

Curriculum Vitae

PERSONAL INFORMATION



Riccardo Trincherio

📍 Corso Casale 16B, 13039, Trino (VC), Italy
☎ +39 3383288090
✉ riccardo.trincherio@polito.it
🌐 <http://www.emcgroup.it>, <https://www.tmsim.polito.it>
Skype: riccardo.trincherio
Sex M | Date of birth 01/07/1987 | Nationality Italian

EDUCATION

01/2012 – 03/2015



PhD in Electronics and Communication Engineering @ Politecnico di Torino

- Open scholarship financed by Politecnico di Torino
- Supervisors: Prof. F.G. Canavero and Prof. I.S. Stievano, EMC Group, DET - Department of Electronics and Telecommunications
- Thesis title: "EMI Analysis and Modeling of Switching Circuits"

1/2010 - 12/2011

Master Degree in Electronic Engineering @ Politecnico di Torino

- Final Score **110L/110, Summa Cum Laude**
- Thesis title: "Characterization of EMI Sources Using a Two-Probe Approach", Supervisor: Prof. F.G. Canavero

09/2006 - 01/2010

Bachelor Degree in Electronic Engineering @ Politecnico di Torino

- Thesis title: "Modeling and Simulation of Field-Circuit", Supervisor: Prof. S. Grivet Talocia

WORK EXPERIENCE

11/2016 – present

Assistant Professor, Politecnico di Torino

- Research Activities:
 - machine learning for the optimization and the statistical analysis of high-speed links
 - analysis of linear time-varying systems;
 - modeling and simulation of switching converters;
 - 3D Electromagnetic simulations (CST);
 - simulation of circuits and systems with uncertain parameters;
 - teaching BSc course "Circuit Theory";
 - developer of a freely available tool "TMsim" (link: <https://www.tmsim.polito.it>);
- Research Projects (technical staff member):
 - R&D SOKEN-POLITO (2015-2019), "Stochastic Modeling of Automotive Immunity";
 - European Space Agency (ESA) project (2017-2019): "Characterization of the susceptibility of SpaceWire (SpW) links to common mode" ITT 1- 8839/17/NL/AF (2017-2019);
 - R&D, Intel Germany-POLITO, (2017-2019) "Macromodeling and Simulations of I/O Buffers and Interconnections in Signal and Power Integrity Analysis".
- Publications:
 - 4 journal papers;
 - 3 international conferences.



06/2015 – 11/2016

Post-doctoral Researcher, Istituto Nazionale Fisica Nucleare

- Research Activity funded by the TRIMAGE FP-7 European project:
 - Development of the electromagnetic shielding system for the TRIMAGE scanner;
 - Design and simulation of a magnetic resonance (MR) compatible RF shield for the positron emission tomography (PET) electronics;
 - Measurements and characterization within the MR environment;
- Publications:
 - 3 journal papers;
 - 4 international conferences.



03/2015 – 06/2015 **Post-doctoral Researcher, Politecnico di Torino**

- Research Activities:
 - Modeling and simulations of switching converters and DC-motors;
 - Worst-case simulation of circuits and systems with uncertainty parameters.
- Publications:
 - 2 journal papers.

01/2012 – 03/2015 **PhD Student, Politecnico di Torino**

- The research activity carried out addressed the development of an alternative novel technique for the analysis, modelling and simulation of the noisy emissions generated by switching circuits and converters. The activity involved:
 - frequency-domain analysis of switching converters via an innovative mathematical formulation;
 - simulations of different switching circuits via standard commercial tools (Matlab, Simulink, SPICE);
 - EMC measurements according to the CIRSP-22 standard.
- Publications
 - 3 journal papers;
 - 1 international conference.
- R&D contract, Sorin CMR-POLITO contract “Impedance Measurement of Pacemakers”. Role: technical staff member and responsible for the following activities:
 - Evaluation of the susceptibility of pacemakers to external electromagnetic fields;
 - Experimental characterization of the input impedance of a set of selected pacemakers via a series of 4-port scattering measurements;
 - Analysed the data from the EMC point of view;
 - Author of 4 official reports.
- R&D contract, General Cab-POLITO Consultancy Agreement “Characterization of ferrite beads”. Role: technical staff member:
 - Experimental characterization of the equivalent impedance of a selection of ferrite components up to 1 GHz;
 - Author of 1 official report.
- Technical co-supervision of several students, providing support and guidelines for their final project works or theses.
- EU, European Project “High Intensity Radiated Fields (HIRF)”.
 - Numerical simulation of complex harness irradiated by an incident field via a dedicated commercial tool (CRIPTE);
 - Author and co-author of 2 official deliverables.

2015-2016 (Several times) **Visiting Researcher @ Forschungszentrum Julich, Julich Germany**

EMC measurements in magnetic resonance environment for electromagnetic characterization of the shielding system within the TRIMAGE project.

04/07/2012 – 06/07/2012 **Visiting Scholar @ IBM, Brussels, Belgium**

Participated to the 2012 EMEA Best Student Recognition Event (BSRE) dedicated to Big Data Analysis. The event was organized to bring together at IBM Brussels the top students from across Europe, Middle East and Africa.

