

Stefano Tomasin

curriculum vitae

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Short Biography

Stefano Tomasin was born in Venice (July 26, 1975), received the Laurea degree and the Ph.D. degree in Telecommunications Engineering from the University of Padova, Italy, in 1999 and 2003, respectively. In the Academic year 1999-2000 he was on leave at the IBM Research Laboratory, Zurich, Switzerland, doing research on signal processing for magnetic recording systems. In the Academic year 2001-2002 he was on leave at Philips Research, Eindhoven, the Netherlands, studying multicarrier transmission for mobile applications. He joined University of Padova first as contractor researcher for a national research project (2002), then as Assistant Professor (2005), and since 2016 he is Associate Professor. In the second half of 2004 he was visiting faculty at Qualcomm, San Diego (CA) doing research on mobile cellular systems. In 2007 he has been visiting Polytechnic University in Brooklyn, NY, working with prof. Elza Erkip on cooperative networks. From December 2014 to December 2015, he has been on a sabbatical leave at the Mathematical and Algorithmic Sciences Laboratory, France Research Center of Huawei Technologies, in Boulogne-Billancourt, France. His current research interests include physical layer security, signal processing for wireless communications, optimization techniques for smart grids, synchronization, scheduling of communication resources. He is senior member of IEEE since 2011 and member of IEEE since 1999. Between 2011 and 2016 he has been Editor of the IEEE Transactions of Vehicular Technologies. Since 2011 he is Editor of EURASIP Journal of Wireless Communications and Networking and since 2017 he is Editor of the IEEE Transactions of Signal Processing.

Education

July 6, 1999: Laurea degree
Telecommunication Engineering

5-year University degree obtained summa cum laude by University of Padova, Italy. Thesis title: "Metodi di equalizzazione per sistemi OFDM" (Equalization methods for OFDM systems). Supervisor: Prof. Nevio Benvenuto.

February 14, 2003: Ph. D. degree
Telecommunication Engineering

Doctoral degree obtained at University of Padova, Italy. Thesis title: "Frequency domain equalization and channel estimation for broadband wireless communications". Supervisor: Prof. Nevio Benvenuto.

Qualifications

April 5, 2017: Italian Professor Qualification

Abilitazione scientifica nazionale for the position of Full Professor in Telecommunications (settore concorsuale 09/F2).

December 12, 2013: Italian Professor Qualification

Abilitazione scientifica nazionale for the position of Associate Professor in Telecommunications (settore concorsuale 09/F2).

2000 (2nd session): Qualification for the Engineer Board

Dr. Tomasin passed the *Esame di stato per l'abilitazione alla professione di ingegnere*.

Current Position

University of Padova, Italy

Associate Professor since January 15, 2016 at the Department of Information Engineering (DEI) of University of Padova.

Other Positions

University of Padova, Italy

Assistant Professor (Jan. 2005-Jan. 2016) at the Department of Information Engineering (DEI) of University of Padova.

**Huawei Technologies,
Boulogne-Billancourt France**

Sabbatical leave (Dec. 2014-Dec 2015) at the Mathematical and Algorithmic Sciences Laboratory, France Research Center of Huawei Technologies working on 5G technologies.

**Polytechnic University,
Brooklyn, NY**

Visiting faculty (Sept. 2007–Dec. 2007), guest of Prof. Elza Erkip. Main research activity: cooperative networks and security in cooperative networks.

**Qualcomm inc.,
San Diego, CA**

Visiting faculty (June 2004–Dec. 2004) under the supervision of Dr. Roberto Padovani on multiuser detection for the uplink of cellular systems based on CDMA technology.

**University of Padova,
Padova, Italy**

Post-doc contract with the FIRB "PRIMO" (Reconfigurable Platforms for wideband wireless communications) Italian university ministry (Jan. 2003 – Dec. 2004).

**Philips Research Lab.,
Eindhoven, The Netherlands**

Internship during the Ph.D. program (Oct. 2001 – Jun. 2002) at Eindhoven (NL) guest of Dr. Jean-Paul Linnartz, within a project on Doppler compensation for OFDM with application to mobile digital terrestrial television receivers.

**IBM Zurich Research Lab.,
Zurich, Switzerland**

Post-master internship (Oct. 1999 – Jan. 2000) under the supervision of Dr. Evangelos Eleftheriou on a project for the performance evaluation of error control coding in magnetic recording systems.

Language Skills

English

Certificated B2 level. Extended time spent abroad (3 months in Zürich, 9 months in Eindhoven, 6 months in San Diego, and 3 months in New York), frequent international contacts, and courses taught in English ensure full control of this language.

Italian

Mother language.

Awards

Reviewer Awards

- Exemplary Reviewer Award from IEEE Communications Letters, 2011.
- Reviewer appreciation award from the IEEE Transactions on Signal Processing, 2008.

Best Paper Awards

Co-author of the best student paper award at the Int. Symp. Bioelectronics and Bioinformatics (ISBB2009), Melbourne, Australia, Dec. 2009.

Other Awards

- Carlo Offelli Award 2005: awarded best young researcher at the Department of Information Engineering, University of Padova.
- Regional Innovation Award 2004: awarded for the best doctoral thesis by the Veneto Region.
- Carlo Offelli Award 2003: nominated among the best five young researcher at the Department of Information Engineering, University of Padova.

Editorial Activity

Guest Editorial Activity

Guest Editor of the Special issue on Physical Layer Security and its Applications, 2015, Proceedings of IEEE, Oct. 2015.

Journal Editorial Activity

- **Associate Editor** of IEEE Transactions on Signal Processing since Jan. 2017.
- **Associate Editor** of IEEE Transactions on Vehicular Technologies from Nov. 2011 to Sept. 2017.
- **Associate Editor** of EURASIP Journal of Wireless Communications and Networking since 2011.
- **Editor** of the ISRN Communications and Networking Journal from 2007 to 2012.
- **Reviewer** for various international Journals, including:
 - European Trans. Telecommunications
 - IEEE Commun. Letters
 - IEEE Signal Processing Letters
 - IEEE Trans. on Communications
 - IEEE Trans. on Signal Processing
 - IEEE Trans. on Vehicular Technologies
 - IEEE Trans. on Wireless Communications
 - IEEE Trans. on Control Systems Technology
 - IEEE Trans. Information Forensics and Security
 - ISRN Communications and Networking
 - Springer Wireless Networks
 - Elsevier Signal Processing

Conference TPC Chair

- Organizer of the IEEE Workshop on Wireless Physical Layer Security (WPLS) at the IEEE International Conference on Communications June 2015, London, UK;
- Organizer of Workshop on Communication Security (WCS 2014) within the ESCAPADE project, Sept. 2014, Ancona, Italy;
- TPC Chair IEEE Vehicular Technology Conference 2008-Fall, Transmission Technology Track

Conference TPC Member

- IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC): 2018-2017.
- International Conference on Computing and Network Communications (CoCoNet): 2018.
- European Wireless (EW): 2018.
- IEEE International Conference on Communications (ICC): 2018-2014.
- IEEE Global Conference on Communication (GLOBECOM): 2016-2013, 2011, 2009, 2007.
- IEEE CNS Workshop on Physical-layer Methods for Wireless Security: 2016.
- IEEE GLOBECOM Workshop on Trusted Communications with Physical Layer Security: 2016, 2017.
- IEEE Vehicular Technology Conference (VTC): 2015-Spring, 2013-Fall, 2012-Fall, 2012-Spring, 2011-Fall, 2011-Spring, 2010-Fall, 2010-Spring, 2009-Fall, 2009-Spring, 2008-Fall, 2008-Spring, 2006-Spring.
- IEEE WiComSec-Phy 2015 - Workshop on Wireless Communication Security at the Physical Layer (jointly with Mobiquitous'15).
- IEEE WCNC 2018-2014, 2012, 2009.
- ACM Q2SWinet 2014.
- ChinaCom 2008.
- IEEE International Workshop on Networking Issues in Multimedia Entertainment (NIME): 2006, 2004.
- IEEE SmartGridComm 2017, 2015, 2014.
- International Conference on Advances in Computing and Communications (ACC2011).
- International Symposium on Wireless Communications Systems (ISWCS): 2014, 2013, 2010.
- IEEE International Conference on Communication, Networks and Satellite (IEEE COMNETSAT): 2017-2016.
- International Conference on Recent Advances in Signal Processing, Telecommunications & Computing (SigTelCom): 2018.

