One6G view on propagation models/measurements and antennas for next generation MIMO systems

Abstract:

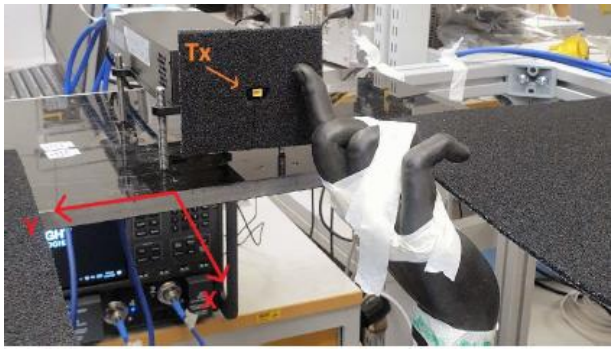
Massive MIMO systems are regarded as key technology in enabling next-generation mobile communications system. However, distributed architectures and high frequency bands (mmWave and sub-THz) create many new challenges, such as the design of integrated nano arrays, the development of improved channel models and new dynamic adaptive beamforming solutions, as well as the integration of Intelligent Relective Surfaces. This panel session, organized by the one6G association (www.one6G.org), is bringing together leading experts from industry and academia to discuss and explore future challenges and opportunities associated with MIMO modeling, measurements, and antennas.

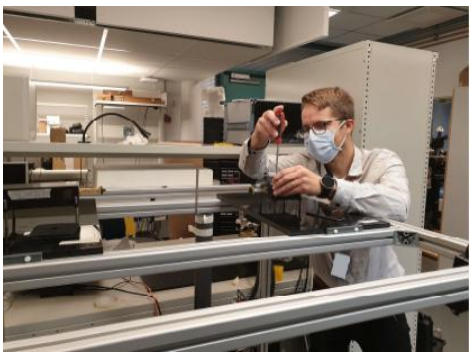
Workshop outline:

Format: 90 min panel session
1. 20 min: brief introduction of one6G association, the panel members, and also some teaser slides on the subject
2. 40 min: panel discussion (supported by a list of questions available to all panel members)
3. 30 min: questions and comments from the audience (open discussion)

Panel Session Leader: (confirmed)
- Rahim Tafazolli (5G/6GIC, UK)

Panel Members: (confirmed)
- Pekka Kyösti (Keysight, Finland)
- José F. Monserrat (UP Valencia, Spain)
- Christian Schneider (TU Ilmenau, Germany)
- Thomas Kuerner (TU Braunschweig , Germany)
- Mate Boban (Huawei Munich Research Center, Germany)





Panel Session Leader

Rahim Tafazolli is Regius Professor of Electronic Engineering, Professor of Mobile and Satellite Communications, Founder and Director of 5GIC, 6GIC and ICS (Institute for Communication System) at the University of Surrey. He has over 30 years of experience in digital communications research and teaching. He has authored and co-authored more than 1000 research publications and is regularly invited to deliver keynote talks and distinguished lectures to international conferences and workshops.

Panel Members

Pekka Kyösti received the M.Sc. degree in mathematics and the D.Sc. (Hons.) in communications engineering from the University of Oulu, Finland, in 2000 and 2018, respectively. He is currently a research director in 6G Flagship programme and a docent (adjunct professor) with the Centre for Wireless Communications (CWC), University of Oulu, and a senior specialist with Keysight Technologies Finland Oy. His present activities are radio channel characterization for 6G systems, and channel modelling and over-the-air emulation for 5G systems. From 1998 to 2002, he was with Nokia Networks, from 2002 to 2016, he was with Elektrobit/Anite, from 2016 onward he has been with Keysight (part time). Since 2002, he has been involved in radio channel measurements, estimation and modelling. From 2008 to 2012, he was actively developing methods for MIMO over-the-air testing. He has acted in contributor and task leader roles in many past research projects such as, e.g., WINNER (I,II,+) and METIS. He has also contributed on channel modelling on many standardization fora such as ITU-R, 3GPP (RAN1, RAN4), CTIA, and WIMAX.

