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<td>08:40 am</td>
<td>Conditions</td>
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<td>Wireless: Architectures, Prototypes, and 5G Use Cases</td>
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<td>Wireless Communications</td>
<td>Green and Sustainable Wireless Networks</td>
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<td>WS-05-Keynote-02: Resilient Wireless Sensor Networks for Industrial</td>
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<td>System Design and Channel Models for Communication in Extreme</td>
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<td>02:40 pm</td>
<td>Personal Perspectives</td>
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<td>WS-09-Keynote-02: Lattice Codes for Wiretap Channels: A Finite</td>
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<td>04:00 pm</td>
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<td>WS-09-Keynote-03: Resource Allocation and Cross Layer Design in 5G</td>
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<td>WS-09-Keynote-04: When Nanotechnology meets Internet of Things</td>
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<td>MAC 1: Game Theory for Wireless Networks</td>
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<td>NET1: Routing and Localization in Vehicle Networks</td>
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<td>APP 2: Testbeds and Simulators</td>
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<td>PAN 1: Global Research Funding Opportunities: Models &amp; Lessons Learnt</td>
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<td>16:00-17:40</td>
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<td>MAC 5: Energy Efficiency and Energy Harvesting</td>
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<td>PAN 3: Roadmap to 5G and Beyond: Global Perspectives</td>
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**Monday, April 4**

- **08:15-09:00**: Opening remarks
- **09:00-10:00**: KEY 1: 5G Physical Layer and MAC: Opportunities and Challenges
- **10:00-10:30**: Morning Break
- **10:30-12:10**: PHY11: Cellular Networks I
- **12:10-14:00**: Lunch
- **14:00-15:40**: MAC-I1: MAC Design 1
- **15:40-16:00**: Afternoon Break

**Tuesday, April 5**

- **09:00-10:00**: KEY 2: Opportunism and Symbiosis in Mobile Cloud Computing: The Promise and the Challenges
- **10:00-10:30**: Morning Break
- **10:30-12:10**: PHY12: Interference Management II
- **12:10-14:00**: Lunch
- **14:00-15:40**: MAC-I2: MAC Design 2
- **15:40-16:00**: Afternoon Break
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<tr>
<td>09:00-10:00</td>
<td>KEY 3: Resilient Wireless Communications - A Frontier to Be Challenged</td>
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<td>10:00-10:30</td>
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<td>10:30-11:10</td>
<td>PHY23: Energy Harvesting II</td>
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<td>PHY24: Physical Layer Security II</td>
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<td>PHY25: Selected Topics in Communications I</td>
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<td>PHY26: Relaying and Cooperative Communications II</td>
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<td>MAC 10: Spectrum Management and Cognitive Radio</td>
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<td>NET16: LTE Network Planning and Configuration</td>
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<td>NET17: Multicast</td>
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<td>NET18: Network Coding</td>
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<td>NET19: D2D, UAV, and IOT Systems</td>
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<td>APP 8: Applications Using Emerging wireless technologies</td>
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<td>PAN 7: Security Issues &amp; Challenges</td>
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<td>12:10-12:50</td>
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<td>14:00-14:40</td>
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<td>PHY29: mmWave Communications</td>
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<td>MAC 11: Efficient Resource Allocation</td>
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<td>NET21: Media Streaming in Wireless Networks</td>
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<td>APP 9: Smart Grids and Energy-Aware Protocols for UAV</td>
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<td>PHY31: Modulation and Coding</td>
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<td>PHY32: Space Time Block Codes</td>
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<td>PHY33: Selected Topics in Communications III</td>
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<td>MAC 12: MAC Design 3</td>
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<td>NET24: D2D Communications</td>
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<td>NET27: Network Planning and Simulation</td>
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<td>APP 10: QoE-QoS of Cellular Networks</td>
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### WS-10-Keynote-01: IoT Security: What Are We Talking About?

**Marc Dacier, QCRI, Qatar**

**Room: Dukhan**
- Chair: Soumya Kanti Datta (EURECOM & Co-Founder, Future Tech Lab, France)

The security of the so called "Internet of Things" but, more generally, the problems linked to the security of cyber physical ecosystems is receiving a lot of attention in the media as well as within the scientific community. In this talk, I will look into the new challenges present in such environments, describe existing approaches that could probably be used to better understand and protect them and finish by looking into some new paths for research.

### WS-01-Keynote-01: Addressing Spectrum Scarcity through Optical Wireless Communications

**Mohamed-Slim Alouini, KAUST, Saudi Arabia**

**Room: PR 5**
- Chair: Mohamed M. Abdallah (Texas A&M University at Qatar, Qatar)

Rapid increase in the use of wireless services over the last two decades has lead the problem of the radio-frequency (RF) spectrum exhaustion. More specifically, due to thisRF spectrum scarcity, additional RF bandwidth allocation, as utilized in the recent past, is not anymore a viable solution to fulfill the demand for more wireless applications and higher data rates. The talk goes first over the potential offered by optical wireless communications to relieve spectrum scarcity. It then summarizes some of the challenges that need to be surpassed before such kind of systems can be massively deployed. Finally the talk offers an overview of some of the recent results for the determination of the capacity of optical wireless channels.

### WS-03-Keynote-01: Fighting Exponential Traffic Growth - Is Mobile Network Energy Efficiency a Desperate Game?

**Markus Gruber, Nokia Bell Labs, Germany**

**Room: PR 6**
- Chair: M. Majid Butt (Trinity College Dublin, Ireland)

This talk starts with presenting energy efficiency in the light of historical developments, highlights energy consumption facts, and reveals the two biggest misconceptions about energy efficiency in networks. It also discusses methodologies for evaluating how green a network is and what to expect till 2020. Finally, a vision towards (near) zero power networking is sketched.

### WS-04-Keynote-01: Multi-beam MIMO for Millimeter-Wave Wireless: Architectures, Prototypes, and 5G Use Cases

**Akbar Sayeed (Univ. of Wisconsin-Madison, USA)**

**Room: PR 7**
- Chair: Miurel Tercero (Ericsson AB, Sweden)

Millimeter-wave (mmW) technology is emerging as a key enabler for meeting the Gigabit rate and millisecond latency requirements for 5G networks. In addition to the larger (multi-GHz) bandwidths, mmW frequencies naturally enable massive MIMO operation with compact-sized high-dimensional 2D antenna arrays. However, harnessing the opportunities of mmW MIMO poses new challenges in communication theory, signal processing, antenna design, RF architecture, analog-digital interface, and baseband
In particular, while electronic multi-beamforming and data multiplexing is a key operational functionality, no existing systems can deliver it: conventional digital approaches suffer from a prohibitively high complexity, and the current phased array-based systems for RF beamforming are limited to single beams. I will first outline a beamspace MIMO framework for the design and analysis of 2D massive MIMO systems, and the role of beamspace channel sparsity in reducing complexity. A hybrid analog-digital transceiver architecture - continuous aperture phased (CAP) MIMO - that achieves multi-beamforming with a lens array and enables performance-complexity optimization will be highlighted. Initial theoretical and numerical results on the potential of mmW MIMO will be presented, including dense beamspace multiplexing capability and gains in capacity and power efficiency. Results from ongoing effort in CAP-MIMO prototype development for technology translation will be presented, along with an outlook for emerging Gigabit applications and 5G use cases, including backhaul, last-mile connectivity, and small-cell mobile access networks.

**WS-05-Keynote-01: Technology Trends for Communications in Extreme Conditions**

*Hussein Mouftah, University of Ottawa, Canada*

*Room: PR 8*

*Chair: Tuncer Baykas (Istanbul Medipol University, Turkey)*

Over the past few decades first responders, namely police, fire department and Emergency Medical Services (EMS) have each developed privately-operated narrowband wireless services to meet their communications needs. However, recent incidents, whether natural or human made, have exposed that the incompatibility between these wireless services, as well as their limited capacity, often presents critical threats to the lives of first responders and the public in general. Thus, there is a persistent need for a unified broadband wireless solution that can support real-time collaboration and information sharing among different types of first responders. LTE presents itself as a promising candidate for such a network due to its numerous advantages such as its large geographical footprint, large bandwidth, Quality of Service (QoS) capabilities, etc. Nevertheless, there are unique requirements and challenges for broadband wireless public safety networks. The most important requirement is interoperability, which means that personnel in different agencies have to be able to communicate directly. This requirement, combined with the limited bandwidth assigned to public safety networks in North America for instance, raises multiple challenges relating to bandwidth allocation, prioritization and scheduling, spectral efficiency, and QoS achievement. Thus, in order to extend the available bandwidth, cognitive radio access can be used in conjunction with the LTE network. Another important requirement for public safety networks is the security and privacy of information, which may not be the same for all emergency agencies. Finally, network robustness is an important requirement that has to be achieved even in the case of major incidents such as natural disasters that take out part of the network. Thus the main objective of this presentation is to address all these issues of LTE interoperability, bandwidth allocation, security and privacy, and robustness, for a first responder network.

**WS-06-Keynote-01: Industrial IoT with 5G**

*Linus Thrybom, ABB Corporate Research, Sweden*

*Room: PR 9*

*Chair: Meryem Simsek (Technische Universität Dresden, Germany)*

Industrial use of wireless communications is today limited to a few domains but has gained interest the last years within industrial verticals since it can reduce cost, improve flexibility and production. This keynote will exemplify the current industrial usage of wireless communications as well as its requirements, and then address the gap between current research activities in the academia and the actual need in industry, in order to enable a wide scale adoption of 5G.

**Sunday, April 3, 08:40 - 09:20**

**WS-10-Keynote-02: Using Software Defined Relationships to Build the Internet of Things**

*Bob Frankston, IEEE Consumer Electronics Society, USA*

*Room: Dukhan*

*Chair: Soumya Kanti Datta (EURECOM & Co-Founder, Future Tech Lab, France)*
Consumer electronics is in transition. We are shifting from creating value and defining products using electronics to creating solutions using software. Consider the smartphone: is it a telephone, or is it a gaming unit, a calendar a camera or a television? With other form factors we can mix or match parts to create a desktop computer, a television, a home control system or whatever we can imagine. Many single-use devices and classic limitations no longer exist. The Internet is central to this revolution. It is a byproduct of creating connectivity solutions using any available means. The Internet represents a fundamental change in how we build systems and in what it means to communicate. You simply click on a URL and you’re "there". You don’t worry about wires or reserved frequency. You can just assume that the packets will appear at the destination most of the time. Using software defined relationships as building blocks is very different from traditional hardware-based engineering. Welcome to the new world of software and the Internet. There’s no dependence on providers or networks. For the IEEE these changes present an opportunity and challenge. Devices are becoming connected, opening up new frontiers as we create and share our own solutions and become less dependent on service providers. We’re at the very earliest stages of an exciting new world.

