

Luca Roselli

Full Professor of Electronics · IEEE Fellow

University of Perugia · Department of Engineering · High Frequency Electronics Lab

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IEEE FELLOW

2018

CITATIONS

6,488

H-INDEX

42

PROJECT FUNDING SECURED

€8.13M

PROFILE

Full Professor of Electronics at the University of Perugia and responsible for the High Frequency Electronics Laboratory (HFE-Lab). Research activity spans high-frequency electronics, RFIDs and RFID-enabled sensors, wireless power transfer and energy harvesting, IoT RF technologies, wireless sensor networks, green and compostable electronics, printable circuits, and additive and hybrid manufacturing. Long-standing experience combines academic research, European and national project leadership, scientific evaluation, international community service, and technology transfer through university spin-off companies.

PUBLICATIONS

100+ journal articles
~250 conference papers

BOOKS

2 books
9 book chapters

SCHOLAR IMPACT

h-index 42
i10-index 129

TECH TRANSFER

Founder of 3
university spin-offs

RESEARCH EXPERTISE

- Applied electronics and high-frequency electronics
- Wireless power transfer and RF energy harvesting
- Green electronics, compostable electronics, and large-area electronics
- RFID systems, RFID sensors, and harmonic sensing
- Internet of Things RF technologies and wireless sensor networks
- Printable circuits, additive and hybrid manufacturing, and microfluidics

ACADEMIC APPOINTMENTS & EDUCATION

Academic appointments

- Full Professor of Electronics, University of Perugia — since 13 March 2023.
- Associate Professor of Electronics, University of Perugia — 1 November 2001 to 12 March 2023; responsible for the High Frequency Electronics Laboratory (HFE-Lab) since 2005.
- Ricercatore in Applied Electronics, University of Perugia — 1 November 1991 to 1 November 2001.
- Consultant, MICREL S.r.l. — six-month contract, 1990–1991; modeling of SAW chirp filters and resonators.
- Second Lieutenant, Italian Army — 1989–1990; teacher of electronic equipment.

Education & visiting appointments

- Laurea in Electronic Engineering, University of Florence — 13 December 1988. Thesis: “Surface acoustic resonators”; supervisor: Prof. Carlo Atzeni.
- Visiting Scientist, Ferdinand Braun Institut fuer Hochstfrequenztechnik (FBH), Berlin — 2 months in 1993 and 2 months in 1994.
- Visiting Scientist, University of Michigan, Ann Arbor — 4 months in 1997 under a Fulbright fellowship for researchers.

TEACHING & SUPERVISION

Continuous teaching activity in applied electronics since 1989 and at the University of Perugia since 1991. **Current/recent courses include** System and Circuits for Internet of Things (since 2017) and Electronic Circuits (since 2018).

- Previous courses include Electronic Components, Applied Electronics, Electronic Devices, Microwave Electronics, Power Electronics, Sensors, Basics of Electronic Circuits, Telecommunication Electronics, and High Frequency Electronic Components.

- Supervisor of PhD students from 2001 to the present, including Valeria Palazzari, Francesco Pio Placentino, Andrea Scarponi, Gabriele Tasselli, Giulia Orecchini, Luca Aluigi, Francesca Lolli, Andrea Battistini, Chiara Mariotti, Valentina Palazzi, Gabriele Brizi, Raffaele Salvati, Leonardo Balocchi, and Leonardo Pierantozzi.
- Supervisor of more than 150 Master theses since 1992.
- PhD assessment committee member/external referee for universities in Italy, Belgium, Portugal, Spain, Sweden, and the United States, including Georgia Institute of Technology.

SELECTED FUNDED PROJECT LEADERSHIP

Funding figures are rounded to €1k and refer to the budget of the involved unit.

The following tables summarize funded projects for which Prof. Roselli acted as acquisition lead (project secured and consortium built). The first group includes projects in which he also served as Unit Principal Investigator; the second includes projects for which his role was limited to acquisition leadership.

