

# Giuseppe Durisi: Curriculum Vitae

## Work address:

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RESEARCH	Information theory, communication theory, machine learning
PERSONAL	Born on November 28, 1977 in Turin, Italy; Italian citizenship; male; married with two children; languages: Italian, English, German, Swedish
EDUCATION	<ul style="list-style-type: none"><li>◇ Mar. 2012: Chalmers University of Technology, Sweden Docent diploma in Information Theory</li><li>◇ Mar. 2006: Politecnico di Torino, Italy Ph.D. in electrical and communication engineering<ul style="list-style-type: none"><li>· Doctoral dissertation: <i>Noncoherent fading channels: capacity and coding</i></li><li>· Advisor: Professor Sergio Benedetto (Politecnico di Torino, Italy)</li></ul></li><li>◇ Nov. 2001: Politecnico di Torino, Italy Telecommunications Engineering Diploma [M.Sc.], <i>summa cum laude</i><ul style="list-style-type: none"><li>· Diploma dissertation: <i>Analysis and simulation of an ultra-wideband communication system over a multipath channel</i></li><li>· Advisors: Professor Sergio Benedetto (Politecnico di Torino, Italy), Dr. Giovanni Romano (Telecom Italia Lab, Turin, Italy)</li></ul></li></ul>
ACADEMIC WORK EXPERIENCE	<ul style="list-style-type: none"><li>◇ Feb. 2016-current: Co-director information and communication technology (ICT) area of advance at Chalmers University of Technology, Sweden</li><li>◇ Jan. 2017-current: Professor at Chalmers University of Technology, Sweden</li><li>◇ Dec. 2013-Dec. 2016: Associate professor at Chalmers University of Technology, Sweden</li><li>◇ Nov. 2010-Nov. 2013: Assistant professor at Chalmers University of Technology, Sweden</li><li>◇ Apr. 2012: Guest professor at Vienna University of Technology, Austria</li><li>◇ Feb. 2008-Oct. 2010: Senior researcher at ETH Zurich, Switzerland</li><li>◇ Feb. 2006-Jan. 2008: Postdoctoral researcher at ETH Zurich, Switzerland</li><li>◇ Nov. 2004-Nov. 2005: Visiting researcher at ETH Zurich, Switzerland</li><li>◇ Mar. 2004-Jul. 2004: Visiting researcher at Università di Pisa, Italy</li><li>◇ Jan. 2002-Jan. 2006: Junior researcher at Istituto Superiore Mario Boella, Turin, Italy</li></ul>
INDUSTRIAL WORK EXPERIENCE	<ul style="list-style-type: none"><li>◇ Jan. 2014-current: Visiting researcher at Ericsson Research, Sweden</li><li>◇ Nov. 2002-Apr. 2003: Visiting researcher at IMST GmbH, Germany</li><li>◇ Feb. 2001-Nov. 2001: Master thesis internship at Telecom Italia Lab, Turin, Italy</li></ul>

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HONORS

- ◇ 2017 exemplary reviewer, IEEE Transactions on Wireless Communications
- ◇ 2016 exemplary reviewer, IEEE Transactions on Communications
- ◇ 2013 IEEE ComSoc Young Researcher Award for Europe, Middle East, and Africa Region
- ◇ 2013 IEEE Sweden VT-COM-IT Chapter *best student conference paper award* (lead author: Ph.D. student Wei Yang)
- ◇ *Student paper award* at the IEEE International Symposium on Information Theory (ISIT 2012) (lead author: Ph.D. student Wei Yang)
- ◇ *Senior member* of the Institute of Electrical and Electronics Engineers (IEEE), Feb. 2012
- ◇ *Optime* award from Unione Industriale, Turin, Italy (for best graduates of the year 2001)
- ◇ 19 invited papers, 1 invited book chapter, organized 2 invited session at international conferences