WS-01-Keynote-02: Semiconductor Lasers for Gbps Visible Light and Underwater Communications

Boon S. Ooi, KAUST, Saudi Arabia

Room: PR 5
Chair: Mohamed M. Abdallah (Texas A&M University at Qatar, Qatar)

The unregulated visible light spectrum has recently been harnessed for energy-efficient, ultra-large bandwidth, and secure data transmission. For instance, the deployment of micro light-emitting diode (LED) by mLED for visible-light communications (VLC) provides a data rate of 512 Mbit/s. This considers low cost deployment for the sole function of wireless data communications, without the intention of using the micro LEDs for illumination. YAG:Ce phosphor is also combined with LEDs for full- or half-duplex communications with 10 Mbps links over ~3 m, as developed by pureLiFi. In such scenario, whereby both VLC and solid-state lighting (SSL) are simultaneously implemented, high power light-emitters, such as laser diodes, reliable phosphor for white-light generation and spectral-efficient optical modulation techniques are critical aspects that require further research and development. For advancing the high-power light-emitter architecture, we focused on the development of laser diodes as the illumination source in place of an LED. In our recent investigation, we undertook the challenge of integrating light-generation and modulation functionalities on a semiconductor. This is achieved by employing a small foot-print, low material polarization field waveguide-modulator / laser-diode (WM-LD) configuration, fabricated seamlessly on single crystal (20/2/1) semipolar GaN substrate. The gain section produces the intense coherent beam required for subsequent white-light generation, while the integrated modulator section enabled high performance light modulation. The fabricated WM-LD exhibited a large extinction ratio of 9.4 dB and a low operating voltage range of 0 to 3.5 V, leading to a high modulation efficiency of 2.68 dB/V. The modulation effect, which is resulted from the external-field-induced quantum-confined-Stark-effect (QCSE), suggests that our device was able to operate in a manner similar to other III-V materials typically used in optical telecommunications, due to the reduced inherent piezoelectric field. A -3dB bandwidth of ~1 GHz was measured in the WM-LD, and a data rate of 1 Gbit/s (limited by the detector bandwidth) was demonstrated using non-return-to-zero on-off keying (OOK) modulation. For proof of concept demonstration of VLC and SSL dual functionalities system, we also utilized the commercially available c-plane blue GaN laser diode (LD) in conjunction with a single crystal YAG:Ce phosphor. A high data rate of 2 Gbps of the unfiltered white light was achieved using an NRZ-OOK modulation scheme, with bit-error rate (BER) less than the forward error correction (FEC) limit of 3.5×10^-3. The generated white light exhibited a color rendering index (CRI) of 58 and a correlated color temperature (CCT) of 4740 K. Alternately, by using spectral-efficient orthogonal frequency division multiplexing (OFDM) encoding scheme, a significantly higher data rate of 4.4 Gbps was demonstrated, for the individual red, blue and green LDs; the combination of which are suitable for RGB white light generation. In addition, by evaluating the phosphor-film preparation process, and optics-phosphor configurations, the generated white light can be systematically tuned from cool day light to neutral light, and still achieving over 4 Gbps data transmission based on OFDM. It is expected that further development in this area could lead to 100 Gbps data rate VLC-SSL system. In underwater optical wireless communications (UWOC), we took advantage of the low absorption of seawater in blue-green (400-550 nm) window of the electromagnetic spectrum. Using 520 nm green LD, we experimentally demonstrated 2.3 Gbit/s UWOC over 7 m distance using NRZ-OOK modulation scheme. By employing OFDM technique, we achieved 4.8 Gbit/s data rate over 5.4 m water channel using a 450 nm LD.

WS-03-Keynote-02: Doubly-massive MIMO Systems at mmWave Frequencies: Opportunities and Research Challenges

Stefano Buzzi, University of Cassino and Lazio, Italy
One of the key features of next generation wireless communication systems will be the use of frequencies in the range 10-100GHz (aka mmWave band) in densely populated indoor and outdoor scenarios. Although conventional wisdom has always considered mmWave frequencies unsuited for cellular communications, due to increased path-loss and atmospheric absorption, recent research results have shown that on distances up to one hundred meters or even more they are actually capable of providing astonishing data-rates, larger than 1 Gbps. Due to the reduced wavelength, antenna arrays with a large number of antennas can be packed in very small volumes, making it possible to consider, at least in principle, communication links wherein not only the base-station, but also the user device, are equipped with very large antenna arrays. We denote this configuration as a "doubly-massive" MIMO wireless link. This talk will focus on the fundamentals of doubly-massive MIMO systems at mmWave frequencies, showing the ultimate gains that they are able to achieve, but also highlighting the extraordinary research challenges (such as, e.g., the hardware complexity and the channel estimation problem), that they pose.

WS-04-Keynote-02: What mm-waves offer for 5G networks?

Jyri Putkonen (Nokia Bell Labs, Finland)

WS-05-Keynote-02: Resilient Wireless Sensor Networks for Industrial Monitoring

Hossam Hassanein (Queens University, Canada)

WS-06-Keynote-02: The Tactile Internet, Use Cases and 5G Enablers

Vladimir Vukadinovic, Nokia, Poland
Mobile Edge Computing (MEC) is a novel paradigm that extends cloud computing capabilities and services to the edge of the network. Due to its proximity to consumers, dense geographical distribution and support for high mobility, MEC platforms can provide services with reduced latency and improved QoS. Thus it is becoming an important enabler for consumer centric Internet of Things applications and services that require real time operations e.g. connected vehicles, smart road intersection management and smart grid. The talk will highlight an architecture for MEC and discuss its applicability to connected vehicles.

Performance Analysis of MIMO NLOS UV Communications over Atmospheric Turbulence Channels
Maryam Haghighi, Ardakani, Ali Reza Heidarpour and Murat Uysal (Ozyegin University, Turkey)

Unequal Error Protection for MPOLSK based MIMO Communication over Atmospheric Turbulence Channels
Tuğba Özbilgin (Bogazici University & TUBITAK Uekae, Turkey); Mutlu Koca (Bogazici University, Turkey)

Wireless networks composed of energy harvesting devices will introduce several transformative changes in wireless networking as we know it: energy self-sufficient, energy self-sustaining, perpetual operation; reduced use of conventional energy and accompanying carbon footprint; untethered mobility; and an ability to deploy wireless networks at hard-to-reach places such as remote rural areas, within the structures, and within the human body. Energy harvesting brings new dimensions to the wireless communication problem in the form of intermittency and randomness of available energy, which necessitates a fresh look at wireless communication protocols at the physical, medium access and networking layers. In addition, energy cooperation through wireless energy transfer enables controlled and optimized energy harvesting at the receiving end. In this talk, I will summarize recent research results on energy harvesting communication and energy cooperation in the fields of communication theory, information theory and wireless networking, and outline several open research problems.

WS-04-01: Panel: Key challenges for mmWave communications in 5G mobile networks
panel session
Akbar Sayeed (Univ. of Wisconsin-Madison, USA), Jyri Putkonen (Nokia Bell Labs, Finland), Laurent Dussopt (CEA-LETI, France), Mythri Hunukumbure (Samsung R&D, UK), Tran Gia Khanh (Tokyo Institute of Technology, Japan)
Chair: Miurel Tercero (Ericsson AB, Sweden)

**WS-05-01: Panel: Communication in Extreme Conditions**

Hossam Hassanein (Queens University), Hussein Mouftah (University of Ottawa)

Room: PR 8
Chair: Tuncer Baykas (Istanbul Medipol University, Turkey)

**WS-06-01: Panel: 5G, Vertical Industry & Tactile Internet**

Gerhard Fettweis, Linus Thrybom, Vladimir Vukadinovic

Room: PR 9
Chair: Gerhard P. Fettweis (Technische Universitaet Dresden, Germany)

Sunday, April 3, 10:00 - 11:00

**WS-01-Interactive-01: Networking Break & Poster Session for Morning WS**

Room: Dafna Foyer
Chair: Imran Shafique Ansari (Texas A&M University at Qatar (TAMUQ), Qatar)

**P1: On the Performance of Downlink Optical Communication via Relaying in the Presence of Pointing Errors**
Selami Şahin (TUBITAK-BILGEM-UEKAE, Turkey); Tuğba Özbilgin (Bogazici University & TUBITAK Uekae, Turkey)

**P2: Quad-LED Complex Modulation (QCM) for Visible Light Wireless Communication**
Robbi Tejaswi (Indian Institute of Science, Bangalore, India); T. Lakshmi Narasimhan (National Instruments, Bangalore, India); A. Chockalingam (Indian Institute of Science, India)

**WS-03-Interactive-01: Networking Break & Poster Session for Morning WS**

Room: Dafna Foyer
Chair: Imran Shafique Ansari (Texas A&M University at Qatar (TAMUQ), Qatar)

**P3: Cooperative Uplink OFDMA-MIMO Resource Allocation with Multiplexing Relays**
Salma Hamda and Mylene Pischella (CNAM, France); Daniel Roviras (Cnam, France); Ridha R. Bouallegue, B. (Ecole Supérieure des Communications de Tunis, Tunisia)

**P4: A TDMA-Based MAC between Gateway and Devices in M2M Networks**
Seungmo Kim (Virginia Tech, USA)

**WS-04-Interactive-01: Networking Break & Poster session for morning WS**

Room: Dafna Foyer
Chair: Laurent Dussopt (CEA, LETI, Minatec, France)

**P5: mmWave Channel Sounder based on COTS Instruments for 5G and Indoor Channel Measurement**
Zhu Wen (Keysight Technologies Co. Ltd, P.R. China); Hongwei Kong (Keysight Technologies Co Ltd., P.R. China); Qi Wang, Shu Li and Xiongwen Zhao (North China Electric Power University, P.R. China); Mengjun Wang (China Academy of Telecommunication Technology, P.R. China); Shaohui Sun (China Academy of Telecommunications Technology (CATT), P.R. China)

**P6: Time-Domain Sounder Validation and Reflectivity Measurements for mm-Wave Applications**
Angelos Goulanatos (University of Bristol & University of Bristol, United Kingdom); Tom Barratt, Wenfang Yuan, Siming Zhang, Mark Beach, Andrew Nix and Evangelos Mellios
WS-05-Interactive-01: Networking Break & Poster session for morning WS

Room: Dafna Foyer
Chair: Tuncer Baykas (Istanbul Medipol University, Turkey)

**P7: Image Restoration for Through-The-Earth Communications**
Sávio Neves and Lucas Silva (Universidade de Brasília, Brazil); Mylene Farias (University of Brasilia, Brazil); Andre Barreto (University of Brasilia and Nokia, Brazil)

**P8: Resource Allocation for Multibeam MISO Satellite Systems: Sum Rate versus Proportional Fair Optimization**
Dai Nguyen and Long Bao Le (INRS, University of Quebec, Canada)

WS-06-Interactive-01: Networking Break & Poster Session for Morning WS

Room: Dafna Foyer
Chair: Toktam Mahmoodi (King's College London, United Kingdom)

