



# **ISWCS 2017**

## **Detailed Final Program**



## Monday 28th Workshops

**Workshop 1:** *LPWANs and Unmanned Aerial Vehicles in Future Wireless Networks*  
**Organisers:** Roberto Verdone, Margot Deruyck

### **Part One: Understanding the Limits of LPWAN Technologies in Automotive Applications and Smart Cities**

**9.00 – 10.30**

- Opening, Roberto Verdone (Università di Bologna, IT)
- “Wireless Technologies in Automotive Applications”, Stefania Sesia (Renault SW lab, FR)
- “The TIM ICT Smart City Reference Network and Platform”, Roberto Gavazzi (Telecom Italia Mobile, IT)
- “LoRa and NB-IOT; Performance Comparison From a Network Perspective”, Luca Feltrin, Chiara Buratti, Roberto Verdone (Università di Bologna, IT)

### **Coffee Break**

### **Part Two: UAV Aided Networks and Their Applications**

**11.00 – 12.30**

- “Future UAV Platforms”, Francesco Grimaccia (Politecnico di Milano, IT)
- “Learning From Flying Radio Access Networks”, David Gesbert (Eurecom Institute, FR)
- “Detecting the source of an RF signal with a transceiver-equipped UAV”, Gauthier Dûchene (Université libre de Bruxelles, BE), François Quitin (Université libre de Bruxelles, BE)
- “Performance Evaluation of the Dynamic Trajectory Design for an Unmanned Aerial Base Station in a Single Frequency Network”, Margot Deruyck (Ghent University – IMEC, BE), Alberto Marri (University of Bologna, IT), Silvia Mignardi (University of Bologna, IT), Luc Martens (Ghent University – IMEC, BE), Wout Joseph (Ghent University – IMEC, BE)

### **Lunch Break and ISWCS 2017 PhD Student Pitch Contest**

### **Part Three: UAV Aided Applications**

**15.00 – 16.30**

- “What Future for UAV Aided Networks and Applications?” Roberto Verdone, (IDESIO, IT)
- **Panel: Regulatory and Platform Constraints vs Potential of UAVs for Wireless Networks**  
Panelists: Roberto Gavazzi (TIM, IT), David Gesbert (EURECOM, FR), Francesco Grimaccia (Polit. Milano, IT), Anna Masutti (Univ. Bologna, IT), Roberto Verdone (IDESIO, IT). Moderator: Margot Deruyck (Ghent Univ. – IMEC, BE)

### **Coffee Break**

### **Part Four: On-Field Demos.**

**17.00 – 18.30. IDESIO Open Day**

- NIMBUS and IDESIO will demonstrate in the courtyard of the School how UAVs can be used for applications in the field of safety, smart cities and industry 4.0.



**Workshop 2:**            ***Ultra-Dense Cell-Less 5G Cellular Networks: Wireless Access and Programmable Network Architecture (5G Cell-Less Nets)***

**Organiser:**            **Marco di Renzo**

**9.00 – 9.50.**            **Keynote (University): Angel Lozano, Pompeu Fabra, Spain.**

**9.50 – 10.30.**

- *Energy-Efficient Architecture for Receive Spatial Modulation in Large MIMO Systems*,  
Ahmed Raafat, Adrian Agustin and Josep Vidal
- *Performance of Media-based Modulation in Multi-user Networks*,  
Merve Yuzgeccioğlu, Eduard Jorswieck

**Coffee Break**

**11.00 – 12.30.**

- *A Study of Angular Stationarity of 5G Millimeter Wave Channels*  
Yi Tan, Jie Huang, Rui Feng, and Cheng-Xiang Wang
- *Outage MIMO Capacity: Small Cells and Statistical Mechanics*  
Giuseppa Alfano, M. Nowak, and W. Tarnowski
- *Radio Access Network Behavior in Urban Environment*  
Panagiotis Matzoros, Christos Tsirakis, George Agapiou
- *Millimeter Wave Multi-Beam-Switching Antenna*,  
Vedaprabhu Basavarajappa, Beatriz Bedia Exposito, Lorena Cabria and Jose Basterrechea

**Lunch Break and ISWCS 2017 PhD Student Pitch Contest**

**15.00 – 15.50. Keynote (Industry): Vincenzo Sciancalepore, NEC Europe, Germany**

**15.50 – 16.30.**

- *Mobility Management as a Service for 5G Networks*  
Akshay Jain, Elena Lopez-Aguilera and Ilker Demirkol
- *User Association in Cell-less 5G Networks Exploiting Particle Swarm Optimisation*  
Tareq M. Shami, David Grace, Alister Burr

**Coffee Break**

**17.00 – 18.30.**

- *Efficient Enabling of Network Slicing in 5G Mobile Networks*  
Mohammad Asif Habibi, Bin Han and Hans D. Schotten
- *Efficient Resource Allocation and Spectrum Trading for Virtualized Multi-tenant 5G Networks*  
Christos Tsirakis, Panagiotis Matzoros, George Agapiou, Dimitris Varoutas
- *Dynamic antenna azimuth planning for 3G, 4G and future 5G broadband radio networks*  
Yingjie You and Dimitris Kolokotronis, FASMETRICS SA, Greece



## Monday 28th Tutorials

- Tutorial 1.**      *Multilayer Analysis of IoT-Based Systems*  
Pedro H. J. Nardelli, Florian Kühnlenz
- Tutorial 2.**      *Complex Systems Science Meets 5G and IoT Networks*  
Majid Butt, Irene Macaluso, Nicola Marchetti
- Tutorial 3.**      *New Modulation and Coding Paradigms for 5G and Beyond*  
Georg Böcherer, Fabian Steiner
- Tutorial 4.**      *Full-Duplex Techniques for Beyond 5G Wireless*  
Hirley Alves, Taneli Riihonen
- Tutorial 5.**      *Multidimensional Signal Reconstruction and Crowd-Sensing*  
Flavio Zabini
- Tutorial 6.**      *Spatiotemporal Stochastic Modeling for the Internet of Things*  
Moe Win, Mohamed-Slim Alouini, Hesham ElSawy
- Tutorial 7.**      *Introduction to Simultaneous Information and Power Transfer and Associated Emerging Technologies*  
Dushantha Nalin K. Jayakody, Symeon Chatzinotas, Shree Krishana Sharma, Tharindu Dilshan Ponnimbaduge
- Tutorial 8.**      *Toward 5G Vehicular Networks: When Vehicles Will Talk to Each Other*  
Alessandro Bazzi, Barbara Mavì Masini
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- 9.00 – 10.30.**      Tutorials 1, 3, 5 and 7
- Coffee Break**
- 11.00 – 12.30.**      Tutorials 1, 3, 5 and 7
- Lunch**
- 13.30 – 15.00.**      PhD Student Pitch Contest
- 15.00 – 16.30.**      Tutorials 2, 4, 6 and 8
- Coffee Break**
- 17.00 – 18.30.**      Tutorials 2, 4, 6 and 8



## Tuesday 29th

**9.00 – 9.30.**            **Opening**

**9.30 – 10.30.**        **Keynote 1: Merouane Debbah**

*Wireless AI: Challenges and Opportunities*

**Coffee Break**

**11.00 – 12.45.**        **Panel 1: *Network Slicing in 5G: From Theory to Practice***

**Moderator: Mauro Baldi (Telecom Italia Mobile).**

**Panelists: Markus Breitbach (Deutsche Telekom), Enrico Buracchini (TIM), Chen Tao (VTT), Johannes Riedl (Siemens), Omer Bulakci (Huawei)**

**Lunch Break**

**13.45 – 14.15.**        **Demo/Poster Session**

**14.15 – 16.00.**        **Special Session 1: *Machine Learning for Communication Networks***

**Organisers: Paul De Kerret, David Gesbert**

**Session Chair: Paul De Kerret, David Gesbert**

|  |   |
|--|---|
| Deep Learning Approach for Optimizing Content Delivering in Cache-enabled HetNet | Lei Lei; Lei You; Gaoyang Dai; Thang Xuan Vu; Di Yuan; Symeon Chatzinotas |
| MIMO Systems with Low-Precision ADCs: A Supervised Learning Approach             | Namyoon Lee   |
| On the Value of the Position Information in Dense Outdoor Cellular Networks      | James Gross   |
| Deep Power Learning for Interference Channels                                    | Paul de Kerret  |

