



# ISWCS 2022

October 19-22, 2022 Hangzhou, China

## CONFERENCE BROCHURE

*The 18<sup>th</sup> International Symposium on  
Wireless Communication Systems*

# CONTENTS

---

● WELCOME FROM THE GENERAL CO-CHAIRS .....	1
● ABOUT ISWCS 2022 .....	2
● CONFERENCE ORGANIZATIONS .....	3
● VACCINATION INFORMATION .....	10
● AGENDA .....	11
● KEYNOTES .....	12
● TUTORIALS .....	17
● TECHNICAL PROGRAM .....	23
● ONLINE CONFERENCE GUIDELINES .....	32
● CONTACT .....	32

## ● Welcome from the General Co-chairs ●

Welcome to ISWCS 2022 in the beautiful city of Hangzhou! The aim of ISWCS is to provide a forum for researchers and technologists to present new ideas and contributions in the form of technical papers, panel discussions, as well as real-world evaluation in the field of wireless communications, networking and signal processing. This 18th symposium will bring together various wireless communication systems developers to discuss the current status, technical challenges, standards, fundamental issues, and future services and applications.

Our hope is that you would enjoy the rich technical blend of plenaries presented by distinguished academic leaders converging on Hangzhou from all over the globe. These will also be complemented by cutting-edge research-oriented tutorials, special sessions and regular technical sessions.

We are indebted to the technical program committee, especially to the TPC Chairs, namely Tony Q. S. Quek, Singapore University of Technology and Design, Singapore; Le Liang, Southeast University, China; Rodrigo C. de Lamare, PUC-RIO, Brazil and Univ. York, UK; and An Liu, Zhejiang University, China.

Our sincere thanks also go out to the entire organizing committee for their generosity with their precious research-time invested in making ISWCS 2022 a success. We are particularly grateful to our Special Sessions Chairs Fan Liu, Southern University of Science and Technology, China; and Navid NaderiAlizadeh, University of Pennsylvania, USA; to the Tutorial Co-Chairs Jun Zhang, Hong Kong University of Science and Technology, HK; Derrick Wing Kwan Ng, University of New South Wales, Australia; and Zhijin Qin, Tsinghua University, China; to the Local Arrangement Chair Min Li, Zhejiang University, China; to the Publication and Publicity Co-Chairs Weijie Yuan, Southern University of Science and Technology, China; and Ming-Min Zhao, Zhejiang University, China. Naturally, we are all grateful to our valued colleagues in the TPC and the research community at large who assisted us in securing timely reviews!

It is our privilege to convey the community's gratitude to the conference patrons as well, who appear at the conference home page. Needless to say that countless further volunteers contributed in numerous ways to the success of the conference.

Dear colleagues, we hope you will enjoy technical discussions, meet friends, and make new professional connections, but also hope that you will be able to experience local culture and history - we look forward to having an inspiring and enjoyable time with you!

Yunlong Cai, Geoffrey Ye Li, Eduard A. Jorswieck and Shi Jin  
General Co-chairs, IEEE ISWCS 2022

## About ISWCS 2022

### » Introduction

The aim of this symposium is to provide a forum for researchers and technologists to present new ideas and contributions in the form of technical papers, panel discussions, as well as real-world evaluation in the field of wireless communications, networking and signal processing.

This 18th symposium will bring together various wireless communication systems developers to discuss the current status, technical challenges, standards, fundamental issues, and future services and applications.

Technically supported by IEEE ComSoc, accepted and presented papers will be published in the conference proceedings and submitted to IEEE Xplore as well as other Abstracting and Indexing databases. The proceedings will be submitted for consideration to IEEE Xplore.

Selected papers will be recommended for potential publication of extended version in Sensors journal (ISSN 1424-8220; Impact Factor: 3.576; Indexing: SCIE (Web of Science), Scopus, Ei Compendex, etc.)

### » Details

#### Conference date:

October 19 to 22, 2022

#### Partners and Technical Sponsors:



浙江大学  
ZHEJIANG UNIVERSITY



sensors  
an Open Access Journal by MDPI



IEEE



IEEE  
ComSoc  
IEEE Communications Society

#### Social Events:

Social events, including coffee break, lunch, and welcome reception dinner, are open to all onsite attendees, regardless of registration types.

Date	Form	Time	Place
October 19	Coffee break	10:00-10:30	Hallway of Jinxi Hall
	Lunch	12:00-14:00	Xiangxuexuan Buffet Restaurant
	Coffee break	15:00-15:30	Hallway of Jinxi Hall
	Welcome reception	18:00-20:00	Wenliu
October 20	Coffee break	10:30-11:00	Hallway of Concurrent Session
	Lunch	12:30-14:00	Xiangxuexuan Buffet Restaurant
	Coffee break	16:00-16:15	Hallway of Concurrent Session
October 21	Coffee break	10:00-10:30	Hallway of Jinxi Hall
	Lunch	12:00-14:00	Xiangxuexuan Buffet Restaurant
	Coffee break	15:30-16:00	Hallway of Concurrent Session

## ● Conference Organizations ●

### » Steering Committee

Yuming Jiang, NTNU, Norway  
Boon Sain Yeo, SensiMesh, Singapore  
Carlos Faouzi Bader, ISEP/CentraleSupélec, France  
Rodrigo C. de Lamare, U. York, UK, and PUC-Rio, Brazil  
Didier Le Ruyet, Le CNAM, France

### » Organizing Committee

#### General Co-Chairs

Yunlong Cai, Zhejiang University, China  
Geoffrey Ye Li, Imperial college London, UK  
Eduard A. Jorswieck, TU Braunschweig, Germany  
Shi Jin, Southeast University, China

#### Technical Program Co-Chairs

Tony Q. S. Quek, Singapore University of Technology and Design (SUTD), Singapore  
Le Liang, Southeast University, China  
Rodrigo C. de Lamare, PUC-RIO, Brazil and Univ. York, UK  
An Liu, Zhejiang University, China

#### Workshop and Special Sessions Chairs

Fan Liu, Southern University of Science and Technology (SUSTech), China  
Navid NaderiAlizadeh, University of Pennsylvania, USA

#### Tutorial Co-Chairs

Jun Zhang, HKUST, HK  
Derrick Wing Kwan Ng, UNSW, Australia  
Zhijin Qin, Tsinghua University, China

#### Local Arrangement Chair

Min Li, Zhejiang University, China

#### Publication and Publicity Co-Chairs

Weijie Yuan, Southern University of Science and Technology (SUSTech), China  
Ming-Min Zhao, Zhejiang University, China

### » Technical Program Committee

#### Co-Chairs

Tony Q. S. Quek, Singapore University of Technology and Design (SUTD), Singapore

Le Liang, Southeast University, China

Rodrigo C. de Lamare, PUC-RIO, Brazil and Univ. York, UK

An Liu, Zhejiang University, China

### Members

Joshua Abolarinwa, Namibia University of Science and Technology, Namibia

Ramon Aguero, University of Cantabria, Spain

Fayçal Ait Aoudia, NVIDIA, France

Mohammed Baidas, Kuwait University, Kuwait

Marko Beko, ULHT/UNINOVA, Portugal

Petros Bithas, National and Kapodistrian University of Athens, Greece

Glauber Brante, Federal University of Technology - Paraná (UTFPR), Brazil

Enrico Buracchini, Telecom Italia Lab, Italy

Marcello Caleffi, University of Naples "Federico II", Italy

Pan Cao, University of Hertfordshire, United Kingdom (Great Britain)

Charles Casimiro Cavalcante, Federal University of Ceará, Brazil

Renato Cavalcante, Fraunhofer Heinrich Hertz Institute, Germany

Junting Chen, The Chinese University of Hong Kong, Shenzhen, China

Pascal Chevalier, CNAM, France

Arsenia Chorti, ETIS UMR 8051, CY University, ENSEA, CNRS, France

Theofilos Chrysikos, University of Patras, Greece

Krzysztof Cichoń, Poznan University of Technology, Poland

Justin Coon, University of Oxford, United Kingdom (Great Britain)

Khalid Darabkh, The University of Jordan, Jordan

Udhaya Kumar Dayalan, Trane Technologies, USA

Renato de Moraes, Federal University of Pernambuco (UFPE), Brazil

Panagiotis Demestichas, University of Piraeus, Greece

Sebastian Dörner, University of Stuttgart, Germany

Mark Eisen, Intel Corporation, USA

Pingyi Fan, Tsinghua University, China

Vasilis Friderikos, King's College London, United Kingdom (Great Britain)

