IEEE pimrc

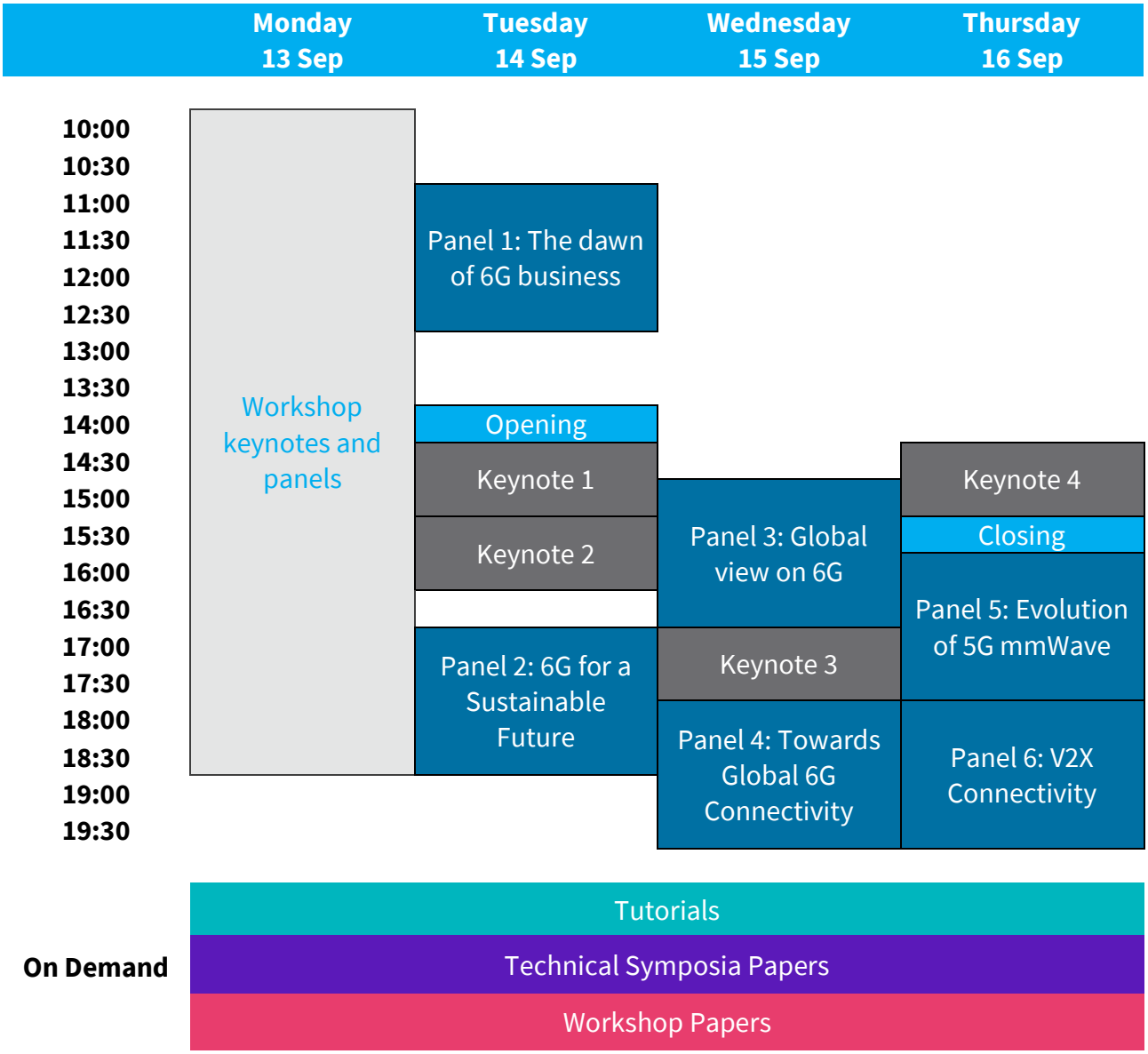
IEEE International Symposium on Personal, Indoor and Mobile Radio Communications

13–16 September 2021 // Virtual Conference // By 6G Flagship

IEEE PIMRC 2021 Advance Program[1]

Keynotes | Panels | Tutorials | Workshops Keynotes and Panels | Technical presentations

Program at a glance



Keynotes | Panels | Tutorials | Workshops Keynotes and Panels | Technical presentations

[1] This advance program is tentative and subject to possible changes.

Keynotes

Keynote 1: TBD

By Dr. Peter Vetter, ***Nokia Bell Labs***

Abstract:

Speaker bio:

Keynote 2: 6G in a world of communicating intelligent machines

By Dr. Magnus Frodigh, ***Vice President and Head of Ericsson Research, Ericsson***

Speaker bio: Dr. Magnus Frodigh has been Vice President and Head of Ericsson Research since 2018.

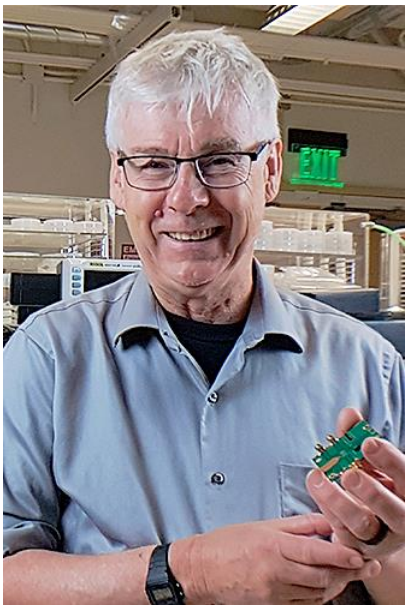
Dr. Frodigh was Research Area Director for Network Architecture and Protocols at Ericsson Research from 2007 to 2018 with responsibility for driving long-term technology leadership research in the areas of network architecture and protocols comprising radio, transport and core networks, including network management.

Dr. Frodigh joined Ericsson in 1994 and has since held various key senior positions within Research & Development and Product Management, focusing on 2G, 3G, 4G and 5G technologies, and expanding collaborations between with both academia and industries. He holds 29 patents.

Dr. Frodigh was born in Stockholm, Sweden, in 1964. He holds a Master of Science degree from Linköping University of Technology, Sweden and earned his Ph.D. in Radio Communication Systems from Royal Institute of Technology in Stockholm, Sweden.
Dr Frodigh is adjunct Professor at Royal Institute of Technology in Wireless Infrastructures since 2013.

Keynote 3: 100-300GHz Wireless Communications: IC and System Design

By Prof. Mark Rodwell, *University of California, Santa Barbara*



Abstract: 100-300GHz wireless systems can provide very high data rates per signal beam, and, given the short wavelengths, even compact arrays can contain many elements, permitting massive spatial multiplexing for further increased capacity. We will describe ICs, modules, and system design of 140GHz massive MIMO wireless hubs and 210/280GHz MIMO backhaul links.

Speaker bio: Mark Rodwell holds the Doluca Family Endowed Chair in Electrical and Computer Engineering at UCSB and directs the SRC/DARPA ComSenTer Wireless Research Center. His research group develops high-frequency transistors, ICs and communications systems. He and his collaborators received the 2010 IEEE Sarnoff Award, the 2012 Marconi Prize Paper Award, the 1997 IEEE Microwave Prize, the 2009 IEEE IPRM Conference Award, and the 1998 European Microwave Conference Microwave Prize.

Keynote 4: Integrated Sensing and Communications

By Dr. Wen Tong, *CTO, Wireless Network, Huawei Technologies Co., Ltd.*

Abstract: In this talk, we present a framework of integrated sensing and communications for 6G. The true integration of the communions and sensing into a single device a, single spectrum and single platform will enable many new value added services, beyond the connectivity function as we know for wireless communications today. Furthermore, for 6G, the higher frequency spectrum with larger bandwidth has been utilized to meet the continuously increasing requirement for larger throughput requirement, in addition to transfer the information bit, we can retrieve the radio wave propagation characteristics with advanced signal processing technologies, to perform the parametrize-identification of the objects, the environmental real time imaging and even spectrogram of the physical world, this will facilitate the proliferation of the deep learning technology for 6G and to provide for the 6G AI service platform. The integrated wireless sensing and communications (ISAC) has the advantages such as preserve the privacy and enable the dynamic real world learning and inferencing service and ultimately the ISAC will make the entire global wireless communications infrastructure and billions of devices as a network of sensors.

Speaker bio: Dr. Wen Tong is the CTO, Huawei Wireless. He is the head of Huawei wireless research. In 2011, Dr. Tong was appointed the Head of Communications Technologies Labs of Huawei, currently, he is the Huawei 5G chief scientist and led Huawei's 10-year-long 5G wireless technologies research and development.

Prior to joining Huawei in 2009, Dr. Tong was the Nortel Fellow and head of the Network Technology Labs at Nortel. He joined the Wireless Technology Labs at Bell Northern Research in 1995 in Canada.

Dr. Tong is the industry recognized leader in invention of advanced wireless technologies, Dr. Tong was elected as a Huawei Fellow and an IEEE Fellow. He was the recipient of IEEE Communications Society Industry Innovation Award in 2014, and IEEE Communications Society Distinguished Industry Leader Award for "pioneering technical contributions and leadership in the mobile communications industry and innovation in 5G mobile communications technology" in 2018. He is also the recipient of R.A. Fessenden Medal. For the past three decades, he had pioneered fundamental technologies from 1G to 5G wireless and Wi-Fi with more than 500 awarded US patents.

Dr. Tong is a Fellow of Canadian Academy of Engineering, and he serves as Board of Director of Wi-Fi Alliance.

Panels

Panel 1: The dawn of 6G business –are we facing a positive disruption?

The team behind the proposal has produced the world's first white paper on the Business of 6G (***https://www.6gchannel.com/items/6g-white-paper-business-of-6g/***). The transition from 5G to 6G will bring about a business disruption in terms of emerging new opportunities, stakeholders, services, and business models by 2030. Successful commercialization of 6G will require converging different technologies and solutions to boost new market creation and transforming existing markets at the levels of users/customers, services, industries,and geopolitics. This panel will identify and shed light to factors that will influence 6G business, provide an outlook toscaling and replicating 6G solutions across use cases and markets in economically feasible way, and identify possible bottlenecks and options regarding the regulatory issues arising around 6G.

Questions:

- What factors impact the development of businesses toward 6G?
- What novel business opportunities could be identified for old and new stakeholders in 6G?
- How to speed up the scaling and replication of 6G solutions across different use cases and markets?
- How to profit from technology innovations in 6G?
- What kind of regulatory bottlenecks we can identify and whatcould we do about them when moving toward 6G?

Organizer:

- **Prof. Petri Ahokangas**, University of Oulu, Oulu Business School

Panellists:

- **Seppo Yrjölä**, Nokia.
- **Paul Timmers**, Oxford university.
- **Georg Serentchy**, Serentchy.
- **Elizabeth Migwalla**, Qualcomm.

Panel 2: 6G for a Sustainable Future – What is missing today?

Mobile communications systems have been the key drivers of the digital innovations. Looking ahead to 2030 and beyond, 6G is under definition as the next-generation mobile communications system. In particular, 6G is expected to serve as a distributed neural network that provides communication links to fuse the physical, biological and cyber worlds, truly ushering in an era of Intelligence-of-Everything in which everything will be sensed, connected, and intelligent. With such a vision, in addition to further boosting high data rate, low latency, and ultra-reliability communication experience, 6G shall also consider e new service scenarios, potential new customers and new ecosystems, as well as the type and number of connecting devices in a cost and energy efficient manner. Green and sustainable development in 6G is thus the core requirement and ultimate goal of network and terminal designs. It is not just a nice-to-have feature; rather, it will be a make-or-break requirement for 6G mobile networks. On the

other hand, with the increasing new capabilities embedded, 6G shall continue to address the challenges of the mankind and facilitate the realization of the sustainable development goals (SDGs) defined by the United Nation. In this panel, we aim at providing an interactive platform for industry and academic to timely exchange visions, key technical challenges and research directions at the beginning of 6G definition towards the sustainable development of 6G itself as well as its role serving as a tool to help improve the sustainable development of the whole society.

Questions:

- What arethe requirementsand new dimensionsforthe sustainable development of 6G mobile communication system? And how can 6G help improve the sustainable development, e.g. protecting the natural environment and improving society good?
- What will the potential new capabilities of 6G (e.g. convergence of sensing, computing with communication, integration of non-terrestrial and terrestrial network) work for the sustainable development goals? What are the potential new performance indicators to reflect these sustainable design requirements and how to develop new methodology to evaluate them?
- What are the key technologies for green communication network design and how would they advance in 6G? How to carry out end-to-end energy efficient design with the currently layered standardization organizations?
- What are the key 6G technologies to connect the remaining 3.5 billion people that are not connected today? How to guarantee that 6G can benefit the rural and underdeveloped world instead of creating a larger digital divide?
- In the year 2030 and beyond, are human users still the major customers or machines and automated processes without direct human intervention? What will be the difference to enable a sustainable future with when machine type of communications become dominant?

Organizer:

- **Dr. Wen Tong**, Huawei, Canada

Panellists:

- **Luke Ibbetson**, Vodafone, UK
- **Eric Hardouin**, Orange, France
- **Patrick Waldemar**, Telenor, Norway
- **Zhisheng Niu**, Tsinghua University, China

Panel 3: Global view on 6G

Wireless technologies are central for our society and economy and their importance is expected to grow. Wireless technologies should be sustainable and also help other sectors of society to be more sustainable. Next big thing in wireless is 6G, currently in the phase of research and heading towards commercialization around 2030. The panel will bring together leading experts from around the world, with participants from Europe, USA and China to discuss the global view of the next generation of networks, i.e., 6G. The panel will look at the vision, the challenges and expected use cases towards 2030, as well as the potential enabling technologies.

Questions:

- What is your vision on 6G in one sentence?
- What are top 3 6G use cases you foresee in 2030?
- What are the top 3 key capabilities networks will need in 2030?
- Why are these3 capabilitiesneeded?
- How to best deliver these 3 capabilities?