**P9: The 5G Enabled Tactile Internet: Applications, Requirements, and Architecture**
Meryem Simsek (Technische Universität Dresden, Germany); Adnan Aijaz (Toshiba Research Europe Ltd, United Kingdom); Mischa Dohler (King's College London, United Kingdom); Joachim Sachs (Ericsson Research & Ericsson AB, Sweden); Gerhard Fettweis (Technische Universität Dresden, Germany)

**P10: Delay-aware and Power-Efficient Resource Allocation in Virtualized Wireless Networks**
Saeedeh Parsaeefard and Vikas Jumba (McGill University, Canada); Mahsa Derakhshani (Imperial College London, United Kingdom); Tho Le-Ngoc (McGill University, Canada)

**P11: MTC Value Network for Smart City Ecosystems**
Amirhossein Ghanbari (KTH Royal Institute of Technology & Wireless@kth, Sweden); Óscar Álvarez (KTH, Royal Institute of Technology, Sweden); Jan Markendahl (Royal Institute of Technology, Sweden)

**P12: Coverage and Capacity Self-Optimisation in LTE-Advanced Using Active Antenna Systems**
Basel Barakat (University of Greenwich, United Kingdom); Mohammad Sharsheer and Kamran Arshad (University of Greenwich, United Kingdom)

**P13: Effective decentralised segmentation-based scheme for broadcast in large-scale dense VANETs**
Chong Han and Mehrdad Dianati (University of Surrey, United Kingdom); Maziar Nekovee (Samsung Electronics, United Kingdom)

**P14: Reshaping the Mobile Core Network via Function Decomposition and Network Slicing for the 5G Era**
Malla Reddy Sama (DOCOMO Euro-labs, Germany); Xueli An and Qing Wei (Huawei Technologies, Germany); Sergio A. Beker (DOCOMO Euro-Labs, Germany)

WS-10-Interactive-01: Networking Break & Poster Session for Morning WS

Room: Dafna Foyer
Chair: Soumya Kanti Datta (EURECOM & Co-Founder, Future Tech Lab, France)

**P15: User-centric Network Selection in Multi-RAT Systems**
Alaa Awad Abdellatif and Amr Mohamed (Qatar University, Qatar); Carla-Fabiana Chiasserini (Politecnico di Torino, Italy)
The growth of Internet-connected and multimedia-capable mobile devices has been exponential and the challenge to cope with the increasing demand of bandwidth-intensive services is expected to continue. Existing RF wireless technologies suffer from the spectrum scarcity, however focusing on spectrum alone to grow capacity is limited and unlikely to solve the expected network congestion. A heterogeneous network (HetNet) is a promising approach to add capacity. As we spend 90% of our times indoors and 80% of the Internet traffic happens indoors, the Wi-Fi technology has been already considered to enable indoor traffic offloading from capacity-stressed licensed RF macro/small-cells. The visible light communications (VLC) or Li-Fi is an emerging technology that uses the existing lighting infrastructure to offer high-speed data transmission combined with high-quality illumination. The Li-Fi technology has the potential for being an attractive complementary to realize indoor gigabit wireless access and to off-load data from existing cellular and Wi-Fi networks. In such multi-tiered HetNet, Wi-Fi provides overshadowing coverage for improved mobility while Li-Fi provides gigabit access for stationary or quasi-static users. In an indoor situation, a coexistence of Wi-Fi and Li-Fi is expected to improve the network throughput as well as the user's quality of service. In this talk, we focus on describing the potential of a hybrid network based on the coexistence of Wi-Fi and Li-Fi. We explore existing research activity in this area and practical framework for coexistence. We also articulate current and future research challenges based on our experience in building a proof-of-concept HetNet combining Wi-Fi and Li-Fi.
### WS-03-01: Energy Efficiency in 5G Networks

**Room:** PR 6  
**Chair:** Eduard Jorswieck (TU Dresden, Germany)

**Energy-Efficient MIMO Overlay Communications for Device-to-Device and Cognitive Radio Systems**  
*Alessio Zappone (TU Dresden, Germany); Bho Matthiesen (Technische Universität Dresden, Germany); Eduard Jorswieck (TU Dresden, Germany)*

**Resource Optimization for Energy Efficiency in Multi-cell Massive MIMO with MRC Detectors**  
*K N R Surya Vara Prasad (The University of British Columbia, Canada); Vijay Bhargava (University of British Columbia, Canada)*

**Energy Efficient Power Control for the Two-tier Networks with Small Cells and Massive MIMO**  
*Ningning Lu and Yanxiang Jiang (Southeast University, P.R. China); Fu-Chun Zheng (The University of Reading, United Kingdom); Xiaohu You (National Mobile communication Research Lab., Southeast University, P.R. China)*

**Optimal Energy Efficiency Based Scheduling with Impact of Transition Time in Small Cell On/Off**  
*Rao Zhang (Beijing University of Posts and Telecommunications, P.R. China); Xiaodong Xu (Beijing University of Posts and Telecommunications & Wireless Technology Innovation Institute, P.R. China); Shuyan Peng (Beijing University of Posts and Telecommunications, P.R. China)*

### WS-04-02: Millimeter wave-based mobile networks

**Room:** PR 7  
**Chair:** Laurent Dussopt (CEA, LETI, Minatec, France)

**Millimetre Wave Backhaul/Fronthaul Deployments for Ultra-dense Outdoor Small Cells**  
*Jialu Lun, David Grace and Alister G. Burr (University of York, United Kingdom); Yunbo Han (Huawei Technologies, P.R. China); Kari Leppanen (Huawei Technologies, Finland); Tao Cai (Huawei Technologies Sweden AB, Sweden)*

**Practical evaluation of on-demand smallcell ON/OFF based on traffic model for 5G cellular networks**  
*Gia Khanh Tran (Tokyo Institute of Technology, Japan); Hidekazu Shimodaira (Tokyo Institute of Technorogy, Japan); Roya Ebrahim Rezagah (Tokyo Institute of Technology, Japan); Kei Sakaguchi (Osaka University & Tokyo Institute of Technology, Japan); Kiyomichi Araki (Tokyo Institute of Technology, Japan)*

**5G systems: The mmMAGIC project perspective on Use cases and Challenges between 6-100 GHz**  
*Miurel Tercero (Ericsson AB, Sweden); Peter von Wrycza (Ericsson, Sweden); Aditya Umbu Tana Amah (IMDEA Networks, Spain); Joerg Widmer (IMDEA Networks Institute, Spain); Maria Fresia (Intel Deutschland, Germany); Valerio Frascolla (Intel Deutschland Gmbh, Germany); Javier Lorca (Telefonica I+D, Spain); Tommy Svensson (Chalmers University of Technology, Sweden); Marie-Helene Hamon and Sandrine Destouet Roblot (Orange Labs, France); Arnesh Vijay (Nokia Bell Labs, Poland); Victoria Sgardoni (University of Bristol & Technological Educational Institute of Chalkis Greece, United Kingdom); Mythri Hunukumbure (Samsung, United Kingdom); Jian Luo (Huawei Technologies Duesseldorf GmbH, Germany); Michael Peter (Fraunhofer HHI, Germany); Nikola Vucic (Huawei Technologies Duesseldorf GmbH, Germany)*

### WS-05-02: System Design and Channel Models for Communication in Extreme Conditions

**Room:** PR 8  
**Chair:** Tuncer Baykas (Istanbul Medipol University, Turkey)
**Architecture for Public Safety Network Using D2D Communication**

Kamran Ali (MIddlesex Universtiy London, United Kingdom); Huan X Nguyen (Middlesex University, United Kingdom); Purav Shah (Middlesex University & School of Science and Technology, United Kingdom); Quoc-Tuan Vien and Namadev Bhuvanasundaram (Middlesex University, United Kingdom)

**Channel Measurements in an Open-pit Mine using USRPs: 5G - Expect the Unexpected**

Rickard Nilsson and Jaap van de Beek (Luleå University of Technology, Sweden)

**Channel Modelling of Human Tissues at Terahertz Band**

Ke Yang (Queen Mary University Of London, United Kingdom); Qammer Hussain Abbasi (Texas A & M University, Qatar); Khalid A. Qaraqe (Texas A&M University at Qatar, USA); Akram Alomainy (Queen Mary University of London, United Kingdom); Yang Hao (Queen Mary University, United Kingdom)

**Unmanned Aerial Vehicle based Missing People Detection System employing Phased Array Antenna**

Hikari Inata, Sotheara Say, Taisuke Ando and Jiang Liu (Waseda University, Japan); Shigeru Shimamoto (Waseda University & Graduate School of Global Information and Telecommunication Studies, Japan)

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**WS-06-02: Vertical Industry & Tactile Internet**

Room: PR 9  
Chair: Meryem Simsek (Technische Universität Dresden, Germany)

**Network Coding for High-Reliability Low-Latency Wireless Control**

Vasuki Narasimha Swamy and Paul Rigge (University of California, Berkeley, USA); Gireeja Ranade (Microsoft Research, Redmond WA, USA); Anant Sahai and Borivoje Nikolić (UC Berkeley, USA)

**Towards 5G-Enabled Tactile Internet: Radio Resource Allocation for Haptic Communications**

Adnan Aijaz (Toshiba Research Europe Ltd, United Kingdom)

**Software Defined Networking for Cognitive Radio over Fiber systems**

Sarra Rebhi, Rim Barrak and Mourad Menif (Higher School of Communications of Tunis, Tunisia)

**On Amorphous Nature of Ultra Dense Networks**

Guozhen Xu, Sen Wang and Chih-Lin I (China Mobile Research Institute, P.R. China)

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**Sunday, April 3, 11:20 - 12:20**

**WS-01-02: Visible Light Communications**

Room: PR 5  
Chair: Mohamed M. Abdallah (Texas A&M University at Qatar, Qatar)

**Space Division Multiple Access in Optical Attocell Networks**

Zhe Chen, Dushyantha Basnayaka and Harald Haas (The University of Edinburgh, United Kingdom)

**Performance of MIMO Enhanced Unipolar OFDM with Realistic Indoor Visible Light Channel Models**

Anil Yesilkaya (Kadir Has University, Turkey); Farshad Miramirkhani (Özyeğin University, Turkey); Ertugrul Basar (Istanbul Technical University, Turkey); Erdal Panayirci (Kadir Has University, Turkey); Murat Uysal (Ozyegin University, Turkey)

**On the Impact of Highpass Filtering when using PAM-FDE for Visible Light Communication**

Liane Grobe (Fraunhofer Heinrich Hertz Institute, Germany); Mike Wolf and Martin Haardt
Sunday, April 3, 14:00 - 14:40

**WS-02-Keynote-01: Promising PHY Research Directions for 5G+ Wireless**

Halim Yanikomeroglu, Carleton University, Canada

Room: PR 5
Chair: Abd-Elhamid M. Taha (Alfaisal University, Saudi Arabia)

The 5G exploratory phase is winding down as 2016 marks the beginning of the 5G standardization phase. Accordingly, it is time to reinitiate a brainstorming endeavour for the beyond-5G wireless networks (5G+ wireless). Towards that end, this talk will present some promising PHY research directions for 5G+ wireless, including but not limited to:

1. Some recent advances in PHY research.
2. Signal constellation design: Revisiting a well-investigated concept with new enablers in novel use cases.
4. Faster-than-Nyquist signaling: How fast is too fast?

**WS-07-Keynote-01: Wireless Powered Communication Networks: An Overview**

Rui Zhang, National University of Singapore, Singapore

Room: PR 6
Chair: Marco Maso (Mathematical and Algorithmic Sciences Lab, Huawei France Research Center, France)

Wireless powered communication network (WPCN) is a new networking paradigm where the battery of wireless communication devices can be remotely replenished by means of microwave wireless power transfer (WPT) technology. WPCN eliminates the need of frequent manual battery replacement/recharging, and thus significantly improves the cost and performance over conventional battery-powered communication networks. However, the design and future application of WPCN is essentially challenged by the low WPT efficiency over long distance and the complex nature of joint wireless information and power transfer within the same network. In this talk, we will provide an overview of the key networking structures and performance enhancing techniques to build an efficient WPCN. Besides, we point out new and challenging future research directions for WPCN.

**WS-08-Keynote-01: Trends, Research Activities, and Views on Future Spectrum Management**

Brian Mark, George Mason University, USA

Room: PR 7
Chair: Kenta Umebayashi (Tokyo University of Agriculture and Technology, Japan)

Future wireless systems require more and more throughput to satisfy users' expectations. However, most of the lower frequencies are already allocated. Measurements have shown that actual usage of the frequencies is low. Due to this reason, regulators around the world are interested in how to utilize the unused frequencies for the benefit of the society. Example solutions include databases for TV whitespace, and LSA (licensed shared access), ASA (authorized shared access). Most flexible solution would be full cognitive radio, finding autonomously unused frequencies to use for its own transmissions. The full cognitive radio solution demands high accuracy of spectrum sensing and very efficient spectrum utilization. Recently, it has been proposed that sensing accuracy and spectrum utilization can be improved by using real world measurements and statistics extracted from them. To achieve cognitive radio based spectrum utilization, new spectrum management policies need to be developed. In this keynote, trends, research activities, and views on future spectrum management around the globe are presented.

**WS-09-Keynote-01: Information-theoretic Security: Old, New, and Personal Perspectives**

Ueli Maurer, ETH, Zurich, Switzerland

Room: PR 8
This talk reviews old and new results in information-theoretically secure encryption, authentication, and key agreement, asking the question of their (un-)suitability for an application context. A core issue is composability; for example, if a secret key generated by a provably-secure key-agreement protocol is used in a provably-secure encryption scheme, then the combination should also be secure. But is it? Such questions are addressed, with some surprises, using the constructive cryptography framework.

**WS-12-Keynote-01: Mm-Wave Communications for 5G and the Role for D2D/ M2M**

**Mythri Hunukumbur, Samsung, UK**

**Room: PR 9**
Chair: Afef Feki (France Research Center, Huawei Technologies, France)

5G promises to provide extreme broadband, massive connectivity and ultra-reliable/ low latency communications across multiple vertical sectors. Due to the scarcity of suitable spectrum in the sub 6GHz region, the mm-wave spectrum (loosely defined as 6-100GHz) has become very appealing to the 5G research community. The EU funded mmMAGIC project investigates the suitability of this spectrum for 5G and designs/ develops radio access architectures and schemes to meet the challenges in this spectrum. Under the multi-antenna and multi-node theme of WP5 (work package 5), we have identified 4 use cases to provide a distinct step change in user experience to the early adopters of 5G. In meeting the challenging KPIs, the D2D and M2M communications have a vital role to play. In this talk, I will highlight the envisaged roles for D2D/ M2M in the selected 5G use cases. Also I will present some early results in this domain from the technical work of WP5.

**Sunday, April 3, 14:40 - 15:20**

**WS-02-Keynote-02: Resource Allocation in the D2D Communications**

**Abd-Elhamid M. Taha, Alfaisal University, Saudi Arabia**

**Room: PR 5**
Chair: Abd-Elhamid M. Taha (Alfaisal University, Saudi Arabia)

Device-to-Device (D2D) continues to hold strong promise, not only for enhancing spectrum utilization, but also for improving wireless services. To date, various efforts have been in both research and industry, with practical implementation instances now emerging. We take a multi-faceted view of resource allocation and management in Device-to-Device Communications (D2D) in different settings: whether overlaid/underlaid; and whether in-band/out-of-band. We review the problem at the heart of the matter, and discuss its tractability, the state of the art solutions, and the road ahead.

**WS-07-Keynote-02: Wirelessly Powered Communications: From Theory to Practice**

**Kaibin Huang, The University of Hong Kong, Hong Kong**

**Room: PR 6**
Chair: Marco Maso (Mathematical and Algorithmic Sciences Lab, Huawei France Research Center, France)

The advancements in microwave power transfer (MPT) over past decades have enabled wireless power transfer over long distances. The latest breakthroughs in wireless communication, namely massive MIMO, small cells and millimeter-wave communication, make wireless networks suitable platforms for implementing MPT. This can lead to the elimination of the "last wires" connecting mobile devices to the grid for recharging, thereby tackling a long-standing ICT grand challenge. Furthermore, the seamless integration between MPT and wireless communication opens a new and actively area called wirelessly powered communications (WPC). In this talk, I will discuss novel techniques that can transform WPC from theory into practice including superdirectivity transmission, analog decoupling of power and information transfers, safety aware adaptive transmission, new waveform designs and backscattering enabled multiuser MPT.
Connected and autonomous driving are the future of Intelligent Transport System (ITS) and road safety, and they have never been closer to market than today. In fact, all big car makers have been working on enabling such technologies, of which some fractions have been already deployed in some nowadays high class vehicles, such as using broadband communication to bring Internet inside the car, or relaying on stand-alone sensors to let the car park by itself or automatically adjust the distance to the front car on the highway. Many more life-saving and useful features will come-out in the future when the full versions of these emerging technologies are deployed. Connected vehicles technology, which is also a key enabler for autonomous driving, is based on a WiFi-like short range wireless communication aka vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communication. Such a technology offers a low latency communication which is necessary for real-time coordination among nearby vehicles and road infrastructure, which is required to enable critical safety applications as well as autonomous driving. But it requires a dedicated radio spectrum to ensure the reliability level which is required for the safety applications, therefore radio spectrum has to be allocated exclusively to this type of communication. For example, in both Europe and US a limited spectrum has been allocated around 5.9Ghz for few years to test and validate the technology. But still many other places around the world need to adopt such spectrum allocation to facilitate the deployment of the Connected Vehicle technology. This talk will provide an overview about Connected Vehicles and related international and local efforts as well as open challenges towards the commercial deployment.

Lattice codes are becoming a key solution to solve multiterminal coding issues. Recent results have shown that they can achieve the secrecy capacity of the Gaussian Wiretap channel. We first explain the nested coding approach. Then we give a design criterion related to the theta series of the lattice: the flatness factor. This design criterion is not easy to analyze but it can be computed for some families of lattices: modular lattices. Some examples of modular lattices will be given as well as the information leakage related to them when they are used for secrecy purpose.

Direct Device-to-Device (D2D) functionality was introduced into the 3GPP LTE-Advanced specifications starting from Release 12 to support proximity services (also known as ProSe). Furthermore, it is widely envisioned that D2D will be one of the most important technical enablers of supporting emerging application within 5G era, as shown in for example in METIS (https://www.metis2020.com). Starting from short explanation of the key motivations for D2D in LTE radio access technology, this talk is focused on D2D development in METIS project: D2D related use cases and scenarios, key technology components developed within METIS project and the role of D2D in METIS concept. Insight will also be provided into the future D2D development.

Sunday, April 3, 15:20 - 16:00

Resource Allocation and Cross Layer Design in 5G Wireless Networks

Mohamad Assaad, SUPÉLEC, France
The proliferation of wireless multimedia applications necessitates the development of new wireless systems that can support the expected high amount of mobile data traffic in the next years. It has been adopted by the 3GPP that the future 5G cellular networks must support the 1000-fold increase in traffic demand. This requires developing new physical layer techniques, e.g., Massive MIMO and Millimeter wave (mmWave), and new network architecture. In fact, Massive MIMO systems where base stations are equipped with hundreds of antennas have been recognized as an efficient technique to increase the spectral efficiency of wireless networks. However, the increase of capacity obtained by physical layer techniques may not be enough to meet the traffic demands and a new architecture is required. 5G networks will have a heterogeneous architecture where macro cells, small cells and D2D co-exist and may cooperate between each other to enhance the performance of the network. This will certainly add additional challenges to the problems of resource allocation. In this talk, we will highlight these challenges and provide some recent results in this area. In particular, a cross layer design framework taking into the physical layer (Massive MIMO), the heterogeneous architecture and the dynamic traffic pattern will be described. The interplay between D2D and Massive MIMO will be covered as well.

The interplay between D2D and Massive MIMO will be covered as well.

**WS-07-Keynote-03: Waveform Design for WPT and SWIPT**

Bruno Clerckx, Imperial College London, UK

**WS-08-01: Spectrum Occupancy Measurements and Techniques**

Room: PR 7
Chair: Mai Ohta (Fukuoka University, Japan)

*Long Term Spectrum Survey of the 2.4 GHz ISM Band in Multiple Hospital Environments*
Mohamad Omar Al Kalaa, Gregory Butron and Walid Baldi (University of Oklahoma, USA); Hazem Refai (Oklahoma University, USA); Nickolas J LaSorte (University of Oklahoma-Tulsa, USA)

*A study on Welch FFT segment size selection method for spectrum awareness*
Hiroki Iwata, Kenta Umebayashi and Samuli Tiiro (Tokyo University of Agriculture and Technology, Japan); Janne Lehtomäki (University of Oulu, Finland); Yasuo Suzuki (Tokyo University of Agriculture and Technology, Japan)

**WS-09-01: Fundamental Results**

Room: PR 8
Chairs: Steven McLaughlin (Georgia Institute of Technology, USA), Zouheir Rezki (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)

*Type II Wiretap Channel with an Active Eavesdropper in Finite Blocklength Regime*
Anna Frank (Technische Universität München, Germany); Harout Aydinyan (TUM, Germany); Holger Boche (Technical University Munich, Germany)
Three-User Cognitive Multiple-Access Channels with Confidential Messages
Amir Sonee (Ferdowsi University of Mashhad, Iran); Ghosheh Abed Hodtani (Ferdowsi University of Mashhad, Mashhad, Iran)

WS-12-01: Panel: M2M Communication in 5G: Challenges and Opportunities
Mérouane Debbah (Huawei), Zexian Li (Nokia), Mythri Hunukumbur (Samsung), Rapeepat Ratasuk (Nokia)

Room: PR 9
Chairs: Majed Haddad (University of Avignon, France), Afef Feki (France Research Center, Huawei Technologies, France)