Ivan Ganchev, University of Plovdiv Paisii Hilendarski, Bulgaria

Ning Gao, Southeast University, China

Rosario Garroppo, University of Pisa, Italy

Matthieu Gautier, Univ Rennes, CNRS, IRISA, France

James Gross, KTH Royal Institute of Technology, Sweden

Xinrong Guan, Army Engineering University of PLA, China

Maxime Guillaud, Huawei Technologies, France

M. Cenk Gursoy, Syracuse University, USA

Martin Haardt, Ilmenau University of Technology, Germany

Yu Han, Singapore University of Technology and Design, Singapore

Hengtao He, The Hong Kong University of Science and Technology, Hong Kong

Chin-Tser Huang, University of South Carolina, USA

Michael Joham, Technische Universität München, Germany

Peter Jung, TU-Berlin, Communications and Information Theory Group, Germany  
Michel Kieffer, CentraleSupélec, France  
Adrian Kliks, Poznan University of Technology, Poland  
Peng-Yong Kong, Khalifa University, United Arab Emirates  
Gerhard Kramer, Technical University of Munich, Germany  
Lukas Landau, Pontificia Universidade Católica do Rio de Janeiro, Brazil  
Didier Le Ruyet, CNAM, France  
Rongpeng Li, Zhejiang University, China  
Xiao Li, Southeast University, China  
Chunshan Liu, Hangzhou Dianzi University, China  
Hongwu Liu, Shandong Jiaotong University, China  
Pascal Lorenz, University of Haute Alsace, France  
Miguel Luis, Instituto Superior de Engenharia de Lisboa, Portugal  
Yuyi Mao, The Hong Kong Polytechnic University, Hong Kong  
Michail Matthaiou, Queen's University Belfast, United Kingdom (Great Britain)  
Christoph Mecklenbräuker, TU Wien, Austria  
Paul Mitchell, University of York, United Kingdom (Great Britain)  
Paulo Montezuma, FCT-UNL, Portugal  
Marc Moonen, KU Leuven, Belgium  
Derrick Wing Kwan Ng, University of New South Wales, Australia  
Hien Ngo, Queen's University Belfast, United Kingdom (Great Britain)  
Berna Özbek, Izmir Institute of Technology, Turkey  
Giancarlo Pastor, Aalto University, Finland  
Alberto Perotti, Huawei Technologies Sweden AB, Sweden  
Paulo Pinto, Universidade Nova de Lisboa, Portugal  
Pekka Pirinen, University of Oulu, Finland  
Vasanthan Raghavan, Qualcomm, Inc., USA  
Riccardo Raheli, University of Parma, Italy  
Remigiusz Rajewski, Poznan University of Technology, Poland  
Ronald Raulefs, German Aerospace Center (DLR), Germany  
Piotr Remlein, Poznan University of Technology, Poland  
Mohammed Ridouani, Hassan 2 University Casablanca - ESTC, Morocco  
Oriol Sallent, Universitat Politècnica de Catalunya, Spain  
Stephan Sand, German Aerospace Center (DLR), Germany  
Ignacio Santamaria, University of Cantabria, Spain  
Rafael Schaefer, University of Siegen, Germany  
Shamik Sengupta, University of Nevada, Reno, USA  
Aydin Sezgin, RUB, Germany  
Hmaied Shaiek, CNAM, France  
Kaiming Shen, The Chinese University of Hong Kong (Shenzhen), China  
Osvaldo Simeone, King's College London, United Kingdom (Great Britain)  
Paschalis Sofotasios, Khalifa University, Finland  
Richard Souza, Federal University of Santa Catarina, Brazil

Pawel Sroka, Poznan University of Technology, Poland  
Himal Suraweera, University of Peradeniya, Sri Lanka  
Mario Tanda, Università di Napoli Federico II, Italy  
Wankai Tang, Southeast University, China  
Stephan ten Brink, University of Stuttgart, Germany  
Yinglei Teng, Beijing University of Posts and Telecommunications, China  
Michel Terré, CNAM, France  
Nikolaos Thomos, University of Essex, United Kingdom (Great Britain)  
Angeles Vazquez-Castro, Universidad Autónoma de Barcelona, Spain  
Quoc-Tuan Vien, Middlesex University, United Kingdom (Great Britain)  
Joao Vilela, University of Porto, Portugal  
Dejan Vukobratović, University of Novi Sad, Serbia  
Jue Wang, Nantong University, China  
Lie-Liang Yang, University of Southampton, United Kingdom (Great Britain)  
Xianghao Yu, The Hong Kong University of Science and Technology, Hong Kong  
Xiaopeng Yuan, RWTH Aachen University, Germany

### Reviewers

Xu Bao, Jiangsu University, China  
Songfu Cai, HKUST, Hong Kong  
Rafael Cerna-Loli, Imperial College London, United Kingdom (Great Britain)  
Wangqian Chen, The Chinese University of Hong Kong, Shenzhen, China  
Weicong Chen, Southeast University, China  
Zijian Chen, Zhejiang University, China  
Yiyao Cheng, City University of Hong Kong, Hong Kong  
Ruoxi Chong, Queens University Belfast, United Kingdom (Great Britain)  
Jannis A Clausius, University of Stuttgart, Germany  
Jisheng Dai, Jiangsu University, China  
Shuping Dang, University of Bristol, United Kingdom (Great Britain)  
Ruoqi Deng, Peking University, China  
Onur Dizdar, VIAVI Solutions, United Kingdom (Great Britain)  
Fuwang Dong, Southern University of Science and Technology, China  
Tao Du, southeast university, China  
Zhen Du, Nanjing University of Information Science and Technology, China  
Emmanuel Majiyebo Eronu, University of Abuja, Nigeria  
Florian Euchner, University of Stuttgart, Germany  
Fang Fang, Western University, Canada  
Tianyu Fang, ShanghaiTech University, China  
Moritz B Fischer, University of Stuttgart, Germany  
Mark F. Flanagan, University College Dublin, Ireland  
Ruifeng Gao, Nantong University, China  
Wei Gao, Wuhan University, China  
Yunfei Gao, Nanchang University, China  
Yao GE, Nanyang Technological University (NTU), Singapore

Yujie Gu, Temple University, USA  
Huayan Guo, The Hong Kong University of Science and Technology, China  
Wei Guo, Xidian University, China  
Yiyu Guo, Queen Mary University of London, United Kingdom (Great Britain)  
Nishant Gupta, Indian Institute of Technology Ropar, India  
Ziyan He, Georgia Institute of Technology, USA  
Jakob Hoydis, Nvidia, France  
Qiyu Hu, Zhejiang University, China  
Meng Hua, University of Macau, China  
Kai Huang, Southeast University, China  
Wei Huang, Hefei University of Technology, China  
Xiang Huang, University of Utah, USA  
Yixuan Huang, Southeast University, China  
Zhe Huang, Zhejiang University, China  
Zelin Ji, Queen Mary University of London, United Kingdom (Great Britain)  
Peiwen Jiang, Southeast University, China  
Kai Kang, Zhejiang University, China  
Abbas Khalili, New York University, USA  
Alva Kosasih, The University of Sydney, Australia  
Martin Le, TU Braunschweig, Germany  
Hoon Lee, Pukyong National University, Korea (South)  
Mengyuan Lee, Zhejiang University, China  
Xianfu Lei, Southwest Jiaotong University, China  
Bowen Li, The Chinese University of Hong Kong, Shenzhen, China  
Min Li, Zhejiang University, China  
Xinmin Li, Southwest University of Science and Technology, China  
Ye Li, Nantong University, China  
Qingfeng Lin, The University of Hong Kong, Hong Kong  
Zhuang Ling, Jilin University, China  
Guowei Liu, Harbin Engineering University, China  
Jian Liu, University of South Carolina, USA  
Mengmeng Liu, Xidian University, China  
Rang Liu, Dalian University of Technology, China  
Tang Liu, Princeton University, USA  
Yanzhen Liu, Zhejiang University, China  
Zhen Liu, Zhengzhou University, China  
Shihang Lu, Southern University Science and Technology, China  
Niranjan M Gowda, Intel Labs, USA  
Abdul Majeed, Gachon University, Korea (South)  
Weidong Mei, National University of Singapore, Singapore  
Xiao Meng, Beijing Institute of Technology, China  
Anup Mishra, Imperial College London, United Kingdom (Great Britain)  
Xidong Mu, Queen Mary University of London, United Kingdom (Great Britain)

Shimaa Ayman Naser, Khalifa University, United Arab Emirates  
Chongjun Ouyang, Beijing University of Posts and Telecommunications, China  
Daeyoung Park, Inha University, Korea (South)  
Seok-Hwan Park, Jeonbuk National University, Korea (South)  
Hebert Pereira, UTFPR, Brazil  
Lucia Pintor, University of Cagliari, Italy  
Hang Que, Southeast University, China  
Ramprasad Raghunath, TU Braunschweig, Germany  
Ekant Sharma, Indian Institute of Technology Roorkee, India  
Muhammad Usman Sheikh, Aalto University, Finland  
Wenhan Shen, Queen Mary University of London, United Kingdom (Great Britain)  
Yucheng Sheng, Southeast University, China  
Victoria Souto, Universidade Federal de Santa Maria, Brazil  
Nanchi Su, University College London, United Kingdom (Great Britain)  
Hao Sun, The Chinese University of Hong Kong, Shenzhen, China  
Shiqi Sun, Tsinghua University, China  
Daniel Tandler, University of Stuttgart, Germany  
Zhenzhou Tang, Wenzhou University, China  
Xiao Tong, Harbin Engineering University, China  
Metin Vural, Technical University of Berlin, Turkey  
Yubo Wan, Zhejiang University, China  
Dawei Wang, Northwestern Polytechnical University, China  
Haonan Wang, Xi'an Jiaotong University, China  
Jie Wang, School of Electronic Information, WuHan University, China  
Kexin Wang, Southeast University, China  
Lifeng Wang, Fudan University, China  
Yiran Wang, Xi An Jiaotong University, China  
Yunqi Wang, The University of Hong Kong, Hong Kong  
Zhaolin Wang, Queen Mary University of London, United Kingdom (Great Britain)  
ZiXu Wang, Zheng Zhou University, China  
Guorui Wei, none, China  
Yi Wei, Zhejiang University, China  
Minghui Wu, Beijing Institute of Technology, China  
Peng Wu, Wuhan University, China  
Huiyun Xia, Harbin Institute of Technology, China  
Huiqiang Xie, Queen Mary University of London, United Kingdom (Great Britain)  
Fangyuan Xing, Zhejiang University, China  
Zheng Xing, The Chinese University of Hong Kong, Shenzhen, China  
Haoqiu Xiong, Southern University of Science and Technology, China  
Dongfang Xu, Friedrich-Alexander University Erlangen-Nuremberg, Germany  
Ye Xue, Hong Kong University of Science and Technology, Hong Kong  
Nan Yang, The Australian National University, Australia  
Xi Yang, Huawei Technologies, China

Yang Yang, Syracuse University, USA  
Zhaohui Yang, Zhejiang University, China  
Ziang Yang, Peking University, China  
Jiacheng Yao, Southeast University, China  
Wenqiang Yi, Queen Mary University of London, United Kingdom (Great Britain)  
Shuhao Zeng, Peking University, China  
Di Zhang, Zhengzhou University, China  
Haobo Zhang, Peking University, China  
Shuowen Zhang, The Hong Kong Polytechnic University, China  
Yutong Zhang, Peking University, China  
Zheng Zhang, Xidian University, China  
Cunzhuo Zhao, Pengcheng Laboratory, China  
Yuanshuai Zheng, The Chinese University of Hong Kong, Shenzhen, China  
Kangda Zhi, Queen Mary University of London, United Kingdom (Great Britain)  
Xingyu Zhou, Southeast University, China  
Jianyue Zhu, Southeast University, China  
Yongxu Zhu, South Bank University, United Kingdom (Great Britain)  
Jiakuo Zuo, Nanjing University of Posts and Telecommunications, China

## Vaccination Information

In compliance with the epidemic prevention requirements of the relevant departments in Hangzhou and with reference to the experience of the conference epidemic prevention work, in order to do a good job in the prevention and control of the new crown pneumonia epidemic during the conference, the relevant matters are hereby notified as follows.