Organizers:

- **Dr. Mikko Uusitalo,** Nokia Bell Labs, Finland, EU project Hexa-X, and
- **Dr. Patrik Rugeland,** Ericsson Research, Sweden, EU project Hexa-X

Panellists:

- **Gunnar Mild**, Senior Expert radio network architecture at Research Area Networks, Ericsson Research, Sweden
- **Brian Daly**, Assistant Vice President for Standards & Industry Alliances, AT&T, USA
- **Chih-Lin I**, China Mobile Chief Scientist, Wireless Technologies, China Mobile, China
- **Marja Matinmikko-Blue**, 6G Flagship Research Coordinator and Senior Research Fellow at CWC, University of Oulu, Finland

---

Panel 4: Towards Global 6G Connectivity: Connecting Remote Areas and Low Income Neighbourhoods

With the arrival of 5G, research on beyond 5G (B5G)/6Gcommunication networks is gearing up all over the world. One of themost important projected goals of 6G connectivity is to meet theUN-SDG Vision 2030 requirements for a better tomorrow. Hence,connecting the over 3 billion people around the globe with themainstream information highways is a challenging goal. Most of theun-and under-connected population live in low income and ruralregions. To achieve this objective of connecting the unconnectedbillions, leading to improvement in their lives, we need to exploretechnologically driven solutions. Unlike in the previous generation oftelecommunication standards, for 6G, it is envisaged that theserequirements would be considered since inception of the standard.There are already whitepaper, magazine and research articlesappearing on similar from academia, industry and technical bodiesincluding IEEE. With this workshop we intend to bring all on the sameplatform and brainstorm on the challenges and solutions forconnecting the over 3 billion and achieving a better quality of lifealong with meeting the UN's Vision 2030 SDG objectives.

Questions:

- What are the main showstopper for mobile network operators (MNOs) to deploy mobile networks in rural areas?
- What are some of the new business models that can be adopted to facilitate the deployment of wireless networks in rural areas in a scalable and sustainable fashion?
- What are in your views the best spectrum allocation policies/regulations that can favor closing the connectivity divide?
- How can we overcome issues related to the lack of a stable energy supply often encountered in rural environments?

- What are in your views the most promising emerging innovative solutions for low-cost backhaul and access technologies to connect the unconnected in rural areas and low income neighborhoods?

Organizer:

- **Prof. Mohamed-Slim Alouini,** King Abdullah University of Science and Technology (KAUST), KSA

Panellists:

- **Prof Abhay Karandika**, IIT, Kanpur, India
- **Dr Albert Lysko**, Council for Scientific and Industrial Research, South Africa
- **Prof Marco Di Renzo**, Paris-Saclay University, France
- **Prof Haris Gacanin**, RWTH Aachen University, Germany
- **Dr Sudhir Dixit**, Basic Internet Foundation, Norway

Panel 5: Evolution of 5G mmWave

The evolution of 5G New Radio (NR) has progressed swiftly since 3GPP standardized the first NR release, i.e., Release 15 in mid-2018. Release 16 was completed in early July 2020. Also in July 2020, 3GPP 5G spanning Release 15&16 was formally endorsed as ITU IMT-2020 5G standard. In addition to efficient utilization of sub 6GHz spectrum, Release 15&16 also provide the basic functionalities of supporting mmWave. Nowadays Release 17 has taken center stage. Technologies for enhanced mmWave are under discussion.

At the same time, 3GPP also starts to plan Release 18 and beyond. To enable large-scale mmWave network deployment, we still face lots of challenges, such as massive MIMO beamforming for outdoor and indoor coverage, cost-effective deployement solutions, seamless mobility with effective beam management, network and device energy efficiency, mobile device complexity and etc. In addtion to the existing challeges, there are lots of new emerging use cases for mmWave, such as uplink centric traffic, real time immsersive communications, positioning for IIOT, sensing. Therefore, it will be very timely to investigate how 5G mmWave evolves towards 2025 and beyond from technology points of view, taking into accounts the main use cases, key challenges and potential technology trends.

In this panel, we will bring together leading experts from the mobile industry. The panel can serve as a good opportunity to share the experts' views about mmWave technology for 5G evolution and can provide a bridge between industry and academia.

Questions:

- What are the challenges in the current 5G mmWave deployment worldwide?
- What are the emerging new use cases for mmWave toward 2025 and beyond?
- Considering those challenges and emerging new use cases, what are the top driving forces for 5G evolution on mmWave?
- What objectives and requirements for 5G evolution on mmWave?
- What are technologies for 5G evolution on mmWave to fulfill the above requirements?

Organizer:

- **Mr. Zhenfei Tang**, Huawei, China

Panellists:

- **Dr. Edward G. Tiedemann**, Jr., Senior Vice President, Qualcomm, US
- **Mr. Rui Sun**, Senior Vice President of Huawei Wireless Research, China
- **Dr. Stefan Parkvall**, Senior Expert at Ericsson Research, Sweden
- **Dr. Fuchan Li**, deputy director of wireless technology research department of China Unicom Research Institute, China
- **Prof. Wolfgang Utschick**, Dean of the ECE Department, TUM, Germany

---

Panel 6: V2X Connectivity and Learning on the Road towards Cooperative Automated Driving

After more than two decades of huge industrial and academic research efforts, cooperative automated driving (CAD) is close to being a reality and to revolutionize our mobility.

Vehicle-to-everything (V2X) connectivity will complement embedded sensors (encompassing RADAR/LIDAR, cameras, positioning-systems) by letting vehicles exchange data with nearby vehicles, pedestrians, roadside-infrastructure as well as with remote entities. Several technologies are currently available and still evolving to support V2X connectivity (e.g., 802.11p/802.11bd, Cellular-V2X and its new 5G NR-based evolution), also pushed by several initiatives and standardization fora (e.g., IEEE, 3GPP, ETSI, 5GAA, Car2Car-Communication-Consortium).

Notwithstanding, the very strict application requirements, such as ultra-low latency (below 3ms) and high-reliability (up to 99.999%) demanded also under congested, harsh and highly-varying propagation scenarios, highly challenge existing connectivity solutions and entail the investigation of more disruptive techniques which are under discussion in the 5G and beyond research arena. On the other hand, sophisticated machine learning (ML) algorithms, implemented in edge/cloud facilities, are required to properly mine the big amount of collected data, to allow human drivers and self-driving vehicles to build an accurate perception of their surroundings and make decisions accordingly.

The design of innovative V2X connectivity and ML techniques for CAD (with their synergies still to be fully disclosed) will contribute to safer, smarter and greener driving paving the way for intriguing interdisciplinary research opportunities which motivate this panel. It will bring together leading experts from academia and industries representing key players active worldwide in the V2X R&D community and spanning automotive and telco vendors. They will discuss the state-of-the-art and share their views about the key V2X and ML solutions. Such insights are expected to fuel a fruitful discussion among the panelists and with the audience on potential cutting-edge technology trends having a lasting impacting the next years as key drivers for the genuine CAD take-off.

Questions:

- Which would be the killer applications in the CAD realm which would challenge more V2X connectivity and/or ML techniques? Which is the main societal impact expected from them?
- How do you see the evolution of connectivity solutions in the next 2-to-5 years and which communication/networking technology on the horizon for 6G you will suggest to

investigate as the game changer to improve performance of next-generation connected vehicles?
- Which role do you foresee for ML to optimize the V2X connectivity and application-layer CAD performance?
- As disruptive technologies and solutions are coming into the V2X picture (e.g., higher spectrum, unconventional access techniques, ML) which is the role of evaluation tools like simulators, prototyping and real-world datasets for accelerating the transition of the main breakthroughs from the lab to the market?
- As demonstrated in the last years, CAD needs to overcome a large number of different issues, including people's skepticism, potential legal/regulation uncertainties, security threats, and a different evolutionary speed between the automotive and the telecom world. Which do you think will be the aspects that mostly risk to breakdown the deployment in the next years?

Organizer:

- **Dr. Claudia Campolo**, Associate Professor, University of Reggio Calabria, Italy

Panellists:

- **Onur Altintas**, InfoTech Labs Fellow and Senior Executive Engineer, Toyota North America R&D, USA
- **Alessandro Bazzi**, Senior Researcher at University of Bologna, Italy
- **Falko Dressler**, Full Professor, TU Berlin, Germany
- **Maxime Flament**, Chief Technology Officer, 5GAA,Germany
- **Stefano Sorrentino**, Principal Researcher, Ericsson, Sweden

---

Tutorials

Tutorial 1: Deep Learning for Wireless Communications

Presenters:

- Dr. Geoffrey Ye Li
  Imperial College London, UK
- Dr. Zhijin Qin,
  Queen Mary University of London, UK

Tutorial 2: MetaEverything: Intelligent Meta-Material Aided Sensing and Communications

Presenters:

- Dr. Boya Di
  Imperial College London, UK
- Dr. Hongliang Zhang
  Princeton University, NJ, USA
- Dr. Zhu Han
  Houston University, TX, USA
- Dr. Lingyang Song
  Peking University, Beijing, China

Tutorial 3: Wireless Powered Communications: A New Communication Paradigm

Presenters:

- Dr. Ioannis Krikidis
  University of Cyprus, Greece
- Dr. Constantinos Psomas
  University of Cyprus, Greece

Tutorial 4: Role of Flying Platforms for Global Connectivity

Presenters:

- Dr. Muhammad Zeeshan Shakir
  University of the West of Scotland, UK

Tutorial 5: Localization-of-Things in Beyond 5G Ecosystems

Presenters:

- Dr. Moe Z. Win
  Massachusetts Institute of Technology, USA
- Andrea Conti
  University of Ferrara, Italy

Tutorial 6: 3GPP NR Positioning: standard and key techniques

Presenters:

- Dr. Yi Wang
  Huawei Technologies Co., Ltd., Shanghai
- Dr. Su Huang
  Huawei Technologies Co., Ltd., Shanghai

Tutorial 7: Wireless for Machine Learning

Presenters:

- Dr. Carlo Fischione
  KTH Royal Institute of Technology, Sweden
- Dr. Viktoria Fodor
  KTH Royal Institute of Technology, Sweden
- Dr. José Mairton B. da Silva Jr.
  KTH Royal Institute of Technology, Sweden
- Henrik Hellström
  KTH Royal Institute of Technology, Sweden

Tutorial 8: Enabling Terahertz Communications for 6G Era

Presenters:

- Dr. Nan Yang
  Australian National University, Australia
- Dr. Chong Han
  Shanghai Jiao Tong University, China
- Dr. Josep M. Jornet
  Northeastern University, USA

Tutorial 9: Tools and Techniques for Future Spectrum Sharing and Coexistence

Presenters:

- Dr. Constantinos B. Papadias
  The American College of Greece, Greece
- Dr. Tharm Ratnarajah
  The University of Edinburgh, UK
- Dr. Dirk T.M. Slock
  EURECOM, France

Tutorial 10: Advances and Future Challenges on 6G Wireless Channel Measurements and Models

Presenters:

- Dr. Cheng-Xiang Wang
  Southeast University and Purple Mountain Laboratories, China
- Dr. Haiming Wang
  Southeast University and Purple Mountain Laboratories, China
- Dr. Jie Huang
  Southeast University and Purple Mountain Laboratories, China
- Dr. Harald Haas
  University of Strathclyde, UK

Tutorial 11: Integrated Access and Backhaul for 5G and Beyond

Presenters:

- Dr. Mohamed-Slim Alouini
  King Abdullah University of Science and Technology, Saudi-Arabia
- Dr. Behrooz Makki
  Ericsson AB, Sweden

- Dr. Erik Dahlman
  Ericsson AB, Sweden
- Dr. Filip Barać
  Ericsson AB, Sweden

Tutorial 12: Towards 6G UAV and Satellite Communications

Presenters:

- Dr. Giovanni Geraci
  University Pompeu Fabra, Spain
- Dr. Adrian Garcia-Rodriguez
  Huawei France R&D, France

Tutorial 13: User-Centric Cell-Free Massive MIMO: From Foundation to Scalable Implementation

Presenters:

- Dr. Emil Björnson
  KTH Royal Institute of Technology, Sweden
- Dr. Luca Sanguinetti
  University of Pisa, Italy
- Dr. Özlem Tuğfe Demir
  KTH Royal Institute of Technology, Sweden

Tutorial 14: Reconfigurable Intelligent Surfaces for Future Wireless Communications

Presenters:

- Dr. Alessio Zappone
  University of Cassino and Southern Lazio, Italy
- Dr. Marco Di Renzo
  CNRS, University Paris-Saclay, France
- Dr. Shi Jin
  Southeast University, China
- Dr. Merouane Debbah
  Huawei France R&D, France

Tutorial 15: AI-enabled Open Virtualized Wireless Networks

Presenters:

- Dr. Melike Erol-Kantarci
  University of Ottawa, Canada
- Dr. Meryem Simsek
  VMware Inc., USA

Workshop Keynotes and Panels

WS1 – 1st Workshop on Dependable Connectivity in 6G

Keynotes

“Reliable and resilient 6G connectivity for IIoT”
Anna Larmo, Ericsson, Finland

“On Dependable 6G Wireless Communications Systems”
Dr.-Ing. Norman Franchi, Technische Universität Dresden, Germany

Panel Discussion: Challenges Ahead Dependable Connectivity in 6G

Moderator

Dr. Bjoern Richerzhagen
Siemens, Germany

Panel Members

Anna Larmo
Ericsson, Finland

Dr. Ing. Norman Franchi (TBC)
Technische Universität Dresden, Germany

Prof. James Gross
KTH Royal Institute of Technology, Sweden

Dr. Osman Yilmaz
Nokia Bell Labs, Finland

WS2 – Workshop on Enabling Technologies for Terahertz Communications

Keynotes

“Conquering the Terahertz Band for 6G Systems: From Theory to Practice“
Prof. Josep M. Jornet

“FEC for THz communication: challenges from an implementation point of view”
Prof. Norbert Wehn, University of Kaiserslautern, Germany

Panel Discussion: THz Communication for 6G: Opportunities, Challenges and the Road Ahead

Moderator

Prof. Maziar Nekovee
Dean of AI Institute, University of Sussex ZJSU, CTO, Quantrom Technologies Ltd.