Acquisition lead and Unit Principal Investigator

Year	Project	Scope	Unit/context	Unit budget
2024	EU Chips JU PROACTIF	Unmanned vehicles for civil security	UNIPG	€474k
2024	EU H2020 EIC Pathfinder REMPOWER	Space-based solar power	UNIPG	€415k
2023	EU KDT EECONE	European ecosystems for green electronics	UNIPG	€429k
2023	EU KDT OPEVA	Optimization of Electric Vehicles Autonomy	UNIPG	€349k
2021	EU ECSEL ENERGY-ECS	Smart and secure energy solutions for future mobility	Spin-off	€253k
2020	EU H2020 NANO-EH	Nano Energy Harvesting	Spin-off	€331k
2019	EU ECSEL ADACORSA	RF technologies for BLOS drones	UNIPG	€375k
2019	EU ECSEL CHARM	Condition monitoring in harsh environment	Spin-off	€211k
2012	IT MIUR GRETA	Localization, identification and sensing by UWB techniques based on green technologies	UNIPG	€260k
2012	EU ENIAC IDEAS	Reconfigurable electronics for efficient electric cars	UNIPG	€300k
2011	EU ENIAC ENLIGHT	Intelligent lighting	UNIPG	€360k
2009	ASI ADAHELI	W-band radiometer feasibility study for solar-flare observation	UNIPG	€60k

Acquisition lead

The projects below were secured and/or consortium-built by Prof. Roselli without direct responsibility as Unit Principal Investigator.

Year	Project	Unit/context	Unit budget
2024	EU Chips JU PROACTIF	Spin-off unit	€318k
2024	EU H2020 EIC Pathfinder REMPOWER	Spin-off unit	€300k
2023	EU KDT EECONE	Spin-off unit	€220k
2023	EU KDT LoLiPoP	UNIPG unit	€251k
2023	EU KDT LoLiPoP	Spin-off unit	€200k
2023	EU KDT OPEVA	Spin-off unit	€208k
2021	EU ECSEL ENERGY-ECS	UNIPG unit	€339k
2019	EU ECSEL CHARM	UNIPG unit	€990k
2011	EU ENIAC ARTEMOS	UNIPG unit	€900k

Total research funding secured: €8.129M, including €3.817M directly managed as Unit Principal Investigator in competitive publicly funded projects and €586k directly managed through industry-funded contract research.

TECHNOLOGY TRANSFER & ENTREPRENEURSHIP

- Founder and general manager of WiS S.r.l. (2000), the first spin-off company of the University of Perugia. Before acquisition in 2008, the company reached annual revenue of €900k and employed 12 engineers; its core business included high-frequency electronic systems for Formula 1 telemetry.
- Founder and general manager of DiES S.r.l. (2005), focused on digital electronic systems for industrial measurement. The company remains active, although his involvement ended in 2010.
- Founder of Luna Geber Engineering S.r.l. (2019), a University of Perugia spin-off focused on transferring advanced electronic technologies for IoT into products for distributed monitoring, including precision farming, animal monitoring, building maintenance, condition monitoring, and electronics and avionics for unmanned ground and aerial vehicles.
- Director of the Scientific and Technical Committee and Board Member of ART S.r.l. (2008–2011), an industrial spin-off of Magneti Marelli.
- Member of the University of Perugia Technology Transfer Committee (2003–2006); author of the first draft of the University Technology Transfer Regulation.
- Representative of the University of Perugia within the IU.NET inter-university consortium for nanoelectronics since 2015; member of the University patent proposal evaluation committee (2018–2020).

PATENTS

- TR2006A000017 — “Sistema automatico di rilevamento dei piattelli rotti nel tiro a volo” (7 Dec 2006).
- TR2008A000005 — “Sicurezza contro gli infortuni derivati dall’utilizzo di utensili da taglio” (6 Nov 2008).
- RM2012A000190 — “Sistema di codifica, decodifica e ritrasmissione senza fili di dati sensoriali” (2 May 2012); extended as European patent application 13161946 2 - 1811.
- IT201800006163A1 — “Rete di ripartizione a radiofrequenza riconfigurabile” (“Reconfigurable Radio Frequency Distribution Network”), filed 8 Jun 2018; granted 14 Jul 2020.

