



# Curriculum Vitæ

Nicola Laurenti

June 9, 2018

## Personals

<b>Name</b>	Laurenti, Nicola
<b>Date, place of birth</b>	8 November 1970, Adria, Italy

## Contacts

<b>Office</b>	Room 222 Dipartimento di Ingegneria dell'Informazione (DEI) Università di Padova via Gradenigo 6/B, 35131 Padova, Italy
<b>Phone</b>	+39 049 82 777 81 (office) +39 329 983 02 69 (mobile)
<b>E-mail</b>	nil@dei.unipd.it

## Positions

<b>2001–current</b>	Assistant Professor at Department of Information Engineering and School of Engineering, University of Padua, Italy
<b>2008–2009</b>	Visiting Scholar at Coordinated Science Laboratory, University Illinois at Urbana-Champaign, United States.
<b>1999–2001</b>	Research Fellow at Department of Information Engineering, University of Padua

## Education

<b>25 February 1999</b>	Ph.D. obtained in Electrical and Communication Engineering
<b>1995–1998</b>	Ph.D. student in Electrical and Communication Engineering at University of Padova, Italy
<b>17 July 1995</b>	Laurea degree <i>cum laude</i> in Electrical Engineering
<b>1992–1993</b>	Exchange student at University of California, Berkeley, United States
<b>1989–1995</b>	Student in Electrical Engineering at University of Padova
<b>12 July 1989</b>	High school graduation, with a score of 60 out of 60
<b>1984–1989</b>	High school student at Liceo Scientifico Statale “E. Fermi”, Padova, Italy

## Honors

<b>2018</b>	Best Paper Award at <i>IEEE/ION Position Location and Navigation Symposium, PLANS 2018</i> for Track D: “Applications to Automated, Semi-Autonomous, and Fully-Autonomous System”
<b>1996</b>	Hewlett Packard Student Award for outstanding achievements in electrical engineering

## Other titles and qualifications

---

<b>5 April 2017</b>	Italian National Qualification for Associate Professorship (Abilitazione Scientifica Nazionale per il ruolo di Professore Universitario, II fascia) in Telecommunications, valid until 5 April 2023
<b>2000</b>	Diploma examination for Mathematics teaching in High School (score: 80.5 out of 80)
<b>1995</b>	Qualifying examination for Engineering profession (score: 118 out of 120)

---

## RESEARCH

---

## Areas and topics

---

since 2010	<b>Global navigation satellite systems (GNSS) security:</b> <ul style="list-style-type: none"><li>• Key management schemes for GNSS services</li><li>• Integrity protection and source authentication for SBAS signals</li><li>• Integrity protection and source authentication for GNSS signals</li><li>• Unconditional security for the GNSS infrastructure through quantum cryptography</li></ul>
since 2009	<b>Quantum communications and cryptography:</b> <ul style="list-style-type: none"><li>• Receiver optimization for quantum PPM modulation</li><li>• Optimization of binary quantum transmission through non unital channels</li><li>• Experimental implementation of free-space quantum key distribution protocols</li></ul>
since 2008	<b>Security at the lower layers of wireless networks:</b> <ul style="list-style-type: none"><li>• Information theoretic physical layer secrecy for OFDM and MIMO systems in fading channels</li><li>• Information theoretic key agreement in wireless systems</li><li>• Physical layer authentication via channel estimation in fading scenarios</li><li>• Secure MAC layer protocols against jammers</li><li>• Mutual information jamming games in OFDM systems</li></ul>
2012–2014	<b>Networked control systems with nonideal transmissions:</b> <ul style="list-style-type: none"><li>• Optimizing the tradeoff among delay, channel losses and reconstruction SNR in Linear Quadratic Gaussian systems</li></ul>
1996–2008	<b>Multicarrier modulation:</b> <ul style="list-style-type: none"><li>• System analysis and performance evaluation</li><li>• Receiver synchronization and frequency estimation</li><li>• Complexity-efficient design and implementations of mo-demodulators</li></ul>
1996–2008	<b>Ultra Wideband systems and networks:</b> <ul style="list-style-type: none"><li>• Receiver design for Impulse Radio</li><li>• Performance analysis of UWB Multiband OFDM systems</li><li>• Synchronization of Multiband OFDM receivers</li></ul>
1995–2005	<b>Time-frequency analysis, signal theory and signal processing:</b> <ul style="list-style-type: none"><li>• Fractional Fourier transforms</li><li>• Spectral modeling of musical sounds</li><li>• Biomedical image processing</li></ul>