Panel Members

Dr. Valerio Frascolla
Director of Research and Innovation at Intel, Germany

Prof. Claudio Paoloni
Head of Engineering Department, Lancaster University, UK

Prof. Ke Guan
Deputy Director of Institute of Modern Communication Beijing Jiaotong University, China

---

WS3 – International Workshop on Beyond 5G Support for the Future Vehicular Networks

Keynotes

“Cooperative Autonomous Vehicles: from Theoretical Models to Real World Labs and Back”
Prof. Alexey Vinel, Halmstad University, Sweden

“V2X in 3GPP Standardization: Evolution and Future of the NR Sidelink”
Dr.-Ing. Elke Roth-Mandutz, Fraunhofer IIS, Germany

WS4 – 5G Verticals: from 5G Trials towards 6G

Keynotes

Keynote 1: “Do verticals really need yet another G?”
Dr. Andreas Müller, Bosch, Germany

Keynote 2: “A new G for new verticals?”
Prof. Roberto Verdone, Università di Bologna, Italy

Panel Discussion: How to Take Industry from 5G towards 6G

Moderator

Joseph Eichinger
Huawei Technologies

Panel Members

Dr. Andreas Müller
Bosch, Germany (TBC)

Dr. Leefke Grosjean
Ericsson, Sweden

Dr. Krister Landernäs
ABB, Sweden

Prof. Hans Schotten
University of Kaiserslautern, Germany (TBC)

Prof. Nancy Alonistioti
National and Kapodistrian University of Athens, Greece (TBC)

WS5 – 1st International Workshop on Terahertz for Integrated Sensing and Communication (THz-ISAC)

Keynotes

“THz Channel Measurements using Ultra Wideband Channel Sounding”
Prof. Thomas Kürner, Technische Universität Braunschwei, Germany

“Context Sensing”
Prof. Rahim Tafazolli, University of Surrey, UK,

“Unified and Integrated Circuit Antenna (UNICA) – Future Integration Approach of THz Devices and Systems”
Prof. Ke Wu, Polytechnique Montréal (University of Montreal), Canada

“Photonics as key enabler for THz communications”
Prof. Tadao Nagatsuma, University of Osaka, Japan

WS6 – Integrated communication, localization and sensing in 6G era

Keynotes

“Personal Radars for Radio Imaging and Infrastructure-less Localization”
Prof. Davide Dardari, University of Bologna, Italy

“Joint Design of Communication and Sensing (Tentative)”
Harish Viswanathan, Nokia Bell Labs, US

WS7 – Workshop on eXtended Reality (XR) for 5G and Beyond (5G-XR Pro)

Keynotes

“On the Challenges of Delivering Next-Generation XR Applications in the Internet”
Dr. Gwendal Simon, Huawei, France

“Networking for Holographic Teleportation Applications”
Prof. Ning Wang, University of Surrey, UK

“Optimal Wireless Streaming for 360 VR Video”
Prof. Ying Cui, Shanghai Jiao Tong University, China

WS8 – Reconfigurable Intelligent Surfaces for B5G/6G

Keynotes

“Rebuilding the theoretical foundations of Communications and Computing”
Prof. Mérouane Debbah, CentraleSupélec, France

“Reconfigurable Intelligent Surfaces for Wideband Communications: Challenges and Possible Solutions”
Prof. Emil Björnson, Linköping University, Sweden

“Network Operator requirements and use-cases for Reconfigurable Intelligent Surfaces”
Fraser Burton, British Telecommunications plc, United Kingdom

---

WS9 – Native-AI Empowered Wireless Networks

Keynotes

“Deep Learning for Physical Layer Communications: An Attempt towards 6G”
Feifei Gao, Associate Professor, IEEE Fellow, Department of Automation, Tsinghua University, China.

“How can a classic communication algorithm help deep learning – integrate message-passing-algorithm into a deep neural network”
Mr. Yiqun GE, Huawei Technology Canada

“Semantic Communications: Beyond Transmitting Bits”
Dr. Zhijin Qin, Queen Mary University of London, UK

WS10 – Workshop on Optical Wireless Technology for Enhanced Connectivity in 6G

Keynotes

“On the Potential of Airborne Base Stations with Laser-Powered UAVs”
Prof. Mohamed -Slim Alouini, KAUST, Saudi Arabia

“VLC from the Industry Point of View”
Dr. Geoff Archenhold, IST Ltd, UK

Panel Discussion: The Future of VLC Technology

Moderator

Prof. Volker Jungnickel
Fraunhofer HHI, Berlin, Germany

Panel Members

Prof. George K. Karagiannidis
Aristotle University of Thessaloniki, Greece

Dr. Nikola Serafimovski
Light Communications Alliance, PureLiFi, Edinburgh, UK

Prof. Marcos Katz
University of Oulu, Finland

Dr. Usman Raza
Toshiba Research Europe, Italy

Technical Presentations

PIMRC is proud to announce that more than 250 high quality technical papers will be presented by authors from all across the world. The papers will be presented in five technical tracks, one special session and ten workshops.

Track 1: Fundamental Theory and Physical Layer

Title	Authors with affiliation and country
A DNN-Based OTFS Transceiver With Delay-Doppler Channel Training and IQI Compensation	Ashwitha Naikoti (Indian Institute of Science, Bangalore, India); A. Chockalingam (Indian Institute of Science, India)
A General Conditional BER Expression of Rectangular QAM in the Presence of Phase Noise	Thanh Pham (McMaster University, Canada); Thang Nguyen and Anh T. Pham (The University of Aizu, Japan)
A Low-Complexity High-Rate Spatial Multiplexing Aided Generalized Spatial Modulation Scheme	Yen-Ming Chen, Kuo-Chun Lin, Yao-Hsien Peng, Aswin Balaji and Chih-Peng Li (National Sun Yat-sen University, Taiwan)
Aerial Reconfigurable Intelligent Surface-Aided Wireless Communication Systems	Tri Nhu Do (Ecole de Technologie Superieure (ETS), Universite of Quebec, Canada); Georges Kaddoum (ETS Engineering School, University of Québec, Canada); Thanh Luan Nguyen (Industrial University of HCMC, Vietnam); Daniel Benevides da Costa (National Yunlin University of Science and Technology (YunTech), Taiwan); Zygmunt J. Haas (University of Texas at Dallas, USA)
Asymmetrically Clipped-FSK Modulation for Energy Efficient Visible Light Communications	Muhammad Jehangir Khan (Université Grenoble Alpes, CNRS, Grenoble INP, GIPSA-Lab, France); Ali Waqar Azim (University of Engineering and Technology, Taxila, Pakistan); Yannis Le Guennec (University Grenoble Alpes, CNRS, Grenoble INP, GIPSA-Lab, France); Ghislaine Maury (Université Grenoble Alpes, CNRS, Grenoble INP, IMEP-LAHC, France); Laurent Ros (GIPSA-lab & INPG & CNRS organisation, France)
Backscatter Communication System With Dumb Diffusing Surface	Jean-Marc Kelif (Orange Labs, France); Dinh-Thuy Phan-Huy (Orange-France Telecom, France)
Cell-Free Massive MIMO in LoS	Hong Yang (Bell Labs, USA)
Channel Prediction and PMI/RI Selection in MIMO-OFDM Systems Based on Deep Learning	Zhen Yuan, Kai Niu and Chao Dong (Beijing University of Posts and Telecommunications, China)

Coded Caching With Shared Caches From Generalized Placement Delivery Arrays	Elizabath Peter and B. Sundar Rajan (Indian Institute of Science, India)
Coded Faster-Than-Nyquist Signaling for Short Packet Communications	Emre Cerci, Adem Cicek and Enver Cavus (Ankara Yildirim Beyazit University, Turkey); Ebrahim Bedeer (University of Saskatchewan, Canada); Halim Yanikomeroglu (Carleton University, Canada)
Collaborative Physical Layer Authentication in Internet of Things Based on Federated Learning	Shiji Wang, Na Li, Shida Xia and Xiaofeng Tao (Beijing University of Posts and Telecommunications, China); Hua Lu (Guangdong Communication & Network Institute, China)
Compression of Clipped OFDM IQ Samples for Cloud Radio Access Network	Aya Shehata, Philippe Mary and Matthieu Crussière (Univ Rennes, INSA Rennes, CNRS, IETR, France)
Dark Blind Interference Alignment for Downlink of Future Railway Communication Systems	Karine Amis (IMT Atlantique, France); Thomas Galezowski (Société du Grand Paris, France); Xavier Lagrange (IMT Atlantique & IRISA, Université Bretagne Loire, France)
Deep Learning Based Joint Beam Selection and Precoding Design for mmWave Systems With Lens Arrays	Qiyu Hu, Yanzhen Liu, Yunlong Cai and Guanding Yu (Zhejiang University, China)
Deep Learning-Based Active User Detection for Grant-Free SCMA Systems	Sivalingam Thushan, Samad Ali, Nurul Huda Mahmood, Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)
Deep Learning-Based Estimator for Fast HARQ Feedback in URLLC	Saleh A Almarshed (University of Surrey & KACST, United Kingdom (Great Britain)); Dionysia Triantafyllopoulou and Klaus Moessner (University of Surrey, United Kingdom (Great Britain))
Deep Learning-Based Signal Detection for Uplink in LoRa-Like Networks	Angesom Ataklity Tesfay (University of Lille & IEMN/IRCICA, France); Eric P. Simon (IEMN CNRS UMR8520, France); Sofiane Kharbech (University of Lille, France); Laurent Clavier (Institut Mines-Telecom, Telecom Lille & IEMN / IRCICA, France)
Deep Reinforcement Learning-Based Beam Training for Spatially Consistent Millimeter Wave Channels	Narengerile Narengerile, John Thompson and Paul Patras (University of Edinburgh, United Kingdom (Great Britain)); Tharmalingam Ratnarajah (The University of Edinburgh, United Kingdom (Great Britain))
Design of Codebook for Non-Binary Polar Coded SCMA	ChangHao Han, Hui Zhao and Jiang Xiangpin (Beijing University of Posts and Telecommunications, China)
Distance Estimation Error Performance of Visible Light Communication Under the Effect of Signal-Dependent Noise	Ahmad Cheema, Malek Alsmadi and Salama Said Ikki (Lakehead University, Canada)
Distributed UAV-Enabled Zero-Forcing Cooperative Jamming Scheme for Safeguarding Future Wireless Networks	Xavier Alejandro Flores Cabezas, Diana Pamela Moya Osorio and Matti Latva-aho (University of Oulu, Finland)
DNN Based Multi-Path Beamforming for FDD Millimeter-Wave Massive MIMO Systems	Ke Xu (Harbin Institute of Technology, Shenzhen & Peng Cheng Laboratory, China); Fu-Chun Zheng (Harbin Institute of Technology, Shenzhen, China & University of York, United Kingdom (Great Britain)); Pan Cao (University of Hertfordshire, United Kingdom (Great Britain)); Hongguang Xu (Shenzhen Graduate School, Harbin Institute of Technology, China); Xu Zhu (University of Liverpool, United Kingdom (Great Britain) & Harbin Institute of Technology, Shenzhen, China)

Emprical Evaluation of OFDM Waveforms for VLC in the Presence of LED Nonlinearities	Mikko Laakso and Alexis Alfredo Dowhuszko (Aalto University, Finland); Risto Wichman (Aalto University School of Electrical Engineering, Finland)
Energy Efficient Precoder Design and Power Allocation for a Low Complexity mmWave System	Kali Krishna Kota (The International Institute of Information Technology, India); P Ubaidulla (International Institute of Information Technology, India)
Energy-Efficient Coverage Enhancement of Indoor THz-MISO Systems: An FD-NOMA Approach	Omar Maraqa (King Fahd University of Petroleum and Minerals, Saudi Arabia); Aditya Rajasekaran and Hamza Sokun (Ericsson, Canada); Saad Al-Ahmadi (King Fahd University of Petroleum and Minerals, Saudi Arabia); Halim Yanikomeroglu (Carleton University, Canada); Sadiq M. Sait (King Fahd University of Petroleum & Minerals, Saudi Arabia)
Enhanced 5G PUCCH Using Non-Coherent Constellations With Low-Complexity Detection	Yi Qin (Huawei Technologies Sweden AB, Sweden); Renaud-Alexandre Pitaval (Huawei Technologies Sweden, Sweden)
Exploiting Joint-Cache-Channel Coding for Decentralized Coded Caching With Heterogeneous Link Rates and Cache Sizes	Aimin Tang, Yao Liu and Xudong Wang (Shanghai Jiao Tong University, China)
Exploiting Spatial Correlation for Pilot Reuse in Single-Cell mMTC	Lucas Ribeiro and Markus Leinonen (University of Oulu, Finland); Hanan Al-Tous and Olav Tirkkonen (Aalto University, Finland); Markku Juntti (University of Oulu, Finland)
Frequency Reuse With Higher-Order Sectorisation and Directional Terminals for Improved Capacity in Realistic Terrain	Zubia Ishrat, Philippa A. Martin and Graeme K Woodward (University of Canterbury, New Zealand); Jim Cavers (Simon Fraser University, Canada)
GFDM Pre-Coding and Decoding in a Gabor Setting	Francesco Linsalata and Maurizio Magarini (Politecnico di Milano, Italy)
Hybrid Precoding Design Based on Dual-Layer Deep-Unfolding Neural Network	Guangyi Zhang, Xiao Fu, Qiyu Hu, Yunlong Cai and Guanding Yu (Zhejiang University, China)
HybridDeepRx: Deep Learning Receiver for High-EVM Signals	Jaakko Pihlajasalo (Tampere University, Finland); Dani Korpi, Mikko Honkala and Janne Huttunen (Nokia Bell Labs, Finland); Taneli Riihonen, Jukka Talvitie and Alberto Brihuega Garcia (Tampere University, Finland); Mikko Uusitalo (Nokia Bell Labs, Finland); Mikko Valkama (Tampere University, Finland)
Imperfect Jamming Cancellation on NOMA Networks With Randomly Located Eavesdroppers	Gustavo M. Silva (Federal University of São Carlos, Brazil); Diana Pamela Moya Osorio and Matti Latva-aho (University of Oulu, Finland)
Intelligent Reflecting Surface Aided Communication Systems: Performance Analysis	Jiarui Li and Yi Hong (Monash University, Australia)
Intelligent Reflecting Surface-Assisted Wireless Key Generation for Low-Entropy Environments	Paul Staat (Max Planck Institute for Security and Privacy & Ruhr-Universität Bochum, Germany); Harald Elders-Boll (TH Köln - University of Applied Sciences, Germany); Markus Heinrichs and Rainer Kronberger (TH Cologne University of Applied Sciences, Germany); Christian Zenger (Ruhr-Universitaet Bochum, Horst Görtz Institute for IT-Security (HGI), Germany); Christof Paar (Max Planck Institute for Security and Privacy, Germany)