SCIENTIFIC EVALUATION & INSTITUTIONAL SERVICE

European and international evaluation

- Expert evaluator panelist, European Research Council (ERC), PE7 “System and Communication Engineering” — 2011–2017.
- Expert evaluator, FWO Foundation for Scientific Research, Belgium — 2011.
- Expert evaluator, H2020 FET Open — 2016.
- Expert evaluator, Research Council of Lithuania, DAINA projects — since 2017.
- H2020 RIA-ICT Projects expert panelist — 2018.
- Expert evaluator, Academy of Finland — since 2018.
- Expert evaluator, Research and Innovation Foundation / RPF, Cyprus — since 2018.
- Expert evaluator, DTU Oersted COFUND Programme, Denmark — since 2018.
- Expert evaluator, National Science Centre, Poland — since 2019.
- Remote evaluator, EU EIC Pathfinder — 2021.
- Expert evaluator, Science Foundation Ireland — 2021.
- Expert evaluator, EU Health and Digital Executive Agency (HaDEA) — 2022.

National evaluation and institutional roles

- MIUR list of expert evaluators — since 2005.
- Expert evaluator for Regione Emilia Romagna (2015–), Provincia Autonoma di Trento (2016–), Regione Campania (2018–), Regione Piemonte (2020–), Regione Toscana (2020–), and Italian Ministry of Defense (2020–), among other institutions.
- Member of the MIUR expert board for drafting the National Research Plan (PNR) 2019, “green technologies” table — coordinator.

EDITORIAL & SCIENTIFIC COMMUNITY SERVICE

- Associate Editor, IEEE Microwave Magazine.
- Associate Editor, Cambridge University Press Journal on Wireless Power Transfer.
- Guest Editor roles for IEEE Microwave Magazine, MDPI Sensors, Proceedings of the IEEE, IEEE Transactions on Microwave Theory and Techniques, and Wiley International Journal of Numerical Modelling.
- Editorial Board Member, IEEE Transactions on Microwave Theory and Techniques (since 1998) and IEEE Microwave Components and Waveguides Letters (since 1995).
- IEEE MTT Technical Committee leadership: MTT-24 RFID Technologies (Vice Chair 2009–2010; Chair 2011–2012), MTT-25 RF Nanotechnologies (Vice Chair 2017–2018; Chair since 2019), and MTT-26 Wireless Power Transfer (Vice Chair since 2017).
- IEEE MTT-S representative within the IEEE IoT Initiative (2019–2022).
- Member of the Governing Board of the EuMA Topical Group MAGEO (Microwaves in Agriculture, Environment and Earth Observation).

CONFERENCE LEADERSHIP

- Chairman and organizer, IEEE CEM-TD 2007, Perugia.
- Chairman and organizer, first IEEE Wireless Power Transfer Conference (WPTC), Perugia, 2013; now established as an IEEE MTT-S flagship conference on wireless power transfer.
- Co-chair, IEEE WiSNet Topical Conference, 2016–2019.
- Technical Program Reviewing Committee member, IEEE International Microwave Symposium (IMS), since 1999; chaired several subcommittees including time-domain modeling, RFID technologies, and wireless power transfer.
- Executive Committee and Advisory Committee member, IEEE WPTC, since its foundation.
- Technical Program Committee / reviewing roles across Wireless Power Week, EuCAP, RFID-TA, APMC, and other international conferences.

PUBLICATIONS & RESEARCH IMPACT

- More than 100 articles in international peer-reviewed journals.
- Two books published by Wiley and Cambridge University Press, nine book chapters, and almost 250 papers in international peer-reviewed conferences.
- Google Scholar (30 Sep 2026): 6,488 citations, h-index 42, i10-index 129.

Distinctive research contributions

- Finite Difference Time Domain (FDTD) and Multi Resolution Time Domain (MRTD) modeling of high-frequency electronic circuits, including linear and nonlinear components and sub-circuits.
- Linearization of electro-optic devices for Radio over Fiber systems.

- RF electronic systems and subsystems, with specific emphasis on RFID systems ranging from high-performance Formula 1 applications to ultra-low-cost IoT implementations.
- Green electronics, RF wireless power transfer, and energy harvesting circuits.