1. No offline participants are allowed to attend the conference if the following circumstances exist:

Those who have a history of travel and contact with medium and high risk areas at home and abroad within 14 days, confirmed cases, suspected cases, asymptomatic infected persons and close contacts who are still under isolation and observation; those who have not recovered from fever, cough and other symptoms in the last 14 days, those who have not ruled out infectious diseases and are not feeling well.

2. All personnel are required to show the green "health code" "trip code" when entering the hotel, and **a negative nucleic acid test certificate (please prepare in advance) is required for two tests in three days to enter Hangzhou**, which can be tested in a different place. During the meeting, all personnel must wear masks and keep social distance according to the requirements of epidemic prevention.

3. **Please take the landing nucleic acid in time after entering Hangzhou city and take three nucleic acid tests in three days.** There are free nucleic acid testing points near the airport and railway station.

### » Nearby Nucleic Acid Sampling Sites

#### Hangzhou Hospital of Traditional Chinese Medicine (杭州市中医院核酸采样点)

**Working Time:** Monday – Friday, 08:00-17:00

**Distance:** 3.8 km from the hotel

#### Parking lot of the Lingguang Cuisine Restaurant in Resorts (名胜区灵光菜馆停车场核酸采样点)

**Working Time:** Monday - Sunday, 08:30-12:00

**Distance:** 540m from the hotel

If you have more questions, please pay attention to Zhejiang health code WeChat Mini program (浙江健康码微信小程序) or the State Council WeChat Mini program (国务院微信小程序)

# Agenda

Wednesday, October 19			
Time	Conference Contents		
08:00-17:00	Registration		
09:00-10:00	Keynote Talk: Jeffrey Andrews (Jinxi Hall)		
10:00-10:30	Coffee break		
10:30-12:00	SS 1 (Jinxi Hall)		
12:00-14:00	Lunch		
14:00-15:00	Keynote Talk: Yonina Eldar (Jinxi Hall)		
15:00-15:30	Coffee break		
15:30-16:30	Keynote Talk: Marios Kountouris (Jinxi Hall)		
16:30-17:30	SS 8 (Jinxi Hall)		
18:00-20:00	Welcome reception		
Thursday, October 20			
Time	Conference Contents		
08:00-17:00	Registration		
09:00-10:30	RS 1 (Lansheng Hall)	RS 2 (Wenxi Hall)	RS 3 (VIP Room)
10:30-11:00	Coffee break		
11:00-12:30	SS2 (Lansheng Hall)	SS 3 (Wenxi Hall)	SS 4 (VIP Room)
12:30-14:00	Lunch		
14:00-16:00	Tutorials 1 (Lansheng Hall)	Tutorials 2 (Wenxi Hall)	
16:00-16:15	Coffee break		
16:15-18:15	Tutorials 3 (Lansheng Hall)	Tutorials 4 (Wenxi Hall)	
Friday, October 21			
Time	Conference Contents		
08:00-17:00	Registration		
09:00-10:00	Keynote Talk: Zhi-Quan (Tom) Luo (Jinxi Hall)		
10:00-10:30	Coffee break		
10:30-11:30	Keynote Talk: Jianming Lu (Jinxi Hall)		
12:00-14:00	Lunch		
14:00-15:30	RS 4 (Lansheng Hall)	RS 5 (Wenxi Hall)	RS 6 (VIP Room)
15:30-16:00	Coffee break		
16:00-17:30	SS 5 (Lansheng Hall)	SS 6 (Wenxi Hall)	SS 7 (VIP Room)

\* RS = Regular Session, SS = Special Session

## Keynotes

### Unlocking new capacity in 6G cellular systems via site-specific ML-aided design

**Jeffrey Andrews**

Truchard Family Endowed Chair in Engineering, Director of 6G@UT, the University of Texas at Austin, USA

*Wednesday, October 19, 2022, 9:00–10:00 Beijing Time, Jinxi Hall*

**Abstract:** 6G cellular networks will be extremely complex systems that must meet many competing requirements in a large variety of environments and use cases. A key enabling 6G technology will be deep learning, which can unlock previously hidden system-level gains, particularly by effectively learning custom site-specific communication techniques that are optimally adapted for each cell-site. I will present a short summary of some of my group's recent discoveries and technologies based on deep learning (DL) that demonstrate a large potential impact in 6G. The first is a novel and practical approach for beam alignment in millimeter wave and THz bands that can achieve a phenomenal speed up — at least 10x and in some cases approaching 1000x — by sensing and exploiting unique aspects of the environment. The second is a new architecture for estimating high dimensional channels by harnessing the expressive power of deep generative networks to develop a custom model of each cell's channel distribution. The third is a site-specific multicell optimization that rapidly learns near-optimal global settings for each base stations antenna arrays, a problem that is completely intractable using conventional techniques. It is trained and tested on AT&T's commercial simulation platform and shows large gains over existing 3GPP approaches.

**Biography:** Jeffrey Andrews is the Truchard Family Endowed Chair in Engineering at the University of Texas at Austin where is Director of 6G@UT. He received the B.S. in Engineering with High Distinction from Harvey Mudd College, and the M.S. and Ph.D. in Electrical Engineering from Stanford University. Dr. Andrews is an IEEE Fellow and ISI Highly Cited Researcher and has been co-recipient of 15 best paper awards including the 2016 IEEE Communications Society & Information Theory Society Joint Paper Award, the 2014 IEEE Stephen O. Rice Prize, the 2014 and 2018 IEEE Leonard G. Abraham Prize, the 2011 and 2016 IEEE Heinrich Hertz Prize, and the 2010 IEEE ComSoc Best Tutorial Paper Award. His other major awards include the 2015 Terman Award, the NSF CAREER Award, the 2021 Gordon Lepley Memorial Teaching Award, the 2021 IEEE ComSoc Joe LoCicero Service Award, the IEEE ComSoc Wireless Communications Technical Committee Recognition Award, and the 2019 IEEE Kiyo Tomiyasu technical field award.

## Communication and Sensing: From Compressed Sampling to Model-based Deep Learning

**Yonina Eldar**

Professor, Department of Math and Computer Science, Weizmann institute of Science, Israel

*Wednesday, October 19, 2022, 14:00–15:00 Beijing Time, Jinxi Hall*

**Abstract:** The famous Shannon-Nyquist theorem has become a landmark in analog to digital conversion and the development of digital signal processing algorithms. However, in many modern applications, the signal bandwidths have increased tremendously, while the acquisition capabilities have not scaled sufficiently fast. Furthermore, the resulting high rate digital data requires storage, communication and processing at very high rates which is computationally expensive and requires large amounts of power. In this talk we consider a general framework for communication and sensing including sub-Nyquist sampling, quantization and processing in space, time and frequency which allows to dramatically reduce the number of antennas, sampling rates, number of bits and band occupancy in a variety of applications. Our framework relies on exploiting signal structure, quantization and the processing task in both standard processing and in deep learning networks leading to a new framework for model-based deep learning. It also allows for the development of efficient joint radar-communication systems and near-field processing. We consider applications of these ideas to a variety of problems in wireless communications, imaging, massive MIMO systems, automotive radar and ultrasound imaging and show several demos of real-time prototypes including a wireless ultrasound probe, sub-Nyquist automotive radar, cognitive radio and radar, dual radar-communication systems, analog precoding, sparse antenna arrays, and a deep Viterbi decoder. We end by discussing more generally how models can be used in deep learning methods with application to a variety of communication settings.

**Biography:** Yonina C. Eldar is a Professor in the Department of Math and Computer Science at the Weizmann Institute of Science, Rehovot, Israel, where she heads the Center for Biomedical Engineering and Signal Processing. She is also a Visiting Professor at MIT and at the Broad Institute and an Adjunct Professor at Duke University, and was a Visiting Professor at Stanford University. She is a member of the Israel Academy of Sciences and Humanities, an IEEE Fellow and a EURASIP Fellow. She has received many awards for excellence in research and teaching, including the IEEE Signal Processing Society Technical Achievement Award, the IEEE/AESS Fred Nathanson Memorial Radar Award, the IEEE Kiyo Tomiyasu Award, the Michael Bruno Memorial Award from the Rothschild Foundation, the Weizmann Prize for Exact Sciences, and the Wolf Foundation Krill Prize for Excellence in Scientific Research. She is the Editor in Chief of Foundations and Trends in Signal Processing, and serves the IEEE on several technical and award committees. She heads the Committee for Promoting Gender Fairness in Higher Education Institutions in Israel.