**14.15 – 16.00.**        **Regular Session 1: *LTE***

**Session Chair: Didier Le Ruyet**

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|--|---|
| On Protecting Location Secrecy   | Wenhan Dai; Moe Win   |
| An MDL-MUSIC Joint Time Delay Estimation Method for LTE PRS                                  | Yuan Gao; Jiantao Xue; Chang Yongyu; Yu Zhang                                       |
| Reduced Complexity ML Interference-Aware Parallel and SIC Receivers for LTE SU-MIMO          | Elena Lukashova; Florian Kaltenberger; Raymond Knopp                                |
| A Support Vector Machine Based Sub-Band CQI Feedback Compression Scheme for 3GPP LTE Systems | Mario Cordina; Carl J. Debono   |
| A Low-Complexity Approach for Time of Arrival Estimation in OFDM Systems                     | Matteo Noschese; Fulvio Babich; Massimiliano Comisso; Chris Marshall; Marco Driusso |



**14.15 – 16.00. Regular Session 6: *Co-existence and Cooperation***  
**Session Chair: Luca Sanguinetti**

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|---|--|
| Transmitting Information and Harvested Energy over a Fading MAC with Minimum Rate Constraints | Deekshith P K; Trupthi Chougule; Shreya Turmari; Ramya Raju; Rakshitha Ram; Vinod Sharma |
| Coexistence Performance Analysis of LAA Based on Release 13                                   | Yu Zhang; Chang Yongyu; Tianyi Zeng  |
| Adaptive Step Size Selection based Bayesian Compressive Spectrum Sensing                      | Rikang Zhou; Xuekang Sun; Nuoya Zhang; Li Gao  |
| Normalized Weighted Energy Detection for Spectrum Sensing Under Random Primary Signal Arrival | Pei Hsin Huang; Ling-Hua Chang; Jwo-Yuh Wu   |
| Joint Optimization of Computing and Radio Resource under Outage QoS Constraint in C-RAN       | Yingshi Li; Hailun Xia; Shie Wu; Lu Chen   |

**14.15 – 16.00. Regular Session 11: *Protocols and Services***  
**Session Chair: Ilaria Thibault**

|   |  |
|---|--|
| Design and Implementation of a Lightweight Data Dissemination Protocol for V2V Communications | MinSik Hwang; Made Harta Dwijaksana; Hyun Seob Oh; Wha Sook Jeon         |
| Robust Discovery, Addressing and Routing Protocol for Dynamic Linear Network Protocol         | Moussa Dethié Sarr; François Delobel; Michel J. Misson; Ibrahima Niang   |
| Performance of SoftCast and H.265 in Software Radio Video Multicasting Systems                | Giuseppe Baruffa; Fabrizio Frescura                                      |
| CAP: A ContAct based Proximity Service via Opportunistic Device-to-Device Relay               | Tianhao Guo; Gang Huang; John Schormans; Wang Tong; Yue Cao              |
| Localization-Based Resource Selection Schemes for Network-Controlled LTE-V2V                  | Giammarco Cecchini, Alessandro Bazzi, Barbara M. Masini, Alberto Zanella |

**Coffee Break**

**16.30 – 18.15. Special Session 2: *Non-Orthogonal Multi-User Transmissions for Next-Generation Wireless Networks***  
**Organiser: Francesco Verde**  
**Session Chair: Francesco Verde**

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|--|---|
| Recent advances of NOMA for 5G and Beyond  | Arumugam Nallanathan                        |
| NOMA: Principles and Recent Results  | Jinho Choi                                  |
| NOMA Assisted Joint Broadcast and Multicast Transmission in 5G Networks              | Pol Henarejos; Musbah Shaat; Monica Navarro |
| Overlay Transmission of Sporadic Random Access and Broadband Traffic for 5G Networks | Gilberto Berardinelli; Harish Viswanathan   |



**16.30 – 18.15. Regular Session 2: Relaying & Cooperative Systems**  
**Session Chair: Rodrigo C. de Lamare**

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|--|---|
| Multiple-relay cooperative MIMO designs  | Donatella Darsena; Giacinto Gelli; Francesco Verde              |
| Ultra-Reliable Short Message Cooperative Relaying Protocols under Nakagami-m Fading      | Parisa Nouri; Hirley Alves; Richard Demo Souza; Matti Latva-aho |
| Compressed Cooperative Reception for the Uplink of C-RAN With Wireless Fronthaul         | Seok-Hwan Park; Kyoung-Jae Lee; Changick Song; Inkyu Lee        |
| Finite Blocklength Performance of a Multi-Relay Network with Best Single Relay Selection | Yulin Hu; Christopher Schnelling; Yassine Amraue; Anke Schmeink |
| Buffer-Assisted Physical-Layer Network Code Designs for Cooperative Systems              | Jiaqi Gu; Rodrigo C. de Lamare; Mario Huemer                    |