TEACHING &  
SUPERVISION

- ◇ Chalmers University of Technology: **Lecturer**
  - 2016: Probability and random processes (7.5 credits, master/PhD course, fall semester, taught in English)
  - 2014-17: Electrical Measurements: Systems and Methods (7.5 credits, bachelor course, spring semester, taught in English/Swedish)
  - 2012–2016: Wireless Communications (7.5 credits, master course, spring semester, taught in English, *guest lecturer*)
  - 2011, 2013, 2015, 2017: Information Theory (7.5 credits, master/PhD course, spring semester, taught in English)
  - 2011: Network Information theory (7.5 credits, PhD course, fall semester, taught in English)
- ◇ Vienna University of Technology: **Lecturer**
  - 2012: Network information theory (1.5 unit, graduate/PhD short course, spring semester, taught in English)
- ◇ ETH Zurich: **Teaching assistant** for graduate courses
  - 2007–2010: Fundamentals of Wireless Communications (4-unit graduate course, spring semester, taught in English)
  - 2009: Receivers for Wireless Communications (4-unit graduate course, spring semester, taught in English)
  - 2009: Harmonic Analysis: Theory and Applications in Advanced Signal Processing (4-unit graduate course, spring semester, taught in English)
- ◇ Politecnico di Torino: **Teaching assistant** for undergraduate courses
  - 2005: Analysis of Discrete-Time Signals (2-unit undergraduate course, fall semester, taught in Italian)
  - 2003–2004: Signal Theory (2-unit undergraduate course, fall semester, taught in Italian)
- ◇ Currently supervised post-doctoral fellows at Chalmers University of Technology:
  - G. C. Ferrante, *finite blocklength information theory and machine learning*, started in 2017
- ◇ Currently supervised Ph.D. students at Chalmers University of Technology:
  - R. Devassy, *Finite block-length bounds for multiple-access protocols*, started in 2013
  - K. Keykhosravi, *Information theory for fiber-optic channels*, started in 2015, (co-supervisor)
  - S. Jacobsson, *Massive MIMO with low precision converters*, started in 2015 (industrial PhD student at Ericsson Research, Gothenburg, Sweden)
  - J. Östman, *Low-latency ultra-reliable communications*, started in 2015, (co-supervisor)

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- Y. Etefagh, *Multiantenna wireless architectures*, started in 2017

### ◇ Past Ph.D. students

- W. Yang, *Fading Channels: Capacity and Channel Coding Rate in the Finite-Blocklength Regime*, PhD 2015 (main supervisor, Chalmers University of Technology)
- M. R. Khanzadi, *Phase Noise in Communication Systems: Modeling, Compensation, and Performance Analysis*, PhD 2015 (co-supervised, Chalmers University of Technology)
- P. Kuppinger, *General uncertainty relations and sparse signal recovery*, PhD 2011 (co-supervised, ETH Zurich)
- V. I. Morgenstern, *Crystallization and noncoherence in wireless communication*, PhD 2010 (co-supervised, ETH Zurich)
- U. G. Schuster, *Wireless communication over wideband channels*, PhD 2007 (co-supervised, ETH Zurich)

### ◇ Supervised master and bachelor students:

- B. Lindqvist, *Variable-length stop-feedback codes*, spring semester 2016
- L. Daja, *Finite-SNR bounds on the capacity of multiple-antenna phase-noise channels*, spring semester 2014
- S. Jacobsson, *1-bit massive MIMO*, spring semester 2014
- J. Östman, *Diversity-multiplexing tradeoff at finite blocklength*, autumn semester 2013
- I. Lellouch, *Coding for phase noise channels*, spring semester 2011
- A. Mohaved, *Recovery guarantees and reconstruction algorithms for one-bit compressive sensing*, fall semester 2011
- M. Baum, *Real-time video surveillance using compressive sensing and GPUs*, spring semester 2010
- P. Loeliger, *Synchronization issues in a relay testbed*, spring semester 2010
- T. Laich, *Matrix completion*, fall semester 2009
- C. Bunte, *Structured measurements for compressive sensing*, fall semester 2009
- M. Gautschi, A. Muaremi, P. Bunjaku, *Reconstruction algorithms for compressive sensing*, fall semester 2009
- D. Matter, *Relaying testbed implementation and evaluation*, spring semester 2009
- S. Belfanti, *Capacity bounds for pilot-assisted schemes*, spring semester 2009
- S. Altorfer, *Bounds on the capacity region of a noncoherent multiple access channel*, fall semester 2007
- P. Loeliger, *Minimum mean-squared error channel estimators for pilot-assisted wireless transmission*, fall semester 2007
- S. Kaplan, *Capacity of MIMO UWB systems under peak constraints*, spring semester 2007
- G. Nikiforov, *Scattering function estimation from dynamic UWB channel measurements*, spring semester 2006

### PROFESSIONAL ◇ Editorships:

#### SERVICE

- Associate editor, IEEE Transactions on Communications, 2015-current
- Publications editor, IEEE Transactions on Information Theory, 2011-2014.

