Curriculum vitae di *Marco Di Renzo*

Sottosettori ERC primari (max 3): *PE7 Systems and Communication Engineering*
PE7_6 Communication systems, wireless technology, high-frequency technology;
PE7_7 Signal processing;
PE7_8 Networks, e.g. communication networks and nodes, Internet of Things, sensor networks, networks of robots

PERSONAL DETAILS

DI RENZO, Marco (male)
Birth date: 1 March 1978
Citizenship: Italian

Researcher unique identifiers:

1. https://dblp.org/pid/88/609.html
2. https://scholar.google.com/citations?user=5dRt0OoAAAAJ&hl=en

URL for web site: https://l2s.centralesupelec.fr/en/u/di-renzo-marco/

Education and key qualifications

- October 2013: HDR (French Habilitation) in Wireless Communication Theory, Univ. Paris-Sud XI, France.
- January 2007: Ph.D. degree in Electrical and Information Engineering, University of L'Aquila, Italy.
- April 2003: Laurea degree (5 years) in Electronic Engineering (wireless communications), University of L'Aquila, Italy (summa cum laude and special mention for the outstanding academic career).

Current position(s)

- 2025-present: Chair Professor of Telecommunications Engineering, King's College London, UK.
- 2024-present: Founding Lead Chair, Emerging Technology Initiative on Electromagnetic Signal and Information Theory (ESIT), IEEE Communications Society, USA.
- 2024-present: Chair, Publications Misconduct Ad Hoc Committee, IEEE Communications Society, USA.
- 2024-present: Director of Journals, IEEE Communications Society, USA.
- 2022-present: Head, Intelligent Physical Communications Group, Signals and Systems Lab, France.
- 2021-present: Vice Chair and Rapporteur, Industry Specification Group on "Reconfigurable Intelligent Surfaces", European Telecommun. Standards Institute (ETSI), Sophia Antipolis, France.
- 2019-present: CNRS Research Director (Professor), Paris-Saclay Univ. (CNRS-CentraleSupélec), France.

Previous position(s)

- 2024-2024: Tan Chin Tuan Exchange Fellow, Nanyang Technological University, Singapore.
- 2024-2024: France-Nokia Chair of Excellence in ICT, Nokia Foundation, Oulu University, Finland.
- 2022-2023: Fulbright Fellow, Advanced Science Research Center, The City University of New York, USA.
- 2020-2021: Nokia Foundation Visiting Professor, Aalto University, Helsinki, Finland.
- 2019-2023: Editor-in-Chief, IEEE Communications Letters, IEEE Communications Society, USA.
- 2018-2018: Visiting Professor, University of L'Aquila, L'Aquila, Italy.
- 2017-2019: Adjunct Professor, University of Technology Sydney, Sydney, Australia.
- 2010-2019: Chargé de Recherche CNRS (Assistant/Associate Professor), CNRS-CentraleSupélec, France.
- 2009-2010: Research Fellow, University of Edinburgh (IDCOM), Edinburgh, UK.
- 2008-2009: Tenured Researcher, Catalan Telecommun. Technological Center (CTTC), Barcelona, Spain.
- 2007-2007: Postdoctoral Fellow, University of L'Aquila, Italy.

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements (*10 most relevant papers in my field of research during the last 5 years*)
The publications can be found on the DBLP database (http://dblp.org/pers/hd/r/Renzo:Marco_Di) and on Google Scholar at https://scholar.google.com/citations?user=5dRt0OoAAAAJ&hl=en. Statistics: 343 journal papers and 221 conference papers; 50626 citations, 99 h-index; 20+ highly cited papers (Clarivate Analytics).