**16.30 – 18.15. Regular Session 7: Resource Allocation and Management**  
**Session Chair: Mohamad Assaad**

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|---|---|
| Decentralized Resource Allocation for Heterogeneous Cellular Networks                             | Obinna Oguejiofor; Li Zhang; Mohanad Alhabo   |
| Inbound Handover Interference-Based Margin for Load Balancing in Heterogeneous Networks           | Mohanad Alhabo; Li Zhang; Obinna Oguejiofor   |
| Interference Management via Space and Frequency Domain Resource Partitioning                      | Yinan Qi; David M Gutierrez-Estevez; Mehrdad Shariat; Milos Tesanovic; Maziar Nekovee |
| Resource allocation for sensors with wireless power transfer and ambient backscatter transmission | Donatella Darsena; Giacinto Gelli; Francesco Verde                                    |
| Mobile Data Offloading under Attractor Selection in Heterogeneous Networks                        | Huan Wu; Xiang Ming Wen; Zhaoming Lu; Qi Pan  |

**16.30 – 18.15. Regular Session 12: Modulation and Waveform Designs**  
**Session Chair: Luca Sanguinetti**

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|--|---|
| An Information Theoretical Analysis of Self-Demodulating Waveform Channels                         | Karsten Wiedmann; Tobias Weber  |
| Study of the Impact of Pulse Shaping on the Performance of Spatial Modulation                      | Carlos Aurélio Faria da Rocha; Bartolomeu F. Uchôa-Filho; Didier Le Ruyet |
| Performance of Spatial Modulation Schemes Using Transmit Antenna Selection with Imperfect Feedback | Ahmet F Coskun; Oguz Kucur  |
| Transmission Strategies in Multi-User Millimeter Wave Systems                                      | Samip Malla; Giuseppe Abreu   |
| EXIT-Based Evolutionary Optimization of Continuous Phase Modulation Waveforms                      | Vito Dantonà; Berthold Lankl  |



## Wednesday 30th

9.00 – 10.00.

**Keynote 2: David Gesbert**

*Sky is the Limit: Flying Access Networks for Beyond 5G*

10.00 – 11.00.

**Keynote 3: Moe Win**

*Network Location and Navigation: From Foundation to Operation*

**Coffee Break**

11.30 – 13.15.

**Panel 2: *Connecting Vehicles. How?***

**Moderator: Roberto Verdone (Università di Bologna).**

**Panelists: Pierluigi Zampieri (Ducati Motor Holding, IT), Angellotti Serino (Maserati, IT),  
Ilaria Thibault (Vodafone, UK), Alessandro Bazzi (National Research Council, IT)**

**Lunch Break**

14.15 – 14.45.

**Demo/Poster Session.**

14.45 – 16.30.

**Special Session 3: *New challenges for Device-to-Device Communications in 5G and Beyond 5G Networks***

**Organiser: Mylene Pischella**

**Session Chair: Berna Ozbek**

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|---|--|
| Interference management for multiuser multiantenna OFDMA underlying device-to-device communications | Berna Özbek; Mylene Pischella; Didier Le Ruyet   |
| Distributed antenna selection with Message Passing Algorithm for MIMO D2D communications            | Yi Yu; Mylene Pischella; Didier Le Ruyet   |
| Overlay D2D vs. Cellular Communications: A Stability Region Analysis                                | Rita Ibrahim; Mohamad Assaad; Berna Sayrac; Anthony Ephremides   |
| <i>ACCENT5: a Vision for 2D Communications within 5G Networks</i>                                   | <i>Anael Bourrous; Lorenzo Iacobelli; Mylene Pischella; Rostom Zakaria; Ali Dziri; Alain Untersee; Olivier Rousset; Quentin Bodinier; Faouzi Bader</i> |

14.45 – 16.30.

**Regular Session 3: *IoT & Energy Harvesting***

**Session Chair: Fulvio Babich**

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|---|--|
| Performance Analysis of Time Diversity Combining with Frequency Offset for Cellular IoT | Louis-Adrien Dufrene; Matthieu Crussière; Jean-François Hélard; Jean Schwoerer |
| On the Scalability of Uncoordinated Multiple Access for the Internet of Things          | Giovanni Chisci; Hesham ElSawy; Andrea Conti; Mohamed-Slim Alouini; Moe Win    |
| Communication over a Time Correlated Channel with an Energy Harvesting Transmitter      | Mehdi Salehi Heydar Abad; Deniz Gündüz; Ozgur Ercetin                          |
| A Fast Energy-Aware Multi-Target Detection Technique using Binary Wireless Sensors      | Pouya Ghofrani; Anke Schmeink  |





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| Information Theoretic Principles of Universal Discrete Denoising | Janis Noetzel; Andreas Winter |
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**14.45 – 16.30. Regular Session 8: *Network Optimisation A***  
**Session Chair: Rodrigo C. de Lamare**

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|---|---|
| A Traffic Prediction Algorithm Based on Bayesian Spatio-Temporal Model in Cellular Network  | Zhen Zhang; Fangfang Liu; Zhimin Zeng; Wen Zhao         |
| Impact of Retransmissions on the Quality of Experience with Realistic Channel Model         | Deniz Ufuk Uras Garip; Onur Çalık; Gunes Karabulut Kurt |
| Hybrid Automatic Neighbor Relations for 5G Wireless Networks                                | Ali Gorcin; Nicolae Cotanis                             |
| Dynamic SDN Controllers-Switches Mapping For Load Balancing and Controller Failure Handling | Hussein Ammar; Youssef Nasser; Ayman Kayssi             |
| Investigation of Machine Learning Based Network Traffic Classification                      | Zhong Fan; Ran Liu                                      |

**14.45 – 16.30. Regular Session 13: *MIMO***  
**Session Chair: Marco Chiani**

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| On the Performance of Full-Duplex Relaying Schemes for Point-to-Point MIMO with Large Antenna Arrays | Mengxue Tang; Mikko Vehkaperä  |
| Fast MCS Selection Method Using Multiple MCS Mapping Functions for OFDM-MIMO Multiplexing            | Sota Harashina; Yasuhiro Kuge; Mamoru Sawahashi; Keisuke Saito         |
| Hierarchical Beamforming for Downlink Fog RAN  | Hussein Al-Shatri; Anja Klein  |
| LR Based Pre-Coding Aided Spatial Modulation with Sub-optimal Detection for V2X Communications       | Raymundo Ramirez-Gutierrez; Li Zhang; Lie-Liang Yang; Jaafar Elmighani |
| Precoding Design With Emission Levels Control For mmWave Hybrid Two-Stage Architectures              | Jonathan Gambini   |

**Coffee Break**

**17.00 – 18.25. Special Session 4: *Communication, Security and Data Analysis in the Social Internet of Things***  
**Organisers: Riccardo Pecori, Antonio Iera**  
**Session Chair: Riccardo Pecori**

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| Internet of Things Toward Social IoT   | Riccardo Pecori  |
| A framework for IoT and E-Health Systems Integration based on the Social Internet of Things Paradigm | Giuseppe Ruggeri; Orazio Briante   |
| An Anonymization Protocol for the Internet of Things   | Luca Davoli; Yanina Protskaya; Luca Veltri   |
| Mobility-aware Handover Strategies in Smart Cities   | Massimo Dalla Cia; Federico Mason; Davide Peron; Federico Chiariotti; Michele Polese; Toktam Mahmoodi; Michele Zorzi; Andrea Zanella |



**17.00 – 18.25. Regular Session 4: *Satellite and Airborne Communications***  
**Session Chair: Alessandro Ugolini**

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| On Cooperation in Satellite DVB-S2X Receivers Through a Capacity Constrained Link                 | Michelangelo Ricciulli; Fredrik Rusek                              |
| Joint Frequency Assignment and Flow Control for Hybrid Terrestrial-Satellite Backhauling Networks | Musbah Shaat; Ana Pérez-Neira; Guillem Femenias; Felip Riera-Palou |
| Coverage, Capacity and Interference Analysis for an Aerial Base Station in Different Environments | Daniele Cileo; Navuday Sharma; Maurizio Magarini                   |
| A System Level Approach to the Application of Multiuser Detection in Multibeam Satellite Systems  | Alessandro Ugolini; Giulio Colavolpe; Alessandro Vanelli-Coralli   |