## Participation in research projects and networks of excellence

---

- 2017–2019** **Enhanced Navigation in Space (ENSPACE):** funded by the European Commission (Horizon 2020 — Applications in Satellite Navigation — Galileo — 2017 call) *as leader of the Univ. of Padua RU*
- 2016–2019** **More GNSS Open Service Signal Integrity Protection and Authentication at the Physical Layer (MORE GOSSIP, A PLAY):** funded by the European Space Agency (Express Procurement) *as principal investigator*
- 2016–2018** **Advanced Key Management Simulator (AKMS):** funded by the European Space Agency (Invitation to Tender) *as leader of the Univ. of Padua RU*
- 2016–2017** **EGNOS Authentication Security Testbed (EAST):** funded by the European Commission (Call for Tender) *as leader of the Univ. of Padua RU*
- 2014–2016** **Advanced GNSS Open Service Signal Integrity Protection and Authentication at the Physical Layer (A GOSSIP, A PLAY):** funded by the European Space Agency (Express Procurement) *as principal investigator*
- 2012–2015** **Enhancing Security by Cross Layer Physical and Data Link Engineering (ESCAPADE):** funded by the Italian Ministry of Education and Research (FIRB, Future in Research)
- 2012–2015** **Applications of Optical Quantum links to Global Navigation Satellite Systems (OQL-GNSS):** funded by the European Space Agency (Invitation to Tender)
- 2009–2013** **Quantum Future. Communications at the Quantum Limit:** funded by the University of Padua (Strategic Projects) *as leader of the Telecommunications RU*
- 2008–2010** **European Network of Excellence on Wireless Communications NEWCOM++:** funded by the European Commission
- 2006–2008** **Enabling blocks for the CMOS integration of a Multi-band OFDM UWB transceiver:** funded by the Italian Ministry of Education and Research (Nationally relevant research projects) *as leader of the Padua RU*
- 2002–2005** **Reconfigurable platforms for interoperability in mobility (PRIMO):** funded by the Italian Ministry of Education and Research (National funding for fundamental research, FIRB)
- 2000–2002** **OFDM systems for wireless LAN applications:** funded by the Italian Ministry of Education and Research
- 1999–2000** **Variable bit-rate mobile communication systems for multimedia applications:** funded by the Italian National Research Council

## Industrial and professional collaborations

---

<b>2018–2019</b>	<b>National Position, Navigation and Timing Cyber-Response Center:</b> a collaboration between Qascom srl and University of Padova, funded by the European Space Agency <i>leader of the DEI Padova unit</i>
<b>2018–2019</b>	<b>Position Authenticated Tachograph for OS NMA Launch (PATROL):</b> a Consortium funded by the European Commission, led by Qascom srl and FDC (France Development Conseil) <i>consultant, leader of the Padova team</i>
<b>Qascom</b>	Authentication and integrity protection of satellite navigation signals
<b>ST Microelectronics</b>	Channel models for DAB system simulations. Design and analysis of algorithms for the synchronization of DAB e DVB-T receivers
<b>Fracarro Radioindustrie</b>	Technologies for multimedia content distribution in multi-dwelling buildings
<b>Elvox</b>	Design of a digital transmission system for audiovisual content over short range twisted pair

## Scientific editorial activity

---

<b>Reviewer</b>	for several journals, including: Nature Communications IEEE Transactions on Communicatons IEEE Communications Magazine IEEE Communication Letters IEEE Transactions on Information Forensics and Security IEEE Transactions on Vehicular Technology IEEE Transactions on Wireless Communicatons IEEE Transactions on Signal Processing Multidimensional Systems and Signal Processing
<b>TPC member</b>	Technical Program Committees for the conferences: ACM Conference on Security and Privacy in Wireless and Mobile Networks, WiSec 2018 IEEE International Conference on Communicatons, ICC 2015: – Workshop on Physical Layer Security – Wireless Communications Symposium IEEE Global Telecommunications Conference, GLOBECOM 2015: – Workshop on Trusted Communications with Physical Layer Security IEEE International Workshop on Lan and Metropolitan Area Networks, LANMAN 2013
<b>Reviewer</b>	for several telecommunication conferences (ICC, Globecom, ISIT, VTC, WPMC, PIMRC) in the latest years

## Advising for PhD Student

---

	I have been the advisor for the following students in the PhD School in Information Engineering at University of Padua
<b>2016–today</b>	Silvia Ceccato. Research topic: Key management for GNSS services
<b>2014–today</b>	Gianluca Caparra. Thesis: <i>Authentication and Integrity Protection for critical infrastructures</i>
<b>2011–2013</b>	Matteo Canale. Thesis: <i>Classical processing algorithms for Quantum Information Security</i>
<b>2011–2012</b>	Nicola Dalla Pozza. Thesis: <i>Receiver design for Quantum Communications</i>
<b>2008–2010</b>	Francesco Renna. Thesis: <i>OFDM in Emerging Wireless Networks: Synchronization Algorithms and Physical Layer Security</i>
<b>2006–2007</b>	Elena Pancera. Research topic: Ultra Wide Band transceivers.