### ◇ Member of the organizing committee:

- International Symposium on Information Theory (ISIT), Aachen, Germany, Jul. 2017
- European School of Information Theory (ESIT), Gothenburg, Sweden, May 2016

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- 7th *International Symposium on Turbo Codes & Iterative Information Processing (ISTC)*, Gothenburg, Sweden, Aug. 2012
- Workshop on *Machine Learning and Large Data Sets*, Gothenburg, Sweden, Aug. 2011
- 1st workshop on *Ultra-Wideband for Wireless Personal Area and Sensor Networks*, Turin, Italy, Nov. 2004
- ◇ Technical program committee membership:
  - *IEEE Int. Conf. Commun. (ICC)*: 2006, 2011–2016, 2018
  - *IEEE Global Commun. Conf. (GLOBECOM)*: 2011–2013, 2018
  - *Int. Zurich Seminar (IZS)*: 2014, 2016, 2018
  - *Int. Conf. Telecommun. (ICT)*: 2015, 2018
  - *Int. Symp. Wirel. Commun. Sys. (ISWCS)*: 2011, 2017, 2018
  - *Int. Veh. Tech. Conf (VTC)*: 2017, 2018
  - *Int. ITG Conf. Sys. Commun. Coding (SCC)*: 2017, 2019
  - *IEEE Inf. Theory. Workshop (ITW)*: 2016
  - *IEEE Wirel. Commun. Net. Conf. (WCNC)*: 2013–2016
  - *Int. Workshop Physic Wirel. Comm. Net. (PHYSCOMNET)*: 2014
  - *Int. Conf. Comput. Net. Commun. (ICNC)*: 2012, 2018
  - *IEEE Int. Symp. Personal, Indoor, Mobile Radio Commun. (PIMRC)*: 2012
  - *IEEE Swedish Commun. Tech. Workshop (SWE-CTW)*: 2011, 2012
  - *Int. Conf. on Commun. Net. in China (CHINACOM)*: 2010
  - *IEEE Int. Conf. Ultra-Wideband (ICUWB)*: 2009
- ◇ Referee for the following journals
  - *IEEE Transactions on Information Theory*
  - *IEEE Transactions on Signal Processing*
  - *IEEE Transactions on Communications*
  - *IEEE Transactions on Wireless Communications*
  - *IEEE Transactions on Vehicular Technology*
  - *IEEE Communications Letters*
  - *IEEE/ACM Transactions on Networking*
  - *Signal Processing (EURASIP)*
- ◇ Referee for the European Research Council (ERC)
- ◇ Referee for the Italian agency for the evaluation of universities and research institutes (AN-VUR)
- ◇ Referee for the German Verband der Elektrotechnik Elektronik Informationstechnik (VDE-ITG)
- ◇ Referee for the Austrian Wiener Wissenschaft- Forschungs- und Technologiesfonds (WWTF)
- ◇ Member of examination committee/opponent in research degree examinations
  - Silvio Mandelli, “Analysis of Wiener phase noise issues in optical transmission systems”, PhD Thesis, Politecnico di Milano, Italy, Jan. 2016.
  - Simone Pecorino, “Information rates of channels with memory by Bayesian tracking”, PhD Thesis, Politecnico di Milano, Italy, Jan. 2016.
  - Zhao Wang, “Interference Alignment with Imperfect Channel Knowledge and Secrecy Constraints”, PhD Thesis, KTH Royal Institute of Technology, Sweden, May 2015.

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- Günther Koliander, “Information-theoretic analysis of noncoherent block-fading channels and singular random variables”, PhD Thesis, Vienna University of Technology, Vienna, Austria, Apr. 2015
- Hien Quoc Ngo, *Massive MIMO: fundamentals and system designs*, PhD Thesis, Linköping University, Sweden, Mar. 2015
- David Gustafsson, *Extending the bandwidth of the Doherty power amplifier*, PhD thesis, Chalmers University of Technology, Sweden, Sep. 2014
- Nicolas Schrammar, *On deterministic models for Gaussian networks*, PhD thesis, KTH Royal Institute of Technology, Sweden, Jun. 2013
- Hien Quoc Ngo, *Performance bounds for very large multiuser MIMO systems*, Licentiate thesis, Linköping University, Sweden, Dec. 2012
- Lu Lu, *Wireless broadcasting with network coding*, Licentiate thesis, KTH Royal Institute of Technology, Sweden, Sep. 2011
- P. Kuppinger, *General uncertainty relations and sparse signal recovery*, PhD thesis, ETH Zurich, Switzerland Feb. 2011