Sunday, April 3, 16:00 - 17:00

WS-02-Interactive-02: Networking Break & Poster session for afternoon WS
Room: Dafna Foyer
Chair: Shahid Mumtaz (Instituto de Telecomunicações, Portugal)

P1: Hardware Experiments on Multi-Carrier Waveforms for 5G
Petra Weitkemper (DOCOMO Euro-Labs, Germany); Johannes Koppenborg (Nokia Bell Labs, Germany); Jamal Bazzi (DOCOMO Euro-Labs, Germany); Rupert Rheinschmitt (Nokia Bell Labs, Germany); Katsutoshi Kusume (DOCOMO Euro-Labs, Germany); Dragan Samardzija (Bell Labs, Nokia, USA); Rolf R.M. Fuchs (Bell Labs, Nokia, Germany); Anass Benjebbour (NTT DOCOMO, INC., Japan)

P2: Centralised and Distributed Interference Management in Coordinated Downlink Beam-forming
Swagato Barman Roy and A S Madhukumar (Nanyang Technological University, Singapore); Francois Chin (Institue for InfoComm Research, Singapore)

P3: On the Performance of Time Constrained OQAM-OFDM Waveforms with Preamble Based Channel Estimation
Toni A Levanen and Markku K. Renfors (Tampere University of Technology, Finland); Tero Ihalainen (Nokia Research Center, Finland); Eeva Lähetkangas (Nokia Networks, Finland); Ville Syrjälä (Tampere University of Technology & Kyoto University, Finland); Mikko Valkama (Tampere University of Technology, Finland)

P4: Performance Analysis for the QoS Support in LTE and WiFi
Amer Saeed, SAEED (University of New Haven, USA); Amir Esmailpour (University of New Haven & Ryerson University, USA); Nidal Nasser (Alfaisal University, Saudi Arabia)

P5: SDRAN-Based User Association and Resource Allocation in Heterogeneous Wireless Networks
Mohamad Zalghout (INSA de Rennes & Institute of Electronics and Telecommunication of Rennes (IETR), France); Ayman Khalil (Institute of Electronics and Telecommunications of Rennes - IETR & INSA, France); Matthieu Crussière (IETR - Electronics and Telecommunications Research Institute of Rennes (IETR) & INSA - National Institute of Applied Sciences, France); Samih Abdul-Nabi (Lebanese International University, Lebanon); Maryline Hélard (INSA Rennes & IETR Institute of Electronics and Telecommunications of Rennes, France)

P6: Block Lower Multi-diagonalization for Multiuser MIMO Downlink
Hiroshi Nishimoto and Hiroki Iura (Mitsubishi Electric Corporation, Japan); Akinori Taira (Mitsubishi Electric Corp. & RIEC, TOHOKU University, Japan); Akihiro Okazaki and Atsushi Okamura (Mitsubishi Electric Corporation, Japan)

P7: Codeword based power loading in MU-MIMO
Filippo Tosato (Toshiba Research Europe, United Kingdom); Magnus Sandell (Toshiba TRL, United Kingdom)

P8: On Handovers in Uplink/Downlink Decoupled LTE HetNets
Mukesh Giluka (Indian Institute Of Technology Hyderabad, India); Sibgath Khan (Indian
WS-07-Interactive-02: Networking Break & Poster Session for afternoon WS

Room: Dafna Foyer
Chair: Aissa Ikhlef (Newcastle University, United Kingdom)

P11: Enhancing Full-duplex Information Transfer by RF Energy Harvesting
Chen-Feng Liu (University of Oulu, Finland); Marco Maso (Mathematical and Algorithmic Sciences Lab, Huawei France Research Center, France); Chia-Han Lee (Academia Sinica, Taiwan); Tony Q. S. Quek (Singapore University of Technology and Design, Singapore); Leonardo S. Cardoso (Université de Lyon & INRIA, INSA-Lyon, CITI-INRIA, France)

Muhammad Ejaz Ahmed (Sungkyunkwan University, Korea); Dong In Kim (Sungkyunkwan University (SKKU), Korea)

WS-08-Interactive-02: Networking Break & Poster Session for Afternoon WS

Room: Dafna Foyer
Chair: Janne Lehtomäki (University of Oulu, Finland)

P13: Novel Two-Stage Spectrum Sensing for Energy Detection with FFT
Mai Ohta (Fukuoka University, Japan); Osamu Takyu (Shinshu University, Japan); Takeo Fujii (The University of Electro-Communications, Japan); Makoto Taromaru (Fukuoka University, Japan)

P14: Performance Evaluation of Multi-Target Tracking for PhyC-SN
Minato Oriuchi, Osamu Takyu and Keiichi Shirai (Shinshu University, Japan); Takeo Fujii (The University of Electro-Communications, Japan); Mai Ohta (Fukuoka University, Japan); Fumihito Sasamori and Shiro Handa (Shinshu University, Japan)

P15: Energy Detection Based Estimation of Primary Channel Occupancy Rate in Cognitive Radio
Miguel López-Benitez (University of Liverpool, United Kingdom); Janne Lehtomäki (University of Oulu, Finland)

P16: On the Effects of I/Q Imbalance on Sensing Performance in Full-Duplex Cognitive Radios
Alexandros-Apostolos A Boulogeorgos (Aristotle University of Thessaloniki, Greece); Haythem Bany Salameh (Yarmouk University, Jordan); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece)

P17: Energy-Efficient Based On Cluster Selection and Trust Management in Cooperative Spectrum Sensing
Zina Chkirkene, Mazen Omar Hasna and Ridha Hamila (Qatar University, Qatar); Noureddine Hamdi (INSAT, Carthage University & ENIT SYSCOM Laboratory, Tunisia)

WS-09-Interactive-02: Networking Break & Poster Session for Afternoon WS
Room: Dafna Foyer

WS-12-Interactive-02: Networking Break & Poster Session for Afternoon WS

Room: Dafna Foyer
Chair: Majed Haddad (University of Avignon, France)

**P18: A Reference Signal based GLRT for Simultaneous Sensing and Reception in Cognitive LTE-A Systems**
Prasanth Karunakaran (University of Erlangen-Nuremberg & Lehrstuhl für Mobilkommunikation, Germany); Wolfgang Gerstacker (University of Erlangen-Nuernberg, Germany)

**P19: Evaluation of multiple access strategies with power control error and variable packet length in M2M**
Qipeng Song (Institut Mines-Télécom / Télécom Bretagne / IRISA, France); Loutfi Nuaymi (Telecom Bretagne, France); Xavier Lagrange (Institut Mines Telecom / Telecom Bretagne & IRISA, France)

**P20: Analysis of Uplink SIR for Cellular Network with Underlaid D2D Communications**
Anushree Neogi (Indian Institute of Technology Bombay, India); Abhay Karandikar (IIT Bombay, India)

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Sunday, April 3, 17:00 - 17:40

WS-02-Keynote-04: When Nanotechnology meets Internet of Things

Najah Abed AbuAli, UAE University, UAE

Room: PR 5
Chair: Shahid Mumtaz (Instituto de Telecomunicações, Portugal)

The Internet of Things (IoT) is the main paradigm through which medical devices will be connected to the Internet, thereby empowering near-real-time health services and transforming a patient's physical space into a smart space. Recent developments in nanotechnology enabled designing novel applications that can be supported by nanomachines such as smart drug administration, nanoscale surgeries, and epidemic spread detection and management. This upholds health services from being near-real time health service into real-time services. In this talk, we present a glimpse on the state-of-the-art of the Internet of nanothings (IoNT). We will identify the architectural requirements necessary for IoNT-based healthcare applications, and the networking requirements entailed by those applications. We will also discuss the IoNT implementation and performance evaluation issues, especially those related to deployment, communication, and co-existence with other networking paradigms. Finally, we will highlight the main challenges and opportunities of IoNT for realizing healthcare applications and services.

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Sunday, April 3, 17:00 - 18:20

WS-07-01: Wireless Power Transfer - State of the Art and Beyond

Room: PR 6
Chair: Aissa Ikhlef (Newcastle University, United Kingdom)

**Long-term throughput optimization in WPCN with Battery-Powered Devices**
Alessandro Biaso (University of Padova, Italy); Michele Zorzi (Università degli Studi di Padova, Italy)

**Distributed Energy Beamforming with One-Bit Feedback**
Seunghyun Lee and Rui Zhang (National University of Singapore, Singapore)

**Secure Beamforming for Max-Min SINR in Multi-Cell SWIPT Systems**
Ali A Nasir (National University of Sciences and Technology (NUST), Pakistan); Duy T Ngo (The University of Newcastle, Australia); Hoang D. Tuan (University of Technology, Sydney, Australia); Salman Durrani (The Australian National University, Australia); Dong...
WS-08-02: Cognitive Radio Networks and Dynamic Spectrum Access

Room: PR 7
Chair: Miguel López-Benítez (University of Liverpool, United Kingdom)

Coexistence between OFDM and Pulsed Radars in The 3.5 GHz Band with Imperfect Sensing
Seungmo Kim and Junsung Choi (Virginia Tech, USA); Carl B. Dietrich (Virginia Tech & Wireless @ Virginia Tech, USA)

Characterization and Adaptive Selection of Radio Channels for Reliable and Energy-Efficient WSN
Achim Berger and Markus Pichler (Linz Center of Mechatronics GmbH, Austria); Daniele Ciccarello and Peter Priller (AVL List GmbH, Austria); Andreas Springer (Johannes Kepler University Linz, Austria)

Development of Measurement Techniques and Tools for Coexistence Testing of Wireless Medical Devices
Walid Balid and Mohamad Omar Al Kalaa (University of Oklahoma, USA); Samer Rajab (Honda R&D Americas, Inc., USA); Hasan Tafish (University of Oklahoma, USA); Hazem Refai (Oklahoma University, USA)

Knowledge-based Update of Primary Exclusive Region for Database-driven Spectrum Sharing Towards 5G
Shota Yamashita, Koji Yamamoto, Takayuki Nishio and Masahiro Morikura (Kyoto University, Japan)

Sunday, April 3, 17:00 - 18:00

WS-09-02: Practical Schemes

Room: PR 8
Chair: Zouheir Rezki (King Abdullah University of Science and Technologie (KAUST), Saudi Arabia)

Multiband Jamming Strategies with Minimum Rate Constraints
Karim A. Banawan (University of Maryland, College Park, USA); Sennur Ulukus (University of Maryland, USA); Peng Wang (NRC PostDoc, USA); Brian Henz (US Army Research Laboratory, USA)

Time Obfuscation-Based Privacy-Preserving Scheme for Location-Based Services
Fenghua Li (State Key Laboratory of Information Security, Institute of Information Engineering, CAS, P.R. China); Sheng Wan (Xidian University, P.R. China); Ben Niu (State Key Laboratory of Information Security, Institute of Information Engineering, CAS, P.R. China); Hui Li (Xidian University, P.R. China); Yuanyuan He (State Key Laboratory of Information Security, Institute of Information Engineering, CAS, P.R. China)

An Efficient CGA Algorithm against DoS Attack on Duplicate Address Detection Process
Cui Zhang (Institute of Information Engineering, Chinese Academy of Sciences, P.R. China); Jinbo Xiong (Fujian Normal University, P.R. China); Qiong Wu (Southeast University, P.R. China)

Sunday, April 3, 17:00 - 18:20

WS-12-02: D2D Communications for 5G Networks
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A Hierarchical Radio Resource Management Scheme for Next Generation Cellular Networks</strong></td>
<td>Dariush Mohammad Soleymani, Andre Puschmann and Elke Roth-Mandutz (Ilmenau University of Technology, Germany); Jens Mueckenheim (Merseburg University of Applied Science, Germany); Andreas Mitschele-Thiel (Ilmenau University of Technology, Germany)</td>
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Monday, April 4

Monday, April 4, 09:00 - 10:00

**KEY 1: 5G Physical Layer and MAC: Opportunities and Challenges**

Dr. R. Valenzuela

Room: Salwa 2

Reinaldo Valenzuela received a Bachelor of Science degree from the University of Chile and a Ph.D. from Imperial College, London. He is currently Director of the Wireless Communications Research Department at Bell Laboratories, and is a Distinguished Member of Technical Staff. Valenzuela has been at the forefront of many recent advances in wireless systems; his research includes propagation measurements and models, MIMO space time systems achieving high capacities using transmit and receive antenna arrays, HetNets, small cells, and next generation air interface techniques and architectures. The author of more than 185 papers, he has 44 issued patents and more than 22,000 citations in Google Scholar. Valenzuela is a 'Highly Cited Author' in Thomson ISI, a Fulbright Senior Specialist, an IEEE Fellow, a Bell Labs Fellow and a WWRF Fellow. For his pioneering contributions to MIMO technology, he was awarded the 2010 IEEE Eric E. Sumner Award. He is a recipient of the 2015 IEEE VTS Avant Garde Award.

Monday, April 4, 10:30 - 12:10

**PHY-I1: Cellular Networks I**

Room: Salwa 2

*Invited talk: 5G: An Evolution or A Revolution?*

Mérouane Debbah (Huawei, France)

**LTE Rel-13 MTC Device Receiver Algorithms for Coverage Enhancement**

Ashok Kumar Reddy Chavva (Samsung Electronics, India); Sripada Kadambar (Samsung R&D Institute India - Bangalore, India); Venkata Ramana Gurugubelli, Anusha Gunturu and Shubham Khuneta (Samsung Electronics, India)

**Non-Feedback Vertical Plane Beamforming for LTE-Advanced Systems**

Kenji Hoshino (Softbank Corp., Japan); Teruya Fujii (Vodafone K.K., Japan)

**Renewable Energy Management in Cellular Networks: An Online Strategy based on ARIMA Forecasting and a Markov Chain Model**

Johann Leithon and Teng Joon Lim (National University of Singapore, Singapore); Sumei Sun (Institute for Infocomm Research, Singapore)

**PHY1: MIMO Detection**

Room: Salwa 1

*Spectral Efficiency of Distributed MIMO Systems with ZF Receivers*

Hisham Almelah and Khairi A. Hamdi (University of Manchester, United Kingdom)

*Spectral Efficiency of ZF Receivers over MIMO Channels with Out-of-Cell Interference*

Hisham Almelah and Khairi A. Hamdi (University of Manchester, United Kingdom)

*Soft Iterative Detector and Semi-Blind Identification for LDPC-Coded MIMO Systems in Dispersive Fading Channels*

Yantao Qiao and Weidong Xiang (University of Michigan, Dearborn, USA); Xiaoyu Yin (Shanghai University, P.R. China); Lina Xu (Technische Universität München, Germany)

*Low-Complexity Joint Modulation Classification and Detection in MU-MIMO*

Hadi Sarieddeen and Mohammad Mansour (American University of Beirut, Lebanon); Louay
PHY2: Device to Device Communications

Room: Salwa 3

**FREDDY: A Framework for VANET aided D2D Discovery**
Hussein Chour, Youssef Nasser, Hassan A. Artail and Alaa Kachouh (American University of Beirut, Lebanon)

**Resource Allocation for Device-to-Device and Small Cell Uplink Communication Networks**
Haibo Dai, Yongming Huang, Chenguol Li, Kang Song and Luxi Yang (Southeast University, P.R. China)

**Mobility Impact on Mode Selection Map in D2D Networks - An Analytical Approach**
Armin Morattab (Ecole de Technologie Supérieure, University of Quebec, Canada); Zbigniew Dziong (École de technologie supérieure, University of Quebec, Canada); Kazem Sohraby (South Dakota School of Mines and Technology, USA); MD. Habul Islam (Southern Alberta Institute of Technology, Canada)

**On the Analysis of Device-to-Device Overlaid Cellular Networks in the Uplink under 3GPP Propagation Model**
Asma Afzal and Syed Ali Raza Zaidi (University of Leeds, United Kingdom); Desmond McLernon (The University of Leeds, United Kingdom); Mounir Ghogho (University of Leeds & International University of Rabat, United Kingdom)

**Energy Costs for Traffic Offloading by Cache-enabled D2D Communications**
Binqiang Chen and Chenyang Yang (Beihang University, P.R. China)

PHY3: Estimation and Detection

Room: Dukhan

**Low Complexity Norm-Adaption Least Mean Square/Fourth Algorithm and Its Applications for Sparse Channel Estimation**
Yingsong Li, Yanyan Wang and Tao Jiang (Harbin Engineering University, P.R. China)

**Parameter Estimation of Inverse Gaussian Channel for Diffusion-Based Molecular Communication**
Lin Lin, Chengfeng Yang and Shiwei Ma (Shanghai University, P.R. China); Maode Ma (Nanyang Technological University, Singapore)

**Maximum Likelihood Estimator for the alpha-kappa-mu Fading Environment**
Fernando Batista (Inatel, Brazil); Rausley Adriano Amaral de Souza (National Institute of Telecommunications (INATEL), Brazil); Antonio Marcelo Oliveira Ribeiro (University of Campinas, Brazil)

**Massive MIMO Channel Estimation Based on Block Iterative Support Detection**
Wenqian Shen and Linglong Dai (Tsinghua University, P.R. China); Yi Shi (Huawei Technologies, P.R. China); Zhen Gao and Zhaocheng Wang (Tsinghua University, P.R. China)

**Beam-blocked Compressive Channel Estimation for FDD Massive MIMO Systems**
Wei Huang (Southeast University, P.R. China); Zhaohua Lu (ZTE Corporation, P.R. China); Cheng Zhang, Yongming Huang, Shi Jin and Luxi Yang (Southeast University, P.R. China)
MAC 1: Machine-to-Machine Communications
Room: PR5

Spectrum sharing for M2M applications through Whitetime exploitation in WiFi networks
John Harris (University of Bristol, United Kingdom)

An Improved Random Access Procedure for M2M Communications
Ningbo Zhang (Beijing University of Posts and Telecommunications & Science and Technology on Information Transmission and Dissemination in Communication Networks Lab, P.R. China)

Efficiency analysis of M2M Data Collection networks using Multipacket Reception in Frame-Slotted ALOHA
Arun George and Venkatesh Tiruchirai Gopalakrishnan (Indian Institute of Technology Madras, India)

Clustering and Radio Resource Partitioning for Machine-Type Communications in Cellular Networks
Utku Tefek and Teng Joon Lim (National University of Singapore, Singapore)

Time Aware Closed Form Frame Slotted ALOHA Frame Length Optimization
Hazem A. Ahmed (Friedrich-Alexander-Universität Erlangen-Nürnberg & Fraunhofer Institute for Integrated Circuits, Germany); Hamed Salah (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Joerg Robert (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Albert Heuberger (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

MAC 2: Game Theory for Wireless Networks
Room: PR6

Gale-Shapley-Algorithm Based Resource Allocation Scheme for Device-to-Device Communications Underlaying Downlink Cellular Networks
Wenson Chang, You-Ting Jau and Szu-Lin Su (National Cheng Kung University, Taiwan); Yinman Lee (National Chi Nan University, Taiwan)

On Modeling Channel Selection in LTE-U as a Repeated Game
Jordi Pérez-Romero (Universitat Politècnica de Catalunya (UPC), Spain); Oriol Sallent (Universitat Politècnica de Catalunya, Spain); Hamed Ahmadi (University College Dublin, Ireland); Irene Macaluso (Trinity College Dublin, Ireland)

Joint Cost-Sharing and Multi-Relay Selection for Two-Way Relay Networks using a Pricing Game
Mohammed S. Bahbahani (University of Manchester, United Kingdom); Emad Alsusa (Manchester University, United Kingdom)

Relay Selection for Energy Harvesting Relay Networks using a Repeated Game
Mohammed S. Bahbahani (University of Manchester, United Kingdom); Emad Alsusa (Manchester University, United Kingdom)

Information Credibility Equilibrium of Cooperative Networks
Chunxiao Jiang (Tsinghua University, Beijing, P.R. China); Zhu Han (University of Houston, USA); Yong Ren (Tsinghua University, Beijing, P.R. China); Lajos Hanzo (University of Southampton, United Kingdom)

NET1: Routing and Localization in Vehicular Networks
Room: PR 7

An Intersection UAV-Assisted VANET Routing Protocol
Omar Sami Oubbati (University of Laghouat, Algeria); Abderrahmane Lakas (UAE University,
### An Enhanced Directional Greedy Forwarding for VANETs using Link Quality Estimation

Ohoud Alzamzami and Imad Mahgoub (Florida Atlantic University, USA)

### Mobility Data Verification For Vehicle Localization in Vehicular Ad Hoc Networks

Lina Altoaimy and Imad Mahgoub (Florida Atlantic University, USA)

### VALS: Vehicle-Aided Location Service in Urban Environment

Raik Aissaoui (Qatar University, Qatar); Amine Dhraief (University of Manouba, Tunisia); Abdelfettah Belghith (University of Manouba & National School of Computer Sciences ENSI, Tunisia); Hamid Menouar (Qatar Mobility Innovations Center, Qatar); Fethi Filali (QMIC, Qatar); Hassan Mathkour (King Saud University, Saudi Arabia)

### The Minimum Delay Relay Optimization Based on Nakagami Distribution for Safety Message Broadcasting in Urban VANET

Wenjie Wang and Tao Luo (Beijing University of Posts and Telecommunications, P.R. China)

### NET2: Heterogeneous Cellular Networks - 2

Room: PR 8

### Maximum Weight Matching based Heuristic for Future HetNets Greening

Hocine Ameur (University of Technology of Troyes, France); Moez Esseghir (Technology University of Troyes & Charles Delaunay Institute, France); Lyes Khoukhi (University of Technology of Troyes, France)

### Load-aware Handover Decision Algorithm in Next-generation HetNets

Konstantinos Alexandris and Nikolaos Sapountzis (EURECOM, France); Navid Nikaein (Eurecom, France); Thrasyvoulos Spyropoulos (EURECOM, France)

### Low-Complexity and Low-Feedback-Rate Channel Allocation for Carrier Aggregation in Heterogeneous Networks

Apostolos Galanopoulos (University of Thessaly & Industrial Systems Institute, Greece); Christos G. Tsinos (University of Luxembourg, Greece); Fotis Foukalas (Athena Research and Innovation Centre, Greece)

### Efficient Load-Aware Vertical Handoff for HetNet with Poisson-Point-Process Distributed Traffics

Wenson Chang and Heng-Tien Wu (National Cheng Kung University, Taiwan); Yinman Lee (National Chi Nan University, Taiwan); Szu-Lin Su (National Cheng Kung University, Taiwan)

### Mobility Prediction based Seamless RAN-Cache Handover in HetNet

Hongjia Li (Chinese Academy of Sciences, P.R. China); Dan Hu (Cisco Systems, Inc., P.R. China)

### APP 1: Cellular Networks

Room: Cigar Lounge

### SDN-based Optimal Traffic Engineering for Cellular Networks with Service Chaining

Rung-Hung Gau and Pei-Kan Tsai (National Chiao Tung University, Taiwan)

### Performance Evaluation for LTE Applications with Buffer Awareness Consideration

Muntadher Alshaikh Ali (University of New Haven, USA); Amir Esmailpour (University of New Haven & Ryerson University, USA); Nidal Nasser (Alfaisal University, Saudi Arabia)

### Intelligent Battery Management for Cellular Networks with Hybrid Energy Supplies

Xilong Liu (New Jersey Institute of Technology, USA); Tao Han (University of North Carolina at Charlotte, USA); Nirwan Ansari (New Jersey Institute of Technology, USA)
Cell Search Evaluation: A Step Towards the Next Generation LTE-MTC Systems
Abdelmohsen Ali and Walaa Hamouda (Concordia University, Canada)

Analysis of Discovery and Access Procedure for D2D Communication in 5G Cellular Network
Zhijian Lin and Liang Du (Xiamen University, P.R. China); Zhibin Gao (Xiamen University, P.R. China); Lianfen Huang (XiAmen University, P.R. China); Xiaojiang Du (Temple University, USA); Mohsen Guizani (QU, USA)

APP 2: Testbeds and Simulators

Room: Ghazal

SAROS: A Social-Aware Opportunistic Forwarding Simulator
Soumaia A. Al Ayyat (The American University in Cairo, Egypt); Sherif Aly (American University in Cairo, Egypt); Khaled A. Harras (Carnegie Mellon University, USA)

Genetic Algorithm-based Mapper to Support Multiple Concurrent Users on Wireless Testbeds
Yaser A. Elnakieb (Virginia Tech, Egypt); Michael Azmy (Faculty of Engineering, Alexandria University, Egypt); Mustafa El-Nainay (Alexandria University & Virginia Tech, Egypt)

A Sensor Cloud Test-bed for Multi-Model and Multi-User Sensor Applications
Sanjay Madria (Missouri University of Science and Technology, USA)

Building Virtual 802.11 Testbeds Towards Open 5G Experimentation
Konstantinos Kousias (University of Thessaly, Greece); Kostas Katsalis (EURECOM & University of Thessaly, France); Donatos Stavropoulos (University of Thessaly, Greece); Thanasis Korakis (New York University, USA); Leandros Tassiulas (Yale University, USA)

Setting up an extended perception in a vehicular network environment: A proof of concept
Nader Chaabouni and Abdelhakim Hafid (University of Montreal, Canada); Jihene Rezgui (College Maisonneuve, Canada); Soumaya Cherkaoui (Université de Sherbrooke, Canada)

PAN 1: Global Research Funding Opportunities: Models & Lessons Learnt

Room: Dafna

•Dr. Abdul Sattar Al-Taie, Executive Director, Qatar National Research Fund (QNRF), Qatar. •Dr. AbdulAziz AlSwailmeem, Vice President For Scientific Research and Support, King Abdulaziz City for Science and Technology (KACST), Riyadh, Saudi Arabia. •Dr. Chengshan Xiao, Program Director, ECCS division, NSF, USA. •Dr. Ajit K Chaturvedi, Deputy Director, IIT Kanpur, India.

NET-P: Poster Session

Room: Dafna Foyer

An Efficient Multi-channel Reader Collision Avoidance Protocol in RFID Systems
Yi Jiang (Northwestern Polytechnical University & School of Electronics and Information, P.R. China); Ruonan Zhang, Wei Cheng and Wei Sun (Northwestern Polytechnical University, P.R. China)

A Hybrid Random Access Method for Smart Meters on LTE Networks
Chalakorn Karupongsiri (The University of Sydney, Australia); Kumudu S Munasinghe (University of Canberra, Australia); Abbas Jamalipour (University of Sydney, Australia)

Performance Modeling of Camera-assisted Proactive Base Station Selection for Human Blockage Problem in mmWave Communications
Yuta Oguma (Kyoto University & Graduate School of Informatics, Japan); Takayuki Nishio,
Koji Yamamoto and Masahiro Morikura (Kyoto University, Japan)

Single-View Bistatic Sparse Reconstruction in TWRI Exploiting Ghost's Aspect Dependence Feature
Abdi T Abdalla (King Fahd University of Petroleum and Minerals, Saudi Arabia); Ali H Muqaibel (KFUPM, Saudi Arabia)

Study of the electromagnetic scattering by large obstacle based on the Method of Auxiliary Sources
Sami Hidouri (National Engineering School of Tunis, Tunisia)

Monday, April 4, 14:00 - 15:40

MAC-I1: MAC Design 1

Room: Salwa 2

**Invited Talk: Ad Hoc MACs: Why and How**
Jean Walrand (University of California, Berkeley, USA)

**An Optimal Link and Rate Combination Search Algorithm for STDMA MAC Protocols**
Siqian Cui (Harbin Institute of Technology & University of California, Irvine, P.R. China); Homayoun Yousefi'zadeh (University of California, Irvine, USA); Xuemai Gu (Harbin Institute of Technology, P.R. China)

**DTMC Modeling for Performance Evaluation of DW-MAC in Wireless Sensor Networks**
Lakshmikanth Guntupalli and Frank Y. Li (University of Agder, Norway)

**S-CW FD: A MAC Protocol for Full-Duplex in Wireless Local Area Networks**
Deniz Marlali and Ozgur Gurbuz (Sabanci University, Turkey)

PHY4: Beamforming

Room: Salwa 1

**Distributed Collaborative Beamforming Design in Highly-Scattered Environments**
Slim Zaidi (University of Quebec, INRS-EMT, Canada); Bouthaina Hmidet (INRS, Canada); Sofiene Affes (INRS-EMT, Canada)

**Energy Efficient Transmit Beamforming Under Queueing Stability Constraints**
Amira Akra and Mohamad Assaad (CentraleSupelec, France)

**Capacity Analysis for MIMO Beamforming Based Cooperative Systems over Time-Selective Links with Full SNR/One-Bit feedback based Path Selection and Imperfect CSI**
Neeraj Varshney and Aditya K Jagannatham (Indian Institute of Technology Kanpur, India)

**Efficient Combination of Multi-User MIMO THP and User Selection Based on Spatial Orthogonality**
Tomoki Maruko and Takahiro Yamaguchi (Waseda University, Japan); Tomoki Yoshimura, Hiromichi Tomeba and Takashi Onodera (Sharp Corporation, Japan); Fumiaki Maehara (Waseda University, Japan)

**Precoder Design for a Three-Input Multiple-Output Spatial Multiplexing System with Noncoherent Reception**
R. K. Mallik (Indian Institute of Technology - Delhi, India); Ross Murch (HKUST, Hong Kong)

PHY5: Multiple Access

Room: Salwa 3
**AMC and HARQ: Effective capacity analysis**
Redouane Sassioi (INRS, Canada); Leszek Szczecinski (INRS-EMT, Canada); Long Bao Le (INRS, University of Quebec, Canada); Mustapha Benjillali (INPT, Morocco)

**Joint Coding/Decoding for Multi-message HARQ**
Abdellatif Benyouss (INRS-EMT, Canada); Mohammed Jabi (Institut National de la Recherche Scientifique, Canada); Mael Le Treust (ETIS / ENSEA, Université Cergy-Pontoise, CNRS, France); Leszek Szczecinski (INRS-EMT, Canada)

**Enhanced Listen-Before-Talk Mechanism for Licensed Assisted Access in Unlicensed Spectrum**
Liu Liu (DOCOMO Beijing Communications Laboratories Co., Ltd, P.R. China); Yu Jiang (DoCoMo Beijing Labs, P.R. China); Hiroki Harada (NTT DoCoMo, Inc., Japan); Huiling Jiang (DOCOMO Beijing Communications Laboratories Co., Ltd., P.R. China)

**Performance Degradation of Distributed Cooperative Systems Due to Hidden Nodes**
Tarla Abadi and Khairi A. Hamdi (University of Manchester, United Kingdom)

**Role of Large Scale Channel Information on Predictive Resource Allocation**
Chuting Yao and Chenyang Yang (Beihang University, P.R. China)

**PHY6: Cognitive Radio Networks I**

Room: Dukhan

**On Throughput and Quality of Experience in Cognitive Radio Networks**
Hung Tran (Malardalen University, Sweden); Hans-Juergen Zepernick (Blekinge Institute of Technology, Sweden); Hoc Phan (University of Reading, United Kingdom)

**Optimal Energy-efficient Power Allocation For Asynchronous Cognitive Radio Networks using FBMC/OFDM**
Juwendo Denis, Mylene Pischella and Didier Le Ruyet (CNAM, France)

**Achieving Energy Fairness in Multiuser Uplink CR Transmission**
Zain Ali (COMSATS Institute of Information Technology, Islamabad, Pakistan); Guftaar Ahmad Sardar Sidhu (Jacobs University Bremen, Germany); Muhammad Waqas (COMSATS Institute of Information Technology, Islamabad, Pakistan); Feifei Gao (Tsinghua University, P.R. China); Shi Jin (Southeast University, P.R. China)

**An Efficient Switching Threshold-Based Scheduling Protocol for Multiuser Cognitive AF Relay Networks**
Anas M. Salhab (King Fahd University of Petroleum & Minerals, Saudi Arabia); Salam A. Zummo (KFUPM, Saudi Arabia)

**Underlay Cognitive Radio: What Is the Impact of Carrier Aggregation and Relaying on Throughput?**
Panagiotis D. Diamantoulakis and Koralia N. Pappi (Aristotle University of Thessaloniki, Greece); Sami Muhibat (Khalifa University, UAE); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece); Tamer Khattab (Qatar University, Qatar)

