

XXXV Finnish URSI Convention on Radio Science
Tampere University, Hervanta Campus, 18 October, 2019
Final Programme

8:30-9:45, Room RN201

Wearable Computing

Chair: Elena-Simona Lohan¹, Tampere University, Finland

1. Overview of A-WEAR European Joint Doctorate Network (invited)
Aleksandr Ometov, Tampere University, Finland
2. Challenges of Privacy-Aware Localization on Wearable Devices
Viktoriiia Shubina¹, Aleksandr Ometov¹, Dragos Niculescu², and Elena-Simona Lohan¹,
¹Tampere University, Finland, ²University "Politehnica" of Bucharest, Romania
3. The Application of Deep Learning Techniques in the Electroencephalogram (EEG) Analysis
Justyna Skibińska and Radim Burget, Brno University of Technology, Brno, Czech Republic
4. Mobility-Aware Analysis of Directional Deafness in mmWave Communications
Asad Ali, Tampere University, Finland
5. Crowdsourcing Solutions for Data Gathering from Wearables
Lucie Klus¹, Elena-Simona Lohan¹, Carlos Granell², and Jari Nurmi¹,
¹Tampere University, Finland, ²Universitat Jaume I, Castellon, Spain
6. Anonymous Communication Using Wearables and Constrained Devices
Raúl Casanova Marqués and Jan Hajný, Brno University of Technology, Brno, Czech Republic

8:30-9:45, Room RH215

Satellite Communications and Networking

Chair: Bo Tan, Tampere University, Finland

1. Interference in Heterogeneous Aviation Networks
Wenbo Wang and Elena-Simona Lohan, Tampere University, Finland
2. Performance Evaluation of Low Earth Orbit Communication Satellites
Niloofar Okati¹, Islam Tanash¹, Taneli Riihonen¹, Ilari Angervuori², and Risto Wichman²,
¹Tampere University, Finland, ²Aalto University, Espoo, Finland
3. Rate and Power Throttling for Traffic Asymmetry in Reverse TDD HetNets
Rakesh Gorrepati, Nachiket Ayir, Sachin Chaudhari, and Taneli Riihonen, ¹International
Institute of Information Technology, Hyderabad, India, ²Tampere University, Finland
4. On Routing Protocols in Inter-Satellite Communications
Ilari Angervuori¹, Risto Wichman¹, and Niloofar Okati², Taneli Riihonen²,
¹Aalto University, Espoo, Finland, ²Tampere University, Finland

9:45-10:15 Coffee Break

10:15-11:30, Room RN201

Special Session: Wireless Sensing Systems in Biology and Medicine

Chair: Leena Ukkonen, Lauri Sydänheimo, Tampere University, Finland

1. LC-Tank Inspired Miniature Antenna for Implantable Biomedical Backscattering Sensing Application
Shubin Ma, Lauri Sydänheimo, Leena Ukkonen, and Toni Björninen, Tampere University, Finland
2. Compact Multi-Band PIFA with Meandered Radiator for Wireless Brain Implant Communications
Nikta Pounoori¹, Shubin Ma¹, Lauri Sydänheimo¹, Yahya Rahmat-Samii², Leena Ukkonen¹,
and Toni Björninen¹, Tampere University, Finland, ²University of California, Los Angeles, USA
3. On-Site Wireless Power Generation: Inductive Coupling Approach
Prasad Jayathurathnage, Fu Liu, and Sergei A. Tretyakov, Aalto University, Espoo, Finland
4. Resonator based Microwave Dehydration Sensor
Joni Kilpijärvi, Jarkko Tolvanen, Jari Juuti, Niina Halonen, and Jari Hannu, University of Oulu, Finland
5. Wireless Power Transfer to Intra-Abdominal Implants Using an Anatomically Adaptive
Around-the-Body Loop Antenna
Shahbaz Ahmed, Lauri Sydänheimo, Leena Ukkonen, and Toni Björninen, Tampere University, Finland

10:15-11:30, Room RH215

Software Defined Radio and Antenna Arrays

Chair: Sergey Andreev, Tampere University, Finland

1. Towards Over-the-Air Characterized Transmitter Array Nonlinearity,
Nuutti Tervo, Marko E. Leinonen, Bilal Khan, Janne P. Aikio, Timo Rahkonen, and Aarno Pärssinen,
University of Oulu, Finland
2. Software Defined Radio Based Phase Meter for Frequency Metrology,
Kalle Hanhijärvi and Anders Wallin, VTT Technical Research Centre of Finland Ltd, Espoo, Finland
3. Phase-Coherent Multichannel SDR - Sparse Array Beamforming,
Mikko Laakso, Robin Rajamäki, Risto Wichman, and Visa Koivunen, Aalto University, Espoo, Finland
4. Software-Defined Radio Test-Bed for Measuring Efficiency of Multisine Waveforms in RF
Power Transfer
Nachiket Ayir, Marcelo Trujillo, and Taneli Riihonen, Tampere University, Finland

11:30-12:30 Lunch Break

12:30-13:20, Room RN201

Keynotes

1. Centenary of URSI and the Finnish Member Committee
Ari Sihvola, Aalto University, Espoo, Finland
2. Trends and Challenges from 5G Towards 6G
Aarno Pärssinen, University of Oulu, Finland