## FUNDING

- ◇ “INNER–information theory of deep neural networks”, Knut och Alice Wallenbergs Stiftelse, WASP-AI-Mathematics program, 2018-2022, responsibility: **principal investigator**
- ◇ “Low-Latency Wireless Random Access for IoT connectivity”, Swedish Foundation for Strategic Research (SSF), Mobility Grant, 933 kSEK, 2018-2019, responsibility: **principal investigator**
- ◇ “Protection in a Power-Electronic Converter Dominated Medium-Voltage Microgrid Utilizing Digital Communication”, Chalmers Energy Area of Advance, 2MSEK, 2018-2019, responsibility: **co-investigator**
- ◇ “Wireless communication for stability and performance enhancement in converter-dominated AC microgrids”, Chalmers E2 seed fund, 250 kSEK, 2018, responsibility: **co-investigator**
- ◇ “INNER–information theory of deep neural networks”, Chalmers E2 seed fund, 500 kSEK, 2018, responsibility: **principal investigator**
- ◇ “SWIFT–short-packet wireless information theory”, Swedish Research Council, *2016-03293 project grant* 2017-2020, 3 680 kSEK **principal investigator**
- ◇ “mmMAGIC–Millimetre-Wave Based Mobile Radio Access Network for Fifth Generation Integrated Communications”, European Commission, Horizon 2020, 2015-2017, responsibility: **project member**
- ◇ “Massive MIMO systems with low-precision converters”, Swedish Foundation for Strategic Research (SSF), Industrial PhD grant, 2 500 kSEK, 2015-2019, responsibility: **principal investigator**
- ◇ “Theory and practice for optimum spectral efficiency for ad-hoc wireless networks with strict requirements on latency and reliability”, Swedish Research Council, *2014-6066 project grant* 2015-2018, 3 643 kSEK **co-investigator**
- ◇ “Multi-antenna technologies for wireless access and backhaul (MATWAB)”, VINNOVA, 3570 kSEK, 2015-2016; responsibility: **co-investigator and project manager**
- ◇ “Massive MIMO: from hype to roll-out”, Ericsson AB, 4000 kSEK, 2014-2016, **co-investigator**
- ◇ “Nonlinear hardware impairments in massive MIMO systems”, Swedish Foundation for Strategic Research (SSF), Strategic Mobility Grant, 942 kSEK, 2014-2015, responsibility: **principal investigator**
- ◇ “Optical interference is not noise”, Swedish Research Council, *2013-5271 project grant*, 4 720 kSEK, 2014-2017; responsibility: **co-investigator**

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- ◇ “Multipath test environment for future communication systems” Swedish Research Council, *2013-5718 industrial Ph.D. project grant*, 2 156 kSEK, 2014-2017; responsibility: **co-investigator**
- ◇ “Fundamental limits of user cooperation in wireless networks”, Swedish Research Council, *2012-4571 Junior researcher grant*, 3 280 kSEK; 2013-2016; responsibility: **principal investigator**
- ◇ “Handling the data flood in wireless communications”, Chalmers *Area of Advance* initiative: Information and Communication Technology; 8 000 kSEK; 2010-2014; responsibility: **principal investigator**

## Giuseppe Durisi: Curriculum Vitae

**PUBLICATIONS: OVERVIEW** Since 2001, Dr. Durisi has published a book contribution, 30 journal papers, and 67 conference papers. These papers received 2620 citations according to [Google Scholar](#), with a corresponding *h-index* of 27. The publications are listed below in reversed chronological order.