Intelligent Reflecting Surfaces Versus Full-Duplex Relaying: Performance Comparison for Non-Ideal Transmitter Case	Mohd Hamza Naim Shaikh (IIIT Delhi, India); Vivek A Bohara (Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi), India); Anand Srivastava (Indraprastha Institute of Information Technology Delhi, India); Gourab Ghatak (IIIT Delhi, India)
Interference Mitigation Against FMCW Signals Applicable Into IEEE 802.11ad for Intra-Vehicle Communications	Kenichi Takizawa, Ryotaro Suga, Huan-Bang Li and Fumihide Kojima (National Institute of Information and Communications Technology, Japan); Kotaro Ikeda (YAZAKI Corporation, Japan); Kentaro Kobayashi and Yuya Kaneko (Yazaki Corporation, Japan); Tadahide Kunitachi (YAZAKI Corporation, Japan)
Investigating Communications Energy Efficiency Tradeoff Between UAV Users and Small-Cell Users	Ramin Hashemi (University of Oulu, Finland); Mohammad Robat Mili (Ghent University, Belgium); Samad Ali (University of Oulu, Finland); Hamzeh Beyranvand (Amirkabir University of Technology, Iran); Matti Latva-aho (University of Oulu, Finland)
Jamming Detection With Subcarrier Blanking for 5G and Beyond in Industry 4.0 Scenarios	Leonardo Chiarello (University of Padova, Italy); Paolo Baracca (Nokia Bell Labs, Germany); Karthik Upadhya (Nokia Bell Labs, Finland); Saeed Reza Khosravirad (Nokia - Bell Labs, USA); Thorsten Wild (Nokia Bell Labs, Germany)
Large System Analysis of the Maximum Ratio Transmission Precoding Under Imperfect Channel State Information With Hardware Impairments	Yasser Naguib (Cairo univ, Egypt)
Latency-Aware Joint Transmit Beamforming and Receive Power Splitting for SWIPT Systems	Dileep Kumar, Onel L. A. López and Antti Tölli (University of Oulu, Finland); Satya Krishna Joshi (Nokia, Finland)
Low Overhead Codebook Design for mmWave Roadside Units Placed at Smart Intersections	Bryse Flowers (University of California, San Diego, USA); Xinyu Zhang (University of California, San Diego); Sujit Dey (University of California, San Diego, USA)
Model-Based Adaptive Modulation and Coding With Latent Thompson Sampling	Vidit Saxena (KTH Royal Institute of Technology & Ericsson Research, Sweden); Hugo M Tullberg (Ericsson, Sweden); Joakim Jaldén (KTH Royal Institute of Technology, Sweden)
Modulation and Coding Schemes for Variable-Rate Parallel Sequence Spread Spectrum	Lukasz Lopacinski (IHP, Germany); Alireza Hasani (Brandenburg University of Technology Cottbus-Senftenberg & IHP GmbH - Innovations for High Performance Microelectronics, Germany); Nebojsa Maletic and Jesús Gutiérrez (IHP - Leibniz-Institut für Innovative Mikroelektronik, Germany); Rolf Kraemer (IHP Microelectronics, Frankfurt/Oder & BTU-Cottbus, Germany); Eckhard Grass (IHP & Humboldt-University Berlin, Germany)
Multilevel Polar Coded Space-Shift Keying	Muhammad Zaeem Hasan, Nemanja Stefan Perovic and Mark F. Flanagan (University College Dublin, Ireland)
Multi-Popularity Multi-Threshold Grouped Caching for Device-To-Device Communication	Ling Huang, Kuan Wu and Ming Jiang (Sun Yat-sen University, China)
On Enlarged 5G PRACH Preamble Set Using Alltop Cubic-Phase Sequences	Renaud-Alexandre Pitaval (Huawei Technologies Sweden, Sweden)
On Secure Downlink NOMA Systems With Aerial Eavesdroppers	Hongjiang Lei and Zhu Chen (Chongqing University of Posts and Telecommunications, China); Ki-Hong Park (King Abdullah University of Science and Technology (KAUST), Saudi Arabia); Weijia Lei (Chongqing University of Posts and Telecommunications, China); Imran Shafique Ansari (University of Glasgow, United Kingdom (Great Britain))

On the Mean Local Delay of Clustered Fog Radio Access Networks	Yanan Zheng, Haonan Hu, Zhiqian Chen and Bo Yin (Chongqing University of Posts and Telecommunications, China); Jie Zhang (University of Sheffield, Dept. of Electronic and Electrical Engineering, United Kingdom (Great Britain))
On the Performance of the IRS-Aided Communication Systems With Analog Mismatches	Liyuan Wen (Shanghaitech University & Shanghai Advanced Research Institute, Chinese Academy of Sciences, China); Kangqi Han (University of Chinese Academy of Sciences (UCAS), Beijing, China); Kai Kang and Hua Qian (Shanghai Advanced Research Institute, Chinese Academy of Sciences, China)
On the Secrecy-Reliability Performance Trade-Off for NOMA-Enabled 5G mmWave Networks	Sourabh Solanki (University of Luxembourg, Luxembourg); Devendra Singh Gurjar (National Institute of Technology, Silchar, India); Pankaj Kumar Sharma (National Institute of Technology Rourkela, India); Shree Krishna Sharma and Symeon Chatzinotas (University of Luxembourg, Luxembourg)
One-Bit Quantized Channel Prediction With Neural Networks	Nurettin Turan, Michael Koller and Wolfgang Utschick (Technische Universität München, Germany)
Optimal SNR Analysis for Single-User RIS Systems	Ikram Singh, Peter J Smith and Pawel A. Dmochowski (Victoria University of Wellington, New Zealand)
Orthogonal Multipoint Multicast Caching in OFDM Cellular Networks With ICI and IBI	Mohsen Amidzadeh and Hanan Al-Tous (Aalto University, Finland); Giuseppe Caire (Technische Universität Berlin, Germany); Olav Tirkkonen (Aalto University, Finland)
Performance Analysis of Hybrid Satellite-Terrestrial Relay Networks	Rong Chai and Fei Zou (Chongqing University of Posts and Telecommunications, China); Qianbin Chen (Chongqing University of Posts and Telecommunication, China)
Performance Analysis of RIS-SSK in the Presence of Hardware Impairments	Asma Bouhlel (Laboratory of Electronic and Microelectronic, Tunisia); Malek Alsmadi, Emad Saleh and Salama Said Ikki (Lakehead University, Canada); Sakly Anis (ENIM, Tunisia)
Performance of a New Framework for Coordinated Direct AF Relay-Aided Downlink NOMA	Anand Jee (Indian Institute of Technology, Delhi, India); Kamal Agrawal (Indian Institute of Technology Delhi, India); Shankar Prakriya (Indian Institute of Technology, Delhi, India)
Performance of Full-Duplex Cooperative NOMA Network With Nonlinear Energy Harvesting	Ujjawal Makhanpuri and Kamal Agrawal (Indian Institute of Technology Delhi, India); Anand Jee and Shankar Prakriya (Indian Institute of Technology, Delhi, India)
Quantized vs. Analog Channel Feedback for FDD Massive MIMO Systems With Multiple-Antenna Users	Mahmoud AlaaElDin (The University of Manchester, United Kingdom (Great Britain)); Emad Alsusa (Manchester University, United Kingdom (Great Britain)); Karim G. Seddik (American University in Cairo, Egypt)
Rate-Splitting Random Access Mechanism for Massive Machine Type Communications in 5G Cellular Internet-Of-Things	Yeduri Sreenivasa Reddy (National Institute of Technology Goa, India); Garima Chopra (Indian Institute of Technology Hyderabad, India); Ankit Dubey (Indian Institute of Technology Jammu, India); Abhinav Kumar (Indian Institute of Technology Hyderabad, India); Trilochan Panigrahi (National Institute of Technology, Goa, India); Linga Reddy Cenkeramaddi (University of Agder, Norway)
Reciprocity Calibration of Distributed Massive MIMO Access Points for Coherent Operation	Joao Vieira (Ericsson, Sweden); Erik G. Larsson (Linköping University, Sweden)
Relay Selection and Throughput Maximization for Full Duplex Wireless Powered Cooperative Communication Networks	Syed Adil Abbas Kazmi, Muhammad Shahid Iqbal and Sinem Coleri (Koc University, Turkey)

Resource Allocation for Energy Harvesting D2D Communications Underlaying NOMA Cellular Networks	Vatsala Vatsala and Abraham O Fapojuwo (University of Calgary, Canada)
Search for Good Irregular Low-Density Parity-Check Codes via Graph Spectrum	Dawei Yin, Xiaojing Zhang and Xichao Shu (Shandong University, China); Guiying Yan (Chinese Academy of Sciences, China); Guanghui Wang (Shandong University, China)
Secretive Coded Caching From PDAs	Shreya Meel and B. Sundar Rajan (Indian Institute of Science, India)
Secure Transmission Design Based on the Geographical Location of Eavesdropper	Tao Li (Xidian University & State Key Laboratory of Integrated Services Networks, China); Yongzhao Li (Xidian University, China); Octavia A. Dobre (Memorial University, Canada)
SimMBM Channel Simulator for Media-Based Modulation Systems	Zehra Yigit (Istanbul Technical University, Turkey); Ertugrul Basar (Koc University, Turkey); İbrahim Altunbaş (Istanbul Technical University, Turkey)
Space Time Block Coding and Structured Multiplexing for Quadrature Spatial Modulation	K s Shafrin, Kunnathully Sadanandan Sanila and Neelakandan R (IIT Goa, India)
Sparse Activity Detection in Intelligent Reflecting Surface Assisted Wireless Networks	Mangqing Guo and M. Cenk Gursoy (Syracuse University, USA)
Stochastic Geometry Based Interference Analysis of Multiuser mmWave Networks With RIS	Joonas Kokkoniemi and Markku Juntti (University of Oulu, Finland)
Transfer Learning Based Detection for Intelligent Reflecting Surface Aided Communications	Saud Khan (The Australian National University & CSIRO, Australia); Salman Durrani and Xiangyun Zhou (The Australian National University, Australia)
Untrained DNN for Channel Estimation of RIS-Assisted Multi-User OFDM System With Hardware Impairments	Nipuni Ginige (University of Oulu, Finland); Kapuruhamy Badalge Shashika Manosha (Nokia Technologies Oy, Finland); Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)

Track 2: RF Technologies, Antennas and Propagation

Title	Authors with affiliation and country
28 GHz Indoor and Outdoor Propagation Measurements and Analysis at a Regional Airport	Kairui Du, Özgür Özdemir, Fatih Erden and Ismail Güvenç (North Carolina State University, USA)
A 3D Non-Stationary Geometry-Based Stochastic Model for Industrial Automation Wireless Communication Systems	Yuxiao Li (Southest University, China); Cheng-Xiang Wang (Southeast University & Heriot-Watt University, China); Yang Liu (Jiangnan University, China)
A Study on the Prediction Method for Spatiotemporal Channel Parameters by Convolutional Neural Network Using a Spherical Image	Satoshi Ito and Takahiro Hayashi (KDDI Research, Inc., Japan)
Analysing the 3GPP Spatial Consistency Procedure Through Channel Measurements	William HZ Sloane (University of Canterbury, Nz, New Zealand); Mansoor Shafi (Spark New Zealand Ltd & Victoria University, Wellington, New Zealand); Camillo Gentile (NIST, USA); Graeme K Woodward and Philippa A. Martin (University of Canterbury, New Zealand); Pan Tang and Jianhua Zhang (Beijing University of Posts and Telecommunications, China); David Lai (NIST, USA)

Angular Power Distribution in 60 GHz Wireless Uplink for Vehicle-To-Infrastructure Scenarios	Jan M. Kelner, Cezary Ziółkowski and Jarosław Wojtuń (Military University of Technology, Poland); Aniruddha Chandra (National Institute of Technology, Durgapur, WB, India); Ales Prokes (Brno University of Technology & Sensor, Information and Communication Systems Research Centre, Czech Republic); Tomas Mikulasek and Jiri Blumenstein (Brno University of Technology, Czech Republic)
Assessment of User Mobility's Influence on System Loss in Several Body-To-Body Scenarios	Filipe Cardoso (ESTSetubal/Polytechnic Institute of Setubal and INESC-ID, Portugal); Manuel Ferreira (ESTSetúbal/Polytechnic Institute of Setúbal, Portugal); Sławomir J. Ambroziak (Gdańsk University of Technology, Poland); Kenan Turbic (RWTH Aachen University, Germany); Luis M. Correia (IST/INESC-ID - University of Lisbon & INESC, Portugal)
CDI Maps: Dynamic Estimation of the Radio Environment for Predictive Resource Allocation	Daniel Fabian Külzer (BMW Group Research and Technology, Germany); Slawomir Stanczak (Technische Universität Berlin & Fraunhofer Heinrich Hertz Institute, Germany); Mladen Botsov (BMW Group, Germany)
Dual Polarization Beamforming Coverage Demonstrated With 5G NR SSB	Arne Simonsson and Sven O. Petersson (Ericsson Research, Sweden); Gunnar Widell (Ericsson Networks, Sweden)
Feed Forward Phase Noise Cancellation in Cellular RF-Receivers	Birgit Pühringer and Andreas Springer (Johannes Kepler University Linz, Austria)
Impact of Channel Correlation and HWIs on LIS-Aided Communication Systems	Emad Saleh and Malek Alsmadi (Lakehead University, Canada); Asma Bouhlel (Laboratory of Electronic and Microelectronic, Tunisia); Ayşe Elif Canbilen (Konya Technical University, Turkey); Najah A. Abu Ali (UAEU, United Arab Emirates); Salama Said Ikki (Lakehead University, Canada)
Lightweight UAV-Based Measurement System for Air-To-Ground Channels at 28 GHz	Vasilii Semkin (VTT Technical Research Centre of Finland, Finland); Seongjoon Kang (New York University Tandon School of Engineering, USA); Jaakko Haarla (Aalto University School of Electrical Engineering, Finland); William Xia (New York University, USA); Ismo Huhtinen (VTT, Finland); Giovanni Geraci (Universitat Pompeu Fabra, Spain); Angel Lozano (Universitat Pompeu Fabra (UPF), Spain); Giuseppe Loianno (NYU, USA); Marco Mezzavilla (NYU Tandon School of Engineering, USA); Sundeep Rangan (New York University, USA)
Measurements and Modeling of the Mobile Wireless Channel at 2.4 GHz in Urban and Suburban Areas	Leonardo Henrique Gonsioroski (Universidade Estadual do Maranhão, Brazil); Luiz da Silva Mello (CETUC-PUC-Rio & Inmetro, Brazil); Amanda Beatriz Cunha dos Santos (Universidade Estadual do Maranhão, Brazil)
Nearly Passive Reconfigurable Intelligent Surface With Constant Phase-Shifts	Zeeshan Sattar (Interdigital Communications, Inc., Canada & École De Technologie Supérieure, Canada); Afshin Haghighat (InterDigital Communications, Canada)
Nonlinear Power Amplifier Effects on a Full Duplex Spatial Modulation System	Yanni Zhou (INSA Lyon, France); Florin Hutu (Univ Lyon, INSA Lyon, Inria, CITI, France); Guillaume Villemaud (Université de Lyon, INRIA, INSA-Lyon, CITI, France); Taneli Riihonen (Tampere University, Finland)
On the Building Map for Radio Propagation Prediction Using Machine Learning	Kazuya Inoue and Koichi Ichige (Yokohama National University, Japan); Tatsuya Nagao and Takahiro Hayashi (KDDI Research, Inc., Japan)

Path Loss in Reconfigurable Intelligent Surface-Enabled Channels	Steven Ellingson (Virginia Tech, USA)
Performance Analysis of M-DPSK Modulation Over Fast-Hoyt Fading Channels Under Non-Isotropic Scattering Conditions	Nazih Hajri (Ecole Supérieure de Communications de Tunis, Sup'Com, Tunisia); Matthias Pätzold and Rym Hicheri (University of Agder, Norway); Neji Youssef (Ecole Supérieure des Communications de Tunis Sup'COM, Tunisia)
Performance Evaluation of GAM in Off-Body Path Loss Modelling for Body Area Networks	Michał R. Laskowski and Sławomir J. Ambroziak (Gdańsk University of Technology, Poland); Luis M. Correia (IST/INESC-ID - University of Lisbon & INESC, Portugal); Krzysztof Swider (Formerly with Gdańsk University of Technnology)
Power Delay Profile Analysis of Industrial Channels at 2.1, 2.6, 3.8 and 5.1 GHz	Eike Lyczkowski (SEW Eurodrive, Germany); Christian Sauer (SEW EURODRIVE GmbH&Co KG, Germany); Felix Reichert (Karlsruhe University of Applied Sciences, Germany); Hannes Frey (Universität Koblenz-Landau, Germany)
Reconfigurable Intelligent Surface Aided Secure UAV Communications	Wen Wang (Beijing University of Posts and Telecommunications, China); Hui Tian (Beijng university of posts and telecommunications, China); Wanli Ni and Meihui Hua (Beijng University of Posts and Telecommunications, China)
Scalable, Resource and Locality-Aware Selection of Active Scatterers in Geometry-Based Stochastic Channel Models	Benjamin Rainer (AIT Austrian Institute of Technology GmbH, Austria); Markus Hofer and Stefan Zelenbaba (AIT Austrian Institute of Technology, Austria); David Löschenbrand and Thomas Zemen (AIT Austrian Institute of Technology GmbH, Austria); Xiaochun Ye (Institute of Computing Technology, Chinese Academy of Sciences, China); Peter Priller (AVL List GmbH, Austria)
Wireless Vehicular Multiband Measurements in Centimeterwave and Millimeterwave Bands	Markus Hofer (AIT Austrian Institute of Technology, Austria); David Löschenbrand (AIT Austrian Institute of Technology GmbH, Austria); Jiri Blumenstein (Brno University of Technology, Czech Republic); Herbert Groll (TU Wien, Austria); Stefan Zelenbaba (AIT Austrian Institute of Technology, Austria); Benjamin Rainer (AIT Austrian Institute of Technology GmbH, Austria); Laura Bernadó (Austrian Institute of Technology, Austria); Josef Vychodil (Brno University of Technology & BUT Brno, Czech Republic); Tomas Mikulasek (Brno University of Technology, Czech Republic); Erich Zöchmann (PIDSO, Austria); Seun Sangodoyin (Georgia Institute of Technology, USA); Hussein Hammoud (University of Southern California, USA); Bernhard Schrenk (AIT Austrian Institute of Technology, Austria); Robert Langwieser and Stefan Pratschner (TU Wien, Austria); Ales Prokes (Brno University of Technology & Sensor, Information and Communication Systems Research Centre, Czech Republic); Andreas Molisch (University of Southern California, USA); Christoph F Mecklenbräuker (TU Wien, Austria); Thomas Zemen (AIT Austrian Institute of Technology GmbH, Austria)

Track 3: MAC and Cross-Layer Design

Title	Authors with affiliation and country
5G QoS Flow Migration Over URLLC Relays	Rafael Kaliski (National Taiwan University of Science and Technology, Taiwan)

AI-Aided Channel Quality Assessment for Bluetooth Adaptive Frequency Hopping	Ziyang Guo (Huawei Technologies Co., Ltd., China); Peng Liu (Huawei, China); Chunqing Zhang, Jiajun Luo and Zhongying Long (Huawei Technologies Co. Ltd., China); Xun Yang (Huawei Technologies, China)
Analytical Evaluation of Bandwidth Part Adaptation in 5G New Radio	Venkatesh Ramaswamy, Jeffery Correia and Darcy Swain Walsh (The MITRE Corporation, USA)
Discrete-Time Analysis of Wireless Blockchain Networks	Francesc Wilhelmi (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC) & Universitat Pompeu Fabra, Spain); Lorenza Giupponi (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain)
Energy-Efficient Autonomous Resource Selection for Power-Saving Users in NR V2X	Dariush Mohammad Soleymani (Fraunhofer IIS & Technical University of Ilmenau, Germany); Lavanya Ravichandran (Fraunhofer IIS, Germany); Mohammad Reza Gholami (Ericsson, Sweden); Giovanni Del Galdo (Fraunhofer Institute for Integrated Circuits IIS & Technische Universität Ilmenau, Germany); Mehdi Harounabadi (Fraunhofer Institute for Integrated Circuits IIS & Technische Hochschule Ingolstadt, Germany)
Learning to Dynamically Allocate Radio Resources in Mobile 6G In-X Subnetworks	Ramoni O. Adeogun (AAU, Denmark); Gilberto Berardinelli and Preben Mogensen (Aalborg University, Denmark)
Outage Prediction for URLLC in Rician Fading	Andreas Traßl (Technische Universität Dresden & Centre for Tactile Internet with Human-in-the-Loop, Germany); Tom Hößler (TU Dresden & Barkhausen Institut, Germany); Lucas Scheuvens (TU Dresden, Germany); Nick Schwarzenberg and Gerhard P. Fettweis (Technische Universität Dresden, Germany)
Q-Learning Based Radio Resource Adaptation for Improved Energy Performance of 5G Base Stations	Saivenkata Krishna Gowtam Peesapati (KTH Royal Institute of Technology & Huawei Technologies Sweden AB, Sweden); Magnus Olsson (Huawei Technologies Sweden AB, Sweden); Meysam Masoudi (KTH Royal Institute of Technology, Sweden); Sören Andersson (Huawei Technologies Sweden AB, Sweden); Cicek Cavdar (KTH Royal Institute of Technology, Sweden)
QoS-Aware Scheduling in New Radio Using Deep Reinforcement Learning	Jakob Stigenberg (Sweden); Vidit Saxena (KTH Royal Institute of Technology & Ericsson Research, Sweden); Soma Tayamon (Ericsson AB, Sweden); Euhanna Ghadimi (Ericsson, Sweden)
QoS-Constrained Federated Learning Empowered by Intelligent Reflecting Surface	Jingheng Zheng (Beijing University of Posts and Telecommunications, China); Wanli Ni (Beijng University of Posts and Telecommunications, China); Hui Tian (Beijng university of posts and telecommunications, China); Yingying Wang (CMCC, China)
Resource Re-Selection With Adaptive Modulation and Collision Detection in LTE V2X Mode 4	Saif Sabeeh and Krzysztof Wesołowski (Poznan University of Technology, Poland)
Security Analysis of Sharding in the Blockchain System	Dachao Yu, Hao Xu and Lei Zhang (University of Glasgow, United Kingdom (Great Britain)); Bin Cao (Beijing University of Posts & Telecommunications, China); Muhammad Ali Imran (University of Glasgow, United Kingdom (Great Britain))
TCP-Aware OFDMA Transmission Based on Traffic Intensity in Downlink and Uplink Directions in IEEE 802.11ax Wireless LANs	Takeru Uemura, Yosuke Tanigawa and Hideki Tode (Osaka Prefecture University, Japan)

Towards FDD Massive MIMO: Downlink Channel Covariance Matrix Estimation Using Conditional Generative Adversarial Networks	Bitan Banerjee, Robert C. Elliott and Witold A. Krzymień (University of Alberta, Canada); Hamid Farmanbar (Huawei Technologies Canada Co., Ltd., Canada)
Traffic Prediction for Reconfigurable Access Scheme in Correlated Traffic MTC Networks	Atoosa Dalili Shoaei (Mcgill University, Canada); Duc Tuong Nguyen and Tho Le-Ngoc (McGill University, Canada)
Transferable and Distributed User Association Policies for 5G and Beyond Networks	Mohamed Sana (CEA LETI Grenoble & University of Grenoble Alpes, France); Nicola di Pietro (Athonet, Italy); Emilio Calvanese Strinati (CEA-LETI, France)

Track 4: Mobile and Wireless Networks

Title	Authors with affiliation and country
5G Network Performance Evaluation and Deployment Recommendation Under Factory Environment	Kaiyue Zeng, Wei Deng, Rui Wang, Long Zhang and Jinxia Cheng (China Mobile Research Institute, China); Tao Chen (VTT Technical Research Centre of Finland LTD, Finland); Na Yi (University of Surrey, United Kingdom (Great Britain))
A Cooperative Multi-RSU Caching Scheme in Vehicular Networks With Fountain Codes	Yanyang Li and Qinghe Du (Xi'an Jiaotong University, China)
A General DRL-Based Optimization Framework of User Association and Power Control for HetNet	Zimu Li and Xiangming Wen (Beijing University of Posts and Telecommunications, China); Zhaoming Lu (BUPT, China); Wenpeng Jing (Beijing University of Posts and Telecommunications, China)
A Multi-Cell Open-Loop Communication Approach to Ultra-Reliable Mobile Networks	Chun-Hung Liu (Mississippi State University, USA); Yu Luo (Missisipi State University, USA); Lina Pu (University of Alabama, USA)
A Novel Scheme to Mitigate CRS Interference in LTE and NR Non Co-Located Scenario	Sen Xu (China Telecom Research Institute, China)
A Novel Time-Of-Arrival Estimation Approach With Channel Frequency Response Reconstruction in OFDM Systems	Ziming He (Samsung Cambridge Solution Centre Ltd, United Kingdom (Great Britain)); Fei Tong (Samsung Cambridge Solution Centre, United Kingdom (Great Britain))
A Privacy-Preserving Pedestrian Dead Reckoning Framework Based on Differential Privacy	Tianyi Feng, Zhixiang Zhang and Wai-Choong Wong (National University of Singapore, Singapore); Sumei Sun (Institute for Infocomm Research, Singapore); Biplab Sikdar (National University of Singapore, Singapore)
A Safe Reinforcement Learning Architecture for Antenna Tilt Optimisation	Erik Aumayr and Saman Feghhi (Ericsson, Ireland); Filippo Vannella (KTH Royal Institute of Technology & Ericsson Research, Sweden); Ezeddin Al Hakim (Ericsson Research, Sweden); Grigorios Iakovidis (KTH Royal Institute of Technology, Sweden)
A Self-Configurable Grouping Method for Integrated Wi-SUN FAN and TSCH-Based Networks	Xinyu Ni (Toshiba Europe Ltd., United Kingdom (Great Britain)); Michael Baddeley (Technology Innovation Institute, United Arab Emirates); Nan Jiang (Toshiba Research Europe Ltd. & Telecommunications Research Lab, United Kingdom (Great Britain)); Yichao Jin (Toshiba Research Europe Ltd, United Kingdom (Great Britain))
Adaptive Creation and Migration of Time-Series City Profiles Based on Edge Computing	Fang-Jing Wu and Yudong Zhao (TU Dortmund University, Germany); Ling-Jyh Chen (Academia Sinica, Taiwan)

Adaptive Data Replication for URLLC in Cooperative 4G/5G Networks	Faten Bou Dihn and Amal Abdel Razzac (Lebanese University, Lebanon); Ammar El Falou (ESIEE Paris, France); Salah Eddine Elayoubi (CentraleSupélec, France)
Age-Optimal Power Allocation in Industrial IoT: A Risk-Sensitive Federated Learning Approach	Yung-Lin Hsu (National Taiwan University, Taiwan); Chen-Feng Liu (Centre for Wireless Communications, University of Oulu, Finland); Sumudu Samarakoon (University of Oulu, Finland); Hung-Yu Wei (National Taiwan University, Taiwan); Mehdi Bennis (Centre of Wireless Communications, University of Oulu, Finland)
Algorithmic and System Approaches for a Stable LiFi-RF HetNet Under Transient Channel Conditions	Hansini Vijayaraghavan and Anna Prado (Technical University of Munich, Germany); Thomas Wiese (Cadami GmbH, Germany); Wolfgang Kellerer (Technische Universität München, Germany)
Analysis of CRLB for AoA Estimation in Massive MIMO Systems	Masoud Arash (Université Catholique de Louvain, Belgium); Hamed Mirghasemi (Université Catholique de Louvain-la-Neuve, Belgium); Ivan Stupia (Université Catholique de Louvain, Belgium); Luc Vandendorpe (Université catholique de Louvain, Belgium)
Bayesian-Based Symbol Detector for Orthogonal Time Frequency Space Modulation Systems	Xinwei Qu (University of Sydney, Australia); Alva Kosasih and Wibowo Hardjawana (The University of Sydney, Australia); Vincent Onasis and Branka Vucetic (University of Sydney, Australia)
Blind Transmitter Localization in Wireless Sensor Networks: A Deep Learning Approach	Ivo Bizon Franco de Almeida (Technische Universität Dresden, Germany); Marwa Chafii (ENSEA, France); Ahmad Nimr and Gerhard P. Fettweis (Technische Universität Dresden, Germany)
Capacity Characterization for Reconfigurable Intelligent Surface Aided MIMO Communication Under Practical Phase Shift Model	Zhenyu Wang (ShanghaiTech University & Shanghai Advanced Research Institute, Chinese Academy of Sciences, China); Ting Zhou and Tianheng Xu (Shanghai Advanced Research Institute, Chinese Academy of Sciences, China); Yapeng Zhao (School of Communication and Information Engineering, Shanghai University, China); Honglin Hu (Shanghai Advanced Research Institute, China)
Cellular Traffic Type Recognition and Prediction	Tuan Anh Nguyen (Telecom-ParisTech, France & Le Quy Don Technical University, Vietnam); Philippe Martins (Telecom ParisTech, France)
Cloud Native Hardware Accelerated 5G Virtualized Radio Access Network	Jean Dion (IRT bcom, France); Julien Lallet (Nokia, France); Laurent Beaulieu (IRT bcom, France); Patrick Savelli (B-com, France); Philippe Bertin (Orange Labs & Bcom, France)
Coexistence of DSRC and C-V2X Communication: Modeling a Competing Scenario	Blanca Ramos Elbal and Markus Rupp (TU Wien, Austria)
Communication-Aware Path Design for Indoor Robots Exploiting Federated Deep Reinforcement Learning	Ruyu Luo (Beijing University Of Posts And Telecommunications, China); Hui Tian (Beijng university of posts and telecommunications, China); Wanli Ni (Beijng University of Posts and Telecommunications, China)
Comparison of Multi-Connectivity Schemes on Different Layers for Reliable Low Latency Communication	Marie-Theres Suer (TU Braunschweig & Robert Bosch GmbH, Germany); Christoph Thein and Hugues Tchouankem (Robert Bosch GmbH, Germany); Lars C Wolf (Technische Universität Braunschweig, Germany)
Constrained K-Means User Clustering and Downlink Beamforming in MIMO-SCMA Systems	Sara Norouzi (McGill University, Canada); Yunlong Cai (Zhejiang University, China); Benoit Champagne (McGill University, Canada)
Cooperative Magneto-Inductive Localization	Henry Schulten, Gregor Dumphart, Antonios Koskinas and Armin Wittneben (ETH Zurich, Switzerland)

Data Collection in UAV-Assisted Wireless Sensor Networks Powered by Harvested Energy	Ilham Benmad (University of Moncton, Canada); Elmahdi Driouch (Université du Québec à Montréal, Canada); Mustapha Kardouchi (University of Moncton, Canada)
Data Traffic Offloading and Rate Control for Vehicles Using Radio Environment, Network Load and Route Planning	Takeo Ohseki (KDDI Research, Inc., Japan); Kosuke Yamazaki (KDDI Research Inc., Japan); Daiki Maemoto, Shigeki Kawai and Tsuneo Nakata (DENSO Corporation, Japan); Akira Itou (KDDI Corporation, Japan)
Deep Learning for Ultra-Wideband Indoor Positioning	Yi-Min Lu and Jang-Ping Sheu (National Tsing Hua University, Taiwan); Yung Ching Kuo (National TsingHua University, Taiwan)
Efficient Non-Line-Of-Sight Identification in Localization Using a Bank of Neural Networks	Abbas Abolfathimomtaz, Mostafa Mohammadkarimi and Masoud Ardakani (University of Alberta, Canada)
Energy-Efficient Federated Learning Framework for Digital Twin-Enabled Industrial Internet of Things	Jiaxiang Zhang (Beijing University of Posts and Telecommunications, China); Yiming Liu (Beijing University of Posts and Telecommunicaitons, China); Xiaoqi Qin (Beijing University of Posts and Telecommunications, China); Xiaodong Xu (Beijing University of Posts and Telecommunications & Wireless Technology Innovation Institute, China)
Energy-Efficient Model Compression and Splitting for Collaborative Inference Over Time-Varying Channels	Mounssif Krouka, Anis Elgabli and Chaouki Ben Issaid (University of Oulu, Finland); Mehdi Bennis (Centre of Wireless Communications, University of Oulu, Finland)
Experimental Evaluation of End-To-End Flow Latency Reduction in Softwarized Cellular Networks Through Dynamic Multi-Access Edge Computing	Pablo Fondo-Ferreiro (Universidade de Vigo, Spain); David Candal-Ventureira and Felipe Gil-Castiñeira (University of Vigo, Spain); Francisco J. González-Castaño (Universidad de Vigo, Spain); Diarmuid Collins (Trinity College Dublin, Ireland)
Fingerprint With Particle Filtering for Positioning Based on MDT	Peter Qi (Ericsson AB, China); Yuxin Zhao (Ericsson AB, Sweden); Fredrik Gunnarsson (Ericsson Research, Sweden); Kangning Zhao (Ericsson AB, Sweden)
Full-Duplex Double Relay Secure Communication	Sin-Yuan Huang (National Tsing Hua University, Taiwan); Chih-Yu Wang (Academia Sinica, Taiwan); Szu-Liang Wang (Chinese Culture University, Taiwan); Wei-Chong Chen (Academia Sinica & Research Center for Information Technology Innovation, Taiwan); Wei-Ho Chung (National Tsing Hua University & Academia Sinica, Taiwan)
High Precision Positioning Using Multi-Cell Massive MIMO System for 5G and Beyond	Vikram Singh and Abhijeet Masal (Center of Excellence in Wireless Technology (CEWiT), IIT Madras, India); Klutto Milleth (Centre of Excellence in Wireless Technology, India); Bhaskar Ramamurthi (Indian Institute of Technology, India)
How Much Localization Performance Gain Could Be Reaped by 5G mmWave MIMO Systems From Harnessing Multipath Propagation?	Bingpeng Zhou (Sun Yat-sen University, China); Risto Wichman (Aalto University School of Electrical Engineering, Finland); Lei Zhang (University of Glasgow, United Kingdom (Great Britain))
Localization Error Bounds for 5G mmWave Systems Under Hardware Impairments	Fariba Ghaseminajm, Emad Saleh, Malek Alsmadi and Salama Said Ikki (Lakehead University, Canada)
LOS/NLOS Classification Using Scenario-Dependent Unsupervised Machine Learning	Anil Kirmaz (Friedrich-Alexander-Universitaet Erlangen-Nuremberg, Germany); Diomidis S. Michalopoulos and Irina Balan (Nokia Bell Labs, Germany); Wolfgang Gerstacker (University of Erlangen-Nuernberg, Germany)

Machine Learning Enables Predictive Resource Recommendation for Minimal Latency Mobile Networking	Yingze Wang and Qimei Cui (Beijing University of Posts and Telecommunications, China); Kwang-Cheng Chen (University of South Florida, USA)
MmWave Fronthaul-To-Backhaul Interference in 5G NR Networks	Edgar Jirousek (TU Wien, Austria); Zeyu Huang (Vienna University of Technology (TU Wien), Austria); Stefan Pratschner and Robert Langwieser (TU Wien, Austria); Stefan Schwarz (TU Wien & CD-Lab Society in Motion, Austria); Markus Rupp (TU Wien, Austria)
Mobility Models for the Industrial Peer-To-Peer Context Based on Empirical Investigation	Christian Sauer (SEW EURODRIVE GmbH&Co KG, Germany); Eike Lyczkowski (SEW Eurodrive, Germany); Marco Schmidt (University of Applied Sciences Würzburg Schweinfurt, Germany)
Multi-Step Optimization of Indoor Localization Accuracy Using Commodity WiFi	Shuyu Li, Sherif Welsen and Vladimir Brusic (University of Nottingham Ningbo China, China)
Network Under Control: Multi-Vehicle E2E Measurements for AI-Based QoS Prediction	Alexandros Palaios and Philipp Geuer (Ericsson Research, Germany); Jochen Fink (Technische Universität Berlin & Fraunhofer Heinrich Hertz Institute, Germany); Daniel Fabian Külzer (BMW Group Research and Technology, Germany); Fabian Göttsch (Technische Universität Berlin, Germany); Martin Kasparick (Fraunhofer Heinrich Hertz Institute & Technical University Berlin, Germany); Daniel Schäufele (Fraunhofer Heinrich Hertz Institute, Germany); Rodrigo Hernangómez (Fraunhofer Heinrich Hertz Institute & Infineon Technologies AG, Germany); Sanket Partani and Raja Sattiraju (University of Kaiserslautern, Germany); Atul Kumar and Friedrich Burmeister (Technische Universität Dresden, Germany); Andreas Weinand (University of Kaiserslautern, Germany); Christian Leonard Vielhaus (TU Dresden, Germany); Frank H.P. Fitzek (Technische Universität Dresden & ComNets - Communication Networks Group, Germany); Gerhard P. Fettweis (Technische Universität Dresden, Germany); Hans D. Schotten (University of Kaiserslautern, Germany); Slawomir Stanczak (Technische Universität Berlin & Fraunhofer Heinrich Hertz Institute, Germany)
Network-Load Estimation for K-Repetition Grant-Free Access Enabling Adaptive Resource Allocation Towards QoS Enhancement	Zixiao Zhao, Qinghe Du and Li Sun (Xi'an Jiaotong University, China)
On Resource Optimization in Multi-IRS-Assisted and Interference-Coupled Multi-Cell Systems	Zhanwei Yu and Di Yuan (Uppsala University, Sweden)
On the Reliability of Spread FBMC Wireless Sensor Networks for Off-Tone Jamming	Hamad Aldoseri (University of Duisburg - Essen, Germany); Lars Haering (University Duisburg-Essen, Germany); Andreas Czylwik (Universität Duisburg-Essen, Germany)
Optimal CPU Frequency Scaling Policies for Sustainable Edge Computing	Yu Luo (Missisipi State University, USA); Lina Pu (University of Alabama, USA); Chun-Hung Liu (Mississippi State University, USA)
Optimization of Coverage and Localization in WLAN APs With Switched Directional Antennas	Lester Ho and Holger Claussen (Tyndall National Institute, Ireland)

Optimization of the IEEE 802.15.4 Superframe for Clustered WSNs Using Differential Evolution	Hossein Amirinia (OntarioTech University, Canada); Ramiro Liscano (Ontario Tech University, Canada)
Performance Analysis of RF/VLC Enabled UAV Base Station in Heterogeneous Network	Yash Gupta (IIITD, India); Mansi Peer (Indraprastha Institute of Information Technology, India); Vivek A Bohara (Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi), India)
Planning Mm-Wave Access Networks With Reconfigurable Intelligent Surfaces	Eugenio Moro, Ilario Filippini and Antonio Capone (Politecnico di Milano, Italy); Danilo De Donno (Huawei Technologies - Italy Research Center, Italy)
Q-Learning-Based SCMA for Efficient Random Access in mMTC Networks With Short Packets	Duc Dung Tran (SnT, UniLu, Luxembourg); Shree Krishna Sharma and Symeon Chatzinotas (University of Luxembourg, Luxembourg); Isaac Woungang (Ryerson University, Canada)
QoE-Aware Joint Segment-Based Video Caching and User Association Optimization	Shuyue Zhao and Wenpeng Jing (Beijing University of Posts and Telecommunications, China); Xiang Ming Wen (Beijing University of posts and telecommunications, China); Zhaoming Lu (BUPT, China)
Quantum Computing for Artificial Intelligence Based Mobile Network Optimization	Furqan Ahmed (Elisa Corporation, Finland); Petri Mähönen (RWTH Aachen University, Germany)
RAN Resource Slicing in 5G Using Multi-Agent Correlated Q-Learning	Hao Zhou, Medhat Elsayed and Melike Erol-Kantarci (University of Ottawa, Canada)
Ranging and Location Attacks on 802.11 FTM	Jerome Henry (Cisco, USA); Yann Busnel (IMT Atlantique & IRISA, France); Romaric Ludinard (IMT Atlantique, France); Nicolas Montavont (Institut Mines Telecom / IMT Atlantique, France)
Reduced Capability Devices for 5G IoT	Rapeepat Ratasuk, Nitin Mangalvedhe and Gilsoo Lee (Nokia Bell Labs, USA); David Bhatoolaul (Nokia Bell Labs, United Kingdom (Great Britain))
Reinforcement Learning Based Green Rate-Constrained UAV Trajectory and User Association Design for IoT Networks	Abhishek Mondal (National Institute of Technology Silchar, India); Ganesh Prasad (NIT Silchar, India); Deepak Mishra (University of New South Wales (UNSW) Sydney, Australia); Ashraf Hossain (National Institute of Technology Silchar, India)
Reinforcement Learning for Antennas' Electric Tilts Optimization in Self Organizing Networks	Antonio Massaro (Nokia Bell Labs, France); Dan Wellington (Nokia Software, USA); Armen Aghasaryan (NOKIA Bell Labs, France); Robert Seidl (Nokia Bell Labs, Germany)
Resource Allocation in Full-Duplex Uncoordinated Communication Systems With NOMA	Joseph Doumit, Marie-Josepha Youssef and Charbel Abdel Nour (IMT Atlantique, France); Joumana Farah (Lebanese University, Faculty of Engineering, Lebanon); Catherine Douillard (IMT Atlantique, France)
Rogue Access Point Detection by Using ARP Failure Under the MAC Address Duplication	Kosuke Igarashi, Hiroya Kato and Iwao Sasase (Keio University, Japan)
Self-Synchronization Based Distributed Localization of Wireless Transmitters	Evert Ismael Pocoma (Université Libre de Bruxelles (ULB), Belgium); François Quitin (Université libre de Bruxelles, Belgium); Luc Vandendorpe (Université catholique de Louvain, Belgium); Philippe De Doncker (ULB, Belgium); François Horlin (Université libre de Bruxelles, Belgium)

Semi-Grant-Free Non-Orthogonal Multiple Access for Tactile Internet of Things	Dimitrios Pliatsios (University of Western Macedonia, Greece); Alexandros-Apostolos A Boulogeorgos (University of Piraeus, Greece); Thomas Lagkas (International Hellenic University, Kavala Campus & South-East European Research Centre, Greece); Vasilis Argyriou (IEEE Member, United Kingdom (Great Britain)); Ioannis Moscholios (University of Peloponnese, Greece); Panagiotis Sarigiannidis (University of Western Macedonia, Greece)
Semi-Supervised Learning Framework for UAV Detection	Olusiji O Medaiyese (University of Louisville, USA); Martins Ezuma (North Carolina State University, USA); Adrian Lauf (University of Louisville, USA); Ismail Güvenç (North Carolina State University, USA)
Sharing is Caring: A Mobile Edge Computing Perspective	Nilanjan Biswas (Universite Catholique de Louvain, Belgium); Hamed Mirghasemi (Université Catholique de Louvain-la-Neuve, Belgium); Luc Vandendorpe (Université catholique de Louvain, Belgium)
Simultaneous Localization and Channel Estimation for 5G mmWave MIMO Communications	Bingpeng Zhou (Sun Yat-sen University, China); Risto Wichman (Aalto University School of Electrical Engineering, Finland); Lei Zhang (University of Glasgow, United Kingdom (Great Britain)); Zhiyong Luo (Sun Yat-sen University, China)
Specific Emitter Identification for WiFi Devices via Bezier Curve Fitting	Shaoying Guo, Yanyun Xu and Weiqing Huang (Institute of Information Engineering, Chinese Academy of Sciences, China); Bo Liu (Institute of Information Engineering, Chinese Academy of Science, China)
Split Learning Meets Koopman Theory for Wireless Remote Monitoring and Prediction	Abanoub M. Girgis (University of Oulu, Finland & Ain-Shams University, Egypt); Hyowoon Seo (University of Oulu, Finland); Jihong Park (Deakin University, Australia); Mehdi Bennis (Centre of Wireless Communications, University of Oulu, Finland); Jinho Choi (Deakin University, Australia)
System-Level Simulation Platform of C-V2X Mode 4: Integrating CarMaker and NS-3	Hang Hu, Rong Chai, Miling Chen and Xizheng Yang (Chongqing University of Posts and Telecommunications, China)
Theoretical Analysis of Caterpillar RLNC for Multi-Hop Communication	Paul Schwenteck, Elif Tasdemir and Rico Radeke (Technische Universität Dresden, Germany); Frank H.P. Fitzek (Technische Universität Dresden & ComNets - Communication Networks Group, Germany)
UAV Deployment for Throughput Maximization in a UAV-Assisted Cellular Communications	Nishant Gupta and Satyam Agarwal (Indian Institute of Technology Ropar, India); Deepak Mishra (University of New South Wales (UNSW) Sydney, Australia)
Uplink Massive MIMO Functional Split for C-RAN System Under Rapid User Mobility Conditions	Alexei Davydov, Victor Sergeev and Artyom Putilin (Intel Corporation, Russia); Bishwarup Mondal, Thushara Hewavithana, Apostolos Papathanassiou and Avik Sengupta (Intel Corporation, USA)
User Scheduling for Precoded Satellite Systems With Individual Quality of Service Constraints	Trinh Van Chien and Eva Lagunas (University of Luxembourg, Luxembourg); Ta Hai Tung (Hanoi University of Science and Technology, Vietnam); Symeon Chatzinotas (University of Luxembourg, Luxembourg); Björn Ottersten (University of Luxembourg, Luxembourg)
Where to Deploy Reconfigurable Intelligent Surfaces in the Presence of Blockages?	Gourab Ghatak (IIIT Delhi, India); Vikrant Malik (IIT Kanpur, India); Sanket Sanjay Kalamkar (Qualcomm Inc., USA); Abhishek K Gupta (Indian Institute of Technology Kanpur, India)

Wireless Positioning Using Deep Learning With Data Augmentation Technique	Kegang Tian, Shijie Song and Wenbo Xu (Beijing University of Posts and Telecommunications, China); Dong Li and Kun Yang (National Key Laboratory of Science and Technology on Blind Signal Processing, China)

Track 5: Experimental Networks, Services, Applications and Business

Title	Authors with affiliation and country
5G Smart Connectivity Platform for Ubiquitous and Automated Innovative Services	Maria Rita Palattella (Luxembourg Institute of Science and Technology (LIST), Luxembourg); James O Sullivan (Huawei Technologies Co, Ireland); David Pradas (Viveris Technologies, France); Kevin McDonnell (Huawei Technologies Co, Ireland); Ignacio Rodriguez (Aalborg Universitet, Denmark); Georgios Karagiannis (Huawei Technologies, Germany)
A Framework for Energy and Carbon Footprint Analysis of Distributed and Federated Edge Learning	Stefano Savazzi (Consiglio Nazionale delle Ricerche CNR, Italy); Sanaz Kianoush and Vittorio Rampa (National Research Council of Italy (CNR), Italy); Mehdi Bennis (Centre of Wireless Communications, University of Oulu, Finland)
A Lifelog Gathering System Based on Autonomous Device-To-Device Communications	Huan-Bang Li (National Institute of Information and Communications Technology, Japan); Lin Shan (National Institute of Information and Communications Technology (NICT), Japan); Kenichi Takizawa and Fumihide Kojima (National Institute of Information and Communications Technology, Japan); Yasushi Fuwa (Shinshu University, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan)
A Smart Parking-Lot Occupancy Model in 5G V2V and V2I Wireless Communication	Bipasha Mukhopadhyay (UEM, India); Tuhina Samanta (Indian Institute of Engineering Science and Technology, Shibpur, India)
Cache-Enabled Pre-Downloading and Post-Uploading Content Delivery Strategies for HSR Communications Using C-RAN	Jiachi Zhang (Beijing Jiaotong University, China); Liu Liu (Bejing Jiaotong University, China); Lu Li (Shandong Jiaotong University, China); Botao Han and Tao Zhou (Beijing Jiaotong University, China)
Comprehensive Measurement-Based Evaluation of Posture Detection From Ultra Low Power UWB Signals	Robert Heyn and Armin Wittneben (ETH Zurich, Switzerland)
Data Trading for Blockchain-Based Data Market in Cyber-Physical-Social Smart Systems	Yuchen Zhou, Jian Chen, Bingtao He and Lu Lv (Xidian University, China)
Design and Experimental Validation of Radio Access Network Controller Prototype for Multi-RAT Technologies With Scheduler Strategies	Md Arifur Rahman, Adam Flizikowski, Slawomir Pietrzyk and Md Munjure Mowla (IS-Wireless, Poland)
Embedding ML Algorithms Onto LPWAN Sensors for Compressed Communications	Antoine Bernard (Télécom SudParis & AFNIC, France); Dridi Aicha (Telecom SudParis, France); Michel Marot (Institut TELECOM Telecom SudParis, France); Hossam Afifi (Télécom SudParis, Institut Telecom & Paris Saclay, France); Sandoche Balakrichenan (AFNIC, France)

How DoS Attacks Can Be Mounted on Network Slice Broker and Can They Be Mitigated Using Blockchain?	Tharaka Mawanane Hewa (University of Oulu, Finland); Anshuman Kalla (CWC, University of Oulu, Finland); Pawani Porambage (University of Oulu, Finland); Madhusanka Liyanage (University College Dublin, Ireland & University of Oulu, Finland); Mika E Ylianttila (University of Oulu, Finland)
Impact of Network Densification on the Performance of a Non-Public URLLC Factory Network	Kimmo Hiltunen (Ericsson Research, Oy L M Ericsson Ab, Finland); Yanpeng Yang (Ericsson, Sweden); Fedor Chernogorov (Ericsson Research, Finland & National Research University Higher School of Economics, Russia)
Joint Radio Resources Allocation in the Coexisting NR-U and Wi-Fi Networks	Bo Yin, Haonan Hu, Bing Xi, Qiaoshou Liu and Yanan Zheng (Chongqing University of Posts and Telecommunications, China); Zhizhong Zhang (Nanjing University of Information Science and Technology, China)
Lazy Learning-Based Self-Interference Cancellation for Wireless Communication Systems With In-Band Full-Duplex Operations	Ou Zhao and Wei-Shun Liao (National Institute of Information and Communications Technology (NICT), Japan); Keren Li (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (National Institute of Information and Communications Technology (NICT) & Kyoto University, Japan); Fumihide Kojima (National Institute of Information and Communications Technology, Japan); Hiroshi Harada (National Institute of Information & Communications Technology (NICT), Japan)
Low-Effort Deep Learning Method Trained Through Virtual Trajectories for Indoor Tracking	Aisha Javed (LUMS, Pakistan); Naveed Ul Hassan (Lahore University of Management Sciences, Pakistan)
NB-IoT for Satellite Communications: Physical Layer Analysis and Performance	Valérian Mannoni (CEA, France); Vincent Berg (CEA LETI, France); Sonia Cazalens and Patrice Raveneau (CNES, France)
Rapid Implementation and Demonstration of Radio Applications Using WISCANet	Jacob B Holtom, Gerard Gubash, Andrew Herschfelt, Owen Ma, Wylie Standage-Beier, Hanguang Yu and Daniel W. Bliss (Arizona State University, USA)

Special Session: Communication and networking algorithms for cyber-physical systems in Industry 4.0

Title	Authors with affiliation and country
Age of Control Process for Real-Time Wireless Control	Burak Kizilkaya (University of Glasgow, United Kingdom (Great Britain)); Bo Chang (University of Electronic Science and Technology of China (UESTC), China); Shuja Ansari (University of Glasgow, United Kingdom (Great Britain)); Yusuf A. Sambo (University of Glasgow & School of Engineering, United Kingdom (Great Britain)); Guodong Zhao and Muhammad Ali Imran (University of Glasgow, United Kingdom (Great Britain))
Age of Loop for Wireless Networked Control Systems Optimization	Pedro Maia de Sant Ana (Robert Bosch GmbH, Germany); Beatriz Soret and Petar Popovski (Aalborg University, Denmark); Nikolaj Marchenko (Robert Bosch GmbH, Germany)
Information Processing and Data Visualization in Networked Industrial Systems	Pavol Mulinka (Czech Technical University in Prague, Czech Republic); Charalampos Kalalas (CTTC, Spain); Merim Dzaferagic and Irene Macaluso (Trinity College Dublin, Ireland); Daniel Gutierrez (LUT University, Finland); Pedro Henrique Juliano Nardelli (Lappeenranta University of Technology & University of Oulu, Finland); Nicola Marchetti (Trinity College Dublin, Ireland)

Performance Evaluation of Dynamic Computation Offloading Capability for Industrial Wearables	Asad Ali and Olga Galinina (Tampere University, Finland); Jiri Hosek (Brno University of Technology, Czech Republic); Sergey Andreev (Tampere University, Finland)
SOON: Social Network of Machines to Optimize Task Scheduling in Smart Manufacturing	Hatem Ghorbel (University of Applied Sciences of Western Switzerland (HES-SO) Haute Ecole Arc Ingénierie, Switzerland); Jonathan Dreyer (University of Applied Sciences of Western Switzerland, Switzerland); Farid Abdalla (University of Applied Sciences of Western Switzerland, HE-Arc Ingénierie, Switzerland); Vicente Montequín (University of Oviedo, Switzerland); Zoltán Balogh and Emil Gatial (Institute of Informatics, Slovak Academy of Sciences, Slovakia); Ivana Bundinská (Institute of Informatics, Slovak Academy of Sciences, Switzerland); Adrian Gligor (George Emil Palade" University of Medicine, Pharmacy, Science and Technology, Switzerland); Laszlo Barna Iantovics (George Emil Palade University of Medicine, Pharmacy, Science and Technology, Romania); Stefano Carrino (Haute Ecole Arc Ingénierie, University of Applied Sciences and Arts Western Switzerland (HES-SO), Switzerland)

Workshop papers

Title	Authors with affiliation and country
Deep Neural Network-Based Blind Multiple User Detection for Grant-Free Multi-User Shared Access	Sivalingam Thushan, Samad Ali, Nurul Huda Mahmood, Nandana Rajatheva and Matti Latva-aho (University of Oulu, Finland)
Positioning Technology Trends and Solutions Toward 6G	Mikko Säily (Nokia Bell Labs, Finland); Osman N. C. Yilmaz (Nokia Standards, Finland); Diomidis S. Michalopoulos and Eva Perez (Nokia Bell Labs, Germany); Ryan Keating (Nokia Bell Labs, USA); Joerg Schaepperle (Nokia Bell Labs, Germany)
Towards an Internet of Reality	James Gross (KTH Royal Institute of Technology, Sweden)
A New Look to THz Wireless Links: Fading Modeling and Capacity Assessment	Evangelos N. Papasotiriou and Alexandros-Apostolos A Boulogeorgos (University of Piraeus, Greece); Katsuyuki Haneda (Aalto University, Finland); Mar Francis De Guzman (Aalto University, Finland & Advanced Science and Technology Institute, Philippines); Angeliki Alexiou (University of Piraeus, Greece)
THz Channel Model for 6G Communications	Zahed Hossain, Clara (Qian) Li, Dawei Ying and Geng Wu (Intel Corporation, USA); Cong Xiong (ASR Microelectronics International Inc., USA)
Deep Reinforcement Learning Based Congestion Control for V2X Communication	Moustafa Roshdi (Fraunhofer IIS, Germany); Shubhangi Bhadauria (Friedrich Alexander University, Erlangen-Nuremberg & Fraunhofer IIS, Germany); Khaled Mohamed Shawky Hassan (Robert Bosch GmbH, Germany); Georg Fischer (University of Erlangen-Nuremberg (FAU), Germany)
Cloud-Controlled Autonomous Mobile Robot Platform	Marcell Balogh, Attila Vidács, Gabor Feher, Markosz Maliosz and Márton Horváth (Budapest University of Technology and Economics, Hungary); Norbert Reider and Sandor Rácz (Ericsson Research, Hungary)
Open Source 5G-NSA Network for Industry 4.0 Applications	Elizabeth Palacios-Morocho and Pablo Picazo (Universitat Politècnica de València, Spain); Saúl Inca (iTEAM Research Institute, Universitat Politècnica de València, Spain); Jose F Monserrat (Universitat Politècnica de València, Spain)

Power Allocation Strategy of Untrusted Relay Network Based on Stackelberg Game	Donghui Xu, Rugui Yao and Yuxin Zhang (Northwestern Polytechnical University, China); Ye Fan (Xi'an Jiaotong University, China); Xiaoya Zuo (Northwestern Polytechnical University, China)
Proactive Application Rate Requirement Adaptation Mechanism for Sidelinks	Ramya Panthangi Manjunath (Huawei German Research Center, Germany); Martin Schubert (Huawei Technologies Duesseldorf GmbH, Munich Office, Germany); Renato L. G. Cavalcante (Fraunhofer Heinrich Hertz Institute, Germany); Mate Boban (Huawei Technologies Duesseldorf GmbH, Germany); Chan Zhou (Huawei European Research Center, Germany); Slawomir Stanczak (Technische Universität Berlin & Fraunhofer Heinrich Hertz Institute, Germany)
Sidelink-Assisted URLLC Built on Cooperative Retransmissions With Optimum Power Control	Tapisha Soni (Huawei Technologies German Research Center & Germany, Germany); Malte Schellmann (Huawei Technologies German Research Center, Germany); Alois Knoll (Technical University Munich Garching, Germany)
Smart Manufacturing Multi-Site Testbed With 5G and Beyond Connectivity	Ilkka S. Harjula (VTT Technical Research Centre of Finland, Finland); Mikko Uitto (VTT Technical Research Centre of Finland Ltd, Finland); Marko Jurmu (VTT Technical Research Centre of Finland Ltd., Finland); Jukka Koskinen, Jukka Mäkelä, Stefan Walter and Markku Hentula (VTT Technical Research Centre of Finland Ltd, Finland); Tapio Heikkilä (Technical Research Centre of Finland, Finland); Marja Lintala (VTT Technical Research Centre of Finland Ltd, Finland); Kyosti Rautiola (VTT, Spain)
A 140-GHz Microstrip Amplitude Modulator Based on Schottky Diodes	Kesen Ding and Wei Kou (UESTC, China); Shixiong Liang (National Key Laboratory of Application Specific Integrated Circuit, China); Xiaoqing Guo (University of Electronic Science and Technology of China, China); Sen Gong (UESTC, China); Yaxin Zhang (University of Electronic Science and Technology of China, China)
Sub-THz VNA-Based Channel Sounder Structure and Channel Measurements at 100 and 300 GHz	Yejian Lyu (Aalborg University, Denmark); Pekka Kyösti (Keysight Technologies & University of Oulu, Finland); Wei Fan (Aalborg University, Denmark)
Terahertz Frequency Quadrupler Based on a 2×2 Single-Chip GaAs Monolithic Integration	Wei Kou (University of Electronic Science and Technology of China, China); Hongji Zhou (China & University Of Electronic Science And Technology Of China, China); Shixiong Liang (National Key Laboratory of Application Specific Integrated Circuit, China); Yaxin Zhang, Sen Gong and Ziqiang Yang (University of Electronic Science and Technology of China, China)
Verification of Dual-Polarized Ultra-Wideband Channel Sounder for THz Applications	Diego Dupleich and Alexander Ebert (Technische Universität Ilmenau, Germany); Robert Müller (TU Ilmenau, Germany); Giovanni Del Galdo (Fraunhofer Institute for Integrated Circuits IIS & Technische Universität Ilmenau, Germany); Reiner S. Thomä (Ilmenau University of Technology, Germany)
AI Based Landscape Sensing Using Radio Signals	Vijaya Parampalli Yajnanarayana (Ericsson Research, India); Dongdong Huang (Ericsson, China); Deep Shrestha (Ericsson Research, Sweden); Yi Geng (Ericsson, China); Ali Behravan (Ericsson, Sweden); Erik Dahlman (Ericsson Research, Sweden)
Indoor Mapping With a Mobile Radar Using an EK-PHD Filter	Jukka Talvitie, Ossi Kaltiokallio, Elizaveta Rastorgueva-Foi and Carlos Baquero Barneto (Tampere University, Finland); Musa Furkan Keskin and Henk Wymeersch (Chalmers University of Technology, Sweden); Mikko Valkama (Tampere University, Finland)
Integration of Communication and Sensing in 6G: A Joint Industrial and Academic Perspective	Henk Wymeersch (Chalmers University of Technology, Sweden); Deep Shrestha (Ericsson Research, Sweden); Carlos Héracles Morais de Lima (Universirty of Oulu, Finland); Vijaya Parampalli