## A New Perspective on Goal-oriented Semantic Communication in the Era of Networked Intelligence

**Marios Kountouris**

Professor and Chair on Advanced Wireless Systems, Communication Systems Department,  
EURECOM, France

*Wednesday, October 19, 2022, 15:30–16:30 Beijing Time, Jinxi Hall*

**Abstract:** Future communication systems will cater to emerging cyber-physical and decentralized interactive systems, such as swarm robotics, self-driving vehicles, and smart IoT. The interconnection of myriad sensing- and learning-empowered devices will underpin the global functioning of our societies, enabling formidable progress at various sectors. The realization of this euphoric dream however hinges upon networks' ability to deliver on an unprecedented number of highly demanding requirements. As we move into the era of distributed networked intelligence, a fundamental paradigm shift is necessary to satisfy the pressing needs for reliable real-time communication, autonomous decision-making, and timely distributed processing. In this talk, we introduce effective goal-oriented communication, which entails an application/context-dependent, non-separable optimization of information generation, transmission, and utilization, via the semantics of information, i.e., the significance and the usefulness of messages with respect to the goal of data exchange. We highlight fundamental concepts, essential principles, and key functionalities required for effectively conveying only information representations and features, which are timely, relevant, and valuable for achieving end users' goals. Finally, we discuss the potential and the technical challenges associated with this promising avenue of research.

**Biography:** Marios Kountouris is a Professor and a Chair on Advanced Wireless Systems at the Communication Systems department, EURECOM, France. He received the Diploma degree in Electrical and Computer Engineering from the National Technical University of Athens (NTUA), Greece in 2002, and the M.S. and Ph.D. degrees in Electrical Engineering from Télécom Paris, France in 2004 and 2008, respectively. Prior to his current appointment, he has held positions at CentraleSupélec, France, Huawei Paris Research Center, France, The University of Texas at Austin, USA, and Yonsei University, S. Korea. He has received several career and best paper awards, including the 2016 IEEE ComSoc CTTC Early Achievement Award, the 2013 IEEE ComSoc Outstanding EMEA Young Researcher Award, and the 2012 IEEE SPS Signal Processing Magazine Award. He has served as Editor for the IEEE Transactions on Wireless Communications, the IEEE Transactions on Signal Processing, and the IEEE Wireless Communication Letters.

## Learning to maximize a convex quadratic function with application to intelligent reflection surface for wireless communication

**Zhi-Quan (Tom) Luo**

Vice President (Academic), The Chinese University of Hong Kong, Shenzhen

*Friday, October 21, 2022, 9:00–10:00 Beijing Time, Jinxi Hall*

**Abstract:** In this talk we consider learning and optimizing a rank-2 convex quadratic function over  $N$  variables, each taking  $K$  discrete values on the unit circle. This problem arises from optimal design of a passive beamformer for intelligent reflecting surface (IRS) in order to maximize the overall channel strength. When  $K=2$  and the quadratic function (or channel state information) is known, we propose a linear time algorithm that is capable of reaching a globally optimal solution of the problem. When the quadratic function is unknown (i.e. in the absence of channel state information) we propose a random max sampling (RMS) method and a conditional sample mean (CSM) method to maximize the quadratic function. We show that RMS method can provide a SNR boost that is linear in  $N$  (the number of reflective elements in IRS), while the CSM can boost the SNR quadratically (in  $N$ ), all with polynomial number of samples. Field trial results demonstrate the effectiveness of the proposed CSM method in the commercial 5G communication networks, providing  $>10\text{dB}$  SNR gain in both typical indoor and outdoor scenarios, and with no need to modify the current communication protocols and design.

**Biography:** Zhi-Quan (Tom) Luo is the Vice President (Academic) at The Chinese University of Hong Kong, Shenzhen where he has been a professor since 2014. He is the Director of Shenzhen Research Institute of Big Data and also the Chinese University of Hong Kong (Shenzhen)-Shenzhen Research Institute of Big Data-Huawei Innovation Laboratory of Future Network System Optimization. He completed his Ph.D. at the Massachusetts Institute of Technology and his undergraduate studies at Peking University, China. His research interests lie in the area of big data, signal processing and digital communication, ranging from theory to design to implementation. He has served on more than forty conference and workshop program committees and been the Chair of the IEEE Signal Processing Society Technical Committee on Signal Processing for Communications (SPCOM). He was the Editor in Chief for IEEE Transactions on Signal Processing from 2012 to 2014 and served as the Associate Editor for many internationally recognized journals. Currently, he is the Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and the Society for Industrial and Applied Mathematics (SIAM). He was elected to Foreign Member of the Chinese Academy of Engineering (CAE) in 2021. He received the 2010 Farkas Prize from the INFORMS Optimization Society. He also received three Best Paper Awards from the IEEE Signal Processing Society in 2004, 2009 and 2011 respectively, and a 2011 Best Paper Award from the EURASIP. In 2014, he was elected to the Royal Society of Canada. In 2018, he was awarded the prize of Paul Y. Tseng Memorial Lectureship in Continuous Optimization.

## Key vision and technology trends for the future wireless network

**Jianming Lu**

Executive Director, Huawei Wireless Technology Lab

*Friday, October 21, 2022, 10:30–11:30 Beijing Time, Jinxi Hall*

**Abstract:** 5G has been deployed rapidly to large scale commercialization, and ITU-R is leading the consortium effort to study future technology trend (FTT) and 6G vision for 2030. In our view, 6G will go far beyond communications. In addition to connected people and things, we predict that 6G will be the platform for connected intelligence, where the mobile network connects vast amounts of intelligent devices and connects them intelligently. This talk will present an overall vision for 6G with drivers, use cases, KPIs, roadmap and key capabilities. Six key capabilities: (1) Extreme connectivity, (2) Native AI, (3) Networked sensing, (4) Integrated Non-terrestrial network, (5) Native trustworthiness and (6) Sustainability, will be further discussed, including potential technologies/research directions and associated challenges.

**Biography:** Jianmin Lu joined the Huawei Technologies in 1999. During the last two decades, he conducted various researches on wireless communications especially on physic layer and MAC layer and developed 3G, 4G and 5G products. He received more than 50 patents during the research. He was deeply involved in 3GPP2 (EVDO/UMB), WiMAX/802.16m and 3GPP (LTE/NR) standardization and contributed several key technologies such as flexible radio frame structure, radio resource management and MIMO. His current research interest is in the area of signal processing, protocol and networking for the next generation wireless communication. He is currently Executive Director of Huawei Wireless Technology Lab.

## Tutorials

### » T1 - Machine Learning Over-the-Air: Two Tales of Interference

**Speakers:** Howard H. Yang, Zhejiang University, China  
Tony Q. S. Quek, Singapore University of Technology and Design, Singapore

**Time:** Thursday, October 20, 2022, 14:00–16:00 Beijing Time

**Place:** Lansheng Hall

#### Summary:

This tutorial aims to present the current research efforts on the development of implementing machine learning algorithms in wireless systems. Specifically, we provide a comprehensive coverage of a distributed learning paradigm based on over-the-air computing, including the general architecture, model training algorithm, and an analytical framework that quantifies the convergence rate. The analysis takes into account key effects from wireless transmissions such as channel fading and interference on the convergence performance of distributed learning and demonstrates how interference is detrimental to model training. Next, we present several improvements to the framework from different aspects. Particularly, we introduce model pruning schemes that reduce the computation, as well as communication complexity for distributed learning over the air. We also discuss the system enhancements from an algorithmic perspective, e.g., the momentum-based approach, to accelerate the model training. Finally, we will elaborate on the analysis of the generalization error of the statistical models trained over the air, which shows that wireless interference has its positive potential of improving the generalization capability. We conclude by shedding light on future works.

#### Biography:

**Howard H. Yang** received a Ph.D. degree in Electrical Engineering from the Singapore University of Technology and Design, Singapore, in 2017. Currently, he is an assistant professor with the ZJU-UIUC Institute, Haining, China. His background also features appointments at the University of Texas at Austin and Princeton University. He is currently an Editor for IEEE Transactions on Wireless Communications. His research interests cover various aspects of wireless communications, networking, and signal processing.

**Tony Q. S. Quek** received the B.E. and M.E. degrees in Electrical and Electronics Engineering from the Tokyo Institute of Technology, Tokyo, Japan, respectively. At the Massachusetts Institute of Technology (MIT), Cambridge, MA, he earned the Ph.D. in Electrical Engineering and Computer Science. Currently, he is a tenured Professor with the Singapore University of Technology and Design (SUTD). He is also the Director of the Future Communications R&D Programme, the Head of ISTD Pillar, and the Deputy Director of the SUTD-ZJU IDEA, the 2020 Nokia Visiting Professor, and from 2016 to 2020, the Clarivate Analytics Highly Cited

Researcher. His current research topics include wireless communications and networking, security, big data processing, network intelligence, and IoT. He is an IEEE Fellow.

## » T2 - Holographic Radio: A New Paradigm for Ultra-Massive MIMO

**Speakers:** Boya Di, Peking University, China  
Hongliang Zhang, Princeton University, USA  
Linyang Song, Peking University, China  
**Time:** Thursday, October 20, 2022, 14:00–16:00 Beijing Time  
**Place:** Wenxi Hall

### Summary:

To enable a ubiquitous intelligent information network, ultra-massive multiple-input multiple-output (MIMO) technology is perceived to enhance the network capacity significantly by exploiting the spatial diversity. However, existing massive MIMO techniques highly rely on phased arrays, which require numerous phase shifters and power amplifiers to construct complex phase-shifting circuits for accurate beamforming. This makes the implementation of ultra-massive MIMO in practice become prohibitive from both cost and power consumption perspectives. The recently developed reconfigurable holographic surfaces (RHSs) composing of densely packing sub-wavelength metamaterial elements can achieve accurate beam steering without costly hardware components. Specifically, the feeds of the RHS are embedded in the bottom layer of the RHS to generate the incident electromagnetic waves, enabling an ultra-thin structure. The RHS utilizes the metamaterial radiation elements to construct a holographic pattern based on the holographic interference principle, which gives rise to the holographic beamforming technique. Benefitted from the advantages of compact design, low power consumption and low cost, RHS realizes continuous or quasi-continuous apertures to enable holographic communications. In this tutorial, we will first provide a basic introduction of RHSs. We then introduce the unique features of RHSs which enable ultra-massive MIMO for both communication and sensing, in a comprehensive way. Related design, analysis, optimization, and signal processing techniques will be presented. Typical RHS-based applications for both wireless communications and radio-frequency sensing will be explored. The implementation issues along with our developed prototypes and experiments will also be discussed. Formalized analysis of several up-to-date challenges and technical details on system design will be provided for different applications.