### PREPRINTS

- [P5] P. Popovski, K. F. Trillingsgaard, O. Simeone, and G. Durisi, “5G wireless network slicing for eMBB, URLLC, and mMTC: A communication-theoretic view,” Apr. 2018. [Online]. Available: <https://arxiv.org/pdf/1804.05057>
- [P4] J. Östman, G. Durisi, E. G. Ström, M. C. Coşkun, and G. Liva, “Short packets over block-memoryless fading channels: Pilot-assisted or noncoherent transmission?” Dec. 2017. [Online]. Available: <https://arxiv.org/abs/1712.06387>
- [P3] K. F. Trillingsgaard, W. Yang, G. Durisi, and P. Popovski, “Common-message broadcast channels with feedback in the nonasymptotic regime: Full feedback,” Jun. 2017. [Online]. Available: <https://arxiv.org/abs/1706.07731>
- [P2] A. Lancho, T. Koch, and G. Durisi, “On single-antenna Rayleigh block-fading channels at finite blocklength,” Jun. 2017. [Online]. Available: <https://arxiv.org/abs/1706.07778>
- [P1] K. F. Trillingsgaard, W. Yang, G. Durisi, and P. Popovski, “Variable-length coding with stop-feedback for the common-message broadcast channel in the nonasymptotic regime,” Jul. 2016. [Online]. Available: <http://arxiv.org/abs/1607.03519>

### PUBLICATIONS:

#### BOOK CHAPTERS

- [B1] G. Durisi, U. G. Schuster, V. I. Morgenshtern, H. Bölcskei, and S. Shamai (Shitz), “Information theory of underspread WSSUS channels,” in *Wireless Communications over Rapidly Time-Varying Channels*, F. Hlawatsch and G. Matz, Eds. Academic Press, Mar. 2011.

### PUBLICATIONS:

#### JOURNAL PAPERS

- [J30] W. Yang, A. Collins, G. Durisi, Y. Polyanskiy, and H. V. Poor, “Beta-beta bounds: Finite-blocklength analog of the golden formula,” *IEEE Trans. Inf. Theory*, 2018, to appear. [Online]. Available: <https://arxiv.org/abs/1706.05972>
- [J29] K. Keykhosravi, M. Tavana, E. Agrell, and G. Durisi, “Demodulation and detection schemes for a memoryless optical WDM channel,” *IEEE Trans. Commun.*, 2018, to appear. [Online]. Available: <https://arxiv.org/abs/1708.08320>
- [J28] O. Castañeda, S. Jacobsson, G. Durisi, M. Coldrey, T. Goldstein, and C. Studer, “1-bit massive MU-MIMO precoding in VLSI,” *IEEE Trans. Emerg. Sel. Topics Circuits Syst.*, vol. 7, no. 4, pp. 508–522, Dec. 2017.
- [J27] S. Jacobsson, G. Durisi, M. Coldrey, T. Goldstein, and C. Studer, “Quantized precoding for massive MU-MIMO,” *IEEE Trans. Commun.*, vol. 65, no. 11, pp. 4670–4684, Nov. 2017.
- [J26] S. Jacobsson, G. Durisi, M. Coldrey, U. Gustavsson, and C. Studer, “Throughput analysis of massive MIMO uplink with low-resolution ADCs,” *IEEE Trans. Wireless Commun.*, vol. 16, no. 6, pp. 4038–4051, Jun. 2017.
- [J25] J. Scarlett, V. Y. F. Tan, and G. Durisi, “The dispersion of nearest-neighbor decoding for additive non-Gaussian channels,” *IEEE Trans. Inf. Theory*, vol. 63, no. 1, pp. 81–92, Jan. 2017.
- [J24] W. Yang, G. Durisi, and Y. Polyanskiy, “Minimum energy to send  $k$  bits over multiple-antenna fading channels,” *IEEE Trans. Inf. Theory*, vol. 62, no. 12, pp. 6831 – 6853, Dec. 2016.
- [J23] C. Studer and G. Durisi, “Quantized massive MU-MIMO-OFDM uplink,” *IEEE Trans. Commun.*, vol. 64, no. 6, pp. 2387–2399, Jun. 2016.