[1] M. Di Renzo et al., "Smart Radio Environments Empowered by Reconfigurable Intelligent Surfaces: How It Works, State of Research, and The Road Ahead," IEEE J. Sel. Areas in Communications, vol. 38, no. 11, pp. 2450-2525, Nov. 2020, doi: 10.1109/JSAC.2020.3007211.
Moving from first electromagnetic principles, this paper critically introduces and overviews the concept of smart radio environment as a new paradigm to design future networks, where the wireless channel is an optimization variable. ***2024 IEEE Best Tutorial Award****. Link: https://ieeexplore.ieee.org/document/9140329.*

[2] W. Tang, M. Di Renzo et al., "Wireless Communications With Reconfigurable Intelligent Surface: Path Loss Modeling and Experimental Measurement," in IEEE Trans. Wireless Commun., vol. 20, no. 1, pp. 421-439, Jan. 2021, doi: 10.1109/TWC.2020.3024887.
This paper reports the first comprehensive measurement campaign to characterize the path-loss of metasurface-aided channels in realistic propagation environments, by using digitally-coding metasurfaces. ***2024 IEEE Marconi Paper Prize Award****. Link: https://ieeexplore.ieee.org/document/9206044.*

[3] S. Zhou, W. Xu, K. Wang, M. Di Renzo and M. -S. Alouini, "Spectral and Energy Efficiency of IRS-Assisted MISO Communication With Hardware Impairments," in IEEE Wireless Communications Letters, vol. 9, no. 9, pp. 1366-1369, Sept. 2020, doi: 10.1109/LWC.2020.2990431.
This paper is the first to unveil the energy efficiency potential of metasurface-aided channels with hardware impairments. ***2023 IEEE Heinrich Hertz Award****. Link: https://ieeexplore.ieee.org/document/9079457.*

[4] M. Di Renzo et al., "Reconfigurable Intelligent Surfaces vs. Relaying: Differences, Similarities, and Performance Comparison," in IEEE Open Journal of the Communications Society, vol. 1, pp. 798-807, 2020, doi: 10.1109/OJCOMS.2020.3002955.
This paper is the first to report a comprehensive comparison of metasurface- and relay-aided channels. ***2022 IEEE Commun. Society Outstanding Paper Award****. Link: https://ieeexplore.ieee.org/document/9119122.*

[5] G. Gradoni, M. Di Renzo, "End-to-End Mutual Coupling Aware Communication Model for Reconfigurable Intelligent Surfaces: An Electromagnetic-Compliant Approach Based on Mutual Impedances," in IEEE Wireless Communications Letters, vol. 10, no. 5, pp. 938-942, May 2021, doi: 10.1109/LWC.2021.3050826.
Moving from multiport network theory, this paper is the first to report a circuits-based communication model for reconfigurable metasurfaces. Link: https://ieeexplore.ieee.org/document/9319694.

[6] M. Di Renzo, F. H. Danufane and S. Tretyakov, "Communication Models for Reconfigurable Intelligent Surfaces: From Surface Electromagnetics to Wireless Networks Optimization," in Proceedings of the IEEE, vol. 110, no. 9, pp. 1164-1209, Sept. 2022, doi: 10.1109/JPROC.2022.3195536.
This paper offers the first comprehensive analysis of electromagnetic models for metasurface-aided channels, with focus on a physically consistent continuous model. Link: https://ieeexplore.ieee.org/document/9864116.

[7] V. Degli-Esposti, E. M. Vitucci, M. Di Renzo, S. A. Tretyakov, "Reradiation and Scattering From a Reconfigurable Intelligent Surface: A General Macroscopic Model," in IEEE Transactions on Antennas and Propagation, vol. 70, no. 10, pp. 8691-8706, Oct. 2022, doi: 10.1109/TAP.2022.3149660.
This paper compares discrete-type and continuous-type models for metasurfaces, and the effective roughness model is generalized to multi-mode metasurfaces. Link: https://ieeexplore.ieee.org/document/9713744.

[8] F. H. Danufane, M. Di Renzo, J. de Rosny, S. Tretyakov, "On the Path-Loss of Reconfigurable Intelligent Surfaces: An Apprach Based on Green's Theorem Applied to Vector Fields," in IEEE Transactions on Communications, vol. 69, no. 8, pp. 5573-5592, Aug. 2021, doi: 10.1109/TCOMM.2021.3081452.
Moving from scattering theory, this paper reports the first electromagnetically consistent path-loss model and scaling laws for continuous-type metasurfaces which can be applied in the near-field, are power-consistent, and unveil fundamental performance limits. Link: https://ieeexplore.ieee.org/document/9433568.