### Biography:

**Boya Di** obtained her Ph.D. degree from the Department of Electronics, Peking University, China, in 2019. Prior to that, she received the B.S. degree in electronic engineering from Peking University in 2014. She was a postdoc researcher at Imperial College London and is now an assistant professor at Peking University. Her current research interests include holographic radio, reconfigurable intelligent surfaces, multi-agent systems, edge computing, and aerial

access networks. She received the best doctoral thesis award from China Education Society of Electronics in 2019. She is also the recipient of 2021 IEEE ComSoc Asia-Pacific Outstanding Paper Award and 2020 IEEE N2WOMEN Rising Star Award. She serves as an associate editor for IEEE Transactions on Vehicular Technology since June 2020. She has also served as a workshop co-chair for IEEE WCNC 2020&2021.

**Hongliang Zhang** received the B.S. and Ph.D. degrees at the School of Electrical Engineering and Computer Science at Peking University, in 2014 and 2019, respectively. He was a Postdoctoral Fellow in the Electrical and Computer Engineering Department at the University of Houston, Texas. Currently, he is a Postdoctoral Associate in the Department of Electrical and Computer Engineering at Princeton University, New Jersey. His current research interest includes reconfigurable intelligent surfaces, aerial access networks, optimization theory, and game theory. He received the best doctoral thesis award from Chinese Institute of Electronics in 2019. He is an exemplary reviewer for IEEE Transactions on Communications in 2020. He is also the recipient of 2021 IEEE Comsoc Heinrich Hertz Award for Best Communications Letters and 2021 IEEE ComSoc Asia-Pacific Outstanding Paper Award. He has served as a TPC Member for many IEEE conferences, such as Globecom, ICC, and WCNC. He is currently an Editor for IEEE Communications Letters, IET Communications, and Frontiers in Signal Processing. He has also served as a Guest Editor for several journals, such as IEEE Internet of Things Journal, Journal of Communications and Networks, etc.

**Lingyang Song** received his Ph.D. degree from the University of York, UK, in 2007, where he received the K. M. Stott Prize for excellent research. He worked as a research fellow at the University of Oslo, Norway until rejoining Philips Research UK in March 2008. In May 2009, he joined the School of Electronics Engineering and Computer Science, Peking University, and is now a Boya Distinguished Professor. His main research interests include wireless communications, mobile computing, and machine learning. Dr. Song is the co-author of many awards, including IEEE Leonard G. Abraham Prize in 2016, IEEE ICC 2014, IEEE ICC 2015, IEEE Globecom 2014, and the best demo award in the ACM Mobihoc 2015. He received National Science Fund for Distinguished Young Scholars in 2017, First Prize in Nature Science Award of Ministry of Education of China in 2017. Dr. Song has served as a IEEE ComSoc Distinguished Lecturer (2015-2018), an Area Editor of IEEE Transactions on Vehicular Technology (2019-), Co-chair of IEEE Communications Society Asia Pacific Board Technical Affairs Committee (2020-). He is a Clarivate Analytics Highly Cited Researcher. He is an IEEE Fellow.

## » T3 - Simultaneously Transmitting And Reflecting Surface (STARS) for 360° Coverage towards 6G

**Speakers:** Yuanwei Liu, Queen Mary University of London, UK

Xidong Mu, Queen Mary University of London, UK

**Time:** Thursday, October 20, 2022, 16:15–18:15 Beijing Time

**Place:** Lansheng Hall

### Summary:

Reconfigurable intelligent surfaces (RISs) and their diverse variants have emerged as promising techniques for the sixth-generation (6G) wireless networks. Comprising of a large number of low-cost reconfigurable elements, both the phase and even the amplitude of the incident signals can be beneficially adjusted, thus realizing the Smart Radio Environment. The main content of this tutorial is to introduce the novel concept of simultaneously transmitting and reflecting surfaces (STARS). The wireless signal incident upon STARS is divided into transmitted and reflected signals passing into both sides of the space surrounding the surface, thus facilitating a 360° coverage. First, the key differences between conventional reflecting-only RISs and STARS are identified from the perspectives of hardware design, physics principles, and communication system design. Furthermore, the basic signal model of STAR-RISs is introduced, and three practical protocols are proposed for their operation, namely energy splitting, mode switching, and time switching. Based on the proposed protocols, a range of promising application scenarios are put forward for integrating STARS into next-generation wireless networks. Case studies are provided for revealing the superiority of STAR-RISs over other baselines. Finally, several open research problems are discussed.

### Biography:

**Yuanwei Liu** received the B.S. and M.S. degrees from the Beijing University of Posts and Telecommunications in 2011 and 2014, respectively, and the PhD degree in electrical engineering from the Queen Mary University of London, U.K., in 2016. He was with the Department of Informatics, King's College London, from 2016 to 2017, where he was a Post-Doctoral Research Fellow. He has been a Senior Lecturer (Associate Professor) with the School of Electronic Engineering and Computer Science, Queen Mary University of London, since Aug. 2021, where he was a Lecturer (Assistant Professor) from 2017 to 2021. His research interests include non-orthogonal multiple access, 5G/6G networks, RIS, integrated sensing and communications, and machine learning. He is a Web of Science Highly Cited Researcher 2021. He is currently a Senior Editor of IEEE Communications Letters, an Editor of the IEEE Transactions on Wireless Communications and the IEEE Transactions on Communications. He serves as the leading Guest Editor for IEEE JSAC special issue on Next Generation Multiple Access, a Guest Editor for IEEE Network special issue on Next Generation Multiple Access for 6G, and a Guest Editor for IEEE JSTSP special issue on Signal Processing Advances for Non-Orthogonal Multiple Access in Next Generation Wireless Networks. He received IEEE ComSoc Outstanding Young Researcher Award for EMEA in 2020. He received the 2020 IEEE Signal Processing and Computing for Communications (SPCC) Technical Early Achievement Award, IEEE Communication Theory Technical Committee (CTTC) 2021 Early Achievement Award. He received IEEE ComSoc Young Professional Outstanding Nominee Award in 2021. He has served as the Publicity Co-Chair for VTC 2019-Fall. He is the leading contributor for “Best Readings for Non-Orthogonal Multiple Access (NOMA)” and the primary contributor for “Best Readings for Reconfigurable Intelligent Surfaces (RIS)”. He serves as the founding Academic Chair of the IEEE ComSoc Next Generation Multiple Access (NGMA) Emerging Technology Initiative (NGMA-ETI), the chair of Special Interest Group (SIG) in SPCC Technical Committee on the topic of signal processing Techniques for NGMA, the vice-chair

of SIG Wireless Communications Technical Committee (WTC) on the topic of Reconfigurable Intelligent Surfaces for Smart Radio Environments (RISE), and the Tutorials and Invited Presentations Officer for Reconfigurable Intelligent Surfaces Emerging Technology Initiative.

**Xidong Mu** received the Ph.D. degree in Information and Communication Engineering from the Beijing University of Posts and Telecommunications (BUPT), Beijing, China, in 2022. He is currently a Postdoctoral Researcher with the School of Electronic Engineering and Computer Science, Queen Mary University of London, U.K. His research interests include non-orthogonal multiple access, IRSs/RISs aided communications, integrated sensing and communications, and optimization theory. He received the Exemplary Reviewer Certificate of the IEEE Transactions on Communications in 2020. He serves the Conference Symposium and Workshop Officer for IEEE ComSoc Next Generation Multiple Access Emerging Technology Initiative (NGMA-ETI).

## » T4 - Machine Learning Approaches for Machine Type Communication Scenarios towards 6G

**Speakers:** Mohammad Shehab, University of Oulu, Finland  
Hirley Alves, University of Oulu, Finland  
Eslam Eldeeb, University of Oulu, Finland

**Time:** Thursday, October 20, 2022, 16:15–18:15 Beijing Time

**Place:** Wenxi Hall

### Summary:

Introduced in 5G, Machine-type Communication (MTC) has revolutionized the wireless communications industry by shifting the focus towards the Internet of Things (IoT), and its variants such as the Industrial IoT. Towards the massive deployment of devices in 6G with novel use cases, conventional Mathematical tools are turning out to be incapable of solving large scale network optimization problems, with large number of variables and non-linear parameters. In this context, machine learning is overwhelmingly becoming an essential tool in handling large scale and high complexity wireless communication scenarios, that lack mathematical tractability. At the heart of these scenarios lies the MTC with problems such as energy optimization, traffic characterization, massive access, mobility, and dependability. In this tutorial, we introduce key research directions in MTC towards 6G and the role of machine learning in addressing some of them. Moreover, we present case studies related to non-orthogonal multiple access (NOMA), unmanned aerial vehicles (UAVs) trajectory planning for serving massive MTC networks, MTC traffic modelling and predictive resource allocation. The tutorial will depict how to apply different ML tools such as support vector machines, deep reinforcement learning (DRL), Q-learning, long-short term memory (LSTM), and meta learning in the former cases studies. In summary, this tutorial provides knowledge to interested researchers about suitable machine learning tools to solve different up-to-date problems in MTC and paves the way for applying these tools in these scenarios and other communication

problems.

### **Biography:**

**Mohammad Shehab** is a postdoctoral Researcher at University of Oulu, Finland. He obtained his B. Sc from Alexandria University in 2011. He worked as TA at Alexandria University and the Arab Academy in Egypt from 2012-2015. He obtained two M. Sc degrees from the Arab Academy and University of Oulu in 2014 and 2017, respectively. He obtained his doctoral degree in 2022 from Oulu with focus on energy efficient QoS provisioning in IoT. His work so far resulted in 13 conference papers, 8 journal papers, and 1 patent. Mohammad won the best student paper award in ISWCS 2017, and the Nokia foundation award consecutively for 2018 and 2019. His current research directions include ML, UAVs, and efficient resource allocation.