## List of publications in bibliographic databases and search engines

---

Google Scholar	<a href="https://scholar.google.com/citations?user=USQXkr8AAAAJ">https://scholar.google.com/citations?user=USQXkr8AAAAJ</a>
Scopus	<a href="http://www.scopus.com/authid/detail.url?authorId=6506456511">http://www.scopus.com/authid/detail.url?authorId=6506456511</a>
Web of Science	<a href="http://apps.webofknowledge.com/summary.do?product=UA&amp;qid=3&amp;SID=W2W4k1pS60MPEx3w0s">http://apps.webofknowledge.com/summary.do?product=UA&amp;qid=3&amp;SID=W2W4k1pS60MPEx3w0s</a>
Orcid	<a href="http://orcid.org/0000-0001-7592-1929">http://orcid.org/0000-0001-7592-1929</a>
ResearcherID	<a href="http://www.researcherid.com/rid/J-5838-2012">http://www.researcherid.com/rid/J-5838-2012</a>
ResearchGate	<a href="https://www.researchgate.net/profile/Nicola_Laurenti">https://www.researchgate.net/profile/Nicola_Laurenti</a>
Academia.edu	<a href="https://unipd.academia.edu/NicolaLaurenti">https://unipd.academia.edu/NicolaLaurenti</a>

---

---

# TEACHING

---

## Positioning, Location and Navigation

---

<b>Program</b>	PhD in Information Engineering, University of Padua.
<b>Objective</b>	The class aims at introducing the students to positioning, location and navigation services in modern communication networks and infrastructure systems, linking classical fundamental notions with more recent state of the art results from industry and research, and providing them with knowledge and expertise they can apply in connection to their own research interests.
<b>Workload</b>	5 ECTS credits
<b>Held in</b>	Winter 2018
<b>Language</b>	Taught in English

## Information Theoretic Methods in Security

---

<b>Program</b>	PhD in Information Engineering and PhD in Mathematics, University of Padua.
<b>Objective</b>	The class aims at providing the students with an information theoretic framework that will allow formal modeling, and understanding fundamental performance limits, in several security-related problems
<b>Workload</b>	5 ECTS credits
<b>Held in</b>	Fall 2011, 2012, 2013, 2014, Winter 2016, Fall 2016
<b>Language</b>	Taught in English
<b>Notes</b>	Also held at National Chiao Tung University Hsinchu, Taiwan, in Winter 2015-2016, upon invitation.

## Network Security

---

<b>Program</b>	Master (Laurea magistrale) in Telecommunication Engineering and in Computer Engineering, University of Padua.
<b>Objective</b>	The class aims at introducing the students to the fundamental notions and tools in information security, with a focus on the solutions, attacks and countermeasures that can be deployed at the different layers in modern communication networks.
<b>Workload</b>	6 ECTS credits
<b>Held in</b>	Spring 2010, 2012, 2013, 2014, 2015, 2016, 2017, Fall 2017
<b>Language</b>	Taught in Italian in 2010, in English since 2012

## Communication Systems and Networks

---

<b>Program</b>	Undergraduate studies in Information Engineering
<b>Objective</b>	This class introduces the fundamental principles underlying the operation of digital communication systems and networks, and provides the basics of performance analysis and system design.
<b>Credits</b>	9 cfu ECTS
<b>Held in</b>	Fall 2015, Spring 2017, 2018
<b>Language</b>	Taught in Italian

## Digital Transmission

---

<b>Program</b>	Graduate studies in Telecommunication Engineering
<b>Objective</b>	Starting from notions given in the Communication Systems class, we introduce and discuss principles, techniques, and problems in modern digital transmission, and aim at guiding the student into performance analysis, simulation and design of digital transmission systems.
<b>Workload</b>	7 ECTS credits
<b>Held in</b>	Winter 2005, 2006, 2007
<b>Language</b>	Taught in Italian

## Communication Systems

---

<b>Program</b>	Undergraduate studies in Information Engineering
<b>Objective</b>	This class introduces the fundamental principles underlying the operation of analog and digital communication systems, and provides the basics of performance analysis and system design.
<b>Workload</b>	9 ECTS credits
<b>Held in</b>	Winter 2004, 2005, 2006, 2007, 2008
<b>Language</b>	Taught in Italian

## Signal Theory

---

<b>Program</b>	Undergraduate studies in Computer Science and Electrical Engineering
<b>Objective</b>	To provide methods for the analysis of deterministic signals, and the statistical characterization of random signals, in the time and frequency domains.
<b>Workload</b>	9 ECTS credits
<b>Held in</b>	Spring 2002, 2003
<b>Language</b>	Taught in Italian

## Other

---

<b>Optical Networks</b>	12 hours of lecture within the <i>Optical Communications</i> class. Held yearly, from Winter 2002 through Winter 2006.
<b>OFDM systems</b>	12 hours of lecture within the <i>Mobile Communications</i> class. Held Spring 2000.
<b>as teaching assistant</b>	for several classes on signals and communications, from 1997 to 2003
<b>Grauating projects</b>	Advisor for more than 60 Laurea Triennale (Bachelor), Laurea Specialistica, Magistrale e Quinquennale (Master) theses.