Publicly Funded Projects

Project Title	Description
Enhanced Space Navigation (ENSPACE) <i>Funded by European Space Research and Technology Centre</i>	Role: Collaborator The project lasts two years (November 2017-October 2019), is led by Prof. Nicola Laurenti (University of Padova) and focuses on techniques to the implementation of advanced global navigation system receivers.
More Operative and Robust Extension to GNSS Open Service Signal Integrity Protection (MORE GOSSIP) <i>Funded by European Space Research and Technology Centre</i>	Role: Collaborator The project lasts 30 months (December 2016-May 2019), is led by Prof. Nicola Laurenti (University of Padova) and focuses on techniques to make the the global navigation system more protected against spoofing attack.
Enhancing communication security by cross-layer physical and data-link (PDX) techniques (ESCAPADE) <i>Funded by Fund for the investments on basic research (FIRB)</i>	Role: Local coordinator Project founded by the Italian Ministry of Education and Scientific Research (MIUR), under the scheme <i>FIRB- Futuro in Ricerca</i> . The project lasts three years (March 8, 2012-March 7, 2015), is led by Dr. Marco Baldi (Polytechnic University of Marche) and focuses on physical layer security for wireless systems. The project has been one of the 99 selected for funding out of 2416 submitted (4% of acceptance).
Integrated Terrestrial And CAble – Receiver Design (ITACA-RD) <i>Funded by Swiss Commission for Technology and Innovation (CTI)</i>	Role: Collaborator Collaborating with École Polytechnique Fédérale de Lausanne (EPFL) (Jun. 2011-Jun. 2012) on the Integrated Terrestrial And CAble Receiver Design (ITACA-RD) project on the development of an integrated DVB-T2 and DVB-C2 receiver.
Design and implementation of a novel control and communication architecture for cooperative operation of distributed harmonic and reactive compensators <i>Funded by University of Padova</i>	Role: Collaborator Collaborating on the research project on the control and communication architecture for future smart micro-grids (2009-2010).
DVB-T2 Advanced Software Platform (DASP) <i>Funded by Swiss Commission for Technology and Innovation (CTI)</i>	Role: Collaborator Collaborating with École Polytechnique Fédérale de Lausanne (EPFL) (Feb. 2009-Feb. 2010) on the DVBT2 advanced software platform (DASP) project for synchronization of the new generation digital video broadcasting systems.
Network of Excellence in Wireless Communications (NEWCOM++) <i>Funded by FP7 Europe</i>	Role: Collaborator NEWCOM++ (Network of Excellence in Wireless COMMunications) European project (2006-2009) within FP7, prosecution of the NEWCOM project.

Privately Funded Projects

Funding Entity	Description
Huawei (China)	Role: Project Leader HIRPO Project (2017) on feedback design for cellular systems.
Huawei (Italy)	Role: Project Leader Projects (2017) on beamforming and scheduling for mm-wave systems.

**Institute for Information Industry (III)
(Taiwan)**

Role: Project Leader

Project (2013) on demand-response techniques for smart micro grids with simulation test-bed.

Luce in Veneto (Italy)

Role: Collaborator

E-light project (2011-2012) on ICT for illumination. Funded by Consorzio Luce in Veneto within Regione Veneto funded research projects.

Fondazione Cariparo, Padova (Italy)

Role: Project Leader

Recipient (Jan. 2012-Dec. 2014) of a funding for a three-year Ph.D. scholarship for a study on the optimization of smart micro grids.

Abilis Systems Sarl (Switzerland)

Role: Project Leader

Three research contracts (2006-2008) on signal processing for digital video broadcasting. These contracts brought also to joint scientific publications and patents.

RAI Research Center (Italy)

Role: Collaborator

Research contracts for new standards on digital video broadcasting (2007-2013), obtaining contribution to the standard activity, joint scientific publications and patents.