[9] M. W. Shabir, Marco Di Renzo, Alessio Zappone, Mérouane Debbah, "Electromagnetically Consistent Optimization Algorithms for the Global Design of RIS," IEEE Wireless Commun. Lett. (2025).
This paper reports the first algorithms to optimize reconfigurable anomalous reflectors, based on global design criteria and electromagnetically consistent. Link: https://ieeexplore.ieee.org/document/10841364.

[10] J. An, M. Di Renzo, M. Debbah, C. Yuen, "Stacked Intelligent Metasurfaces for Multiuser Beamforming

Beamforming in the Wave Domain," ICC 2023 - IEEE International Conference on Communications, Rome, Italy, 2023, pp. 2834-2839, doi: 10.1109/ICC45041.2023.10279173.
This paper introduces a multilayer metasurface technology called stacked intelligent metasurface, which processes data in the wave domain, showing its advantages in terms of reduced implementation complexity and reduced power consumption. ***Best Paper Award****. Link: https://ieeexplore.ieee.org/document/10279173.*

Other additional papers that received major recognition in my field of research:

- M. Di Renzo et al, "Reconfigurable Intelligent Surfaces for 6G Systems: Principles, Applications, and Research Directions," in IEEE Communications Magazine, vol. 59, no. 6, pp. 14-20, June 2021, doi: 10.1109 /MCOM.001.2001076. This paper received the "***IEEE Communications Society Fred W. Ellersick Prize***".
- M. Di Renzo et al, "Holographic MIMO Surfaces for 6G Wireless Networks: Opportunities, Challenges, and Trends," in IEEE Wireless Communications, vol. 27, pp. 118-125, October 2020, doi: 10.1109/MWC. 001.1900534. This paper received the "***IEEE Communications Society Fred W. Ellersick Prize***".
- M. Di Renzo et al, "Smart Radio Environments Empowered by Reconfigurable AI Meta-Surfaces: An Idea Whose Time Has Come". J Wireless Com Network 2019, 129 (2019). https://doi.org/10.1186/s13638-019-1438-9. This paper received the "***EURASIP Best Paper Award*** ".
- M. Di Renzo et al, "Bit Error Probability of SM-MIMO Over Generalized Fading Channels," in IEEE Transactions on Vehicular Technology, vol. 61, no. 3, pp. 1124-1144, March 2012, doi: 10.1109/TVT. 2012.2186158. This paper received the "***IEEE Jack Neubauer Memorial Paper Award***".
- M. Di Renzo et al, "Reflection Probability in Wireless Networks with Metasurface-Coated Environmental Objects: An Approach Based on Random Spatial Processes". J Wireless Com Network 2019, 99 (2019). https://doi.org/10.1186/s13638-019-1403-7. This paper received the "***EURASIP Best Paper Award*** ".
- M. Di Renzo et al., Spatial Multiplexing in Near Field MIMO Channels with Reconfigurable Intelligent Surfaces. IET Signal Process. e12195 (2023). https://doi.org/10.1049/sil2.12195. This paper received the "***Top Cited Article***" recognition from Wiley.

Peer recognition (last 10 years)

- 2025: Research.com Electronics and Electrical Engineering in France Leader Award (ranked 1st)
- 2025: Top Cited Article, Wiley (IET Signal Processing – Papers published in 2023)
- 2025: Who's Who in France (https://www.whoswho.fr/)
- 2024, 2023, 2022, 2021, 2019: Highly Cited Researcher (Web of Science)
- 2024: EURASIP Fellow
- 2024: EurAAP (European Association on Antennas and Propagation) Ambassador
- 2024: Tan Chin Tuan Exchange Fellowship, Nanyang Technological University, Singapore, Singapore
- 2024: IEEE Communications Society Marconi Prize Paper Award in Wireless Communications
- 2024: IEEE Communications Society Best Tutorial Paper Award
- 2024: IEEE Communications Society Fred W. Ellersick Prize
- 2023: IEEE Commun. Society Technical Recognition Award, Signal Processing & Computing for Commun.
- 2023: IEEE James Evans Avant Garde Award, Vehicular Technology Society
- 2023: France-Nokia Chair of Excellence in ICT, Nokia Foundation
- 2023: IEEE Communications Society Heinrich Hertz Award
- 2023: IEEE Communications Society Fred W. Ellersick Prize
- 2023: EURASIP Best Paper Award, Journal on Wireless Communications and Networking
- 2023: IEEE ICC Best Paper Award – Wireless Communications
- 2023: AIIA Fellow, International Artificial Intelligence Industry Alliance
- 2022: Prix Michel-Monpetit, French Academy of Sciences
- 2022: IEEE Communications Society Outstanding Paper Award
- 2021: Fulbright Fellowship, USA-France Fulbright Foundation
- 2021: AAIA Fellow, Asia-Pacific Artificial Intelligence Association
- 2021: Ordinary Member, Academia Europaea
- 2021: Ordinary Member, European Academy of Sciences and Arts
- 2021: EURASIP Best Paper Award, Journal on Wireless Communications and Networking
- 2021: IEEE Access Best Multimedia Award Winner 2020 Part 1
- 2021: Distinguished Speaker, IEEE Vehicular Technology Society
- 2020-present: World's Top 2% Scientists (Stanford University)
- 2020: IET Fellow
- 2020: IEEE Fellow
- 2020: Nokia Foundation Visiting Professorship, Nokia Foundation