## Participation in teaching projects

---

<b>2014–2016</b>	<b>Open Distributed European virtual Campus on ICT Security (DECAMP):</b> , Strategic Partnership for higher education, funded by the German Academic Exchange Service (DAAD) under the European Commission <i>Erasmus+</i> call <i>as leader of the Padua unit</i>
------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



---

# LIST OF PUBLICATIONS

---

## Books and book chapters

- [B1] G. Caparra, M. Centenaro, N. Laurenti, S. Tomasin, and L. Vangelista, “Wireless physical layer authentication for the Internet of Things,” *Information Theoretic Security and Privacy of Information Systems*, Cambridge University Press, 2017, pp. 390–418.
- [B2] F. Renna, N. Laurenti, and S. Tomasin, “MIMOME Gaussian Channels with GMM Signals in High-SNR Regime: Fundamental Limits and Tradeoffs,” *Physical and Data-Link Security Techniques for Future Communication Systems*, Springer International Publishing, 2016, pp. 33–52.
- [B3] N. Laurenti, T. Erseghe, “Deterministic and Random Signals,” *Principles of Communications Networks and Systems*, John Wiley & Sons, Chichester, 2011.
- [B4] N. Laurenti, “Sources of Digital Information,” *Principles of Communications Networks and Systems*, John Wiley & Sons, Chichester, 2011.
- [B5] N. Laurenti, “Channel Coding and Capacity,” *Principles of Communications Networks and Systems*, John Wiley & Sons, Chichester, 2011.
- [B6] L. Baldini, D. Manstretta, T. Erseghe, N. Laurenti, A. Liscidini, R. Castello, “Reconfigurable Multi-Band OFDM UWB Receivers,” *Circuits and Systems for Future Generations of Wireless Communications*, Springer-Verlag, New York, 2009.
- [B7] N. Benvenuto, R. Corvaja, T. Erseghe, N. Laurenti, *Communication Systems. Fundamentals and Design Methods*, John Wiley & Sons, Chichester, 2006.
- [B8] A. M. Tonello, N. Laurenti, S. Pupolin, “Capacity Considerations on the Uplink of a Multi-User DMT OFDMA System Impaired by Time Misalignments and Frequency Offsets,” *Software Radio Technologies and Services*, Springer-Verlag, New York, 2001.

## Journal papers

- [J1] Gianluca Caparra, Christian Wullems, Silvia Ceccato, Silvia Sturaro, Nicola Laurenti, Oscar Pozzobon, Rigas T. Ioannides, and Massimo Crisci, “Design Drivers and New Trends for Navigation Message Authentication Schemes for GNSS Systems,” *InsideGNSS*, vol. 11, n. 5, pp. 64–73, September 2016.
- [J2] A. Benfarah, S. Tomasin, and N. Laurenti, “Power Allocation in Multiuser Parallel Gaussian Broadcast Channels With Common and Confidential Messages,” *IEEE Transactions on Communications*, vol. 64, n. 6, pp. 2326–2339, June 2016.
- [J3] A. Biazon, N. Laurenti, and M. Zorzi, “Achievable Secrecy Rates of an Energy Harvesting Device,” *IEEE Journal on Selected Areas in Communications*, vol. 34, n. 5, pp. 1502–1517, May 2016.
- [J4] H. Endo, M. Fujiwara, M. Kitamura, T. Ito, M. Toyoshima, Y. Takayama, H. Takenaka, R. Shimizu, N. Laurenti, G. Vallone, P. Villoresi, T. Aoki, M. Sasaki, “Free-space optical channel estimation for physical layer security,” *Optics Express*, vol. 24, n. 8, pp. 8940–8955, April 2016.
- [J5] S.-Y. Chang, Y. Hu, N. Laurenti, “SimpleMAC: A Simple Wireless MAC-Layer Countermeasure to Intelligent and Insider Jammers,” *IEEE/ACM Transactions on Networking*, vol. 24, n. 2, pp. 1095–1108, February 2016.
- [J6] A. Ferrante, N. Laurenti, C. Masiero, M. Pavon, S. Tomasin, “On the Error Region for Channel Estimation Based Physical Layer Authentication over Rayleigh Fading,” *IEEE Transactions on Information Forensics and Security*, vol. 10, n. 5, pp. 941–952, May 2015.
- [J7] G. Vallone, D. Marangon, M. Canale, I. Savorgnan, D. Bacco, M. Barbieri, S. Calimani, C. Barbieri, N. Laurenti, and P. Villoresi, “Adaptive Real Time Selection for Quantum Key Distribution in Lossy and Turbulent Free-Space Channels,” *Physical Review A*, vol. 91, n. 4, art. 042320, 14 April 2015.
- [J8] M. Baldi, F. Chiaraluce, N. Laurenti, S. Tomasin, F. Renna, “Secrecy Transmission on Parallel Channels: Theoretical Limits and Performance of Practical Codes,” *IEEE Transactions on Information Forensics and Security*, vol. 9, n. 11, pp. 1765–1779, November 2014.
- [J9] S. Tomasin, F. Trentini, N. Laurenti, “Secret Key Agreement by LLR Thresholding and Syndrome Feedback over AWGN Channel,” *IEEE Communications Letters*, vol. 18, n. 1, pp. 26–29, January 2014.
- [J10] A. Chiuso, N. Laurenti, L. Schenato, A. Zanella, “LQG-like control of scalar systems over communication channels:

The role of data losses, delays and SNR limitations,” *Automatica*, vol. 50, n. 12, pp. 3155–3163, December 2014.