- [J22] G. Durisi, T. Koch, and P. Popovski, “Towards massive, ultra-reliable, and low-latency wireless communication with short packets,” *Proc. IEEE*, vol. 104, no. 9, pp. 1711–1726, Sep. 2016.
- [J21] G. Durisi, T. Koch, J. Östman, Y. Polyanskiy, and W. Yang, “Short-packet communications over multiple-antenna Rayleigh-fading channels,” *IEEE Trans. Commun.*, vol. 64, no. 2, pp. 618–629, Feb. 2016.
- [J20] R. Devassy, G. Durisi, J. Östman, W. Yang, T. Eftimov, and Z. Utkovski, “Finite-SNR bounds on the sum-rate capacity of Rayleigh block-fading multiple-access channels with no a priori CSI,” *IEEE Trans. Commun.*, vol. 63, no. 10, pp. 3621–3632, Oct. 2015.
- [J19] W. Yang, G. Caire, G. Durisi, and Y. Polyanskiy, “Optimum power control at finite blocklength,” *IEEE Trans. Inf. Theory*, vol. 61, no. 9, pp. 4598–4615, Sep. 2015.
- [J18] M. R. Khanzadi, G. Durisi, and T. Eriksson, “Capacity of SIMO and MISO phase-noise channels with common/separate oscillators,” *IEEE Trans. Commun.*, vol. 63, no. 9, pp. 3218 – 3231, Sep. 2015.
- [J17] G. Koliander, E. Riegler, G. Durisi, and F. Hlawatsch, “Degrees of freedom of generic block-fading MIMO channels without a priori channel state information,” *IEEE Trans. Inf. Theory*, vol. 60, no. 12, pp. 7760–7781, Dec. 2014.
- [J16] M. Dörpinghaus, G. Koliander, G. Durisi, E. Riegler, and H. Meyr, “Oversampling increases the pre-log of noncoherent Rayleigh fading channels,” *IEEE Trans. Inf. Theory*, vol. 60, no. 9, pp. 5673–5681, Sep. 2014.
- [J15] E. Agrell, A. Alvarado, G. Durisi, and M. Karlsson, “Capacity of a nonlinear optical channel with finite memory,” *J. Lightw. Technol.*, vol. 32, no. 16, pp. 2862–2876, Aug. 2014, **invited paper**.
- [J14] W. Yang, G. Durisi, T. Koch, and Y. Polyanskiy, “Quasi-static multiple-antenna fading channels at finite blocklength,” *IEEE Trans. Inf. Theory*, vol. 60, no. 7, pp. 4232–4265, Jul. 2014.
- [J13] G. Durisi, A. Tarable, C. Camarda, R. Devassy, and G. Montorsi, “Capacity bounds for MIMO microwave backhaul links affected by phase noise,” *IEEE Trans. Commun.*, vol. 62, no. 3, pp. 920–929, Mar. 2014.
- [J12] V. I. Morgenshtern, E. Riegler, W. Yang, G. Durisi, S. Lin, B. Sturmfels, and H. Bölcskei, “Capacity pre-log of noncoherent SIMO channels via Hironaka’s theorem,” *IEEE Trans. Inf. Theory*, vol. 59, no. 7, pp. 4213–4229, Jul. 2013.
- [J11] W. Yang, G. Durisi, and E. Riegler, “On the capacity of large-MIMO block-fading channels,” *IEEE J. Sel. Areas Commun.*, vol. 31, no. 2, pp. 117–132, Feb. 2013.
- [J10] G. Durisi, V. I. Morgenshtern, and H. Bölcskei, “On the sensitivity of continuous-time noncoherent fading channel capacity,” *IEEE Trans. Inf. Theory*, vol. 58, no. 10, pp. 6372–6391, Oct. 2012.
- [J9] G. Durisi, “On the capacity of the block-memoryless phase-noise channel,” *IEEE Commun. Lett.*, vol. 16, no. 8, pp. 1157–1160, Aug. 2012.
- [J8] P. Kuppinger, G. Durisi, and H. Bölcskei, “Uncertainty relations and sparse signal recovery for pairs of general signal sets,” *IEEE Trans. Inf. Theory*, vol. 58, no. 1, pp. 263–277 Jan. 2012.
- [J7] G. Durisi and H. Bölcskei, “High-SNR capacity of wireless communication channels in the noncoherent setting: A primer,” *Int. J. Electron. Commun. (AEÜ)*, vol. 65, no. 8, pp. 707–712, Aug. 2011, **invited paper**.
- [J6] G. Durisi, U. G. Schuster, H. Bölcskei, and S. Shamai (Shitz), “Noncoherent capacity of underspread fading channels,” *IEEE Trans. Inf. Theory*, vol. 56, no. 1, pp. 367–395, Jan. 2010.



- [J5] U. G. Schuster, G. Durisi, H. Bölcskei, and H. V. Poor, “Capacity bounds for peak-constrained multiantenna wideband channels,” *IEEE Trans. Commun.*, vol. 57, no. 9, pp. 2686–2696, Sep. 2009.
- [J4] M. R. Casu and G. Durisi, “Implementation aspects of a transmitted-reference UWB receiver,” *Wirel. Commun. Mob. Comput., Special Issue: Ultrawideband for Wireless Communications*, vol. 5, no. 5, pp. 537–549, Aug. 2005.
- [J3] G. Durisi and S. Benedetto, “Comparison between coherent and noncoherent receivers for UWB communications,” *EURASIP J. Signal Process., Special Issue: UWB—State of the Art*, no. 3, Mar. 2005.
- [J2] G. Durisi, A. Tarable, J. Romme, and S. Benedetto, “A general method for error probability computation of UWB systems for indoor multiuser communications,” *J. Commun. Netw., Special Issue: Ultra-Wideband (UWB) Communications*, vol. 5, no. 4, pp. 354–364, Dec. 2003.
- [J1] G. Durisi and S. Benedetto, “Performance evaluation of TH-PPM in the presence of multiuser interference,” *IEEE Commun. Lett.*, vol. 7, no. 5, May 2003.

PUBLICATIONS:  
CONFERENCE  
PAPERS

- [C67] H. Sac, T. Bacinoglu, E. Uysal-Biyikoglu, and G. Durisi, “Age-optimal channel coding blocklength for a transmission queue with fcfs service and arq,” in *Proc. IEEE Int. Workshop Signal Process. Advances Wireless Commun. (SPAWC)*, Kalamata, Greece, Jun. 2018.
- [C66] S. Jacobsson, O. Castañeda, C. Jeon, G. Durisi, and C. Studer, “Nonlinear precoding for phase-quantized constant-envelope massive MU-MIMO-OFDM,” in *Proc. Int. Conf. Telecommun. (ICT)*, Saint-Malo, France, Jun. 2018.
- [C65] R. Devassy, G. Durisi, G. C. Ferrante, O. Simeone, and E. Uysal-Biyikoglu, “Delay and peak-age violation probability in short-packet transmission,” in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Vail, CO, U.S.A., Jun. 2018.
- [C64] S. Jacobsson, Y. Etefagh, G. Durisi, and C. Studer, “All-digital massive MIMO with a fronthaul constraint,” in *Proc. IEEE Statistical Sig. Pro. Workshop (SSP)*, Friburg, Germany, Jun. 2018, **invited paper**.
- [C63] O. Castañeda, S. Jacobsson, G. Durisi, T. Goldstein, and C. Studer, “VLSI design for a 3-bit constant-modulus precoder for massive MU-MIMO,” in *Proc. IEEE Int. Symp. Circuits and Syst. (ISCAS)*, Florence, Italy, May 2018.
- [C62] S. Jacobsson, W. Xu, G. Durisi, and C. Studer, “MSE-optimal 1-bit precoding for multiuser MIMO via branch and bound,” in *Proc. IEEE Int. Conf. Acoust., Speech, Signal Process. (ICASSP)*, Calgary, Canada, Apr. 2018.
- [C61] G. C. Ferrante, J. Östman, G. Durisi, and K. Kittichokechai, “Pilot-assisted short-packet transmission over multiantenna fading channels: A 5G case study,” in *Conf. Inf. Sci. Sys. (CISS)*, Princeton, NJ, Mar. 2018, **invited paper**.
- [C60] S. Jacobsson, G. Durisi, M. Coldrey, and C. Studer, “Massive multiuser MIMO downlink with low-resolution converters,” in *Proc. Int. Zurich Seminar Commun. (IZS)*, Zurich, Switzerland, Feb. 2018, **invited paper**.
- [C59] S. Jacobsson, G. Durisi, M. Coldrey, and C. Studer, “On out-of-band emissions of quantized precoding in massive MU-MIMO-OFDM,” in *Proc. Asilomar Conf. Signals, Syst., Comput.*, Dec. 2017, **invited paper**.
- [C58] S. Jacobsson, G. Durisi, M. Coldrey, and C. Studer, “Massive MU-MIMO-OFDM downlink with one-bit DACs and linear precoding,” in *Proc. IEEE Global Telecommun. Conf. (GLOBECOM)*, Singapore, Dec. 2017.

