

# 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>◇ Jun. 2020-current: Full professor at Chalmers University of Technology, Sweden</li><li>◇ Apr. 2023-current: Director of the master program in Information and Communication Technologies at Chalmers University of Technology, Sweden</li><li>◇ Feb. 2016-Feb. 2022: Co-director information and communication technology (ICT) area of advance at Chalmers University of Technology, Sweden</li><li>◇ Oct. 2018-Dec. 2020: Co-director of Chalmers artificial-intelligence research center (CHAIR)</li><li>◇ Jan. 2017-May 2020: 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>◇ Sep. 2018-Sep. 2020: Visiting researcher at Qamcom Research &amp; Technology AB, Sweden</li><li>◇ Jan. 2014-2017: 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
- ◇ 2022: *3rd place award* at the Asilomar Conference on Signals, Systems and Computers *student paper contest* (lead author: Ph.D. student Oguz Kislal)
  - ◇ 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)
- TEACHING & SUPERVISION
- ◇ Chalmers University of Technology: **Lecturer**
    - 2021-2022: Digital communications (7.5 credits, master course, fall semester, taught in English)
    - 2021-2022: Probability and statistical learning using python (7.5 credits, master course, fall semester, taught in English)
    - 2020-2022: Statistics and machine learning in high dimensions (7.5 credits, master/PhD course, fall semester, taught in English)
    - 2011-2023: Information theory (7.5 credits, master/PhD course, spring semester, taught in English)
    - 2012-2023: Wireless communications (7.5 credits, master course, spring semester, taught in English, *guest lecturer*)
    - 2016-2018: Probability and random processes (7.5 credits, master/PhD course, fall semester, taught in English)
    - 2014-2018: Electrical measurements: systems and methods (7.5 credits, bachelor course, spring semester, taught in English/Swedish)
    - 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 Ph.D. students at Chalmers University of Technology:
    - J. Naram, *Information theoretic generalization bounds*, started in 2023
    - S. Tabakovic, *Theory of deep learning*, started in 2020 (co-supervisor)
    - L. Aabel, *Distributed massive MIMO with low-precision components*, started in 2020

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- O. Kislal, *Joint coding and queuing analyses in ultra-reliable low-latency communications*, started in 2019 (co-supervisor)
- Y. Etefagh, *Multiantenna wireless architectures*, started in 2017
- ◇ Current post-doctoral fellows at Chalmers University of Technology:
  - Deekshith P. K., *Uncoordinated massive random access*, 2023–present
  - K-H. Ngo, *Secure and private massive cloud/edge connectivity*, 2020–present
- ◇ Past post-doctoral fellows at Chalmers University of Technology:
  - A. Lancho, *Massive multiple-access communications for IoT applications*, 2019–2021
  - A. Rezazadeh, *Information-theoretic methods in machine, learning*, 2019–2022
  - G. C. Ferrante, *finite blocklength information theory*, 2017–2018
- ◇ Past Ph.D. students
  - F. Hellström, *Information-Theoretic Generalization Bounds: Tightness and Expressiveness*, PhD 2023 (main supervisor, Chalmers University of Technology)
  - J. Östman, *Ultra-Reliable Short-Packet Communications: Fundamental Limits and Enabling Technologies*, PhD 2020 (co-supervisor, Chalmers University of Technology)
  - S. Jacobsson, *Massive multiantenna communications with low-resolution converters*, PhD 2019 (main supervisor, Chalmers University of Technology)
  - K. Keykhosravi, *Capacity analysis and receiver design in the presence of fiber nonlinearity*, PhD 2019 (co-supervisor, Chalmers University of Technology)
  - R. Devassy, *Delay and throughput bounds for the design of next generation wireless systems*, PhD 2019 (main supervisor, Chalmers University of Technology)
  - 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-supervisor, Chalmers University of Technology)
  - P. Kuppinger, *General uncertainty relations and sparse signal recovery*, PhD 2011 (co-supervisor, ETH Zurich)
  - V. I. Morgenstern, *Crystallization and noncoherence in wireless communication*, PhD 2010 (co-supervisor, ETH Zurich)
  - U. G. Schuster, *Wireless communication over wideband channels*, PhD 2007 (co-supervisor, ETH Zurich)

## PROFESSIONAL SERVICE ◇ Editorships:

- Guest editor, IEEE Journal on Selected Areas in Information Theory; Special issue on “Information Theoretic Foundations of Future Communication Systems”, 2021
- Associate editor, IEEE Transactions on Communications, 2015-2021
- Publications editor, IEEE Transactions on Information Theory, 2011-2014.
- ◇ Member of the organizing committee:
  - Track chair, European Conference on Networks and Communications (EUCNC), Gothenburg, Sweden, June 2023
  - Recent-result chair, International Symposium on Information Theory (ISIT), Espoo, Finland, June 2022
  - Publication chair, Information Theory Workshop (ITW), Riva del Garda, Italy, September 2020
  - Track chair, Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, California, USA, Nov. 2019

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- Publication chair, International Symposium on Information Theory (ISIT), Aachen, Germany, Jul. 2017
- Chair, European School of Information Theory (ESIT), Gothenburg, Sweden, May 2016
- Local organizer, 7th *International Symposium on Turbo Codes & Iterative Information Processing (ISTC)*, Gothenburg, Sweden, Aug. 2012
- Chair, Workshop on *Machine Learning and Large Data Sets*, Gothenburg, Sweden, Aug. 2011
- Chair, 1st workshop on *Ultra-Wideband for Wireless Personal Area and Sensor Networks*, Turin, Italy, Nov. 2004
- ◇ Technical program committee membership:
 

<i>IEEE Int. Conf. Commun. (ICC)</i> :	2006, 2011–2016, 2018–2024
<i>IEEE Global Commun. Conf. (GLOBECOM)</i> :	2011–2013, 2018, 2021–2023
<i>IEEE Int. Conf. Comp. Comm. (INFOCOM)</i> :	2023
<i>IEEE Int. Workshop Signal Process. Advances Wireless Commun. (SPAWC)</i> :	2021–2022
<i>Int. Veh. Tech. Conf. (VTC)</i> :	2017–2019
<i>Int. Zurich Seminar (IZS)</i> :	2014–2022
<i>Int. Conf. Telecommun. (ICT)</i> :	2015, 2018
<i>Int. Symp. Wirel. Commun. Sys. (ISWCS)</i> :	2011, 2017, 2018
<i>Int. ITG Conf. Sys. Commun. Coding (SCC)</i> :	2017, 2019, 2022
<i>IEEE Inf. Theory. Workshop (ITW)</i> :	2016
<i>IEEE Wirel. Commun. Net. Conf. (WCNC)</i> :	2013–2016, 2019
<i>Int. Workshop Physic Wirel. Comm. Net. (PHYSCOMNET)</i> :	2014
<i>Int. Conf. Comput. Net. Commun. (ICNC)</i> :	2012, 2018
<i>Int. Symp. Personal, Indoor, Mobile Radio Commun. (PIMRC)</i> :	2012
<i>IEEE Swedish Commun. Tech. Workshop (SWE-CTW)</i> :	2011, 2012
<i>Int. Conf. on Commun. Net. in China (CHINACOM)</i> :	2010
<i>IEEE Int. Conf. Ultra-Wideband (ICUWB)</i> :	2009
- ◇ Invited-session organizers at
 

<i>Asilomar Conference on Signals, Systems, and Computers</i> :	2022
<i>IEEE Inf. Theory Workshop (ITW)</i> :	2020
<i>Int. Zurich Seminar (IZS)</i> :	2016
<i>Int. Symp. Wirel. Commun. Sys. (ISWCS)</i> :	2014
- ◇ Referee for the European Research Council (ERC)
- ◇ Referee for the Swedish Research Council (Vetenskapsrådet)
- ◇ Referee for the Israel Science Foundation
- ◇ Referee for the Italian agency for the evaluation of universities and research institutes (ANVUR)
- ◇ 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
  - Juan Vidal Alegría, *Beyond Massive MIMO: Trade-offs and Opportunities with Large Multi-Antenna Systems*, Ph.D. Thesis, Lund University, Sweden, June. 2023
  - Antonino Favano, *The Capacity of Amplitude-Constrained Vector Gaussian Channels*, Ph.D. Thesis, Politecnico di Milano, Italy, Jan. 2023