- [J11] N. Dalla Pozza and N. Laurenti, “Adaptive discrimination scheme for quantum pulse-position-modulation signals,” *Physical Review A*, vol. 89, n. 1, art. 012339, January 2014.
- [J12] S. Tomasin and N. Laurenti, “Secure HARQ With Multiple Encoding Over Block Fading Channels: Channel Set Characterization and Outage Analysis,” *IEEE Transactions on Information Forensics and Security*, vol. 9, n. 10, pp. 1708–1719, October 2014.
- [J13] F. Renna, M. R. Bloch, N. Laurenti, “Semi-Blind Key-Agreement over MIMO Fading Channels,” *IEEE Transactions on Communications*, vol. 61, n. 2, pp. 620–627, February 2013.
- [J14] D. Bacco, M. Canale, N. Laurenti, G. Vallone, P. Villoresi, “Experimental quantum key distribution with finite-key security analysis for noisy channels,” *Nature communications*, vol. 4, n. 13, art. 2363, September 2013.
- [J15] P. Baracca, N. Laurenti, S. Tomasin, “Physical Layer Authentication over MIMO Fading Wiretap Channels,” *IEEE Transactions on Wireless Communications*, vol. 11, n. 7, pp. 2564–2573, July 2012.
- [J16] F. Renna, N. Laurenti, H. V. Poor, “Physical-Layer Secrecy for OFDM Transmissions Over Fading Channels,” *IEEE Transactions on Information Forensics and Security*, vol. 7, n. 4, pp. 1354–1367, August 2012.
- [J17] G. Cariolaro, T. Erseghe, N. Laurenti, G. Pierobon, “New Results on the Spectral Analysis of Multi-h CPM Signals,” *IEEE Transactions on Communications*, vol. 59, n. 7, pp. 1893–1903, July 2011.
- [J18] T. Erseghe, N. Laurenti, “An Analysis of GLRT Packet Detection for WiMedia UWB Applications,” *IEEE Transactions on Vehicular Technology*, vol. 59, n. 3, pp. 1229–1241, March 2010.
- [J19] D. Manstretta, N. Laurenti, R. Castello, “A Reconfigurable Narrowband MB-OFDM UWB Receiver Architecture,” *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 55, n. 4, pp. 324–328, April 2008.
- [J20] N. Laurenti, G. De Poli, D. Montagner, “A Nonlinear Method for Stochastic Spectrum Estimation in the Modeling of Musical Sounds,” *IEEE Transactions on Speech and Audio Processing*, vol. 15, n. 3, pp. 531–541, March 2007.
- [J21] T. Erseghe, N. Laurenti, “Design and Performance Evaluation of a Full-Duplex Operating Receiver for Time-Hopping UWB,” *Journal on Special Topics in Mobile Networks and Applications*, vol. 11, n. 3, pp. 429–439, March 2006.
- [J22] T. Erseghe, N. Laurenti, V. Cellini, “A Multicarrier Architecture Based upon the Affine Fourier Transform,” *IEEE Transactions on Communications*, vol. 53, n. 4, pp. 853–862, May 2005.
- [J23] L. Vangelista, N. Laurenti, “Efficient Implementation and Alternative Architectures for OFDM-OQAM Systems,” *IEEE Transactions on Communications*, vol. 49, n. 4, pp. 664–675, April 2001.
- [J24] G. Cariolaro, T. Erseghe, P. Kraniuskas, N. Laurenti, “Multiplicity of Fractional Fourier Transforms and their Relationships,” *IEEE Transactions on Signal Processing*, vol. 48, n. 1, pp. 227–241, January 2000.
- [J25] G. Cariolaro, T. Erseghe, P. Kraniuskas, N. Laurenti, “A Unified Framework for the Fractional Fourier Transform,” *IEEE Transactions on Signal Processing*, vol. 46, n. 12, pp. 3206–3219, December 1998.
- [J26] L. Vangelista, N. Laurenti, “Comments on ‘Orthogonal Multiple Carrier Data Transmission’,” *European Transactions on Telecommunications and Related Technologies*, vol. 9, n. 6, pp. 571–572, November 1998.