Thomas Kürner (Fellow IEEE) received his Dipl.-Ing. degree in Electrical Engineering in 1990, and his Dr.-Ing. degree in 1993, both from University of Karlsruhe (Germany). From 1990 to 1994 he was with the Ins>tut für Höchsfrequenztechnik und Elektronik (IHE) at the University of Karlsruhe working on wave propagation modelling, radio channel characterisation and radio network planning. From 1994 to 2003, he was with the radio network planning department at the headquarters of the GSM 1800 and UMTS operator E-Plus Mobilfunk GmbH & Co KG, Düsseldorf, where he was team manager radio network planning support responsible for radio network planning tools, algorithms, processes and parameters from 1999 to 2003. Since 2003 he is Full University Professor for Mobile Radio Systems at the Technische Universität Braunschweig. In 2012 he was a guest lecturer at Dublin City University within the Telecommunications Graduate Ini>a>ve in Ireland. Currently he is chairing the IEEE 802.15 TAG THz. He was also the chair of IEEE 802.15.3d TG 100G, which developed the worldwide first wireless communica>ons standard opera>ng at 300 GHz. He is also the project coordinator of the H2020-EU-Japan project ThoR ("TeraHertz end-to-end wireless systems supporting ultra high data Rate applications") and Coordinator if the German DFG-Research Unit FOR 2863 Meteracom ("Metrology for THz Communications"). In 2019 he received the Neal-Shephard Award of the IEEE Vehicular Technology Society (VTS). Since 2016 he is a member of the Board of Directors of the European Association on Antennas and Propagation (EurAAP) and since 2020 a Distinguished Lecturer of IEEE VTS.

Prof. Jose F. Monserrat is full professor and Vice President of the Universitat Politècnica de València, the first technical university in Spain. His research focuses on the design of future beyond 5G wireless systems and their performance assessment. He has been involved in several European Projects, like METIS/METIS-II where he led the simulation activities, or currently 5G-CARMEN and 5G-SMART. He co-edited the Wiley book "Mobile and wireless communications for IMT-Advanced and beyond" and
the Cambridge book "5G Mobile and Wireless Communications Technology". Jose Monserrat is senior member of the IEEE and has published more than 60 journal papers. Currently his research team consists of 5 Postdoctoral fellows, 8 PhD students and 2 Master students. Jose F. Monserrat has served as advisor of the European Parliament and the World Bank Group in the vehicular 5G communications topic.

Christian Schneider received his Diploma degree in electrical engineering from the Technische Universität Ilmenau, Germany in 2001. He is currently a Group Leader at the Electronic Measurements and Signal Processing department (EMS) at the TU Ilmenau as well as at Fraunhofer IIS. He has been involved in German and European Union Funded Projects (WINNER (I, II, +), RESCUE and ITN-5VC) as a Work Package Leader and an editor of deliverables. He received a best paper award at the European
Wireless conference in 2013 and European Conference on Antennas and Propagation in 2017 as well as 2019. He has authored more than 130 publications. His research interests include multidimensional channel sounding, parameter estimation, radio propagation characterization and modelling combined with emerging concepts from machine learning and its application to wireless space-time communication and localization e.g. as integrated communication and sensing (ICAS).

Mate Boban (Senior Member, IEEE) received the Diploma degree in informatics from the University of Zagreb, Croatia, and the Ph.D. degree in electrical and computer engineering from Carnegie Mellon University, Pittsburgh, PA, USA, in 2004 and 2012, respectively. He is a Principal Research Engineer with Huawei Munich Research Center, Germany. He is an Alumni of the Fulbright Scholar Program. He has co-chaired several IEEE workshops and conferences and has been involved in European Union
Funded Projects (5G-CAR, DRIVE-C2X, and TEAM) as a Work Package Leader and an Editor of deliverables. He is actively involved in key industry and standardization bodies: 3GPP, 5GAA, and ETSI. He has coauthored three papers that received the Best Paper Award, at IEEE VTC Spring 2014, IEEE VNC 2014, and EuCAP 2019. He is an Associate Editor of IEEE Transactions on Mobile Computing. His current research interests include resource allocation, machine learning applied to wireless communication systems (in particular, V2X, and IIoT), and channel modeling.

Main point of contact

Martin Schubert (Senior Member, IEEE) received his doctoral degree in electrical engineering from the Technische Universität, Berlin, Germany, in 2002. From 2003-2012, he has been with the Fraunhofer Heinrich Hertz Institute (HHI), Germany, where he worked as senior researcher, lecturer, and team leader. Since 2013 he is principal researcher at Huawei Munich Research Center. Dr. Schubert was a corecipient of the VDE Johann-Philipp-Reis Award in 2007, and he coauthored the 2007 Best Paper Award of the IEEE Signal Processing Society. From 2009-2013 he has been Associate Editor of the IEEE Transactions of Signal Processing. He was co-chair of the 2009 VDE/EURASIP Workshop on Smart Antennas (WSA'09), publicity chair of IEEE SPAWC 2013, and Workshops Co-Chair of EuCNC 2016. He has (co-)authored 2 books, 5 book chapters, and around 150 papers on topics related to multiantenna signal processing, interference management, and resource allocation for wireless networks.