SELECTED INVITED AND KEYNOTE PRESENTATIONS

- Keynote speaker, COMITE 2010, Brno — “A System-on-Chip Millimeter-Wave Radiometer for the Space-Based Observation of Solar Flares”.
- Keynote speaker, IEEE IMWS-IWPT 2012, Kyoto — “EM- and piezo-scavengers: two useful solutions in highly humanized scenarios toward a ‘greener world’”.
- Keynote speaker, IEEE WPTC 2014, Jeju — “Smart surfaces: an example of Large Area Electronics systems enabled by concurrent WPT, Energy Harvesting and RFID Technologies”.
- Keynote speaker, Wireless Charging 2014, Amsterdam — “Wireless Power Transfer, Green Electronics and Radio Frequency Identification: concurrent technologies enabling Internet of Things evolutions”.
- Keynote speaker, IEEE-HIT Electromagnetic Compatibility Conference 2017, Holon — “EMC implications of IoT device massive deployment”.
- IEEE-MTT Speakers Bureau invited lecture series since 2012 on “Green RFID” and IoT-enabling technologies, delivered at institutions and events in Canada, Italy, China, Korea, and elsewhere.
- Invited talk, ADTC & EDA Workshop 2022, Dresden — “Sustainable sensors for massively distributed monitoring applications”.

AWARDS & RECOGNITIONS

- Fulbright fellowship for researchers — 1997.
- IET Microwaves, Antennas and Propagation Premium Award — 2013.
- WPTC Student Paper Award to Chiara Mariotti — 2014 (advisor).
- RFID-TA Best Paper Award — 2014.
- ENIAC Innovation Award to the ENLIGHT project — 2014.
- IEEE MTT-S IMS Student Design Competition, First Place Award for Wireless Power Transfer to Valentina Palazzi — 2016 (tutor).
- IEEE MTT-S Graduate Fellowship to Valentina Palazzi — 2017 (tutor).
- Elevation to IEEE Fellow — 2018.
- SIE “Sannino” Award for the best Microwave Electronics paper — 2018.
- Finalist, Intellectual Property Award 2021, with “Reconfigurable Radio-Frequency Distribution Network”; presented at EXPO 2021 Dubai — 2022.

ONLINE PROFILE

Google Scholar: <https://scholar.google.it/citations?hl=it&user=SPwDg2gAAAAJ>

SELECTED PUBLICATIONS

Selected peer-reviewed publications, in reverse chronological order.