ACADEMIC EXPERIENCE**Teaching Activity**

- BSc course “Circuit Theory”, Politecnico di Torino a.y. 2017-2018; first semester (practice sessions, 35h);
- BSc course “Circuit Theory”, Politecnico di Torino - Verres Campus, a.y. 2017-2018; first semester (lectures and practice sessions, 48h);
- BSc course “Circuit Theory”, Politecnico di Torino a.y. 2016-2017; first semester (lectures and practice sessions, 18h);
- BSc course “Circuit Theory”, Politecnico di Torino - Verres Campus, a.y. 2016-2017; first semester (lectures and practice sessions, 48h);
- Certificate of attendance for the course “Apprendere ed insegnare nell’Higher Education” supported by the Politecnico di Torino, June 20th, 2017.

Curriculum Vitae

Projects (summary)

- European Project “High Intensity Radiated Fields (HIRF)”;
 - R&D, Sorin CMR-POLITO, “Impedance Measurement of Pacemakers”;
 - R&D, General Cab-POLITO, “Characterization of ferrite beads”;
 - European project “TRIMAGE” FP7 program;
 - R&D, SOKEN-POLITO, “Stochastic Modeling of Automotive Immunity”;
 - ESA Project: “Characterization of the susceptibility of SpaceWire (SpW) links to common mode” ITT 1-8839/17/NL/AF.
 - R&D, Intel “Macromodeling and Simulations of I/O Buffers and Interconnections in Signal and Power Integrity Analysis”.
- Grant, Honours and awards
- Selected for the IBM Best Student Recognition Event in 2012.

Memberships

- Institute of Electrical and Electronics Engineers (**IEEE**), Graduate student member (2012 - 2015), Member (2015 - present).
- IEEE Electromagnetic Compatibility Society (**IEEE EMCS**), Graduate student member (2012- 2015),
- Associated with the National Institute of Nuclear Physics (**INFN**) sezione di Torino (2015-2016),
- European Society for Magnetic Resonance in Medicine and Biology (**ESMRMB**), Junior membership (2015-2016).

Referee/Reviewer

Since 2015, reviewer for the following international journals:

- IEEE Transaction on EMC
- IEEE Transaction on Power Electronics
- IEEE Transaction on Circuits and Systems I: Regular Paper
- IEEE Transaction on Circuit and System II: Express Brief
- IET Power Electronics
- IEEE Transaction on Industrial Electronics
- 20th International Workshop of Signal and Power Integrity
- 21st International Workshop of Signal and Power Integrity
- 2018 Joint IEEE EMC & APEMC Symposium

Conference Organization

- Member of the technical program committee of the 21st IEEE International Workshop on Signal and Power Integrity, SPI2017 (www.spi2017.org);
- Member of the technical program committee of the 22nd IEEE International Workshop on Signal and Power Integrity, SPI2018 (www.spi2018.org);
- Member of the local committee of the Workshop on Uncertainty Modeling for Engineering Applications, UMEMA2017 (<https://umema.eu>).

Journal Publications

1. R. Trinchero, P. Manfredi, I. S. Stievano and F. G. Canavero, "Machine Learning for the Performance Assessment of High-Speed Links," in *IEEE Transactions on Electromagnetic Compatibility*, doi: 10.1109/TEMC.2018.2797481 (early access, available at <http://ieeexplore.ieee.org>).
2. A. Del Guerra, et al., "TRIMAGE: A dedicated trimodality (PET/MR/EEG) imaging tool for schizophrenia", *European Psychiatry*, doi: 10.1016/j.eurpsy.2017.11.007 (early access, available at <http://www.eurpsy-journal.com>)
3. R. Trinchero, P. Manfredi and I. S. Stievano, "Self-Validated Time-Domain Analysis of Linear Systems with Bounded Uncertain Parameters," in *IEEE Transactions on Circuits and Systems II: Express Briefs*, doi: 10.1109/TCSII.2017.2740118 (early access, available at <http://ieeexplore.ieee.org>)
4. S. Grivet-Talocia and R. Trinchero, "Behavioral, Parameterized, and Broadband Modeling of Wired Interconnects With Internal Discontinuities," in *IEEE Transactions on Electromagnetic Compatibility*, doi: 10.1109/TEMC.2017.2723629 (early access, available at <http://ieeexplore.ieee.org>)
5. Riccardo Trinchero, Paolo Manfredi, and Igor S. Stievano, "TMsim: An Algorithmic Tool for the Parametric and Worst-Case Simulation of Systems with Uncertainties," *Mathematical Problems in Engineering*, vol. 2017, Article ID 6739857, 12 pages, 2017. doi:10.1155/2017/6739857.
6. A. Berneking; R. Trinchero; Y. Ha; F. Finster; P. Cerello; C. Lerche; N. Shah, "Design and Characterization of a Gradient-Transparent RF Copper Shield for PET Detector Modules in Hybrid MR-PET Imaging," in *IEEE Transactions on Nuclear Science*, vol. 64, no. 5, pp. 1118-1127, May 2017.
7. R. Trinchero, P. Manfredi, I. S. Stievano and F. G. Canavero, "Steady-State Analysis of Switching Converters via Frequency-Domain Circuit Equivalents," in *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 63, no. 8, pp. 748-752, Aug. 2016.
8. R. Trinchero, P. Manfredi, T. Ding and I. S. Stievano, "Combined Parametric and Worst Case Circuit Analysis via Taylor Models," in *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 63, no. 7, pp. 1067-1078, July 2016.
9. T. Ding, R. Trinchero, P. Manfredi, I. S. Stievano and F. G. Canavero, "How Affine Arithmetic Helps Beat Uncertainties in Electrical Systems," in *IEEE Circuits and Systems Magazine*, vol. 15, no. 4, pp. 70-79, Fourthquarter 2015.
10. R. Trinchero, I. S. Stievano and F. G. Canavero, "EMI Prediction of Switching Converters," in *IEEE*