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- Linghui Zhou, *Information-Theoretic Privacy and Secrecy in Biometric Identification and Authentication*, Ph.D. Thesis, Royal Institute of Technology, Sweden, Oct. 2022.
- Kassem Saied, *Quasi-Cyclic Short Packet Transmission for IoT*, Ph.D. Thesis, Université Bretagne Sud, France, Mar. 2022.
- Emmanouil Foutoulakis, *Performance and Optimization Aspects of Time Critical Networking*, Ph.D. Thesis, Linköping University, Sweden, Oct. 2021.
- Khac-Hoang Ngo, *Non-coherent Wireless Communications: Fundamental Limits and System Design*, Ph.D. Thesis, University of Paris-Saclay, France, July 2020
- Apostolos Avranas, *Resource Allocation for Latency Sensitive Wireless Systems*, Ph.D. Thesis, Telecom Paris, France, Jun. 2020.
- Emmanouil Fountoulakis, *Performance Analysis and Optimization for Time Critical Networking*, Licentiate Thesis, Linköping University, Sweden, Oct. 2019.
- Jun Li, *Ultra-low latency communication for 5G transport network*, PhD Thesis, Royal Institute of Technology, Sweden, Sep. 2019.
- Sebastian Schiessl, *Performance Trade-offs for Ultra-Reliable Low-Latency Communication Systems*, PhD Thesis, Royal Institute of Technology, Sweden, Jun. 2019.
- 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, Royal Institute of Technology, Sweden, May 2015.
- 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

- ◇ “Goal-oriented communications: When is semantic feedback useful?”, Swedish Research Council 2022-05571 project grant, 3 600 kSEK, responsibility: **co-investigator**
- ◇ “SAICOM: Software Artificial Intelligence for Communications”, Swedish Foundation for Strategic Research (SSF), Future software systems, 2022-2026, 35 000 kSEK, responsibility: **co-investigator**
- ◇ “Evaluated mutual information bounds for learning and metalearning”, Wallenberg AI, autonomous systems, and software program 2023-2027, responsibility: **principal investigator**
- ◇ “Energy-efficient massive random access for real-time distributed autonomous systems”, Swedish Research Council 2021-04970 project grant, 2022-2025, 4 000 kSEK, responsibility: **principal investigator**

- ◇ “LANTERN: Low-latency and private edge computing in random-access networks”, Marie Skłodowska-Curie Individual Fellowship 2021-2022, responsibility: **co-supervisor** (fellow: K.-H. Ngo)
- ◇ “Information-theoretic limits for deep neural networks”, Marie Skłodowska-Curie Individual Fellowship 2020-2021, responsibility: **supervisor** (fellow: A. Rezazadeh)
- ◇ “Generalization bounds for deep neural networks: Insight and Design” Wallenberg AI, autonomous system, and software program, 2020-2025, responsibility: **co-investigator**
- ◇ “Non-coherent low-latency communications”, German DAAD-DLR fellowship, 25 kSEK, 2019, responsibility: **principal investigator**
- ◇ “Distributed massive MIMO with low-precision components”, Swedish Foundation for Strategic Research (SSF), Industrial PhD grant, 2 500 kSEK, 2020-2024, responsibility: **principal investigator**
- ◇ “Secure, Private, and Low-Latency Cloud Connectivity for IoT Applications”, WASP expedition project, 2019-2021, responsibility: **principal investigator**
- ◇ “Communication in time: theory and practice for the automated society”, Swedish Research Council, *2018-04359 project grant* 2019-2022, 4 000 kSEK, responsibility: **co-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**
- ◇ “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**

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- ◇ “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**

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**PUBLICATIONS:** Since 2001, Dr. Durisi has published a book, 54 journal papers, and 105 conference papers.  
**OVERVIEW** These papers received 8219 citations according to [Google Scholar](#), with a corresponding *h-index* of 41. The publications are listed below in reversed chronological order.

### PREPRINTS

- [P4] F. Hellström, G. Durisi, B. Guedj, and M. Raginsky, “Generalization Bounds: Perspectives from Information Theory and PAC-Bayes,” Sept. 2023.
- [P3] A. Hu, L. Aabel, G. Durisi, S. Jacobsson, M. Coldrey, and C. Fager, “EVM analysis of distributed massive MIMO with 1-bit radio-over-fiber fronthaul,” Mar. 2023.
- [P2] K.-H. Ngo, G. Durisi, A. Graell i. Amat, P. Popovski, A. E. Kalor, and B. Soret, “Un-sourced multiple access with common alarm messages: Network slicing for massive and critical IoT,” Feb. 2023.
- [P1] G. Durisi and A. Lancho, *Transmitting short packets over wireless channels—an information-theoretic perspective*, Lecture Notes, Nov. 2020. [[Online](#)]

### PUBLICATIONS:

#### BOOK

- [B1] A. Zaidi, F. Athley, J. Medbo, U. Gustavsson, G. Durisi, and X. Cheng, *5G Physical Layer: principles, models and technology components*. Academic Press, 2018.