Professional Achievements

Representation Activity

- Member of the executive board of the School of Engineering (U. of Padova), from 2009 to 2011.
- Representative of the Department of Information Engineering within the Tutoring Commission (Commissione Tutorato) of the School of Engineering (U. of Padova), since 2013.
- Representative of the Department of Information Engineering within the Perspective Student Commission (Commissione Orientamento) of the School of Engineering (U. of Padova), since 2013.
- Representative of the Department of Information Engineering within the Commission for Relation with the Engineering Association (U. of Padova) since 2013.

Engineering Association Memberships

- Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) since 2011 and member of IEEE since 1999.
- Member of the European Association for Signal Processing (EURASIP).

Teaching Experience

Fondamenti di Comunicazioni (Communication Engineering Fundamentals)

Bachelor course *Ing. Informatica*
Academic Years 2013-2014, then since 2016-2017 until now.
Hours: 72. Language: Italian

Topics: principles of communication; transmission channels; analog and digital modulation principles; uniform and non uniform quantization. **In the academic year 2013-2014 Dr. Tomasin has been Professore Aggregato for this course.**
Large classes with about 100 students.

5G Systems

Master course - *ICT for Internet and Multimedia*
Academic Years since 2017-2018 until now.
Hours: 48. Language: English

Topics: Architecture of cellular communication systems, OFDM, synchronization for OFDM, peak to average power ratio reduction, channel estimation, MIMO systems, capacity of MIMO, MIMO spatial multiplexing, space time coding.
Small class with less than 10 students.

Analisi dei Dati (Data Analysis)

Bachelor course - *Ing. Informazione*
Academic Year 2015-2016.
Hours: 72. Language: Italian

Topics: Probability theory. Random variables and vectors. Stochastic processes.
Large class with about 100 students.

Advanced Communication Techniques

Master course - *Ing. Telecomunicazioni*
Academic Years 2011-2012, 2012-2013.
Hours: 48. Language: English

Topics: OFDM, synchronization for OFDM, peak to average power ratio reduction, channel estimation, MIMO systems, capacity of MIMO, MIMO spatial multiplexing, space time coding.
Small class with less than 10 students. **In the academic year 2011-2012 and 2012-2013, Dr. Tomasin has been Professore Aggregato for this course.**

Fondamenti di Comunicazioni (Communication Engineering Fundamentals)

Bachelor course - *Ing. Informatica*
Academic Years 2005-2006, 2006-2007, 2007-2008, 2008-2009.
Hours: 54. Language: Italian

Topics: principles of communication; transmission channels; analog and digital modulation principles; uniform and non uniform quantization. **In the academic years 2006-2007 and 2007-2008 Dr. Tomasin has been Professore Aggregato for this course.**
Large classes with about 100 students.

Fondamenti di Comunicazioni (Communication Engineering Fundamentals)

Bachelor course *Ing. dell'Informazione*
Academic Years 2008-2009.
Hours: 72. Language: Italian

Topics: principles of communication; transmission channels; analog and digital modulation principles; uniform and non uniform quantization and basics of information theory. **In the academic year 2008-2009 Dr. Tomasin has been Professore Aggregato for this course.**
Large classes with about 100 students.

Sistemi di Telecomunicazioni (Telecommunication Systems)

Master course
Academic Years 2008-2009, 2009-2010.
Hours: 48. Language: Italian

Topics: principles of communication; transmission channels; analog modulation (SSB, DSB, FM); digital modulation, principles with signal and detection theory, examples (QAM, PSK, orthogonal, PAM); uniform and non uniform quantization, powerline communications.
Small class with less than 10 students.

Telecomunicazioni (Communication Systems)

Bachelor course *Ing. dell'Informazione*
Academic Years 2014-2015.
Hours: 72. Language: Italian

Topics: principles of communications; digital modulation systems; quantization; elements of information theory and Shannon theorems; channel coding; queuing theory; elements of network layer techniques. **In the academic year 2014-2015 Dr. Tomasin has been Professore Aggregato for this course.**
Large classes with about 100 students.

Key Technologies for Next Generation Digital Video Broadcasting Standard

Ph.D. course within the Newcom++ network of excellence
Year: 2009.
Hours: 20. Language: English.