- [C57] K. Keykhosravi, G. Durisi, and E. Agrell, “A tighter bound on the capacity of the nondispersive optical fiber channel,” in *European Conf. Optical Comm. (ECOC)*, Gothenburg, Sweden, Sep. 2017.
- [C56] K. F. Trillingsgaard, W. Yang, G. Durisi, and P. Popovski, “Feedback halves the dispersion for some two-user broadcast channels with common message,” in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Aachen, Germany, Jun. 2017.
- [C55] A. Lancho, T. Koch, and G. Durisi, “A high-SNR normal approximation for single-antenna Rayleigh block-fading channels,” in *Proc. IEEE Int. Symp. Inf. Theory (ISIT)*, Aachen, Germany, Jun. 2017, **finalist student paper award**
- [C54] J. Östman, G. Durisi, and E. G. Ström, “Finite-blocklength bounds on the maximum coding rate of rician fading channels with applications to pilot-assisted transmission,” in *Proc. IEEE Int. Workshop Signal Process. Advances Wireless Commun. (SPAWC)*, Sapporo, Japan, Jul. 2017, **invited paper**
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## PATENTS

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## SOFTWARE

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## INVITED TALKS

- [T26] “Delay and peak-age violation probability in short-packet transmissions”, Communication Theory Workshop (CTW), Miramar Beach, Florida, May 2018
- [T25] “Short-packet over fading channels: pilot-assisted or noncoherent transmission?”, NSF Workshop on Low-Latency Wireless Random-Access, MIT, Cambridge, MA, USA, Nov. 2017
- [T24] “Short-packet transmission”, tutorial presentation at “ITG-Fachgruppe”: applied information theory, Bremen, Germany, Oct. 2017

- [T23] “Quantized precoding for massive MU-MIMO”, Ericsson, Stockholm, Sweden, Nov. 2016
- [T22] “Latency-reliability trade-off in short packet communications”, Communication Theory Workshop (CTW), Nafplio, Greece, May 2016
- [T21] “My path through information theory: From double asymptotics to finite blocklength”, Claude Elwood Shannon 100th Birthday Celebration, Paderborn, Germany, May 2016
- [T20] “How much energy is needed to transmit  $k$  bits over fading channels?”, Technische Universität München (TUM), Dec. 2015
- [T19] “Towards low-latency wireless communications: the art of sending short packets”, GRD ISIS workshop on recent advances in network information theory and coding theory, Lyon, Nov. 2015
- [T18] “Short packet communications with multiple antennas”, Vienna University of Technology, Apr. 2015
- [T17] “Short packet communications with multiple antennas”, Nordic Workshop on System & Network Optimization for Wireless, Geilo, Norway, Mar. 2015
- [T16] “Short packet communications with multiple antennas”, Linköping University, Sweden, Mar. 2015
- [T15] “Short packet communications with multiple antennas”, Inf. Theory Applicat. Workshop (ITA), San Diego, CA, Feb. 2015
- [T14] “Massive MIMO uplink with 1 bit ADC”, Ericsson AB, Stockholm, Sweden, Nov., 2014
- [T13] “On the cost of CSI acquisition in large MIMO systems”, Communication Theory Workshop, Phuket, Thailand, Jun., 2013
- [T12] “How costly is it to learn fading channels?”, Linköping University, Sweden, Dec., 2012
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- [T10] “How costly is it to learn fading channels?”, Vienna University of Technology, Apr. 2012
- [T9] “MIMO for microwave backhaul links: research challenges”, Ericsson AB, Gothenburg, Sweden, Mar. 2012
- [T8] “How costly is it to learn a MIMO fading channel?”, Ericsson research, Gothenburg, Sweden, Mar. 2012
- [T7] “Degrees of freedom of multiple-antenna systems under channel uncertainty”, Politecnico di Torino, Turin, Italy, Sep. 2011
- [T6] “Degrees of freedom of multiple-antenna systems under channel uncertainty”, KTH Royal Institute of Technology, Stockholm, Sweden, Sep. 2011
- [T5] “Compressed sensing and beyond”, Gothenburg University, Sweden, Aug. 2011
- [T4] “Handling the data flood in wireless communications”, Chalmers University of Technology, Gothenburg, Sweden, May 2010.
- [T3] “On the noncoherent capacity of wireless channels of practical interest”, Joint UMIC and ISS seminar, RWTH Aachen, Germany, Jun. 2009.
- [T2] “On the capacity of real-world fading channels”, ITG meeting—Algorithms for signal processing, Zurich, Switzerland, Mar. 2009.
- [T1] “Capacity bounds for peak-constrained multiantenna channels,” in *Third IEEE Workshop on Advanced Signal Processing for Wireless Communication Systems*, Copenhagen, Denmark, Nov. 2007.