## Conference papers

- [C1] S. Ceccato, F. Formaggio, G. Caparra, N. Laurenti, S. Tomasin, “Exploiting Side-Information for Resilient GNSS Positioning in Mobile Phones,” *IEEE/ION Position Location and Navigation Symposium, PLANS*, Monterey, CA, 23–26 April 2018, pp. 1515–1524.
- [C2] G. Caparra, M. Centenaro, N. Laurenti, S. Tomasin, “Optimization of Anchor Nodes’ Usage for Location Verification Systems,” *International Conference on Localization and GNSS, ICL-GNSS*, Nottingham, England, 27–29 June 2017.
- [C3] G. Caparra, S. Ceccato, N. Laurenti, J. Cramer, “Feasibility and Limitations of Self-Spoofing Attacks on GNSS Signals with Message Authentication,” *International Technical Meeting of the Satellite Division of The Institute of Navigation, ION GNSS+*, Portland, OR, 25–29 September 2017, pp. 3968–3984.
- [C4] G. Caparra, S. Ceccato, S. Sturaro, N. Laurenti, “A key management architecture for GNSS open service Navigation Message Authentication,” *European Navigation Conference, ENC*, Lausanne, Switzerland, 9–12 May 2017, pp. 287–297.
- [C5] A. Dalla Chiara, G. Da Broi, O. Pozzobon, S. Sturaro, G. Caparra, N. Laurenti, J. Fidalgo, M. Odriozola, G. M. Lopez, I. Fernández-Hernández, “SBAS authentication proposals and performance assessment,” *International Technical Meeting of the Satellite Division of The Institute of Navigation, ION GNSS+*, Portland, OR, 25–29 September 2017, pp. 2106–2116.

- [C6] C. Pielli, F. Chiariotti, N. Laurenti, A. Zanella, M. Zorzi, “A game-theoretic analysis of energy-depleting jamming attacks,” *International Conference on Computing, Networking and Communication, ICNC*, Santa Clara, CA, 26–29 January 2017, pp. 100–104.
- [C7] A. Dalla Chiara, I. Fernandez-Hernandez, E. Chatre, V. Rijmen, G. da Broi, O. Pozzobon, J. Caro Ramon, J. Fidalgo, N. Laurenti, G. Caparra, S. Sturaro, “Authentication Concepts for Satellite-Based Augmentation Systems,” *International Technical Meeting of the Satellite Division of The Institute of Navigation, ION GNSS+*, 2016.
- [C8] A. Benfarah, N. Laurenti, and S. Tomasin, “Resource Allocation for Downlink of 5G Systems with OFDMA under Secrecy Outage Constraints,” *IEEE Global Telecommunications Conference, GLOBECOM*, 2016, pp. 1–6.
- [C9] G. Caparra, S. Sturaro, N. Laurenti, and C. Wullems, “A Novel Navigation Message Authentication Scheme for GNSS Open Service,” *International Technical Meeting of the Satellite Division of The Institute of Navigation, ION GNSS+*, 2016.
- [C10] G. Caparra, S. Sturaro, N. Laurenti, and C. Wullems, “Evaluating the Security of One-way Key Chains in TESLA-based GNSS Navigation Message Authentication Schemes,” *International Conference on Localization and GNSS, ICL-GNSS*, 2016.
- [C11] G. Caparra, M. Centenaro, N. Laurenti, S. Tomasin, and L. Vangelista, “Energy-Based Anchor Node Selection for IoT Physical Layer Authentication,” *IEEE International Conference on Communications, ICC*, 2016.
- [C12] A. Biazon, A. R. Khamesi, N. Laurenti, and M. Zorzi, “Achievable Secrecy Rates of an Energy Harvesting Device with a Finite Battery,” *IEEE Global Communications Conference (GLOBECOM)*, 2015, pp. 1–7.
- [C13] F. Renna, N. Laurenti, and S. Tomasin, “MIMOME Gaussian Channels with GMM Signals in High-SNR Regime: Fundamental Limits and Tradeoffs,” *Workshop on Communication Security, WCS*, 2014.
- [C14] A. Benfarah, S. Tomasin, and N. Laurenti, “On The Secrecy Capacity Region of Parallel Broadcast Channels with Common and two Confidential Messages,” *IEEE Global Telecommunications Conference, GLOBECOM*, 2014, pp. 1–6.
- [C15] N. Laurenti, S. Tomasin, and F. Renna, “Resource allocation for secret transmissions on parallel Rayleigh channels,” *IEEE International Conference on Communications, ICC*, 2014, pp. 2209–2214.
- [C16] S. Tomasin and N. Laurenti, “Secret message transmission by HARQ with multiple encoding,” *IEEE International Conference on Communications, ICC*, 2014, pp. 2191–2196.
- [C17] G. Caparra, N. Laurenti, R. T. Ioannides, and M. Crisci, “Improving Secure Code Estimation-Replay Attacks and their Detection on GNSS Signals,” *ESA Workshop on Satellite Navigation Technologies, NAVITEC*, 2014.
- [C18] F. Renna, N. Laurenti, and S. Tomasin, “Achievable secrecy rates over MIMOME Gaussian channels with GMM signals in low-noise regime,” *International Conference on Wireless Communications, Vehicular Technology, Information Theory and Aerospace & Electronic Systems, VITAE*, 2014, pp. 1–5.
- [C19] A. Chiuso, N. Laurenti, L. Schenato, and A. Zanella, “LQG cheap control over SNR-limited lossy channels with delay,” *IEEE Conference on Decision and Control, CDC*, 2013, pp. 3988–3993.
- [C20] F. Gerlin, N. Laurenti, G. Naletto, G. Vallone, P. Villoresi, L. Bonino, S. Mottini, and Z. Sodnik, “Design optimization for quantum communications in a GNSS intersatellite network,” *International Conference on Localization and GNSS, ICL-GNSS*, 2013, pp. 1–6.
- [C21] A. Chiuso, N. Laurenti, L. Schenato, and A. Zanella, “LQG cheap control subject to packet loss and SNR limitations,” *European Control Conference, ECC*, 2013, pp. 2374–2379.
- [C22] F. Renna, N. Laurenti, S. Tomasin, M. Baldi, N. Maturo, M. Bianchi, F. Chiaraluce, and M. R. Bloch, “Low-power secret-key agreement over OFDM,” *ACM workshop on hot topics on wireless network security and privacy, HotWiSec*, 2013, pp. 43–47.
- [C23] N. Dalla Pozza and N. Laurenti, “Adaptive receiver for Quantum PPM signals,” *Quantum Information, Processing and Computation, QIPC*, 2013, pp. 207–208.
- [C24] S.-Y. Chang, Y.-C. Hu, and N. Laurenti, “SimpleMAC: a jamming-resilient MAC-layer protocol for wireless channel coordination,” *ACM International conference on Mobile computing and networking, Mobicom*, 2012, p. 77.
- [C25] N. Dalla Pozza, N. Laurenti, and F. Ticozzi, “Optimal Binary Codes and Measurements for Classical Communication over Qubit Channels,” *OSA Congress Research in Optical Sciences*, 2012, no. 4, pp. 5–7.
- [C26] M. Canale, D. Bacco, S. Calimani, F. Renna, N. Laurenti, G. Vallone, and P. Villoresi, “A prototype of a free-space QKD scheme based on the B92 protocol,” *International Symposium on Applied Sciences in Biomedical and Communication Technologies, ISABEL*, 2011, pp. 1–5.
- [C27] J. J. Haas, Y.-C. Hu, and N. Laurenti, “Low-cost mitigation of privacy loss due to radiometric identification,” *ACM*