### PUBLICATIONS:

#### BOOK

#### CHAPTERS

- [BC1] G. Durisi, G. Liva, and Y. Polyanskiy, “Short-packet transmission,” in *Information Theoretic Perspectives on 5G Systems and Beyond*, I. Marić, S. Shamai (Shitz), and O. Simeone, Eds. London, U.K.: Cambridge Univ. Press, Jul. 2020.
- [BC2] 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

- [J54] A. Munari, F. Lazaro, G. Durisi, and G. Liva, “The dynamic behavior of frameless ALOHA: Stability, throughput, and age of information,” *IEEE Trans. Commun.*, 2023.
- [J53] Y. Etefagh, S. R. Aghdam, G. Durisi, S. Jacobsson, M. Coldrey, and C. Studer, “Performance of quantized massive MIMO with fronthaul rate constraint over quasi-static channels,” *IEEE Access*, 2023.
- [J52] A. Lancho, G. Durisi, and L. Sanguinetti, “Cell-free massive MIMO for URLLC: A finite-blocklength analysis,” *IEEE Trans. Wireless Commun.*, 2023.
- [J51] A. O. Kislal, A. Lancho, G. Durisi, and E. Ström, “Efficient evaluation of the error probability for pilot-assisted URLLC with Massive MIMO,” *IEEE J. Sel. Areas Commun.*, 2023.
- [J50] K.-H. Ngo, A. Lancho, G. Durisi, and A. Graell i Amat, “Un-sourced multiple access with random user activity,” *IEEE Trans. Inf. Theory*, 2023.
- [J49] S. T. Jose, O. Simeone, and G. Durisi, “Transfer meta-learning: Information-theoretic bounds and information meta-risk minimization,” *IEEE Trans. Inf. Theory*, vol. 68, no. 1, pp. 474–501 Jan. 2022.
- [J48] F. Hellström and G. Durisi, “Corrections to ‘Generalization bounds via information and conditional information density’,” *IEEE J. Sel. Areas Inf. Theory*, vol. 2, no. 3, pp. 1072–1073, Sep. 2021.
- [J47] J. Östman, A. Lancho, G. Durisi, and L. Sanguinetti, “URLLC with Massive MIMO: Analysis and design at finite blocklength,” *IEEE Trans. Wireless Commun.*, vol. 20, no. 10, pp. 6387–6401, Oct. 2021.