**17.00 – 18.25. Regular Session 9: *Network Optimisation B***  
**Session Chair: Gianni Pasolini**

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| Extending the Range of Full-Duplex Radio with Multi-Carrier Partial Overlapping                 | Hamid Reza Barzegar; Luca Reggiani; Laura Dossi               |
| Beamforming Optimization with Hybrid Association in C-RANs Under a Limited Backhaul             | Alireza Zamani; Saeed Shojaee; Omid Taghizadeh; Anke Schmeink |
| Joint Merging Overlapped Virtual Cells and Designing Beamforming in Ultra Dense Network         | Lu Chen; Hailun Xia; Zhimin Zeng; Shie Wu                     |
| Optimised Clustering Algorithm-Based Centralised Architecture for Load Balancing in IoT Network | Thair Abed Al-Janabi; Hamed Saffa Al-Raweshidy                |

**17.00 – 18.25. Regular Session 14: *Coding and Cryptography***  
**Session Chair: Fabian Steiner**

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| Polar Codes over Fading Channels with Power and Delay Constraints                            | Deekshith P K; Sahasranand K R  |
| Mitigating Clipping Effects on Error Floors under Belief Propagation Decoding of Polar Codes | Ahmed Elkelesh; Sebastian Cammerer; Moustafa Ebada; Stephan ten Brink |
| Complexity-Constrained Spatially Coupled LDPC Codes based on Protographs                     | Massimo Battaglioni; Marco Baldi; Enrico Paolini                      |
| Quantum Key Distribution with a Control Key  | Junaid ur Rehman; Youngmin Jeong; Hyundong Shin                       |



## Thursday 31st

- 9.00 – 10.00.**      **Keynote 4: Giuseppe Caire**  
*Beyond Massive MIMO: Trends in Very Large Multiple Antenna Systems*
- 10.00 – 10.15.**      **Closing**
- Coffee Break**
- 10.45 – 12.30.**      **Special Session 5: *Post-OFDM Waveforms for 5G Radio Access Technology, From Wireless Broadband to Critical MTC***  
**Organiser: Daniel Roviras**

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| Post OFDM Waveforms Comparison for Critical Machine Type Communications      | Rafik Zayani   |
| Comparison of Promising Candidate Waveforms for 5G: WOLA-OFDM Versus BF-OFDM | Robin Gerzaguët; Yahia Medjahdi; David Demmer; Rafik Zayani; Jean-Baptiste Doré; Hmaied Shaiek; Daniel Roviras |
| On frequency-domain equalization for FBMC-PAM communication systems          | Davide Mattera; Mario Tanda; Maurice Bellanger   |
| Grouped Linear Constellation-Precoding for Subcarrier Index Modulation OFDM  | Juliana Inácio; Bartolomeu F. Uchôa-Filho; Didier Le Ruyet   |

- 10.45 – 12.30.**      **Regular Session 5: *Massive MIMO***  
**Session Chair: Giuseppa Alfano**

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| Performance/Complexity Comparison of SVD vs SURV for Subspace Estimation in Noncoherent Massive MIMO | George Yammine; Robert F.H. Fischer  |
| Evaluating Massive MIMO Precoding based on 3D-Channel Measurements with a Spider Antenna             | Maximilian Arnold; Marc Gauger; Stephan ten Brink  |
| Low Complexity Beam Selection for Sparse Massive MIMO Systems  | Samuel Tumelero Valduga; Luc Deneire; André de Almeida; Tarcisio F. Maciel; Ramon Aparicio-Pardo |
| Wireless Information and Power Transfer in MU-Massive-MIMO with Distributed Antennas                 | Kaifeng Guo; Satrajit Mukherjee; Gerd H. Ascheid   |
| Space-Frequency Grouping Based Key Extraction for MIMO-OFDM Systems                                  | Ozan Alp Topal; Gunes Karabulut Kurt; Berna Özbek  |

- 10.45 – 12.30.**      **Regular Session 10: *Energy Efficient Systems***  
**Session Chair: Davide Dardari**

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| UEFA-M: Utility-based Energy Efficient Adaptive Multimedia Mechanism over LTE HetNet Small Cells | Ramona Trestian; Quoc-Tuan Vien; Purav Shah; Glenford E Mapp   |
| On the Effective Energy Efficiency of Ultra-Reliable Networks in the Finite Blocklength Regime   | Mohammad Shehab; Endrit Dosti; Hirley Alves; Matti Latva-aho   |
| An Energy-Aware Offloading Clustering Approach (EAOCA) in Fog Computing                          | Arash Bozorgchenani; Daniele Tarchi; Giovanni Emanuele Corazza |



Resource Allocation and Subcarrier Pairing in Energy Efficient  
Relay-Assisted OFDMA Downlink Systems

Zijian Wang; Luc Vandendorpe