**Hirley Alves** is Associate Professor and is Head of the Machine-type Wireless Communications Group. He is actively working on massive connectivity and ultra-reliable low latency communications for future wireless networks, 5G and 6G, full-duplex communications, energy-efficient, and sustainable ICT. He leads the Massive Wireless Automation for the 6G Flagship Program. He is a recipient of several national and international grants and awards. He has been the organizer, chair, TPC, and tutorial lecturer for several renowned international conferences. He is the general chair of the biannual workshop series on Full-Duplex Communications for Future Wireless Networks at ICC and Globecom and led a series of tutorials on the same topic, besides being the lead lecturer in MTC-related tutorials (ISWCS'18, PIMRC'19, INDIN'19, ICPS'19, ICPS'20). In addition, he was the General Chair of the ISWCS'2019 and the General Co-Chair of the 1st 6G Summit, Levi 2019, and ISWCS 2021. Moreover, Prof. Alves is co-author of a book entitled "Wireless RF Energy Transfer in the massive IoT era: towards sustainable zero-energy networks," Wiley, Dec 2021.

**Eslam Eldeeb** received the B.Sc. degree in electrical engineering from Alexandria University, Egypt, in 2019, and the M.Sc. degree from the University of Oulu, Finland, in 2021, where he is currently pursuing the Ph.D. degree with the Centre for Wireless Communication. He is actively working on massive connectivity and ultrareliable low-latency communication. His research interests are machine-type communication, deep learning, and deep reinforcement learning for wireless communication networks.

## Technical Program

» Wednesday, October 19, 2022

### SS1: Exploiting Wireless Interference in MIMO Communications via Symbol-Level Precoding in 6G and Beyond

**Time:** Wednesday, October 19, 2022, 10:30–11:30 Beijing Time

**Place:** Jinxi Hall

**Organizers:** **Ang Li**, Xi'an Jiaotong University, China; **Christos Masouros**, University College London, UK; **A. Lee Swindlehurst**, University of California Irvine, USA

Time	Contents
10:30-10:45	<b>Constructive Interference Precoding for Downlink NOMA</b> MengChun Yan (South China University of Technology, China); Yingyang Chen (Jinan University, China); Miaowen Wen (South China University of Technology, China); Shancheng Zhao (Jinan University, China); Zhetao Li (Xiangtan University, China).
10:45-11:00	<b>Multi-User Symbol-Level Precoding for Downlink Reconfigurable MIMO Communication Systems</b> Haonan Wang and Ang Li (Xi'an Jiaotong University, China); Yuanjun Shen (University College London, United Kingdom (Great Britain)); Branka Vucetic and Yonghui Li (University of Sydney, Australia)
11:00-11:15	<b>NOMA Made Practical: Removing the SIC through Constructive Interference</b> Abdelhamid Salem (UCL, United Kingdom (Great Britain)); Christos Masouros (University College London, United Kingdom (Great Britain))
11:15-11:30	<b>Modulating Data Using Reconfigurable Intelligent Surface by Symbol Level Precoding</b> Hei Victor Cheng (Aarhus University, Denmark); Wei Yu (University of Toronto, Canada)

### SS8: Integrated Sensing and Communications for 6G

**Time:** Wednesday, October 19, 2022, 16:30–17:30 Beijing Time

**Place:** Jinxi Hall

**Organizers:** **Jie Yang**, Southeast University, China; **Shi Jin**, Southeast University, China

Time	Contents
16:30-16:45	<b>Near-Field Channel Reconstruction and User Location for ELAA Systems</b> Zhizheng Lu (Southeast University, China); Yu Han (Singapore University of Technology and Design, Singapore); Shi Jin (Southeast University, China); Michail Matthaiou (Queen's University Belfast, United Kingdom (Great Britain)); Tony Q. S. Quek (Singapore University of Technology and Design, Singapore)
16:45-17:00	<b>On the Performance Improvement of Data-aided Joint Sensing and Communication</b> Na Zhao and Qing Chang (Beihang University, China); Yunlong Wang, Xiao Shen and Yuan Shen (Tsinghua University, China)
17:00-17:15	<b>An AFDM-Based Integrated Sensing and Communications</b> Yuanhan Ni, Zulin Wang and Peng Yuan (Beihang University, China); Qin Huang (Group 201, Beihang University, China)

» Thursday, October 20, 2022

### RS1: RIS/IRS and Backscatter Communications

<b>Time:</b> Thursday, October 20, 2022, 09:00–10:30 Beijing Time	
<b>Place:</b> Lansheng Hall	
Time	Contents
09:00-09:15	<b>CSIT-Free Model Aggregation for Multi-RIS-Assisted Over-the-Air Computation</b> Fusheng Zhu (GuangDong Communications & Networks Institute, China); Yaqiong Zhao and Wei Xu (Southeast University, China); Xiaohu You (National Mobile communication Research Lab., Southeast University, China)
09:15-09:30	<b>Reconfigurable Intelligent Surface Assisted Localization over Near-Field Beam Squint Effect</b> Zhuoran Li, Ziwei Wan, Keke Ying, Yikun Mei, Malong Ke and Zhen Gao (Beijing Institute of Technology, China)
09:30-09:45	<b>Robust Beamforming Design for Reconfigurable Intelligent Surface-aided Cell-free Systems</b> Jiacheng Yao and Wei Xu (Southeast University, China); Xiaohu You (National Mobile communication Research Lab., Southeast University, China); Derrick Wing Kwan Ng (University of New South Wales, Australia); Jiewei Fu (Guangdong Communications and Networks Institute, China)
09:45-10:00	<b>Joint Power Allocation and Phase-Shift Design for RIS-Aided Cooperative Near-Field Localization</b> Fengjiao Zhang, Ming-Min Zhao, Ming Lei and Minjian Zhao (Zhejiang University, China)
10:00-10:15	<b>Beamforming Design and Resource Allocation for IRS-Assisted NOMA Cognitive Radio System</b> Xiaopeng Yuan, Weiyu Li, Yulin Hu and Anke Schmeink (RWTH Aachen University, Germany)

### RS2: Resource Allocation in Wireless Networks

<b>Time:</b> Thursday, October 20, 2022, 9:00–10:30 Beijing Time	
<b>Place:</b> Wenxi Hall	
Time	Contents
09:00-09:15	<b>Learning to Optimize Resource in Dynamic Wireless Environment via Meta-Gating Graph Neural Network</b> Qiushuo Hou, Mengyuan Lee, Guanding Yu and Yunlong Cai (Zhejiang University, China)
09:15-09:30	<b>Reliability-Oriented Power Allocation for Multi-Source WPT Enabled Short Packet Communications</b> Ning Guo (Wuhan University, China); Xiaopeng Yuan (RWTH Aachen University, Germany); Chongfa Wang (Jinhua Electronic Equipment Factory, China); Yulin Hu and Anke Schmeink (RWTH Aachen University, Germany)

09:30-09:45	<b>Resource Allocation and Beamforming design for Downlink MISO-URLLC Systems</b> Bingqian Zhu (Southeast University, China); Baoyin Bian (State Grid Electric Power Research Institute, China); Yehua Zhang (State Grid Zhejiang Electric Corporation, China); Wenmeng Li (State Grid Electric Power Research Institute, China); Lang Li (State Grid Zhengjiang Electric Corporation, China); Jing Jiang (State Power Economic and Technological Research Institute Co. Ltd, China); Hua Zhang and Jun-Bo Wang (Southeast University, China)
09:45-10:00	<b>Joint Spectrum Allocation and Power Control in Vehicular Networks Based on Reinforcement Learning</b> Kexin Wang (Southeast University, China); Yeqing Feng (Guangdong Communications & Networks Institute, China); Le Liang and Shi Jin (Southeast University, China)
10:00-10:15	<b>Traffic Scheduling for 5G-TSN Integrated Systems</b> Jingwei Yang and Guanding Yu (Zhejiang University, China)
10:15-10:30	<b>Cloud-Edge Inference under Communication Constraints: Data Quantization and Early Exit</b> Yu Gao, Wei Wang, Dezhi Wang, Huiqiong Wang and Zhaoyang Zhang (Zhejiang University, China)

### RS3: Signal Detection and Channel Decoding

<b>Time:</b> Thursday, October 20, 2022, 09:00–10:30 Beijing Time	
<b>Place:</b> VIP Room	
Time	Contents
09:00-09:15	<b>Extrinsic Graph Neural Network-Aided Expectation Propagation for Turbo-MIMO Receiver</b> Xingyu Zhou (Southeast University, China); Jing Zhang (Southeast University & National Mobile Communications Research Lab, China); Chao-Kai Wen (National Sun Yat-sen University, Taiwan); Shi Jin (Southeast University, China)
09:15-09:30	<b>Learning Statistically Robust MIMO Detection with Imperfect CSI</b> Yi Sun, Hong Shen and Wei Xu (Southeast University, China); Chunming Zhao (National Mobile Communications Research Laboratory, Southeast University, China)
09:30-09:45	<b>An Improved OFDMA Design for Low-Cost Receivers</b> Zeliang Ou and Hongwen Yang (Beijing University of Posts and Telecommunications, China)
09:45-10:00	<b>A DNN-based Decoding Scheme for Communication Transmission System over AWGN Channel</b> Meilin He (Hangzhou Dianzi University, China)
10:00-10:15	<b>Age of Information With Product Coded IoT Systems</b> Wenrui Zhang and Ming Jiang (Southeast University, China); Chunming Zhao (National Mobile Communications Research Laboratory, Southeast University, China)
10:15-10:30	<b>List-Based Detector and Access Points Selection in Cell-Free Massive MIMO Using LDPC Codes</b> Tonny Ssettumba and Roberto B. Di Renna (Pontifical Catholic University of Rio de Janeiro, Brazil); Lukas T N Landau (Pontificia Universidade Católica do Rio de Janeiro, Brazil); Rodrigo C. de Lamare (Pontifical Catholic University of Rio de Janeiro, Brazil & University of York, United Kingdom (Great Britain))