*international workshop on Vehicular inter-networking, VANET*, 2011, pp. 31–40.

- [C28] F. Renna, M. R. Bloch, and N. Laurenti, “Semi-Blind Key-Agreement over MIMO Fading Channels,” *IEEE International Conference on Communications, ICC*, 2011, pp. 1–6.
- [C29] F. Renna, N. Laurenti, and H. V. Poor, “Achievable secrecy rates for wiretap OFDM with QAM constellations,” *International ICST Conference on Performance Evaluation Methodologies and Tools, VALUETOOLS*, 2011, pp. 679–686.
- [C30] F. Renna, M. R. Bloch, and N. Laurenti, “Semi-Blind Key-Agreement over MIMO Quasi-Static Channels,” *NEW-COM++ / COST 2100 Joint Workshop on Wireless Communications, JNCW*, 2011.
- [C31] M. Canale, D. Bacco, S. Calimani, F. Renna, N. Laurenti, G. Vallone, and P. Villoresi, “Performance analysis of a low-cost, low-complexity, free-space QKD scheme based on the B92 protocol,” *Annual conference on Quantum Cryptography, QCRYPT*, 2011, vol. 1863, no. 1995, pp. 52303–52303.
- [C32] R. Corvaja, G. Pierobon, F. Ticozzi, G. Vallone, P. Villoresi, I. Capraro, A. Dall’Arche, N. D. Pozza, F. Gerlin, A. Tomaello, M. Zorzi, A. Assalini, and A. Ferrante, “Engineering a long distance free-space quantum channel,” *International Symposium on Applied Sciences in Biomedical and Communication Technologies, ISABEL*, 2011, pp. 1–5.
- [C33] F. Renna, N. Laurenti, and Y.-C. Hu, “The Jamming Game in an OFDM Setting,” *International ICST Conference on Performance Evaluation Methodologies and Tools, VALUETOOLS*, 2011, pp. 496–505.
- [C34] P. Baracca, N. Laurenti, and S. Tomasin, “Physical Layer Authentication over an OFDM Fading Wiretap Channel,” *International ICST Conference on Performance Evaluation Methodologies and Tools, VALUETOOLS*, 2011, pp. 648–657.
- [C35] M. Canale, F. Renna, and N. Laurenti, “QKD secrecy for privacy amplification matrices with selective individual attacks,” *Annual conference on Quantum Cryptography, QCRYPT*, 2011, vol. 012318, pp. 52304–52304.
- [C36] F. Renna, N. Laurenti, and H. V. Poor, “High SNR secrecy rates with OFDM signaling over fading channels,” *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC*, 2010, pp. 2692–2697.
- [C37] F. Renna, N. Laurenti, and H. V. Poor, “Physical layer secrecy for OFDM systems,” *European Wireless Conference, EW*, 2010, pp. 782–789.
- [C38] F. Renna, N. Laurenti, T. Erseghe, “Time Synchronization for OFDM Systems in Very Dispersive Channels,” *Proceedings of 2009 IEEE International Conference on Ultra-Wideband, ICUWB ‘09*, Vancouver, Canada, 9–11 September 2009, pp. 545–550.
- [C39] A. Paviotti, S. Carmignato, A. Voltan, N. Laurenti, G. M. Cortelazzo, “Estimating angle-dependent systematic error and measurement uncertainty for a conoscopic holography measurement system,” *Proc. SPIE Three-Dimensional Imaging Metrology*, San Jose, CA, 19 January 2009 vol. 7239, paper n. 72390Z.
- [C40] N. Laurenti, F. Renna, “Estimation of Carrier and Clock Frequency Offsets for Ultra Wide Band Multiband OFDM Systems,” *Proceedings of 2008 IEEE International Conference on Ultra-Wideband, ICUWB ‘08*, Hannover, Germany, 10–12 September 2008, vol. 2, pp. 49–54.
- [C41] T. Erseghe, N. Laurenti, V. Rizzi, R. Corvaja, “A packet detection algorithm for the UWB standard ECMA 368,” *Proceedings of the 12th Tyrrhenian International Workshop on Digital Communications*, Ischia Island, Italy, 9–12 September 2007.
- [C42] T. Erseghe, N. Laurenti, “Time Hopping UWB: Receiver Design and Performance of a Full-Duplex System,” *Networking with UWB*, Rome, Italy, 4–6 July 2005.
- [C43] E. Grisan, A. Paviotti, N. Laurenti, A. Ruggeri, “A Lattice Estimation Approach for the Automatic Evaluation of Corneal Endothelium Density,” *Proceedings of 2005 International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS ‘05*, Shanghai, China, 1–4 September 2005.
- [C44] T. Erseghe, N. Laurenti, P. Nicoletti, A. Sivieri, “An Algorithm for Radio Resource Management in UWB Ad Hoc Networks with Concurrent Guaranteed QoS and Best Effort Traffic,” *Proceedings of the 7th International Symposium on Wireless Personal Multimedia Communications, WPMC 2004*, Abano Terme, 12–15 September 2004.
- [C45] N. Laurenti, P. Toniolo, “Performance of the Multi-band OFDM UWB System with Time-varying Channels,” *Proceedings of the 7th International Symposium on Wireless Personal Multimedia Communications, WPMC 2004*, Abano Terme, 12–15 September 2004.
- [C46] N. Laurenti, T. Erseghe, V. Cellini, “On the Performance of TH-PPM and TH-PAM as Transmission Formats for UWB Communications,” *Proceedings of Spring 2004 IEEE Vehicular Technology Conference, VTC ‘04-Spring*, Milano, 17–19 May 2004.
- [C47] A. Berno, N. Laurenti, “Time and Frequency Synchronization for Hiperlan/2,” *Proceedings of the IFIP-TC6 Confer-*