13:20-14:35, Room RN201

Special session: Wireless Localization and Location-Aware Communications

Chair: Jari Nurmi, Tampere University, Finland

1. Wireless Positioning Research at FGI (invited)
Nicola Linty, Finnish Geospatial Research Institute FGI, Masala, Finland
2. GPS L5 Software Receiver Implementation in FGI-GSRx
Saiful Islam, Mohammad Zahidul Hasan Bhuiyan, Nicola Linty, and Sarang Thombre,
Finnish Geospatial Research Institute FGI, Masala, Finland
3. Signal Attenuation Modelling in WLAN Positioning
Terry Lines and Anahib Basiri, University College London, United Kingdom
4. Unsupervised Channel Charting with Channel State Information Using ULA and UCA
Antenna Models in 5G Network
Jaakko Pihlajasalo, Simo Ali-Löytty, and Mikko Valkama, Tampere University, Finland
5. Aroma Based Localization in GNSS-Denied Environments
Saiful Islam¹, Elena-Simona Lohan², Philipp Müller², and Mohammad Zahidul Hasan Bhuiyan¹,
Finnish Geospatial Research Institute FGI, Masala, Finland, ²Tampere University, Finland
6. Positioning Reference Signal Design for Positioning via 5G
Ruben Morales-Ferre¹, Gonzalo Seco-Granados², and Elena-Simona Lohan¹,
¹Tampere University, Finland, ²Universitat Autònoma de Barcelona, Spain

13:20-14:35, Room RH215

RF Circuits and Signal Processing

Chair: Olli-Pekka Lundén, Tampere University, Finland

1. An Integrated Power Amplifier Front-End Module with On-Chip Antenna at 180-240 GHz
Shihai He, Jiangcheng Chen, Markus Berg, Timo Rahkonen, and Aarno Pärssinen,
University of Oulu, Finland
2. THz Transceiver Development for High-Speed Communication, Sumit Pratap Singh,
Mostafa Jafari Nokandi, Mohammad Montaseri, Shihai He, Jiangcheng Chen, Timo Rahkonen,
and Aarno Pärssinen, University of Oulu, Finland
3. Cancellation of Self-Interference in OFDM Transceivers Using Zero-Crossing-Based Sampling
Micael Bernhardt¹, Fernando Gregorio², Juan Cousseau², and Taneli Riihonen,
¹Tampere University, Finland, ²Universidad Nacional del Sur, Bahía Blanca, Argentina
4. 2-D Predictive Filters for Polynomial Signals with Applications to Wind Profiler Data
Firas Laakom, Tampere University, Finland,
5. Numerical Approximations for the Gaussian Q-Function by Sums of Exponentials
Islam Tanash, Niloofer Okati, and Taneli Riihonen, Tampere University, Finland

14:35-15:05 Coffee Break

15:05-15:35, Room RN201

Keynote

3. Mobile Antenna Challenges and Opportunities
Ville Viikari, Aalto University, Espoo, Finland

15:35-16:50, Room RN201

Special Session: Radios in Defense and Security

Chair: Taneli Riihonen, Tampere University, Finland

1. MIL COM-IST-EW in the 5G/6G Era (invited)
Anders Furu, Finnish Defence Research Agency
2. Analog Cancellation of Periodic Frequency-Modulated Jamming
Karel Pärlin¹ and Taneli Riihonen², ¹Rantelon, Tallinn, Estonia, ²Tampere University, Finland
3. Synthetic Aperture Radar Imaging using COTS Components
Juha Jylhä, Harri Tolkkinen, Robert Arajärvi, Minna Väilä, and Marja Ruotsalainen,
Tampere University, Finland
4. OFDM Waveform Optimization for Joint Communications and Sensing
Sahan Liyanaarachchi, Carlos Baquero Barneto, Taneli Riihonen, and Mikko Valkama,
Tampere University, Finland

15:35-16:50, Room RH215

Fields, Waves and Radio Propagation

Chair: Jari Kangas, Tampere University, Finland

1. Theory of Characteristic Modes for Conducting and Dielectric Objects
Henrik Wallén and Pasi Ylä-Ojjala, Aalto University, Espoo, Finland
2. Enhanced Field Localization through Nested Cavity Resonators
Francisco Cuesta, Viktor Asadchy, Mohammad Mirmoosa, and Sergei Tretyakov,
Aalto University, Espoo, Finland
3. Radiation from Electric Dipole within the Time Domain
Grigorii Ptitsyn, Mohammad S. Mirmoosa, and Sergei A. Tretyakov, Aalto University, Espoo, Finland
4. Impact of Plastering Mesh on Radio Propagation: Practical RF Measurements and Basic Principles
Ari Asp¹, Tuomo Hentilä¹, Arto Hujanen², Jussa Pikkuvirta¹, Markku Renfors¹, and Mikko Valkama¹,
¹Tampere University, Finland, ²VTT, Technical Research Centre of Finland Ltd

16:50-17:00, Room RN201

Young Scientist Award

Closing