Motivations of DVB-T2. Description of key technologies behind DVB-T2, including the LDPC/BCH forward error correction scheme, transmission scheduling, orthogonal frequency-division multiplexing with huge block size, multiple-antenna transmissions, and synchronization techniques. Comparison with the current DVB-T standard.
Small class with less than 10 students.

Broadband Wireless Communications

Ph.D. course within the NEWCOM (European network) Doctoral School in Wireless Communications

Year: 2006.

Hours: 20. Language: English.

Communications over broadband channels. Principles and design of multicarrier systems. Synchronization, Equalizations, Impairment. Implementation architectures.

Small class with less than 10 students.

Multicarrier Systems

Ph.D. course

Year: 2005

Hours: 20. Language: English.

Principles and design of multicarrier systems. Synchronization, Equalizations, Impairment. Implementation architectures.

Small class with less than 10 students.

Doctoral Student Supervision

- **Francesco Formaggio**, started in 2017 at University of Padova, Italy, working on security techniques for global navigation satellite systems.
- **Alessandro Brighente**, started in 2017 at University of Padova, Italy, working on resource allocation for next generation cellular systems.
- **Ermanna Conte**, Ph.D. in 2010 at University of Padova, Italy, with thesis entitled "Multiuser MIMO downlink systems with limited feedback and remote sensing of vital signs".
- **Sintayehu Dehnie**, Ph.D. in 2009 at NYU Polytechnic University, NY, with thesis entitled "Detection and mitigation of misbehavior in cooperative wireless communications".

Bibliometric Indices

Google scholar: h-index 26 (total citations 3243)

Scopus: h-index 18 (total citations 1922)

ISI Web of Knowledge: h-index 15 (total citations 1256)

Publications

Entries in boldface refer to invited papers.

Accepted For Publication

- [1] S. Ceccato, F. Formaggio, G. Caparra, S. Tomasin, and N. Laurenti, "Exploiting side-information for resilient gnss positioning in mobile phones," *IEEE/ION Position Location and Navigation Symposium*, Apr. 2018.

Journal Publications

- [2] R. Bonetto, M. Rossi, S. Tomasin, and C. Fischione, "Joint optimal pricing and electrical efficiency enforcement for rational agents in microgrids," *IEEE Access*, vol. 5, pp. 19782–19798, 2017. DOI: 10.1109/ACCESS.2017.2750242.
- [3] N. Ksairi, S. Tomasin, and M. Debbah, "A multi-service oriented multiple-access scheme for M2M support in future LTE," *IEEE Commun. Magazine*, vol. 55, no. 1, Jan. 2017, ISSN: 0163-6804. DOI: 10.1109/MCOM.2016.1500689CM.
- [4] H. Soleimani, S. Tomasin, T. Alizadeh, and M. Shojafar, "Cluster-head based feedback for simplified time reversal prefiltering in ultra-wideband systems," *Physical Communication*, vol. 25, no. Part 1, pp. 100–109, 2017, ISSN: 1874-4907. DOI: <https://doi.org/10.1016/j.phycom.2017.09.005>. [Online]. Available: <http://www.sciencedirect.com/science/article/pii/S1874490716302294>.
- [5] A. Benfarah, S. Tomasin, and N. Laurenti, "Power allocation in multiuser parallel Gaussian broadcast channels with common and confidential messages," *IEEE Trans. on Commun.*, vol. 64, no. 6, pp. 2326–2339, Jun. 2016, ISSN: 0090-6778. DOI: 10.1109/TCOMM.2016.2552166.
- [6] R. Bonetto, M. Rossi, S. Tomasin, and M. Zorzi, "On the interplay of distributed power loss reduction and communication in low voltage microgrid," *IEEE Trans. Ind. Informatics*, vol. 2, no. 2, pp. 322–337, Feb. 2016. DOI: 10.1109/TII.2015.2509251.
- [7] N. Benvenuto, S. Ciccotosto, and S. Tomasin, "Iterative block fractionally spaced nonlinear equalization for wideband channels," *IEEE Wireless Commun. Letters*, vol. 4, no. 5, pp. 489–492, Oct. 2015, ISSN: 2162-2337. DOI: 10.1109/LWC.2015.2444396.
- [8] A. Ferrante, N. Laurenti, C. Masiero, M. Pavon, and S. Tomasin, "On the error region for channel estimation-based physical layer authentication over Rayleigh fading," *IEEE Trans. Inf. Forensics and Security*, vol. 10, no. 5, pp. 941–952, May 2015, ISSN: 1556-6013.
- [9] E. Jorswieck, S. Tomasin, and A. Sezgin, "Broadcasting into the uncertainty: Authentication and confidentiality by physical-layer processing," *Proceedings of the IEEE*, vol. 103, no. 10, pp. 1702–1724, Oct. 2015, ISSN: 0018-9219. DOI: 10.1109/JPROC.2015.2469602.
- [10] S. Tomasin and A. Dall'Arche, "Resource allocation for secret key agreement over parallel channels with full and partial eavesdropper CSI," *IEEE Trans. Info. Forensics and Security*, vol. 10, no. 11, pp. 2314–2324, Nov. 2015, ISSN: 1556-6013. DOI: 10.1109/TIFS.2015.2455412.
- [11] M. Baldi, F. Chiaraluce, N. Laurenti, S. Tomasin, and F. Renna, "Secrecy transmission on parallel channels: Theoretical limits and performance of practical codes," *IEEE Trans. Inf. Forensics and Security*, vol. 9, no. 11, pp. 1765–1779, Nov. 2014, ISSN: 1556-6013. DOI: 10.1109/TIFS.2014.2348915.
- [12] P. Baracca, S. Tomasin, and N. Benvenuto, "Backhaul rate allocation in uplink SC-FDMA systems with multicell processing," *IEEE Trans. Wireless Commun.*, vol. 13, no. 3, pp. 1264–1273, Mar. 2014, ISSN: 1536-1276. DOI: 10.1109/TWC.2014.011714.121946.