- [1] V. Palazzi, F. Alimenti, L. Pierantozzi, M. Ribeca, L. Balocchi, L. Valentini, S. Bittolo Bon, P. Mezzanotte, M. M. Tentzeris, and L. Roselli, "Room-Temperature Selective-Metallization Processes Applied to 3-D-Printed and Flexible Materials for Wireless Sensing," *Proc. IEEE*, vol. 112, no. 8, pp. 1065–1090, Aug. 2024, doi: 10.1109/JPROC.2024.3481315.
- [2] P. Mezzanotte, V. Palazzi, F. Alimenti, and L. Roselli, "Innovative RFID Sensors for Internet of Things Applications," *IEEE J. Microw.*, vol. 1, no. 1, pp. 55–65, Jan. 2021, doi: 10.1109/JMW.2020.3035020.
- [3] V. Palazzi, J. Hester, J. Bito, F. Alimenti, C. Kalialakis, A. Collado, P. Mezzanotte, A. Georgiadis, L. Roselli, and M. M. Tentzeris, "A Novel Ultra-Lightweight Multiband Rectenna on Paper for RF Energy Harvesting in the Next Generation LTE Bands," *IEEE Trans. Microw. Theory Techn.*, vol. 66, no. 1, pp. 366–379, Jan. 2018, doi: 10.1109/TMTT.2017.2721399.
- [4] N. B. Carvalho et al., "Europe and the Future for WPT: COST Action IC1301 Team," *IEEE Microw. Mag.*, vol. 18, no. 4, pp. 56–87, 2017, doi: 10.1109/MMM.2017.2680078.
- [5] V. Palazzi, F. Alimenti, P. Mezzanotte, M. Virili, C. Mariotti, G. Orecchini, and L. Roselli, "Low-Power Frequency Doubler in Cellulose-Based Materials for Harmonic RFID Applications," *IEEE Microw. Wireless Compon. Lett.*, vol. 24, no. 12, pp. 896–898, Dec. 2014, doi: 10.1109/LMWC.2014.2361431.
- [6] L. Roselli, N. B. Carvalho, F. Alimenti, P. Mezzanotte, G. Orecchini, M. Virili, C. Mariotti, R. Gonçalves, and P. Pinho, "Smart Surfaces: Large Area Electronics Systems for Internet of Things Enabled by Energy Harvesting," *Proc. IEEE*, vol. 102, no. 11, pp. 1723–1746, Nov. 2014, doi: 10.1109/JPROC.2014.2357493.
- [7] S. Kim, C. Mariotti, F. Alimenti, P. Mezzanotte, A. Georgiadis, A. Collado, L. Roselli, and M. M. Tentzeris, "No Battery Required: Perpetual RFID-Enabled Wireless Sensors for Cognitive Intelligence Applications," *IEEE Microw. Mag.*, vol. 14, no. 5, pp. 66–77, Jul./Aug. 2013, doi: 10.1109/MMM.2013.2259398.
- [8] F. Alimenti and L. Roselli, "Theory of Zero-Power RFID Sensors Based on Harmonic Generation and Orthogonally Polarized Antennas," *Prog. Electromagn. Res.*, vol. 134, pp. 337–357, 2013, doi: 10.2528/PIER12090103.
- [9] R. Vyas, V. Lakafosis, H. Lee, G. Shaker, L. Yang, G. Orecchini, A. Traille, M. M. Tentzeris, and L. Roselli, "Inkjet Printed, Self Powered, Wireless Sensors for Environmental, Gas, and Authentication-Based Sensing," *IEEE Sensors J.*, vol. 11, no. 12, pp. 3139–3152, Dec. 2011, doi: 10.1109/JSEN.2011.2166996.
- [10] G. Orecchini, F. Alimenti, V. Palazzari, A. Rida, M. M. Tentzeris, and L. Roselli, "Design and Fabrication of Ultra-Low Cost Radio Frequency Identification Antennas and Tags Exploiting Paper Substrates and Inkjet Printing Technology," *IET Microw. Antennas Propag.*, vol. 5, no. 8, pp. 993–1001, Jun. 2011, doi: 10.1049/iet-map.2010.0344.
- [11] F. Alimenti, M. Virili, G. Orecchini, P. Mezzanotte, V. Palazzari, M. M. Tentzeris, and L. Roselli, "A New Contactless Assembly Method for Paper Substrate Antennas and UHF RFID Chips," *IEEE Trans. Microw. Theory Techn.*, vol. 59, no. 3, pp. 627–637, Mar. 2011, doi: 10.1109/TMTT.2010.2103210.
- [12] L. Roselli, V. Borgioni, F. Zepparelli, F. Ambrosi, M. Comez, P. Faccin, and A. Casini, "Analog Laser Predistortion for Multiservice Radio-Over-Fiber Systems," *J. Lightw. Technol.*, vol. 21, no. 5, pp. 1211–1223, May 2003, doi: 10.1109/JLT.2003.810931.
- [13] F. Alimenti, P. Mezzanotte, L. Roselli, and R. Sorrentino, "Modeling and Characterization of the Bonding-Wire Interconnection," *IEEE Trans. Microw. Theory Techn.*, vol. 49, no. 1, pp. 142–150, Jan. 2001, doi: 10.1109/22.899975.
- [14] J. A. Pereda, F. Alimenti, P. Mezzanotte, L. Roselli, and R. Sorrentino, "A New Algorithm for the Incorporation of Arbitrary Linear Lumped Networks Into FDTD Simulators," *IEEE Trans. Microw. Theory Techn.*, vol. 47, no. 6, pp. 943–949, Jun. 1999, doi: 10.1109/22.769330.
- [15] P. Ciampolini, P. Mezzanotte, L. Roselli, and R. Sorrentino, "Accurate and Efficient Circuit Simulation With Lumped-Element FDTD Technique," *IEEE Trans. Microw. Theory Techn.*, vol. 44, no. 12, pp. 2207–2215, Dec. 1996, doi: 10.1109/22.556448.