## SS2: Rate-Splitting Multiple Access for 6G

**Time:** Thursday, October 20, 2022, 11:00–12:30 Beijing Time

**Place:** Lansheng Hall

**Organizers:** Bruno Clerckx, Imperial College London, UK; Yijie (Lina) Mao, ShanghaiTech University, China

Time	Contents
11:00-11:15	<b>Batch Gradient Descent-based Optimization of WMMSE for Rate Splitting Strategy</b> Zhijie Wang, RuHui Ma and Hongjian Shi (Shanghai Jiao Tong University, China); Liwei Lin (Fujian University of Technology, China); Haibing Guan (Shanghai Jiao Tong University, China)
11:15-11:30	<b>Deep Learning-Based Rate-Splitting Multiple Access for Massive MIMO-OFDM Systems With Imperfect CSIT</b> Minghui Wu, Ziwei Wan, Yang Wang, Shicong Liu and Zhen Gao (Beijing Institute of Technology, China)
11:30-11:45	<b>Energy-efficient Federated Edge Learning for Internet of Vehicles via Rate-Splitting Multiple Access</b> Shengyu Zhang (The University of Hongkong, Hong Kong); Shiyao Zhang (Southern University of Science and Technology, China); Lawrence K. Yeung (the University of Hong Kong, Hong Kong)
11:45-12:00	<b>Rate Splitting Multiple Access-Aided MISO Visible Light Communications</b> Shuai Ma (China University of Mining and Technology, China); Guanjie Zhang and Zhi Zhang (China University of Mining and Technology, France); Rongyan Gu (China University of Mining and Technology, China); Youlong Wu (ShanghaiTech University, China); Shiyin Li (China University of Mining and Technology, China)
12:00-12:15	<b>Reconfigurable Intelligent Surfaces Empowered Cooperative Rate Splitting with User Relaying</b> Kangchun Zhao (China); Yijie Mao (ShanghaiTech University, China); Zhaohui Yang (Zhejiang University, China); Lixiang Lian (ShanghaiTech University, China); Bruno Clerckx (Imperial College London, United Kingdom (Great Britain))

## SS3: Reconfigurable Intelligent Surfaces for Future Communication and Sensing Systems

**Time:** Thursday, October 20, 2022, 11:00–12:30 Beijing Time

**Place:** Wenxi Hall

**Organizers:** Hongliang Zhang, Princeton University, USA; Boya Di, Peking University, China; Marco Di Renzo, Paris-Saclay University, France

Time	Contents
11:00-11:15	<b>RIS-Assisted Downlink Multi-cell Communication Using Statistical CSI</b> Luoluo Jiang, Caihong Luo and Xiao Li (Southeast University, China); Michail Matthaiou (Queen's University Belfast, United Kingdom (Great Britain)); Shi Jin (Southeast University, China)
11:15-11:30	<b>STAR-RISs Assisted NOMA Networks: A Tile-based Passive Beamforming Approach</b> Ruikang Zhong and Xidong Mu (Queen Mary University of London, United Kingdom (Great Britain)); Xiaoxia Xu (Wuhan University, China); Yue Chen and Yuanwei Liu (Queen Mary University of London, United Kingdom (Great Britain))

<b>11:30-11:45</b>	<p><b>Parameter Estimation for Reconfigurable Holographic Surfaces enabled Radars</b> Xiaoyu Zhang (Peking University, China); Haobo Zhang (Peking University, China); Hongliang Zhang (Princeton University, USA); Liang Liu (The Hong Kong Polytechnic University, China); Boya Di (Peking University, China)</p>
<b>11:45-12:00</b>	<p><b>Intelligent Reflecting Surface-Aided Maneuvering Target Sensing: True Velocity Estimation</b> Lei Xie (The Hong Kong University of Science and Technology, China); Xianghao Yu and Shenghui Song (The Hong Kong University of Science and Technology, Hong Kong)</p>
<b>12:00-12:15</b>	<p><b>Error Propagation and Overhead Reduced Channel Estimation for RIS-Aided Multi-User mmWave Systems</b> Zhendong Peng (University of Electronic Science and Technology of China, China); Cunhua Pan (Southeast University, China); Gui Zhou (Friedrich-Alexander-University Erlangen-Nürnberg, Germany); Hong Ren (Southeast University, China)</p>

### SS4: Next Generation Multiple Access (NGMA) towards 6G

<p><b>Time:</b> Thursday, October 20, 2022, 11:00–12:30 Beijing Time <b>Place:</b> VIP Room <b>Organizers:</b> Yuanwei Liu, Queen Mary University of London, UK; Zhiguo Ding, The University of Manchester, UK; Naofal Al-Dhahir, University of Texas at Dallas, USA</p>	
Time	Contents
<b>11:00-11:15</b>	<p><b>Joint Detection for Massive Grant-free Access via BiGAMP</b> Shanshan Zhang (Shanghai Jiao Tong University, China); Ying Cui (The Hong Kong University of Science and Technology, China); Wen Chen (Shanghai Jiao Tong University, China)</p>
<b>11:15-11:30</b>	<p><b>Energy Consumption Minimization for NOMA-Assisted Mobile Edge Computing</b> Hao Xu (Wuhan University, China); Yao Zhu and Yulin Hu (RWTH Aachen University, Germany); Kai Xiang (Hubei University of Economic, China); Anke Schmeink (RWTH Aachen University, Germany)</p>
<b>11:30-11:45</b>	<p><b>Joint Trajectory Design and Resource Allocation for UAV-assisted Jamming NOMA Cognitive UAV networks</b> Ruomei Sun (Nanjing University of Aeronautics and Astronautics, China); Yuhang Wu (NanJing University of Aeronautics and Astronautics, China); Fuhui Zhou (Nanjing University of Aeronautics and Astronautics, China); Qihui Wu (PLA Uniceristy of Science and Technology, China)</p>
<b>11:45-12:00</b>	<p><b>A sky-ground NOMA receiver for cellular-connected UAVs</b> Donatella Darsena (University of Napoli Parthenope, Italy); Ivan Iudice (CIRA - Italian Aerospace Research Centre, Italy); Francesco Verde (University of Napoli Federico II &amp; National Inter-University Consortium for Telecommunications, Italy)</p>

» Friday, October 21, 2022

### RS4: Millimeter Wave Systems (6)

<b>Time:</b> Friday, October 21, 2022, 14:00–15:30 Beijing Time	
<b>Place:</b> Lansheng Hall	
Time	Contents
14:00-14:15	<b>Enhanced Physical Layer Secure Key Generation using mmWave Beamforming</b> Navaneetha C. Manjappa (Humboldt University of Berlin & IHP - Leibniz-Institut Für Innovative Mikroelektronik, Germany); Lara Wimmer (IHP Leibniz Institut für Innovative Mikroelektronik, Germany); Nebojsa Maletic (IHP - Leibniz-Institut für Innovative Mikroelektronik, Germany); Eckhard Grass (IHP & Humboldt-University Berlin, Germany)
14:15-14:30	<b>Low Computational Complexity Algorithm for Hand Gesture Recognition using mmWave RADAR</b> Yanhua Zhao (IHP, Germany and HU, Berlin, Germany); Vladica Sark (IHP - Leibniz-Institut für Innovative Mikroelektronik, Germany); Milos Krstic (IHP, Germany); Eckhard Grass (IHP & Humboldt-University Berlin, Germany)
14:30-14:45	<b>Exploiting Lens Antenna Arrays in Uplink mmWave MU-MIMO Networks: Joint Beamforming Optimization</b> Chongjun Ouyang, Hao Xu, Xujie Zang and Hongwen Yang (Beijing University of Posts and Telecommunications, China)
14:45-15:00	<b>Fast Millimeter-Wave Base Station Discovery via Data-driven Beam Training Optimization</b> Ziying Wang, Chunshan Liu and Lou Zhao (Hangzhou Dianzi University, China); Min Li (Zhejiang University, China)
15:00-15:15	<b>Sensing-based Two-timescale Channel Estimation for RIS-assisted Hybrid Millimeter Wave Systems</b> Jiabei Sun, Lou Zhao and Chunshan Liu (Hangzhou Dianzi University, China); Yue Gao (Technology and Engineering Center for Space Utilization & Chinese Academy of, China)
15:15-15:30	<b>Countering jamming attacks against beam alignment protocol for millimeter wave networks</b> Donatella Darsena (University of Napoli Parthenope, Italy); Francesco Verde (University of Napoli Federico II & National Inter-University Consortium for Telecommunications, Italy)

### RS5: Signal Processing for Communications (6)

<b>Time:</b> Friday, October 21, 2022, 14:00–15:30 Beijing Time	
<b>Place:</b> Wenxi Hall	
Time	Contents
14:00-14:15	<b>Evaluation of a Gaussian Mixture Model-based Channel Estimator using Measurement Data</b> Nurettin Turan, Benedikt Fesl, Moritz Grundei, Michael Koller and Wolfgang Utschick (Technische Universität München, Germany)

14:15-14:30	<b>Variational Bayesian Inference Based Channel Estimation for OTFS System with LSM Prior</b> Qiankun Wang, Ming Lei, Ming-Min Zhao and Minjian Zhao (Zhejiang University, China)
14:30-14:45	<b>Deep Learning based Channel Prediction for OFDM Systems under Double-Selective Fading Channels</b> Yuhang Shao, Ming-Min Zhao, Liyan Li and Minjian Zhao (Zhejiang University, China)
14:45-15:00	<b>Time-delay Estimation of Coherent GPR Signal by Using Sparse Frequency Sampling and IMUSIC Method</b> Huimin Pan, Jingjing Pan and Xiaofei Zhang (Nanjing University of Aeronautics and Astronautics, China)
15:00-15:15	<b>Low Complexity Unitary Approximate Message Passing Based Equalization for OTFS System</b> Futian Ni, Ming Lei, Ming-Min Zhao and Minjian Zhao (Zhejiang University, China)
15:15-15:30	<b>Cluster Precoders for Cell-Free MU-MIMO Systems</b> Andre R. Flores (Pontifical Catholic University of Rio de Janeiro, Brazil); Rodrigo C. de Lamare (Pontifical Catholic University of Rio de Janeiro, Brazil & University of York, United Kingdom (Great Britain)); Kumar Vijay Mishra (United States DEVCOM Army Research Laboratory, USA)