- [J46] I. C. Sezgin, L. Aabel, S. Jacobsson, G. Durisi, Z. S. He, and C. Fager, “All-digital, radio-over-fiber, communication link architecture for time-division duplex distributed antenna system,” *J. Lightw. Technol.*, vol. 39, no. 9, pp. 2769–2779, Feb. 2021.
- [J45] J. Östman, R. Devassy, G. Durisi, and E. G. Ström, “Short-packet transmission via variable-length codes in the presence of noisy stop feedback,” *IEEE Trans. Wireless Commun.*, vol. 20, no. 1, pp. 214–227, Jan. 2021.
- [J44] F. Hellström and G. Durisi, “Generalization bounds via information density and conditional information density,” *IEEE J. Sel. Areas Info. Theory*, vol. 1, no. 3, pp. 824–839, Nov. 2020.
- [J43] A. Lancho, J. Ostman, G. Durisi, T. Koch, and G. Vazquez-Vilar, “Saddlepoint approximations for short-packet wireless communications,” *IEEE Trans. Wireless Commun.*, vol. 19, no. 7, Jul. 2020.
- [J42] O. Castañeda, S. Jacobsson, G. Durisi, T. Goldstein, and C. Studer, “High-bandwidth spatial equalization for mmWave massive MU-MIMO with processing-in-memory,” *IEEE Trans. Circuits Syst. II: Express Briefs*, vol. 67, no. 5, pp. 891–895, May 2020.
- [J41] O. Castañeda, S. Jacobsson, G. Durisi, T. Goldstein, and C. Studer, “Finite-alphabet MMSE equalization for all-digital massive MU-MIMO mmWave communications,” *IEEE J. Sel. Areas Commun.*, vol. 38, no. 9, pp. 2128–2141, Sep. 2020.
- [J40] A. Lancho, T. Koch, and G. Durisi, “On single-antenna Rayleigh block-fading channels at finite blocklength,” *IEEE Trans. Inf. Theory*, vol. 66, no. 1, pp. 496–519, Jan. 2020.
- [J39] K. Keykhosravi, E. Agrell, and G. Durisi, “Accuracy assessment of nondispersive optical perturbative models through capacity analysis,” *Entropy*, vol. 21, no. 8, Aug. 2019.
- [J38] K. Keykhosravi, M. Secondini, G. Durisi, and E. Agrell, “How to increase the achievable information rate by per-channel dispersion compensation,” *J. Lightw. Technol.*, vol. 37, no. 10, pp. 2443–2451, May 2019.
- [J37] M. C. Coşkun, G. Durisi, T. Jerkovits, G. Liva, W. Ryan, B. Stein, and F. Steiner, “Efficient error-correcting codes in the short blocklength regime,” *Physical Communication*, vol. 34, pp. 66–79, Mar. 2019.
- [J36] R. Devassy, G. Durisi, G. C. Ferrante, O. Simeone, and E. Uysal-Biyikoglu, “Reliable transmission of short packets through queues and noisy channels under latency and peak-age violation guarantees,” *IEEE J. Sel. Areas Commun.*, vol. 37, no. 4, pp. 721–734, Apr. 2019.
- [J35] S. Jacobsson, G. Durisi, M. Coldrey, and C. Studer, “Linear precoding with low-resolution DACs for massive MU-MIMO-OFDM downlink,” *IEEE Trans. Wireless Commun.*, vol. 18, no. 3, pp. 1595–1609, Mar. 2019.
- [J34] 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?” *IEEE Trans. Commun.*, vol. 67, no. 2, pp. 1521–1536, Feb. 2019.
- [J33] P. Popovski, K. F. Trillingsgaard, O. Simeone, and G. Durisi, “5G wireless network slicing for eMBB, URLLC, and mMTC: A communication-theoretic view,” *IEEE ACCESS*, vol. 6, no. 1, Dec. 2018.
- [J32] K. F. Trillingsgaard, W. Yang, G. Durisi, and P. Popovski, “Common-message broadcast channels with feedback in the nonasymptotic regime: stop feedback,” *IEEE Trans. Inf. Theory*, vol. 64, no. 12, pp. 7686–7718, Dec. 2018.
- [J31] K. F. Trillingsgaard, W. Yang, G. Durisi, and P. Popovski, “Common-message broadcast channels with feedback in the nonasymptotic regime: Full feedback,” *IEEE Trans. Inf. Theory*, vol. 64, no. 12, pp. 7719–7741, Dec. 2018.
- [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*, vol. 64, no. 9, pp. 6236–6256, Sep. 2018.

- [J29] K. Keykhosravi, M. Tavana, E. Agrell, and G. Durisi, “Demodulation and detection schemes for a memoryless optical WDM channel,” *IEEE Trans. Commun.*, vol. 66, no. 7, pp. 2994–3005, Jul. 2018.
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## PATENTS

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## SOFTWARE

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- [S1] Quantized precoding for massive MIMO. [Online]. Available: <https://github.com/quantizedmassivemimo/>

## TUTORIALS

- [T2] Giuseppe Durisi and Fabian Steiner “Short-packet communications: fundamentals and practical coding schemes”, Swedish Communication Technology Workshop (SWE-CTW), Lund, Sweden, Jun. 2019.
- [T1] Giuseppe Durisi, Gianluigi Liva, and Fabian Steiner, “Short-packet communications: fundamentals and practical coding schemes”, IEEE Globecom 2018, Abu-Dhabi, UAE.

## INVITED TALKS

- [I36] “Short packets over a massive random-access channel”, London Symposium on Information Theory, London, U.K., May 2023
- [I35] “Seeking information-theoretic bounds that explain generalization”, Information theory and tapas workshop, Madrid, Spain, Jan. 2023
- [I34] “Short packets over wireless fading networks”, Digital Futures Seminar, Stockholm, Sweden, Oct. 2022
- [I33] “Short packets over wireless fading networks”, Junior Conference on Wireless and Optical Communication (JWOC), Paris, France, Oct. 2022
- [I32] “Short packets over wireless fading networks”, Keynote talk, Workshop on short packet communications for 6G mission-critical applications, International Conference on Communications (ICC), May 2022