	Yajnanarayana (Ericsson Research, India); Björn Richerzhagen (Siemens AG, Germany); Musa Furkan Keskin (Chalmers University of Technology, Sweden); Corina-Kim Schindhelm (Siemens, Germany); Alejandro Ramirez (Siemens AG, Germany); Andreas Wolfgang (Qamcom Research & Technology AB, Sweden); Mar Francis De Guzman (Aalto University, Finland & Advanced Science and Technology Institute, Philippines); Katsuyuki Haneda (Aalto University, Finland); Tommy Svensson (Chalmers University of Technology, Sweden); Robert Baldemair (Ericsson AB & Ericsson Research, Sweden); Stefan Parkvall (Ericsson Research, Sweden)
Low-Complexity AoA and AoD Estimation in the Transformed Spatial Domain for Millimeter Wave MIMO Channels	Sandra Roger (Universitat de València, Spain); Carmen Botella-Mascarell (University of Valencia, Spain); Diego Lloria (Universitat de València, Spain); Máximo Cobos (Universidad de Valencia, Spain); Gabor Fodor (Ericsson Research & Royal Institute of Technology (KTH), Sweden)
Enhanced Power Saving Schemes for eXtended Reality	Dongru Li (vivo Communications Research Institute, vivo Mobile Communication Co., Ltd., China); Huazheng You, Wei Jiang, Xiaohang Chen, Chaojun Zeng and Xiaodong Sun (vivo Communications Research Institute, vivo Mobile Communication Co., Ltd., China)
Exploring Extended Reality With Flexible Spectrum Access in Wireless Cellular Network	Yu Gao (Huawei Technologies Co., Ltd., China); Songyan Xue (Huawei Technologies Co. Ltd., China); Mengying Ding (Huawei Technologies, Co. Ltd., China); Jinlin Peng (Huawei Technologies Co. Ltd., China); Jiyong Pang (Huawei Technologies Co., Ltd., China)
Frame Synchronisation for Multi-Source Holograhphic Teleportation Applications - an Edge Computing Based Approach	Sweta Anmulwar (University of Surrey, Guildford, United Kingdom (Great Britain)); Ning Wang, Andy Pack and Vu San Ha Huynh (University of Surrey, United Kingdom (Great Britain)); Jinze Yang (Huawei Technologies, China); Rahim Tafazolli (University of Surrey, United Kingdom (Great Britain))
Performance Evaluation of Extended Reality Applications in 5G NR System	Jay Kumar Sundararajan (Qualcomm, USA); Hwan-Joon Kwon (Qualcomm, China); Olufunmilola Awoniyi-Oteri, Yuchul Kim, Chih-ping Li, Jelena Damnjanovic and Shanyu Zhou (Qualcomm, USA); Ruifeng Ma (Qualcomm, China); Yeliz Tokgoz, Prashanth Hande and Tao Luo (Qualcomm, USA); Kiran Mukkavilli (Qualcomm Technologies, Inc., USA); Tingfagn Ji (Qualcomm Technologies Inc., USA)
UE Power Saving Techniques for Extended Reality (XR) Services in 5G NR Systems	Yuchul Kim (Qualcomm, USA); Hwan-Joon Kwon (Qualcomm, China); Olufunmilola Awoniyi-Oteri, Prashanth Hande, Jay Kumar Sundararajan and Yeliz Tokgoz (Qualcomm, USA); Tao Luo (QUALCOMM INc, USA); Kiran Mukkavilli (Qualcomm Technologies, Inc., USA); Tingfang Ji (Qualcomm Inc., USA)
XR Quality Index: Evaluating RAN Transmission Quality for XR Services Over 5G and Beyond	Shengyue Dou (Huawei Technologies Co., Ltd., China); Shuri Liao (Huawei Technologies, Co. Ltd., China); Jian Wu (Huawei Technologies, China); Kedi Wu (Huawei Technologies, Co., China); Erkai Chen (Huawei Technologies Co., Ltd., China); Weichao Chen (Huawei Technologies Company Ltd., Shanghai, China); Hui Shen (Huawei Technologies Co., Ltd., China); Nijun Li (Huawei Technologies Co. Ltd., China)
Impact of Reconfigurable Intelligent Surface Size on Beamforming Efficiency	Giorgos Stratidakis (University of Piraeus, Greece); Sotiris Droulias (University of Piraeus Greece, Greece); Angeliki Alexiou (University of Piraeus, Greece)

Reconfigurable Intelligent Surface (RIS): Eigenvalue Decomposition-Based Separate Channel Estimation	Salah Eddine Zegrar and Liza Afeef Omar Shehab El Din (Istanbul Medipol University, Turkey); Huseyin Arslan (University of South Florida & Istanbul Medipol University, USA)
A Kalman-Based Autoencoder Framework for End-To-End Communication Systems	Bin Hu (Huawei Techonologies, China); Jian Wang (Huawei Techologies, China); Chen Xu (Huawei Technologies Co., Ltd., China); Gongzheng Zhang and Rong Li (Huawei Technologies, Co. Ltd., China)
A Signal Detection Scheme Based on Deep Learning in OFDM Systems	Guangliang Pan, Zitong Liu and Wei Wang (Nanjing University of Aeronautics and Astronautics, China); Minglei Li (China University of Petroleum（East China）, China)
Adaptive Modulation for Wireless Federated Learning	Xinyi Xu, Guanding Yu and Shengli Liu (Zhejiang University, China)
AoI Optimal UAV Trajectory Planning: A Deep Recurrent Reinforcement Learning Approach	Mengjie Wu, Huijia Chi and Shuying Gan (Northwest A&F University, China); Xijun Wang (Sun Yat-sen University, China); Chao Xu (Northwest A&F University, China)
Client Selection Based on Label Quantity Information for Federated Learning	Jiahua Ma and Xinghua Sun (Sun Yat-sen University, China); Wenchao Xia (Nanjing University of Posts and Telecommunications, China); Xijun Wang and Xiang Chen (Sun Yat-sen University, China); Hongbo Zhu (Nanjing University of Posts and Telecommunications, China)
Deep Reinforcement Learning Based Caching Placement and User Association for Dynamic Cellular Networks	Yue Wang, Chunyan Feng and Tiankui Zhang (Beijing University of Posts and Telecommunications, China)
Deep Reinforcement Learning-Based Multi-Panel Beam Management in Massive MIMO Systems: Algorithm Design and System-Level Simulation	Yang Li (China Academy of Information and Communications Technology, China); Jiamo Jiang (China Academy of Information and Communications Technology (CAICT), China); Chao Jia (Beijing University of Posts and Telecommunications, China); Yifei Yuan (China Mobile Research Institute, China); Zhongyuan Zhao (Beijing University of Posts and Telecommunications, China); Ying Du and Zhiqin Wang (China Academy of Information and Communications Technology, China)
Fast Convergence for Federated Learning in OFDMA Systems	Deshi Ye, Songyang Chen and Can Wang (Zhejiang University, China)
GPAE-LSTMnet: A Novel Learning Structure for Mobile MIMO Channel Prediction	Xiao Zhuoran, Zhaoyang Zhang, Chongwen Huang, Caijun Zhong and Xiaoming Chen (Zhejiang University, China)
Memetic Algorithm Based on Community Detection for Energy-Efficient Service Migration Optimization in 5G Mobile Edge Computing	Guo Li, Ling Liu, Zhengping Liang, Xiaoliang Ma and Zexuan Zhu (Shenzhen University, China)
Relevance-Based Wireless Resource Allocation for a Machine Learning-Based Centralized Control System	Afsaneh Gharouni and Peter Rost (Nokia Bell Labs, Germany); Andreas Maeder (Nokia Networks, Germany); Hans D. Schotten (University of Kaiserslautern, Germany)
Smart Scheduling Based on Deep Reinforcement Learning for Cellular Networks	Jian Wang (Huawei Techologies, China); Chen Xu (Huawei Technologies Co., Ltd., China); Rong Li (Huawei Technologies, Co. Ltd., China); Yiqun Ge (Huawei Technologies Canada Inc., Canada); Jun Wang (Huawei Technologies Co. Ltd, China)
A New LED Communication Model Based on Photonic Properties	Jean-Paul Linnartz (Technische Universiteit Eindhoven, The Netherlands); Xiong Deng (TU Eindhoven, The Netherlands); Anton Alexeev (Eindhoven University of Technmology, The Netherlands); Paul van Voorthuisen (Signify, The Netherlands)

A Visible Light Positioning System Based on Support Vector Machines	Neha Chaudhary (University of Aveiro, Portugal); Othman Isam Younus (Northumbria University, United Kingdom (Great Britain)); Zahra Nazari Chaleshtori (Czech Technical University in Prague, Czech Republic); Luis Nero Alves (DETI, Universidade of Aveiro, Instituto de Telecomunicações & Instituto de Telecomunicações, Portugal); Zabih Ghassemlooy (Northumbria University, United Kingdom (Great Britain)); Stanislav Zvanovec (Czech Technical University in Prague, Czech Republic)
An Efficient Multi-Link Channel Model for LiFi	Sreelal Maravanchery Mana (Fraunhofer Heinrich Hertz Institute, Germany); Kerolos Gabra (Fraunhofer Heinrich-Hertz-Institut & Technische Universität Berlin, Germany); Sepideh Mohammadi Kouhini (Fraunhofer Henrich Hertz Institute, Germany); Peter Hellwig (Fraunhofer Heinrich Hertz Institute, Germany); Jonas Hilt (Fraunhofer Institute for Telecommunication, HHI, Germany); Volker Jungnickel (Fraunhofer Heinrich Hertz Institute & Technische Universität Berlin, Germany)
Design and Implementation of an Optical Camera Communication System for Wireless Sensor Networking in Farming Fields	Vicente Matus, Victor Guerra and Cristo Jurado-Verdu (IDeTIC-ULPGC, Spain); Stanislav Zvanovec (Czech Technical University in Prague, Czech Republic); Jose Rabadan (IDeTIC-ULPGC, Spain); Rafael Perez-Jimenez (Universidad de Las Palmas de Gran Canaria, Spain)
Experimental Characterization of Fiber Optic Lighting - Optical Camera Communications	Shivani Rajendra Teli and Klara Eollosova (Czech Technical University, Czech Republic); Stanislav Zvanovec (Czech Technical University in Prague, Czech Republic); Zabih Ghassemlooy (Northumbria University, United Kingdom (Great Britain)); Matej Komanec (Czech Technical University in Prague, Czech Republic)
Experimental Characterization of Multi-Hop Vehicular VLC Systems	Bassam Aly (Ford Otosan, Turkey); Mohammed Elamassie (Özyeğin Üniversitesi, Turkey); Murat Uysal (Ozyegin University, Turkey)
Impact of Synchronization Errors on the Performance of ACO-OFDMA Signaling for Medical Extra-WBAN Links	Md Jahid Hasan (Ecole Centrale Marseille, Oledcomm, France); Mohammad-Ali Khalighi (Ecole Centrale Marseille, France); Luis Nero Alves (DETI, Universidade of Aveiro, Instituto de Telecomunicações & Instituto de Telecomunicações, Portugal); Bastien Bechadergue (University of Versailles Saint-Quentin-en-Yvelines, France)
Modelling of an Underwater Optical Wireless Communication System With Misalignment Tolerance	Veridiano Marques (INESC TEC & Faculty of Engineering University of Porto, Portugal); Henrique M Salgado (University of Porto & INESC Porto, Portugal); Luis M. Pessoa (INESC TEC & Faculty of Engineering, University of Porto, Portugal)
Performance Analysis of Indoor Vehicular VLC Links for Autonomous Driving	Elizabeth Eso (Northumbria University Newcastle, United Kingdom (Great Britain)); Elnaz Alizadeh Jarchlo (TU Berlin, Germany); Zabih Ghassemlooy (Northumbria University, United Kingdom (Great Britain)); Stanislav Zvanovec (Czech Technical University in Prague, Czech Republic); Falko Dressler (TU Berlin, Germany); Juna Sathian (Northumbria University, United Kingdom (Great Britain))
The Impact of Blocking and Shadowing on the Indoor Visible Light Positioning System	Othman Isam Younus (Northumbria University, United Kingdom (Great Britain)); Neha Chaudhary (University of Aveiro, Portugal); Zahra Nazari Chaleshtori (Czech Technical University in Prague, Czech Republic); Zabih Ghassemlooy (Northumbria University, United Kingdom (Great Britain)); Luis Nero Alves (DETI, Universidade of Aveiro, Instituto de Telecomunicações & Instituto de Telecomunicações, Portugal); Stanislav Zvanovec (Czech Technical University in Prague, Czech Republic)