Transactions on Electromagnetic Compatibility, vol. 57, no. 5, pp. 1270-1273, Oct. 2015. doi: 10.1109/TEMC.2015.2419974.

11. R. Trincherò, I. S. Stievano and F. G. Canavero, "Steady-State Analysis of Switching Power Converters Via Augmented Time-Invariant Equivalents," in *IEEE Transactions on Power Electronics*, vol. 29, no. 11, pp. 5657-5661, Nov. 2014.
12. R. Trincherò, I.S. Stievano, F.G. Canavero, "Steady-State Response of Periodically Linear Circuits via Augmented Time-Invariant Nodal Analysis", *Journal of Electrical and Computer Engineering*, vol. 2014, Article ID 198273, 11 pages, 2014. doi: 10.1155/2014/198273.

Conference Publications

1. R. Trincherò, I. S. Stievano and F. G. Canavero, "Simulation of buck converters via numerical inverse Laplace transform," 2017 IEEE 21st Workshop on Signal and Power Integrity (SPI), Baveno, 2017, pp. 1-4.
2. P. Manfredi, R. Trincherò, F. G. Canavero and I. S. Stievano, "Application of Taylor models to the worst-case analysis of stripline interconnects," 2016 IEEE 20th Workshop on Signal and Power Integrity (SPI), Turin, 2016, pp. 1-4.
3. A. Berneking, R. Trincherò, N. J. Shah, P. Cerello, and C. W. Lerche, "Design and Characterization of a Frequency Selective RF Shield for PET Detector Modules in Hybrid MR-PET Imaging", PSMR conference, Cologne, Germany, May 23–25, 2016.
4. R. Trincherò, I. S. Stievano and F. G. Canavero, "EMI modeling of switching circuits via augmented equivalents and measured data," 2015 IEEE International Symposium on Electromagnetic Compatibility (EMC), Dresden, 2015, pp. 130-133.
5. A. Berneking, R. Trincherò, P. Cerello, and C. W. Lerche, N. J. Shah, "Low-Pass Shielding Design for MRI Applications Optimized for Strong RF Shielding Effectiveness", ESMRMB 2016, Vienna, Austria, Sept. 2016.
6. P. Manfredi, R. Trincherò, I.S. Stievano, "Worst-Case EMC Investigation of Single-Wire Transmission Lines Based on Taylor Arithmetic", IEEE International Symposium on Electromagnetic Compatibility (EMC), Washington DC, US, Aug. 2017.
7. T. Ding, L. Zhang, R. Trincherò, I. Stievano, F. Canavero, "Worst-case analysis of electrical and electronic equipment via affine arithmetic", ICEAA, Verona, Italy, Sept. 2017.
8. R. Trincherò, I.S. Stievano, F.G. Canavero, "EMI Modeling of DC Motors from Measured Data", 18th International Symposium on Electromagnetic Compatibility (CEM 2016), Rennes, France, Jul. 2016.

PERSONAL SKILLS

Mother tongue
Other languages

Italian
English: Professional Working Proficiency
French: Intermediate Working Proficiency

Communication skills

Good communication skills and team working attitude in **multicultural environments**, acquired working in composite groups.

Organisational skills

Good **project planning** and **time management** skills acquired during PhD program; accustomed at carrying out tasks in an independent way

Job-related skills

Acquired extensive technical competencies in several business areas (**telecommunications, aerospace, automotive**) during 5 years of work experiences and university studies:

- Electromagnetic compatibility, Antennas and propagation, Radio frequency communication systems
- Measurements of physical systems, Lab Instrumentation management
- Digital communication, Signal processing and Information theory
- Microelectronics, Electronic system design
- Control theory, Optimization and Operational research
- Numerical methods, Computer algorithms and Programming

Computer skills

- Programming Languages: Matlab, C.
- Office applications and editing software: Microsoft Office package, Latex text editors
- Scientific Software: SPICE, Cadence, Simulink, AWR Microwave, Xilinx ISE, CST microwave STUDIO

Extracurricular Activities

- **Music:** I play saxophone in the band of my own town
- **Sport:** indoor football.

DATE:

06-07-2018

SIGNATURE