### RS6: Novel Communication Techniques

<b>Time:</b> Friday, October 21, 2022, 14:00–15:30 Beijing Time	
<b>Place:</b> VIP Room	
Time	Contents
14:00-14:15	<b>Wireless Transmission of Images with the Assistance of Multi-level Semantic Information</b> Zhenguo Zhang, Qianqian Yang, Shibo He, Mingyang Sun and Jiming Chen (Zhejiang University, China)
14:15-14:30	<b>Semi-NOMA enabled Coexisting Semantic and Bit Communications</b> Xidong Mu and Yuanwei Liu (Queen Mary University of London, United Kingdom (Great Britain))
14:30-14:45	<b>Performance Evaluation of Spatial Scattering Modulation in the Indoor Environment</b> Jiliang Zhang (The University of Sheffield, United Kingdom (Great Britain)); Wei Liu and Alan Tennant (University of Sheffield, United Kingdom (Great Britain)); Weijie Qi and Jiming Chen (Ranplan Ltd., United Kingdom (Great Britain)); Jie Zhang (University of Sheffield, Dept. of Electronic and Electrical Engineering, United Kingdom (Great Britain))
14:45-15:00	<b>Analysis of Switching Probability for Hybrid FSO/RF Channels under High-altitude Platform</b> Xuantaoy Lyu and Peicong Zheng (Peng Cheng Laboratory, China); Ning Ge (Tsinghua University, China)
15:00-15:15	<b>Joint Distribution of Distance and Angle in Rectangular Finite Wireless Networks</b> Francisco J. Martin-Vega and Gerardo Gomez (University of Málaga, Spain); David Morales and Francisco Javier Lopez-Martinez (University of Granada, Spain); Mari Carmen Aguayo-Torres (Universidad de Malaga, Spain)

### SS5: Ultra Reliable and Low Latency Communications and Applications for 6G

<b>Time:</b> Friday, October 21, 2022, 16:00–17:30 Beijing Time	
<b>Place:</b> Lansheng Hall	
<b>Organizers:</b> Bo Ai, Beijing Jiaotong University, China; Yulin Hu, Wuhan University, China	
Time	Contents
16:00-16:15	<b>CU-DRL: A Novel Deep Reinforcement Learning-assisted Offloading Scheme for Supporting Vehicular Edge</b> Xu Deng (Fudan University, China); Peng Sun (Duke Kunshan University, China); Azzedine Boukerche (University of Ottawa, Canada); Liang Song (Fudan University, China)
16:15-16:30	<b>Throughput Maximization in Latency-Critical Downlink Communication with Hybrid BC-TDMA Strategy</b> Xiaopeng Yuan (RWTH Aachen University, Germany); Weiqing Yao and Xian Luo (Energy Internet Laboratory, China); Zhiwei Bao (School of Electronic Information, Wuhan University, China); Anke Schmeink (RWTH Aachen University, Germany)
16:30-16:45	<b>Energy-Efficient Scheduling in RIS-aided MEC Networks with NOMA and Finite Blocklength Codes</b> Yang Yang and M. Cenk Gursoy (Syracuse University, USA)
16:45-17:00	<b>Multi-objective Optimization of Energy and Latency in URLLC-enabled Wireless VR Networks</b> Xinyu Gao, Yixuan Zou, Wenqiang Yi and JiaQi Xu (Queen Mary University of London, United Kingdom (Great Britain)); Ruiqi Liu (ZTE Corporation, China); Yuanwei Liu (Queen Mary University of London, United Kingdom (Great Britain))
17:00-17:15	<b>Sum Throughput Maximization for MISO-Assisted Multi-User Downlink Transmissions in the FBL Regime</b> Zhicheng Xiao (University of Wuhan, China); Yulin Hu (RWTH Aachen University, Germany); Chao Shen (Shenzhen Research Institute of Big Data, China); Bo Ai (Beijing Jiaotong University, China); Anke Schmeink (RWTH Aachen University, Germany)

### SS6: Data-Driven Methods for Real-World Wireless Network Modeling and Optimization

<b>Time:</b> Friday, October 21, 2022, 16:00–17:30 Beijing Time	
<b>Place:</b> Wenxi Hall	
<b>Organizers:</b> Yang Li, Shenzhen Research Institute of Big Data, China; Tsung-Hui Chang, The Chinese University of Hong Kong (Shenzhen), China	
Time	Contents
16:00-16:15	<b>Zeroth-Order Block Coordinate Gradient Descent Method For Cellular Network Performance Optimization</b> Pengcheng He, Siyuan Lu and Xin Guan (Tongji University, China); Yibin Kang (Huawei Technologies Co. Ltd, China); Qingjiang Shi (Tongji University, China)
16:15-16:30	<b>GraphHO: A Graph-based Handover Optimization System for Cellular Networks</b> Lin Yang (Noah's Ark Lab & Huawei, China); Min Cheng (Noah's Ark Lab, Huawei, Hong Kong); Jun Qu (Huazhong University of Science and Technology, China); Zhitang Chen (Huawei Technologies, Hong Kong)

<b>16:30-16:45</b>	<p><b>Downlink IP Throughput Modeling and Prediction with Deep Neural Networks</b> Jianhang Zhu (SUN YAT-SEN University, China); Jiajie Huang and Jie Gong (Sun Yat-Sen University, China); Zhen Liu (Zhengzhou University, China); ZiXu Wang (Zheng Zhou University, China); Yang Li (Shenzhen Research Institute of Big Data, China); Yibin Kang (Huawei Technologies Co. Ltd, China)</p>
<b>16:45-17:00</b>	<p><b>Data-driven Extreme Events Modeling for Vehicle Networks by Personalized Federated Learning</b> Paul Zheng, Yao Zhu, Yulin Hu and Anke Schmeink (RWTH Aachen University, Germany)</p>
<b>17:00-17:15</b>	<p><b>Multi-Grid-Based Localized Statistical Channel Modeling: A Beamspace Radio Map Approach</b> Xinzhi Ning (Tongji University, Shanghai, China); Shutao Zhang (The Chinese University of Hong Kong, Shenzhen, China); Xi Zheng (Networking and User Experience Lab, Huawei Technologies, Shenzhen, China); Tsung-Hui Chang (The Chinese University of Hong Kong, Shenzhen, China)</p>

### SS7: Orthogonal Time Frequency Space (OTFS) Modulation for Wireless Communication

<p><b>Time:</b> Friday, October 21, 2022, 16:00–17:30 Beijing Time  <b>Place:</b> VIP Room  <b>Organizers:</b> <b>Zhiqiang Wei</b>, Friedrich-Alexander University Erlangen-Nuremberg, Germany;  <b>Shuangyang Li</b>, University of New South Wales (UNSW), Australia</p>	
Time	Contents
<b>16:00-16:15</b>	<p><b>Achieving the Optimal Transceiver Beamforming for Multi-User and Multi-Target DFRC System</b> Yao Liu (University of Science and Technology of China, China); Jizhe Zhou, Ying Du and Kaifeng Han (China Academy of Information and Communications Technology, China); Jiamo Jiang (China Academy of Information and Communications Technology (CAICT), China); Weidong Wang (University of Science and Technology of China, China); Chen Li (University of Science And Technology of China, China)</p>
<b>16:15-16:30</b>	<p><b>Reliability Analysis of Stochastic Geometry-based Multi-UAV-aided LEO-Satcom under OTFS</b> Junfan Hu (Xidian University, China); Yi Jin (Southeast University, China); Jia Shi, Xuan Liu, Zhenfei Dai and Zan Li (Xidian University, China)</p>
<b>16:30-16:45</b>	<p><b>On the Achievable Rate of MMSE-based MIMO OTFS Systems</b> Ruoxi Chong (Queens University Belfast, United Kingdom (Great Britain)); Mohammadali Mohammadi and Hien Ngo (Queen's University Belfast, United Kingdom (Great Britain)); Simon Cotton (Queen's University, Belfast, United Kingdom (Great Britain)); Michail Matthaiou (Queen's University Belfast, United Kingdom (Great Britain))</p>
<b>16:45-17:00</b>	<p><b>A Low-Complexity Cross-Domain OAMP Detector for OTFS</b> Wen Haifeng (The Hong Kong University of Science and Technology (Guangzhou), China); Weijie Yuan (Southern University of Science and Technology, China); Nan Wu (Beijing Institute of Technology, China)</p>
<b>17:00-17:15</b>	<p><b>Deep learning with a self-adaptive threshold for OTFS channel estimation</b> Xiaoqi Zhang (SUSTech, China); Weijie Yuan (Southern University of Science and Technology, China); Chang Liu (University of New South Wales, Australia)</p>

## Online Conference Guidelines

### 1. Download Voov Meeting: <https://meeting.tencent.com>

### 2. Join a session meeting room:

- 1) Find your session program on [https://www.aconf.org/conf\\_185955/program.html](https://www.aconf.org/conf_185955/program.html)
- 2) Find specific session and visit meeting room
- 3) Enter your participant code to access the meeting room. You can find your participant code from the email sent by ISWCS 2022. Or you can find the participant code in the dashboard after sign-in (<https://www.aconf.org/u/ticket.html>). Make sure you have paid the registration, otherwise the participant code is not available to enter the meeting room.



### 3. Launch Voov Meeting and entering the meeting room

- 1) Please change your name to “Paper ID + Your name”
- 2) Config your voice and video settings.

## Contact

### Yunlong Cai (Zhejiang University)

E-mail: [ylcai@zju.edu.cn](mailto:ylcai@zju.edu.cn)

### Nana (Conference Services)

E-mail: [nana@chytey.com](mailto:nana@chytey.com)

Cell phone: 18627754146



## Partners and Technical Sponsors:

