

# Program

# 12<sup>th</sup> International ITG Conference on Systems, Communications and Coding (SCC 2019)

February 11 – 14, 2019

University of Rostock  
Universitätsplatz 1  
18055 Rostock

[www.scc2019.net](http://www.scc2019.net)

Universität  
Rostock



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**For further information please visit the  
conference website**

**<http://www.scc2019.net>**

#### **Contact:**

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■ **Monday February 11, 2019**

13:00 – 20:00 Registration  
14:00 – 16:00 Tutorial  
16:00 – 16:30 Coffee Break  
16:30 – 18:30 Tutorial  
19:00 Welcome Reception in the Aula's Foyer

■ **Tuesday February 12, 2019**

09:00 – 09:15 Opening  
09:15 – 10:20 Session 1: Communications under  
Hardware Constraints  
10:20 – 11:20 Poster Session P1 and Coffee Break  
11:20 – 12:50 Session 2: Optical Communications  
12:50 – 14:00 Lunch Break  
14:00 – 15:30 Session 3: Information Bottleneck Method  
& Quantization  
15:30 – 16:30 Poster Session P2 and Coffee Break  
16:30 – 18:00 Session 4: Machine Learning in  
Communications

■ **Wednesday February 13, 2019**

09:00 – 10:20 Session 5: Polar Codes  
10:20 – 11:20 Poster Session P3 and Coffee Break  
11:20 – 12:40 Session 6: Private Information Retrieval &  
Security  
12:40 – 14:00 Lunch Break  
14:00 – 15:20 Session 7: Optical Communications  
15:20 – 16:20 Poster Session P4 and Coffee Break  
16:20 – 17:40 Session 8: Coding  
19:00 – 23:00 Banquet at Lokschuppen

■ **Thursday February 14, 2019**

09:00 – 10:30 Session 9: 5G Panel  
10:30 – 11:30 Coffee Break  
11:30 – 12:50 Session 10: Cryptography  
12:50 – 14:00 Lunch Break  
14:00 – 15:20 Session 11: MIMO

13:00 – 20:00 **Registration**

14:00 – 16:00 **Tutorial:**  
**The Information Bottleneck Method in  
Communications**  
*Gerhard Bauch, Hamburg University of  
Technology, Germany*

16:00 – 16:30 **Coffee Break**

16:30 – 18:30 **Tutorial:**  
**Communications and Control**  
*Wolfgang Kellerer, Technische Universität  
München, Germany*

19:00 **Welcome Reception**  
*Aula, Foyer*

08:00 – 18:00 **Registration**

09:00 – 09:15 **Opening – Welcome Message**  
*Wolfgang Schareck, Rector, University of Rostock, Germany*

**Session 1: Communications under Hardware Constraints**

*Chair: Volker Kuehn, University of Rostock, Germany*

09:15 – 10:00 **Invited Talk:**  
**The Why and How of Coarse Quantization in Wireless Communication Systems**  
*Josef A. Nossek, Universidade Federal do Ceara, Brasil*

10:00 – 10:20 **Characterization Method for Distortions in Multi-Port Amplifiers**  
*Tony Colin, Thomas Delamotte, Andreas Knopp, Bundeswehr University Munich, Germany*

10:20 – 11:20 **Poster Session P1 and Coffee Break**

**Session 2: Optical Communications**

*Chair: Peter Winzer, Nokia, Bell-Labs, USA*

11:20 – 11:50 **Invited Talk:**  
**Kramer-Kronig Digital Optical Field**  
*Chistian Antonelli, University LAquila, Italy*

11:50 – 12:20 **Invited Talk:**  
**The Nonlinear Fourier Transform in Optical Communications**  
*Vahid Aref, Nokia Bell Labs, Germany*

12:20 – 12:50 **Invited Talk:**  
**Probabilistic Constellation Shaping in Optical Communications**  
*Georg Bocherer, Huawei Technologies, France*

12:50 – 14:00 **Lunch Break**

**Session 3:**  
**Information Bottleneck Method & Quantization**

*Chair: Dirk Wubben, University of Bremen, Germany*

14:00 – 14:30 **Invited Talk:**  
**Information-Theoretic Quantization and Its Connection to Classification**  
*Brian Kurkoski, Japan Advanced Institute of Science and Technology (JAIST), Japan*

