “Probing Defects Generation During Stress in High-k/Metal Gate FinFETs by Random Telegraph Noise Characterization”.
- Recipient of the **“Best Oral Presentation Award”** at the Riunione Annuale GE (Gruppo Italiano di Elettronica) 2016, Brescia (Italy), 22-24.06.2016, for the paper “Effects of Border Traps on Hysteresis and Mobility Measurement in InGaAs Quantum-Well MOSFETs”.
- Recipient of the **“Best Paper Award” at the ESSDERC (49th European Solid-State Device Research Conference) 2019**, Krakow (Poland), 23-26.09.2019, for the paper “SIMPLY: Design of a RRAM-Based Smart Logic-in-Memory Architecture using RRAM Compact Model”.
- Co-recipient of the **“Best Student Paper Award” at the IEEE IIRW (International Integrated Reliability Workshop) 2020**, Fallen Leaf Lake, California (U.S.A.), 04-29.10.2020, for the paper “Circuit Reliability Analysis of In-Memory Inference in Binarized Neural Networks”.
- Co-recipient of the **“Best Student Paper Award” at the IEEE IIRW (International Integrated Reliability Workshop) 2021**, Fallen Leaf Lake, California (U.S.A.), 04-29.10.2021, for the paper “Understanding the Reliability of Ferroelectric Tunnel Junction Operations using an Advanced Small-Signal Model”.
- Co-recipient of the **“Best Student Paper Award”** and of the **“People’s Choice Award” at the IEEE IRPS (International Reliability Physics Symposium) 2022**, Dallas, Texas (U.S.A.), 27-31.03.2022, for the paper “The Relevance of Trapped Charge for Leakage and Random Telegraph Noise Phenomena”.
- Co-recipient of the **“Best Student Paper Award” at the IEEE IIRW (International Integrated Reliability Workshop) 2023**, Fallen Leaf Lake, California (U.S.A.), 08-12.10.2023, for the paper “The Major Effect of Trapped Charge on Dielectric Breakdown Dynamics and Lifetime Estimation”.
- **IEEE Student Member (2012-2014), Member (2015-2022), Senior Member (2022-Today).**
- Member of IEEE Young Professionals (2015-Today).
- Member of IEEE Electron Device Society – EDS (2018-Today).
- Member of the Device Reliability Physics Committee of the IEEE EDS (2024-Today).
- Member of the Nanotechnology Committee of the IEEE EDS (2024-Today).
- Member of SIE - Società Italiana di Elettronica (2013-Today).
- Local representative for UniMORE at SIE (2024-Today).

TEACHING AND STUDENT MENTORING

Teaching:

- **Instructor** of undergraduate- and graduate-level courses in Electronics in the following fields: semiconductor devices, analog electronics, basic digital circuits, advanced electron devices, reliability, energy-efficient nanoelectronics.

Student Mentoring:

- Advisor of more than 30 master and bachelor theses.
- Advisor of 6 Ph.D. students.
- Member of several International Ph.D. Dissertation Committees (both admission and evaluation).

INSTITUTIONAL ROLES AND RESPONSIBILITIES

- Member of the Council of the International Doctorate School in ICT (2018-Today)
- Member of the Board of the International Doctorate School in ICT (2023-Today)
- President of the Teaching Committee of the International Doctorate School in ICT (2023-Today)
- Delegate of the Department's Director at the Linguistic Center (2018-Today)
- Member of the Council of the National Doctorate in Micro- and Nano-electronics (2022-Today)
- Member of the Research Committee of the Engineering Department (2025-Today)
- Erasmus Delegate of the Course Council in Computer Engineering in Mantova (2025-Today)
- Member of the working group on Internationalization of the Engineering Department (2026-Today)
- Member of the working group on Communication of the Engineering Department (2026-Today)

CONFERENCE COMMITTEES AND PEER REVIEW

- **IEEE European Solid-State Device Research Conference (ESSDERC)**
 - o 2022, Technical Program Co-Chair
 - o 2021, Technical Program Committee Member
 - o 2020, Technical Program Committee Member
 - o 2014, Service Volunteer
- **IEEE International Electron Device Meeting (IEDM)**
 - o 2023, Technical Program Committee Member (Reliability of Systems and Devices)
 - o 2022, Technical Program Committee Member (Reliability of Systems and Devices)
- **IEEE International Integrated Reliability Workshop (IIRW)**
 - o 2026, Technical Program Committee Member
 - o 2025, Member-at-Large
 - o 2024, Member-at-Large
 - o 2023, General Chair
 - o 2022, Technical Program Chair
 - o 2021, Vice Technical Program Chair, Tutorials Co-Chair, and Technical Program Committee Member
 - o 2020, Publication Chair, Vice Technical Program Chair, and Technical Program Committee Member
 - o 2019, Publication Chair and Technical Program Committee Member
 - o 2018, European Liaison and Technical Program Committee Member

- 2017, Technical Program Committee Member
- **IEEE International Reliability Physics Symposium (IRPS)**
 - 2023, Session Chair (Gate/MOL Dielectrics)
 - 2022, Emeritus Track Chair and Session Chair (Gate/MOL Dielectrics)
 - 2021, Track Chair and Session Chair (Gate/MOL Dielectrics)
 - 2020, Track Vice-Chair (Gate/MOL Dielectrics)
 - 2019, Technical Program Committee Member (Gate/MOL Dielectrics)
 - 2018, Technical Program Committee Member (Gate/MOL Dielectrics)
 - 2017, Technical Program Committee Member (Gate/MOL Dielectrics)
- **IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA)**
 - 2026, Track Chair (Emerging Topic in FA and Reliability)
 - 2025, Technical Program Committee (Emerging Topic in FA and Reliability)
 - 2024, Track Chair (Emerging Topic in FA and Reliability)
 - 2023, Track Chair (Emerging Topic in FA and Reliability)
 - 2023, Technical Program Committee Member (Emerging Topic in FA and Reliability)
 - 2022, Track Chair (Emerging Topic in FA and Reliability)
 - 2021, Track Chair (Emerging Topic in FA and Reliability)
 - 2020, Track Chair (Emerging Topic in FA and Reliability)
 - 2019, Technical Program Committee Member (Emerging Topic in FA and Reliability)
 - 2018, Technical Program Committee Member (Emerging Topic in FA and Reliability)
 - 2017, Technical Program Committee Member and Session Chair (Emerging Topics in FA and Reliability)
- **IEEE Electron Devices Technology and Manufacturing (EDTM)**
 - 2025, Technical Program Committee (Reliability)
 - 2024, Technical Program Committee (Reliability)
 - 2023, Technical Program Committee Member (Reliability)
 - 2022, Technical Program Committee Member (Reliability)
- **First International Conference on Microelectronic Devices and Technologies (MicDAT)**
 - 2018, Technical Program Committee Member
- **China RRAM International Workshop (ChinaRRAM)**
 - 2017, Technical Program Committee Member
- **Reviewer for the following journals (non-exhaustive list):** NPG Nature Electronics, NPG Nature Communications, NPG Scientific Reports, IEEE Electron Device Letters (Golden Reviewer), IEEE Transactions on Electron Devices (Golden Reviewer), IEEE Transactions on Device and Materials Reliability, IEEE Journal of Electron Device Society, IEEE Journal on Selected and Emerging Topics in Circuits and Systems, AIP Applied Physics Letters, AIP Journal of Applied Physics, Solid-State Electronics, 2D Materials, Journal of Vacuum Science and Technology, Microelectronic Engineering, Microelectronics Reliability.
- **Associate Editor of IEEE Transactions on Electron Devices**
- **Associate Editor of Microelectronics Engineering (Elsevier)**
- **Associate Editor for the Hardware-related topics of Frontiers in Computational Neuroscience**
- **Guest Editor for the Brain-Inspired Computing: Neuroscience Drives the Development of New Electronics and Artificial Intelligence in Frontiers**

- **Guest Editor** for the **Brain-Inspired Computing: From Neuroscience to Neuromorphic Electronics for new forms of Artificial Intelligence** in **Frontiers**
- **Guest Editor** for the special issue of the international journal **IEEE Transactions on Materials and Device Reliability** including extended papers selected from the top contributed papers at the **IEEE IIRW 2022** international conference.
- **Guest Editor-in-Chief** for the special issue of the international journal **IEEE Transactions on Electron Devices** on Reliability of Advanced Nodes.
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- **Co-organizer** of the **Brain-Inspired Computing Workshop** held in Modena (Italy) in 2019 and 202.

SCIENTIFIC AND INDUSTRIAL COLLABORATIONS

NaMLab gGmbH (Germany) – Reliability of ferroelectric devices
 Applied Materials (Italy, USA) – Modeling of dielectric reliability and of memristive devices
 IHP GmbH (Germany) – RRAM optimization and low-power circuit design
 KAUST (Saudi Arabia) – Characterization and modeling of 2D Devices
 SUTD (Singapore) – Dielectrics Reliability at the Nanoscale
 Polytechnic of Marseille (France) – Dielectric reliability and circuit design
 imec (Belgium) – FinFETs Reliability; RRAM devices at the Nanoscale
 ST-Microelectronics (Italy) – Low-Noise Circuits for Ultrasound Transducers
 ST-Microelectronics (France) – Characterization and modeling of SiGe HBT devices
 M.I.T. (U.S.A.) – InGaAs MOSFETs characterization for reliability

08/07/2026 – Modena (MO), Italy