- [13] S. Tomasin, "Routing over multi-hop fading wiretap networks with secrecy outage probability constraint," *IEEE Commun. Letters*, vol. 18, no. 10, pp. 1811–1814, Oct. 2014, ISSN: 1089-7798. DOI: 10.1109/LCOMM.2014.2352298.
- [14] S. Tomasin and N. Laurenti, "Secure HARQ with multiple encoding over block fading channels: Channel set characterization and outage analysis," *IEEE Trans. Inf. Forensics and Security*, vol. 9, no. 10, pp. 1708–1719, Oct. 2014, ISSN: 1556-6013.
- [15] S. Tomasin, F. Trentini, and N. Laurenti, "Secret key agreement by LLR thresholding and syndrome feedback over AWGN channel," *IEEE Commun. Letters*, vol. 18, no. 1, pp. 26–29, Jan. 2014, ISSN: 1089-7798. DOI: 10.1109/LCOMM.2013.112513.131744.
- [16] **P. Baracca, N. Benvenuto, and S. Tomasin, "Resource allocation with multicell processing, interference cancellation and backhaul rate constraint in single carrier FDMA systems," Elsevier Physical Communication, vol. 8, pp. 69–80, Special issue on Broadband Single-carrier transmission techniques invited paper Sep. 2013, ISSN: 1874-4907. DOI: 10.1016/j.phycom.2012.09.003.**
- [17] T. Erseghe and S. Tomasin, "Power flow optimization for smart microgrids by SDP relaxation on linear networks," *IEEE Trans. on Smart Grid*, vol. 4, no. 2, pp. 751–762, Jun. 2013, ISSN: 1949-3053. DOI: 10.1109/TSG.2012.2222677.
- [18] T. Erseghe, S. Tomasin, and A. Vigato, "Topology estimation for smart micro grids via powerline communications," *IEEE Trans. Signal Processing*, vol. 61, no. 13, pp. 3368–3377, Jul. 2013, ISSN: 1053-587X. DOI: 10.1109/TSP.2013.2259826.
- [19] S. Rosati, S. Tomasin, M. Butussi, and B. Rimoldi, "LLR compression for BICM systems using large constellations," *IEEE Trans. on Commun.*, vol. 61, no. 7, pp. 2864–2875, Jul. 2013, ISSN: 0090-6778. DOI: 10.1109/TCOMM.2013.052113.120776.
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