ence on Networking, *Networking 2002*, Pisa, 19–24 May 2002, pp. 491–502.

- [C48] N. Laurenti, G. De Poli, “A Method for Spectrum Separation and Envelope Estimation of the Residual in Spectrum Modeling of Musical Sound,” *COST-G6 Conference on Digital Audio Effects, DAFx ‘00*, Verona, Italy, 7–9 December 2000, pp. 233–236.
- [C49] A. M. Tonello, N. Laurenti, S. Pupolin, “Analysis of the Up-link of an Asynchronous Multi-user DMT OFDMA System Impaired by Time Offsets, Frequency Offsets and Multi-path Fading,” *Vehicular Technology Conference, VTC 2000, Fall*, Boston, Stati Uniti, 24–28 September 2000, vol. 3, pp. 194–1099.
- [C50] A. M. Tonello, N. Laurenti, S. Pupolin, “Capacity Considerations on the Uplink of a Multi-User DMT OFDMA System Impaired by Time Misalignments and Frequency Offsets,” *12th Tyrrhenian International Workshop on Digital Communications*, Isola d’Elba, 13–16 September 2000.
- [C51] N. Laurenti, L. Vangelista, “Filter Design for the Conjugate OFDM-OQAM System,” *First International Workshop on Image and Signal Processing and Analysis, IWISPA 2000*, Pula, Croatia, 14–15 June 2000.
- [C52] A. M. Tonello, N. Laurenti, S. Pupolin, “On the Effect of Time and Frequency Offsets in the Up-link of an Asynchronous Multi-user DMT OFDMA System,” *International Conference on Telecommunications, ICT 2000*, Acapulco, Mexico, 22–25 May 2000.

## Patents

- [P1] L. Vangelista, N. Laurenti, *OFDM-OQAM multicarrier transmission systems*, European Patent n. EP1032174, Telit Mobile Terminals S.p.A., filed 17 February 2000, published 30 August 2000.
- [P2] G. Cariolaro, U. De Prezzo, N. Laurenti, F. Renzulli, *Carrier and symbol synchronisation for multicarrier signals*, European Patent n. EP0998086, Società Italiana per lo Sviluppo dell’Elettronica, (S.I.SV.EL.) S.p.A., filed 28 October 1999, published 15 April 2009.

## Theses

- [T1] N. Laurenti, *Implementation Issues in OFDM Systems*, Tesi di Dottorato, Università di Padova, defended on 25 February 1999.
- [T2] N. Laurenti, *Image Reconstruction from Projections*, Tesi di Laurea, Università di Padova, defended on 17 July 1995.