- 2019: Loading the Future Trophy, Open Innovation Camp "Images & Réseaux"
- 2018: IEEE Communication Society Best Young Professional in Academia Award
- 2018 and 2016: Distinguished Lecturer, IEEE Communications Society
- 2018 and 2016: Distinguished Lecturer, IEEE Vehicular Technology Society
- 2017: SEE-IEEE Alain Glavieux Award
- 2015: IEEE Jack Neubauer Memorial Paper Award (award, paper)
- 2014: IEEE ComSoc Best Young Researcher Award for Europe, Middle East and Africa Region (EMEA)
- 2014: Royal Academy of Engineering Distinguished Visiting Fellowship, UK
- 2013: Best Paper Award, Network of Excellence in Wireless Communications
- Conference Best Paper Awards: IEEE RFID-TA 2021, IEEE ICC 2019, INISCOM 2018, ComManTel 2015, IEEE CAMAD 2014, ATC 2014, IEEE VTC-Fall 2013, IEE CAMAD 2012).

ADDITIONAL INFORMATION

Administrative positions (main)
- 2023-now: Member, "Conseil de laboratoire" (laboratory council), Signals & Systems Lab., CentraleSupélec.
- 2022-now: Member, "Comité de direction élargi" (management committee), Signals & Systems Lab.
- 2022-now: Head, Intelligent Physical Communications Group, Signals & Systems Lab., CentraleSupélec.
- 2022: Member, Ph.D. Committee, Graduate School "Sciences du Numérique", Paris-Saclay Univ.
- 2020-Dec. 2022: Coordinator, Communication Networks - Labex DigiCosme, Paris-Saclay University.
- 2020-now: Member, "Comité d'admission et recrutement", Ph.D. School STIC, Paris-Saclay University.
- 2015-2019: Member, "Conseil de laboratoire" (lab. council), Signals & Systems Lab., CentraleSupélec.

Invited Presentations, Keynotes, and Tutorials
- 2016-2025: Over the last years, I gave, every year, 30+ keynotes, tutorials, invited presentations, short courses in France, Europe, and worldwide. This includes IEEE Communications Society and IEEE Vehicular Technology Society Distinguished Lecturer Tours in many countries, and tutorial presentations at IEEE conferences. In 2020-2024, I gave 150+ keynotes, tutorials, and invited presentations.

Professional Service (selected)
- 2025-present: Editorial Board, Proceedings of the IEEE.
- 2024-present: Voting Member, IEEE Fellows Evaluation Standing Committee (Communications Society).
- 2024-present: Director of Journals, IEEE Communications Society.
- 2024-present: Board of Governors (appointed member), IEEE Communications Society.
- 2024-present: Chair, Publications Misconduct Committee, IEEE Communications Society.
- 2023-present: Past Editor-in-Chief and Advisory Board, IEEE Communications Letters.
- 2021-2022: Guest Editor, Proc. of IEEE (invited by the Editor-in-Chief). Interdisciplinary issue on RIS.
- 2019-2023: Editor-in-Chief, IEEE Communications Letters.
- Technical Program Committee Chair, IEEE Communications Conference 2026.
- Technical Program Committee Chair, IEEE Wireless Communications and Networking Conference 2024.
- Technical Program Committee Chair, IEEE MeditCom 2023.
- Technical Program Track Chair (physical layer and communication theory), IEEE WCNC 2023.

Academic Teaching and Training (selected)
Since 2011, I have been the training or general coordinator of 10 European Training Networks now called Doctoral Networks (DN). Each DN has 10-15 Ph.D. students, and I was responsible for the training activities (100 hours of scientific teaching courses and 100 hours of soft skills teaching courses). Examples: http://www.h2020-msca-etn-5gwireless.eu/, http://www.h2020-msca-etn-5gaura.eu/, https://h2020-msca-itn-metawireless.cnit.it/, https://integrate.cnit.it/index.php. I developed the first course on Reconfigurable Intelligent Surfaces (RIS) at the University of Oulu in 2020, and then delivered it in France, Europe, China.

Research Funding - Coordination of and Participation in Research Projects (selected)
I served as the project coordinator in 6 EU projects including two European doctoral networks (5Gwireless, 5Gaura), and I served / I am serving as the training coordinator in 10 European doctoral networks. I was/am the scientific coordinator for L2S-CS in 6 ANR projects (SpatialModulation, 4 PEPR-5G projects, CHISTERA-PASSIONATE), 6 industrial projects, 5 EU for L2S-CNRS. Total budget as Principal Investigator: ~13 million Euro in personal funding. Recent projects include HE-TeraWireless, HE-Twin6G, HE-INSTINCT, HE-UNITE, HE-COVER, HE-INTEGRATE, H2020-RISE-6G, H2020-ARIADNE, H2020-MetaWireless, H2020-5GSmartFact, ANR PEPR-5G, ANR CHISTERA-PASSIONATE.

Selected list of projects (the amounts indicate the personal share of funding):
- HE MSCA-DN TeraWireless on terahertz commun. (2025-2029). EU Training Coordinator – 750k Euro.

- HE MSCA-SE TWIN6G (2025-2027) on digital twin for future networks. PI – 160k Euro.
- COFECUB-CAPES (2024-2027) bilateral French-Bazil project on high-efficiency mobile systems. PI.
- HE INSTINCT (2024-2026) on reconfigurable intelligent surfaces commun. and sensing. PI – 280k Euro.
- ANR CHISTERA (2024-2026) on physics-based wireless machine learning. PI – 350k Euro.
- HE MSCA-SE UNITE (2023-2026) on reconfigurable surfaces for aerial commun. PI – 160k Euro.
- HE MSCA-SE COVER (2023-2026) on reconfigurable surfaces for aerial commun. PI – 120k Euro.
- ANR PEPR-5G Future Networks (2023-2027). Principal Investigator for CentraleSupélec – 800k Euro.
- HE MSCA-DN INTEGRATE on commun. & sensing (2022-2026). EU Training Coordinator – 750k Euro.
- H2020 MSCA EU Fellowship SURFER on surface commun. (2022-2024). EU Project Coord. – 175k Euro.
- H2020 ICT RISE-6G on reconfigurable intelligent surfaces (2021-2023). PI – 350k Euro.
- H2020 MSCA-ITN MetaWireless on reconfig. surfaces (2021-2024). EU Training Coord. – 550k Euro.
- H2020 MSCA-ITN 5GSmartFact on reconfigurable surfaces for Industry 4.0 (2021-2024). PI – 550k Euro.
- H2020 MSCA EU Fellow. PathFinder on reconfig. surfaces (2021-2023). EU Project Coord. – 175k Euro.
- Huawei-Sweden Research Grant on reconfig. surfaces (2020-2021). Project Coordinator – 180k Euro.
- Huawei-Sweden Research Grant on AI for reconfig. surfaces (2021-2022). Project Coord. – 200k Euro.
- H2020 ICT ARIADNE on reconfigurable intelligent surfaces (2019-2022). PI – 550 Euro.
- H2020 MSCA-ITN 5Gwireless on 5G technologies (2015-2018). EU Project Coordinator – 800k Euro.
- H2020 MSCA-ITN 5Gaura on 5G software networks (2015-2019). EU Project Coordinator – 800k Euro.
- H2020 MSCA EU Fellowship REDESIGN on fog networks (2019-2020). EU Project Coord. – 175 Euro.
- H2020 MSCA EU Fellowship MAPNET on optimization (2019-2020). EU Project Coord. – 185k Euro.
- FP7 MSCA-ITN GREENET on green wireless networks and spatial modulation (2011-2014) – 480k Euro
- FP7 MSCA-ITN CROSSFIRE on stochastic geometry modeling of HetNets (2012-2015) – 515k Euro
- H2020 MSCA-ITN 5GstepFWD on integrating 5G wireless & optical commun. (2017-2020) – 525k Euro.
- H2020 MSCA-ITN PAINLESS on energy-neutral drone-aided networks (2018-2022) – 545k Euro.
- ANR-SpatialModulation on spatial modulation based on reconfig. antennas (2015-2019) – 150k Euro.

Supervision of Research Graduate Students

Ph.D. students graduated in the last years: Xuan Thang Vu (2014), Peng Guan (2015), Wei Lu (2015), Lam Thanh Tu (2018), Jonatan Krolikowski (2018), Shanshan Wang (2019), Jian Song (2019), Xiaojun Xi (2019), Xuewen Qian (2020), Fadil Danufane (2021), Romain Fara (2021), Jiang Liu (2021), Abdelhamed Abdelhamed (2022), Arzhang Shahbazi (2022), Shuo Li (2023), Wasif M. Shabir (2024), Shumin Wang (2024), Juan-Carlos Ruiz Sicilia (2024), Gurjot Singh Bhatia (Dec. 2024), Guillermo Encinas Lago (Dec. 2024). ***Postdocs supervised***: Viet-Dung Nguyen (2018-2019), Farshad Sharms (2019-2020), Kishor Chandra (2019-2020), Xuewen Qian (2021-2022), Stefan Perovic (2022-2023), Nour Awarkeh (2022-2023), Sumin Jeong (2023), Hajar El Hassani (2023). ***Current group***: (a) Main Ph.D. supervisor: Ahmed Najjar, Emmanouela Dimitriadou-Panidou, Muhammed-Niyas Kalliyan, Meenakshi, Mounir Dabouz, Khethiwe Mhlope Ziwenjere, Necati Kagan Erkek, Ayane Lebeta Goshu, Yao Wang, Gul Afshana. (b) Postdocs: Silvia Palmucci, Giuseppe Pettanice, Wasif M. Shabir, Shumin Wang, Ankita Chauhan.

Other contributions to the research community

- Special Interest Groups and Emerging Technology Initiative on Reconfigurable Intelligent Surfaces (RIS)
  - SIG - Wireless (Founding Chair): https://wtc.committees.comsoc.org/sig/.
  - SIG - Radio Communications (Founding Vice Chair): https://rc.committees.comsoc.org/sig/.
  - SIG - Signal Processing (Founding liaison officer): https://spcc.committees.comsoc.org/special-interest-groups/sig-reflections/.
  - ETI - RIS (Founding liaison officer): https://riseti.committees.comsoc.org/.
- Industry Specification Group on Reconfigurable Intelligent Surfaces at ETSI
  - Lead Co-Founder, Vice-Chair, Rapporteur: https://portal.etsi.org/tb.aspx?tbid=900#/.
- Emerging Technology Initiative on Electromagnetic Signal and Information Theory (ESIT)
  - Lead Co-Founder, Lead Chair: https://sites.google.com/view/ieee-comsoc-eti-on-esit.

Since 2019, I have led the key research initiatives on RIS within the IEEE Communications Society, with focus on interdisciplinary aspects at the crossroad of communications, electromagnetics, metamaterials. Recently, I led the creation, and I was appointed as the Chair of the Emerging Technology Initiative on Electromagnetic Signal and Information Theory, whose mission is to foster interdisciplinary research across these fields.

Industrial collaborations (main)

Orange (France), SIRADEL (France), Nokia (France), NEC Europe (Germany), Interdigital (UK), British Telecom (UK), Ranplan Wireless (UK), Huawei (Sweden), China Mobile (China), ZTE (China).