14:30 – 14:50 **A Parametric Information Bottleneck Algorithm for Gaussian Random Variables and Gaussian Mixtures**  
*Maximilian Stark, Jan Lewandowsky, Gerhard Bauch, Hamburg University of Technology, Germany*

14:50 – 15:10 **Vector Approximate Message Passing Using Information Bottleneck Optimized Lookup Tables**  
*Daniel Franz, Volker Kuehn, University of Rostock, Germany*

15:10 – 15:30 **Trade-Off Between Measurement Accuracy and Quantization Precision for Minimum Bayes Risk in Wireless Networked Control Systems**  
*Kilian Kiekenap, Hussein Al-Shatri, Anja Klein, Technische Universitat Darmstadt, Germany*

15:30 – 16:30 **Poster Session P2 and Coffee Break**

**Session 4: Machine Learning in Communications**

Chair: Anja Klein, Technische Universität Darmstadt, Germany

- 16:30 – 17:00 **Invited Talk:**  
**Deep Learning in Communications:  
 From Theory to Practice**  
*Jakob Hoydis, Nokia Bell Labs, France*
- 17:00 – 17:20 **Dictionary Learning for Reconstructing  
 Measurements of Analog Wireless Sen-  
 sor Nodes**  
*Christopher Willuweit, Carsten Bockelmann,  
 Armin Dekorsy, University of Bremen, Ger-  
 many*
- 17:20 – 17:40 **Exploiting General Multi-Dimensional  
 Priors in Compressed-Sensing Recon-  
 struction**  
*Stefan Birgmeier, Norbert Görtz, Vienna  
 University of Technology, Austria*
- 17:40 – 18:00 **Novel Massive MIMO Channel Sounding  
 Data Applied to Deep Learning-based  
 Indoor Positioning**  
*Maximilian Arnold, University of Stuttgart,  
 Germany; Jakob Hoydis, Nokia Bell Labs,  
 France; Stephan ten Brink, University of  
 Stuttgart, Germany*

08:00 – 17:00 **Registration**

**Session 5: Polar Codes**

Chair: Martin Bossert, University of Ulm, Germany

- 09:00 – 09:20 **Polar Code Construction for List  
 Decoding**  
*Peihong Yuan, Tobias Prinz, Technical  
 University of Munich, Germany; Georg  
 Böcherer, Huawei Technologies, France;  
 Onurcan İşcan, Ronald Boehnke, Huawei  
 European Research Center, Germany;  
 Wen Xu, Huawei Technologies Duesseldorf  
 GmbH - European Research Center (ERC),  
 Germany*
- 09:20 – 09:40 **Polar Subcodes for Encoding and Blind  
 Decoding of Variable-Sized Data Blocks**  
*Kirill Ivanov, EPFL, Switzerland; Peter Trifonov,  
 Saint Petersburg Polytechnic University,  
 Russia*
- 09:40 – 10:00 **Polar Codes for Identification Systems**  
*Linghui Zhou, Minh Thanh Vu, Tobias J.  
 Oechtering, KTH Royal Institute of Techno-  
 logy, Sweden*
- 10:00 – 10:20 **Two-Dimensional Magnetic Recording  
 Systems with CRC concatenated Polar  
 Channel Coding Schemes**  
*Hidetoshi Saito, Kogakuin University, Japan*
- 10:20 – 11:20 **Poster Session P3 and Coffee Break**

**Session 6: Private Information Retrieval & Security**

Chair: Robert F.H. Fischer, Ulm University, Germany

- 11:20 – 11:50 **Invited Talk:**  
**On the capacity of private information retrieval**  
*Mikael Skoglund, KTH Royal Institute of Technology, Sweden*
- 11:50 – 12:20 **Invited Talk:**  
**Private Information Retrieval Under Access Constraints**  
*Sennur Ulukus, University of Maryland, USA*
- 12:20 – 12:40 **Signal Constellations for Physical-Layer Security**  
*Johannes Pfeiffer, Robert F.H. Fischer, Ulm University, Germany*
- 12:40 – 14:00 **Lunch Break**

**Session 7: Optical Communications**

Chair: Gerhard Bauch, Hamburg University of Technology, Germany

- 14:00 – 14:20 **Two-Stage Dimension-Wise Coded Modulation for Four-Dimensional Hurwitz-Integer Constellations**  
*Sebastian Stern, Felix Frey, Ulm University, Germany; Johannes K. Fischer, Fraunhofer Heinrich-Hertz-Institute, Germany; Robert F.H. Fischer, Ulm University, Germany*
- 14:20 – 14:40 **Nonlinear Fourier Spectrum of Truncated Multi-Soliton Pulses**  
*Vahid Aref, Nokia Bell Labs, Germany*
- 14:40 – 15:00 **Performance of Run-Length-Limited Codes in Visible-Light Communications**  
*Zaid Dhannoon, Robert F. H. Fischer, Ulm University, Germany*
- 15:00 – 15:20 **Minimizing the Oversampling Rate in Bandwidth-Variable Optical Kramers-Kronig IM/DD-Transmission with Multidimensional PAM**  
*Simon Ohlendorf, Stephan Pachnicke, Werner Rosenkranz, Christian-Albrechts-Universität zu Kiel, Germany*
- 15:20 – 16:20 **Poster Session P4 and Coffee Break**

Monday 02/11/2019	Tuesday 02/12/2019
	9:00 – 9:15 Opening  9:15 – 10:20 <b>Session 1</b> Communications under Hardware Constraints
	Poster Session P1 & Coffee Break
13:00 – 20:00 Registration	11:20 – 12:50 <b>Session 2</b> Optical Communications
	Lunch Break
14:00 – 16:00 <b>Tutorial</b> The Information Bottle- neck Method in Communications	14:00 – 15:30 <b>Session 3</b> Information Bottleneck Method & Quantization
Coffee Break	Poster Session P2 & Coffee Break
16:30 – 18:30 <b>Tutorial</b> Communications and Control	16:30 – 18:00 <b>Session 4</b> Machine Learning in Communications
19:00 – 23:00 Welcome Reception	

Wednesday 02/13/2019	Thursday 02/14/2019
9:00 – 10:20 <b>Session 5</b> Polar Codes	9:00 – 10:30 <b>Session 9</b> 5G Panel
Poster Session P3 & Coffee Break	Poster Session P5 & Coffee Break
11:20 – 12:40 <b>Session 6</b> Private Information Retrieval & Security	11:30 – 12:50 <b>Session 10</b> Cryptography
Lunch Break	Lunch Break
14:00 – 15:20 <b>Session 7</b> Optical Communications	14:00 – 15:20 <b>Session 11</b> MIMO
Poster Session P4 & Coffee Break	
16:20 – 17:40 <b>Session 8</b> Coding	
19:00 – 24:00 Banquet at Lokschuppen	

**Session 8: Coding**

*Chair: Aydin Sezgin, Ruhr-Universität Bochum, Germany*

- 16:20 – 16:40 **An Iterative Hard and Soft Decision Decoding Algorithm for Cyclic Codes**  
*Martin Bossert, Ulm University, Germany*
- 16:40 – 17:00 **Low-Complexity Joint Channel Estimation and List Decoding of Short Codes**  
*Mustafa Cemil Coşkun, Technische Universität München, Germany; Gianluigi Liva, DLR - German Aerospace Center, Germany; Johan Östman, Giuseppe Durisi, Chalmers University of Technology, Sweden*
- 17:00 – 17:20 **Generalized Two-Magnitude Check Node Updating with Self Correction for 5G LDPC Codes Decoding**  
*Wei Zhou, Michael Lentmaier, Lund University, Sweden*
- 17:20 – 17:40 **Static Layered Schedules and Core-Only Parity Check for the 5G New Radio LDPC Codes**  
*Janik Frenzel, Intel Corporation, Germany; Stefan Müller-Weinfurtner, Intel, Germany; Johannes Huber, Ralf R. Müller, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany*