- [I31] “Short packets over wireless fading networks”, Plenary talk, Information Theory Workshop (ITW), Sep. 2021
- [I30] “Fast-Rate Loss Bounds via Conditional Information Measures with Applications to Neural Networks”, London Symposium on Information Theory, May 2021.
- [I29] “Short-Packet Transmission via Variable-Length Codes in the Presence of Noisy Stop Feedback”, DLR-MIT-TUM Workshop on Coding and Random Access, Munich, Germany, Feb. 2020.
- [I28] “Playing with bits”, Lunch talks at Ericsson Series, Gothenburg, Sweden, Sep. 2019.
- [I27] “Fundamentals of short-packet transmission”, Plenary talk at the Small-Data Networks Special Session, Int. Symp. Personal, Indoor and Mobile Radio Commun., Bologna, Italy, Sep. 2018
- [I26] “Delay and peak-age violation probability in short-packet transmissions”, Communication Theory Workshop (CTW), Miramar Beach, Florida, May 2018
- [I25] “Short-packet over fading channels: pilot-assisted or noncoherent transmission?”, NSF Workshop on Low-Latency Wireless Random-Access, MIT, Cambridge, MA, USA, Nov. 2017
- [I24] “Short-packet transmission”, tutorial presentation at “ITG-Fachgruppe”: applied information theory, Bremen, Germany, Oct. 2017
- [I23] “Quantized precoding for massive MU-MIMO”, Ericsson, Stockholm, Sweden, Nov. 2016
- [I22] “Latency-reliability trade-off in short packet communications”, Communication Theory Workshop (CTW), Nafplio, Greece, May 2016
- [I21] “My path through information theory: From double asymptotics to finite blocklength”, Claude Elwood Shannon 100th Birthday Celebration, Paderborn, Germany, May 2016
- [I20] “How much energy is needed to transmit  $k$  bits over fading channels?”, Technische Universität München (TUM), Dec. 2015
- [I19] “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
- [I18] “Short packet communications with multiple antennas”, Vienna University of Technology, Apr. 2015
- [I17] “Short packet communications with multiple antennas”, Nordic Workshop on System & Network Optimization for Wireless, Geilo, Norway, Mar. 2015
- [I16] “Short packet communications with multiple antennas”, Linköping University, Sweden, Mar. 2015
- [I15] “Short packet communications with multiple antennas”, Inf. Theory Applicat. Workshop (ITA), San Diego, CA, Feb. 2015
- [I14] “Massive MIMO uplink with 1 bit ADC”, Ericsson AB, Stockholm, Sweden, Nov., 2014
- [I13] “On the cost of CSI acquisition in large MIMO systems”, Communication Theory Workshop, Phuket, Thailand, Jun., 2013
- [I12] “How costly is it to learn fading channels?”, Linköping University, Sweden, Dec., 2012
- [I11] “How costly is it to learn fading channels?”, RWTH Aachen, Germany, Jul., 2012
- [I10] “How costly is it to learn fading channels?”, Vienna University of Technology, Apr. 2012
- [I9] “MIMO for microwave backhaul links: research challenges”, Ericsson AB, Gothenburg, Sweden, Mar. 2012
- [I8] “How costly is it to learn a MIMO fading channel?”, Ericsson research, Gothenburg, Sweden, Mar. 2012

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- [I7] “Degrees of freedom of multiple-antenna systems under channel uncertainty”, Politecnico di Torino, Turin, Italy, Sep. 2011
- [I6] “Degrees of freedom of multiple-antenna systems under channel uncertainty”, KTH Royal Institute of Technology, Stockholm, Sweden, Sep. 2011
- [I5] “Compressed sensing and beyond”, Gothenburg University, Sweden, Aug. 2011
- [I4] “Handling the data flood in wireless communications”, Chalmers University of Technology, Gothenburg, Sweden, May 2010.
- [I3] “On the noncoherent capacity of wireless channels of practical interest”, Joint UMIC and ISS seminar, RWTH Aachen, Germany, Jun. 2009.
- [I2] “On the capacity of real-world fading channels”, ITG meeting—Algorithms for signal processing, Zurich, Switzerland, Mar. 2009.
- [I1] “Capacity bounds for peak-constrained multiantenna channels,” in *Third IEEE Workshop on Advanced Signal Processing for Wireless Communication Systems*, Copenhagen, Denmark, Nov. 2007.