08:00 – 12:00 **Registration**

**Session 9: 5G Panel**

*Chair: Stephan ten Brink, University of Stuttgart, Germany*

- 09:00 – 09:30 **Invited Talk:**  
**Fog Networking for the Coexistence of Ultra-Reliable and Mobile Broadband 5G Services**  
*Oswaldo Simeone, King's College London, Great Britain*
- 09:30 – 10:30 **Panel Discussion**  
*Oswaldo Simeone  
King's College London, Great Britain  
Peter Rost  
Nokia Networks, Munich, Germany  
Michael Meyer  
Ericsson, Herzogenrath, Germany  
Joseph Eichinger  
Huawei, Munich, Germany  
Stephan Brück  
Qualcomm, Nuremberg, Germany*
- 10:30 – 11:30 **Coffee Break**



**Session 10: Cryptography**

Chair: Armin Dekorsy, University of Bremen, Germany

- 11:30 – 12:00 **Invited Talk:**  
**Code-Based Cryptography**  
*Tanja Lange, Technische Universiteit Eindhoven, The Netherlands*
- 12:00 – 12:30 **Invited Talk:**  
**Codes in Cryptography - Essential Components for Secure Systems**  
*Tim Güneysu, Ruhr-Universität Bochum, Germany*
- 12:30 – 12:50 **Secret Key Generation Based on Channel State Information in a mmWave Communication System**  
*Nikola Felkaroski, Ss. Cyril and Methodius University in Skopje, IHP Microelectronics, Macedonia; Markus Petri, IHP, Germany*
- 12:50 – 14:00 **Lunch Break**

**Session 11: MIMO**

Chair: Wolfgang Utschik, Technical University of Munich, Germany

- 14:00 – 14:20 **Optimization of Subspace Projection in Noncoherent Massive MIMO Systems**  
*George Yammin, Robert F.H. Fischer, Ulm University, Germany*
- 14:20 – 14:40 **Highly-efficient Hybrid Beamforming by Port Selection in Massive MIMO Multi-Mode Antenna Systems**  
*Nils L. Johannsen, Niklas Doose, Peter A. Hoeher, University of Kiel, Germany*
- 14:40 – 15:00 **Sum-Rate Maximization by Iterative User Selection in Cellular Full-Duplex MIMO Systems**  
*Michael Newinger, Christoph Sommerauer, Wolfgang Utschick, Technische Universität München, Germany*
- 15:00 – 15:20 **Low-complexity Detection for Spatial Modulation**  
*Juergen Freudenberger, Daniel Rohweder, University of Applied Sciences, Konstanz, Germany; Sergo Shavgulidze, Georgian Technical University, Georgia*
- 15:20 **Closing**

**P1 Poster Session Tuesday, 10:20 – 11:20**

- P1-1 **A Low-Complexity Three-Error-Correcting BCH Decoder with Applications in Concatenated Codes**  
*Juergen Freudenberger, Mohammed Rajab, University of Applied Sciences, Konstanz, Germany; Sergo Shavgulidze, Georgian Technical University, Georgia*
- P1-2 **On List Decoding of Generalized Reed-Solomon Codes Under Partial Codeword Knowledge**  
*Christian Senger, University of Stuttgart, Germany*
- P1-3 **Protograph-Based LDPC Code Design for Ternary Message Passing Decoding**  
*Emna Ben Yacoub, Technical University of Munich and DLR - German Aerospace Center, Germany; Fabian Steiner, Technical University of Munich, Germany; Balazs Matuz, Gianluigi Liva, DLR - German Aerospace Center, Germany*
- P1-4 **Multilevel Coding over Eisenstein Integers with Ternary Codes**  
*Sebastian Stern, Ulm University, Germany; Daniel Rohweder, Juergen Freudenberger, University of Applied Sciences Konstanz, Germany; Robert F.H. Fischer, Ulm University, Germany*
- P1-5 **An Incremental Redundancy Hybrid ARQ Scheme with Non-catastrophic Puncturing of Polar Codes**  
*Tao Wang, Daiming Qu, Tao Jiang, Huazhong University of Science and Technology, P.R. China*
- P1-6 **Genetic Algorithm-based Polar Code Construction for the AWGN Channel**  
*Ahmed Elkelesh, Moustafa Ebada, Sebastian Cammerer, Stephan ten Brink, University of Stuttgart, Germany*

- P1-7 **Design of Quantized Decoders for Polar Codes Using the Information Bottleneck Method**  
*Syed Aizaz Ali Shah, Maximilian Stark, Gerhard Bauch, Hamburg University of Technology, Germany*
- P2 Poster Session Tuesday, 15:30 – 16:30**
- P2-1 **Switched Max-Link Buffer-Aided Relay Selection for Cooperative Multiple-Antenna Systems**  
*Flavio Duarte, Rodrigo C. de Lamare, Pontifical Catholic University of Rio de Janeiro, Brazil*
- P2-2 **On the Performance of NOMA-based Cooperative Relaying with Receive Diversity**  
*Vaibhav Kumar, Barry G Cardiff, Mark F. Flanagan, University College Dublin, Ireland*
- P2-3 **Resource Allocation for Outdoor-to-Indoor Amplify-and-Forward SUDAS with Independent Relay Processing**  
*Meysam Goodarzi, Humboldt University of Berlin, Germany; Aravindh Krishnamoorthy, Robert Schober, Friedrich-Alexander University Erlangen-Nürnberg, Germany; Marco Breiling, Fraunhofer Institute for Integrated Circuits (IIS), Germany*
- P2-4 **On the Relation Between PAPR and System Performance in Multicarrier Modulation**  
*Stephan F. Pfletschinger, Ludwig Erhardt, Hochschule Offenburg, Germany*
- P2-5 **Real-time Cooperative Spectrum Sensing: Reliable Localization of Unknown Interferers in Shared Spectrum**  
*Kedar Kulkarni, Norman Franchi, Gerhard Fettweis, Technische Universität Dresden, Germany*
- P2-6 **Crest-Factor Reduction for Responsive Communications Jammers**  
*Jan Mietzner, Hamburg University of Applied Sciences (HAW), Germany*

- P2-7 **Joint List Multistage Decoding with Sphere Detection for Polar Coded SCMA Systems**  
*Liudmila Karakchieva, Peter Trifonov, Saint Petersburg Polytechnic University, Russia*

**P3 Poster Session Wednesday, 10:20 – 11:20**

- P3-1 **The Turbo Principle in Molecular Communications**  
*Martin Damrath, Max Schurwanz, Peter A. Hoeher, University of Kiel, Germany*
- P3-2 **Improving Ultra Wideband In-Body Communication Using Space Diversity**  
*Jan-Christoph Brumm, Joschua Kohagen, Gerhard Bauch, Hamburg University of Technology, Germany*
- P3-3 **On the DoF of the 2-Antenna 3-User MISO BC with Alternating CSIT**  
*Alexey Buzuverov, Anja Klein, Technische Universität Darmstadt, Germany*
- P3-4 **Performance of PSSS Systems in Multipath Channels**  
*Elias Peter, Wolfgang Endemann, Ruediger Kays, TU Dortmund University, Germany*
- P3-5 **Noncoherent Detection for an EM-Lens-Enabled Massive MIMO System**  
*George Yammine, Stephan Bucher, Robert F.H. Fischer, Ulm University, Germany*
- P3-6 **High-SNR Analysis of Improper Signaling in the MIMO Broadcast Channel with TIN**  
*Christoph Hellings, Franz Weißer, Wolfgang Utschick, Technische Universität München, Germany*
- P3-7 **Area Efficient Coprocessor for the Elliptic Curve Point Multiplication**  
*Malek Safieh, Johann-Philipp Thiers, Juergen Freudenberger, University of Applied Sciences, Konstanz, Germany*

**P4 Poster Session Wednesday, 15:20 – 16:20**

- P4-1 **Cloud Control AGV over Rayleigh Fading Channel – The Faster the Better**  
*Shreya Tayade, German Research Center for Artificial Intelligence, Germany; Peter Rost, Andreas Maeder, Nokia Networks, Germany; Hans Dieter Schotten, Deutsches Forschungszentrum für Künstliche Intelligenz GmbH, Germany*
- P4-2 **Practical GFDM-based Linear Receivers**  
*Ahmad Nimr, Technische Universität Dresden, Germany; Marwa Chafii, CNRS, France; Gerhard Fettweis, Technische Universität Dresden, Germany*
- P4-3 **Activity-Aware Multiple Feedback SIC for Massive Machine-Type Communications**  
*Roberto Di Renna, Rodrigo C. de Lamare, Pontifical Catholic University of Rio de Janeiro, Brazil*
- P4-4 **Channel-Optimized Information Bottleneck Design for Signal Forwarding and Discrete Decoding in Cloud-RAN**  
*Tobias Monsees, Dirk Wübben, Armin Dekorsy, University of Bremen, Germany*
- P4-5 **On Decoding Schemes for the MDPC-McEliece Cryptosystem**  
*Hannes Bartz, Gianluigi Liva, German Aerospace Center, Germany*
- P4-6 **A Channel Model and Soft-Decision Helper Data Algorithms for ROPUFs**  
*Sven Muelich, University of Ulm, Germany; Sven Puchinger, Technical University of Munich, Germany; Veniamin Stukalov, Martin Bossert, University of Ulm, Germany*
- P4-7 **Industrial Radio Link Abstraction Models for Short Packet Communication with Polar Codes**  
*Johannes Demel, Carsten Bockelmann, Armin Dekorsy, University of Bremen, Germany*

## General Information

SCC 2019 will take place in the main building of the University of Rostock at Universitätsplatz 1. It is located in the city center.

### Social Event

There will be a welcome reception on Monday, February 11, 2019, 19:00 in the Aula's foyer in the main building.

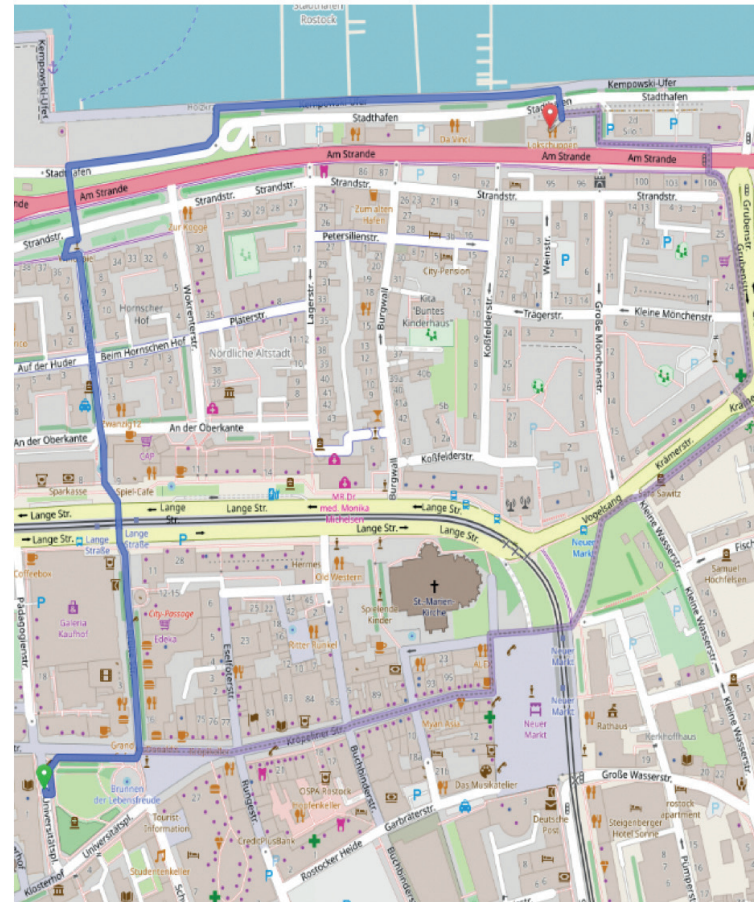
### Banquet

The conference banquet will be held on Wednesday, February 13, 2019, 19:00, at Lokschuppen next Stadthafen.

### Address:

**Am Strande 2c  
18055 Rostock**

## How to reach Lokschuppen



We would like to thank the sponsors of this conference. Without their contribution the program would not be possible in this extent (sponsors are listed in alphabetical order)