**PHY7: Energy Harvesting I**

Room: PR5

**Energy Harvesting Relay Systems in Mixed Rician and Rayleigh Fading: The Effects of LOS Path Component**
Haiyang Ding (State Key Lab. of ISN, Xidian University & Xi’an Communication Institute, P.R. China); Daniel Benevides da Costa (Federal University of Ceara (UFC) & Area: Telecommunications, Brazil); Xiaodong Wang (Columbia University, USA); Ugo Dias and Rafael
MAC 3: Cognitive Radio Networks

Room: PR6

Spectrum Decision for Cognitive Radio Networks With Various-Bandwidth Channels
Samer T. Talat (Industrial Technology Research Institute, Taiwan); Chung-Wei Wang and Li-Chun Wang (National Chiao Tung University, Taiwan)

Interference minimization based power allocation for Cognitive radio networks with imperfect spectrum sensing
Yongjun Xu (Chongqing University of Posts and Telecommunications & Chongqing Key Laboratory of Mobile Communication Technology, P.R. China); Xiaohui Zhao (University of Jilin & College of Communication Engineering, P.R. China); Fengye Hu (Jilin University, P.R. China)

Novel Cooperative Policy For Cognitive Radio Networks: Stability Region and Delay Analysis
Mohamed Salman (University of Colorado Boulder, USA); Amr El-Keyi (Carleton University, Canada); Mohammed Nafie (Cairo University & Nile University, Egypt); Mazen Omar Hasna (Qatar University, Qatar)

Exploiting Group Structure in MAC Protocol Design for Multichannel Ad Hoc Cognitive Radio Networks
Sachin Kadam (Indian Institute of Technology Bombay, India); Devika Prabhu (IIM Lucknow, India); Nitish Rathi (Indian Institute of Management Kozhikode, India); Prakash Chaki (NEC Corporation, Japan); Gaurav S. Kasbekar (Indian Institute of Technology, Bombay, India)

On Optimizing Cooperative Cognitive User Performance under Primary QoS Constraints
Adel M. Elmahdy (Nile University, Egypt); Amr El-Keyi (Carleton University, Canada); Tamer ElBatt (Faculty of Engineering, Cairo University & WINC, Nile University, Egypt); Karim G Seddik (American University in Cairo, Egypt)

NET3: Localization - 1

Room: PR 7

BLE-based Collaborative Indoor Localization with Adaptive Multi-lateration and Mobile Encountering
Jun-Wei (Chun-Wei) Qiu (Chiou), Chien-Pu Lin and Yu-Chee Tseng (National Chiao-Tung
**Standardizing Location Fingerprints Across Heterogeneous Mobile Devices for Indoor Localization**

Han Zou (Nanyang Technological University, Singapore); Baoqi Huang (Inner Mongolia University, P.R. China); Xiaoxuan Lu (University of Oxford, United Kingdom); Hao Jiang (Nanyang Technological University, Singapore); Lihua Xie (University of Nanyang Technological University, Singapore)

**Convex Hull based Node Selection NLoS mitigation for Indoor Localization**

Stephen Lingfeng Wang and Yuechuan Zhang (Toshiba Research Europe Limited, United Kingdom)

**EveTrack: An Event Localization and Tracking Scheme for WSNs in Dynamic Environments**

Kamran Ali (Michigan State University, USA); Ijaz Haider Naqvi (LUMS School of Science and Engineering (SSE) & LUMS SSE, Pakistan)

**RSS Based Localization in Rayleigh Fading Environment**

Rojina Adhikary and John N. Daigle (University of Mississippi, USA)

**NET4: Heterogeneous Wireless Networks**

Room: PR 8

**An MDP-based Vertical Handoff Decision Algorithm for Heterogeneous Wireless Networks**

Lin Chen and Hui Li (University of Science and Technology of China, P.R. China)

**Energy Efficient BSs Switching in Heterogeneous Networks: An Operator's Perspective**

Jinwei He (China Mobile Research Institute, P.R. China); Chao Xu (Xidian University, P.R. China); Sen Bian and Zecai Shao (China Mobile Research Institute, P.R. China); Jiongjiong Song and Yufei Li (Xidian University, P.R. China); Chih-Lin I (China Mobile Research Institute, P.R. China)

**Jitter-Aware Packet Scheduler for Concurrent Multipath Transmission in Heterogeneous Wireless Networks**

Min-Cheng Chan (National Chiao Tung University, USA); Chien-Chao Tseng (National Chiao-Tung University, Taiwan); Li-Hsing Yen (National Chiao Tung University, Taiwan)

**A Systematic Node Placement Strategy for Multi-Tier Heterogeneous Network Graphs**

Kai Ding (University of California at Irvine, USA); Homayoun Yousefi'zadeh (University of California, Irvine, USA)

**Forming a Cluster-Mesh Topology to Boost Base-Station Anonymity in Wireless Sensor Networks**

Sami Alsemairi and Mohamed Younis (University of Maryland Baltimore County, USA)

**APP 3: M2M and IoT**

Room: Cigar Lounge

**Evaluating Bluetooth Low Energy in Realistic Wireless Environments**

Mohamad Omar Al Kalaa and Walid Baldi (University of Oklahoma, USA); Naim Bitar (The University of Oklahoma, USA); Hazem Refai (Oklahoma University, USA)

**QoS Estimation and Selection of CSP in Oligopoly Environment for Internet of Things**

Subarna Chatterjee (Indian Institute of Technology Kharagpur, India); Sudip Misra (Indian Institute of Technology-Kharagpur, India)

**Leveraging Solution-Specific Gateways for Cost-Effective and Fault-Tolerant IoT Networking**
**APP 4: Content Caching and Analytics**

Room: Ghazal

**Student/Supervisor Collaboration and Usage Patterns of Publications Available on ResearchGate**
Zahra Hammook, Jelena Mišić and Vojislav B. Mišić (Ryerson University, Canada)

**Factor Graph based Multi-source Data Fusion for Wireless Localization**
Wanlong Zhao, Weixiao Meng, Yonggang Chi and Shuai Han (Harbin Institute of Technology, P.R. China)

**Feasibility Analysis and Self-organizing Algorithm for RAN Cooperative Caching**
Zejue Wang and Hongjia Li (Chinese Academy of Sciences, P.R. China); Chang Yang (Institute of Information Engineering, Chinese Academy of Science, P.R. China)

**Learning Automaton based Distributed Caching for Mobile Social Networks**
Chuan Ma (The University of Sydney, Australia); Zhihua Lin, Loris Marini, Jun Li and Branka Vucetic (University of Sydney, Australia)

**PAN 2: Increasing Academic and Industrial Competitiveness in a Changing ICT Value Place**

Room: Dafna

Dr. Neeli Rashmi Prasad, Chief Technology Architect of SPA Solutions, San Francisco, USA. Associate Professor and Director of CTIF-USA, Princeton, NJ, USA.

Mr. Lars Kierkegaard, Head of Strategy & Business Development at Teracom A/S, Copenhagen, Denmark.

Dr. Vladimir Poulkov, Professor, Technical University of Sofia and Head of Bulgarian Telecommunications Cluster, Bulgaria

**PHY-P1: Poster Session I - PHY and Fundamentals**

Room: Dafna Foyer

**Throughput Performance Models for Adaptive Modulation and Coding under Fading Channels**
Miguel López-Benítez (University of Liverpool, United Kingdom)

**Lossy Transmission of Correlated Sources in a Multiple Access Quasi-Static Fading Channel**
Antonios Argyriou (University of Thessaly, Greece); Ozgu Alay (Simula Research Laboratory, Norway)

**High Fidelity DSRC Receiver Model for ns-3 Simulation Using Large-scale Field Data**
S M Osman Gani, Amin Tahmasbi-Sarvestani, Mohammad Fanaei and Yaser P. Fallah (West Virginia University, USA)

**Performance of Two-Way Overlay Spectrum Sharing Systems in the Presence of Co-**
**Channel Interference**

Pankaj Kumar Sharma and Prabhat Kumar Upadhyay (Indian Institute of Technology Indore, India)

**Transparent operation of kronecker product based full dimension MIMO to exploit 2D antenna array**

Suryong Jeong, Keonkook Lee, Taeyoung Kim and Ji-Yun Seol (Samsung Electronics, Korea); Young-Han Nam (Samsung Research America, USA); Md Saifur Rahman (Samsung Research America - Dallas & Samsung Information Systems America, USA)

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**Monday, April 4, 16:00 - 17:40**

**NET-I: Cloud and Fog Communications in 5G Systems**

Room: Salwa 2

*Invited talk: Fog Networking for 5G and IoT*

Mung Chiang (Princeton University, USA)

**Evaluation of Adaptive Active Set Management for Multi-connectivity in Intra-frequency 5G Networks**

Fasil Tesema (Nokia Bell Labs & Technical University of Dresden, Germany); Ahmad Awada (Nokia Bell Labs, Germany); Ingo Viering (Nomor Research GmbH, Germany); Meryem Simsek and Gerhard Fettweis (Technische Universität Dresden, Germany)

**Load-Aware Dynamic RRH Assignment in Cloud Radio Access Networks**

Debashisha Mishra and Amogh PC (Indian Institute of Technology Hyderabad, India); Arun Ramamurthy, Antony Franklin A and Bheemarjuna Reddy Tamma (IIT Hyderabad, India)

**Parallel Opportunistic Routing in IoT Networks**

Fateh Singh (Indian Institute of Technology Madras, India); Vijeth J Kotagi and Siva Ram Murthy (IIT Madras, India)

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**PHY8: Massive MIMO**

Room: Salwa 1

**Performance Analysis of Downlink MMSE Beamforming Training in TDD MU-Massive-MIMO**

Kaifeng Guo (RWTH Aachen University & Institute for Communication Technologies and Embedded Systems, Germany); Behnam Khodapanah and Gerd H. Ascheid (RWTH Aachen University, Germany)

**Resource Allocation for Licensed/Unlicensed Carrier Aggregation MIMO Systems**

Christos G. Tsinos (University of Luxembourg, Greece); Fotis Foukalas (Athena Research and Innovation Centre, Greece); Theodoros Tsiftsis (Nazarbayev University & Technological Educational Institute of Central Greece, Kazakhstan)

**A CMDP-based Approach for Energy Efficient Power Allocation in Massive MIMO Systems**

Peng Li and Yanxiang Jiang (Southeast University, P.R. China); Wei Li (Xi’an Jiaotong University & University of Maryland, P.R. China); Fu-Chun Zheng (The University of Reading, United Kingdom); Xiaohu You (National Mobile communication Research Lab., Southeast University, P.R. China)

**Identifying the Maximum DoF Region in the Three-cell Compounded MIMO Network**

Galymzhan Nauryzbayev (University of Manchester, United Kingdom); Emad Alsusa (Manchester University, United Kingdom)

**Progressive Channel State Information for Advanced Multi-User MIMO in Next Generation Cellular Systems**
PHY9: Interference Management I

Room: Salwa 3

**Low Complexity Opportunistic Interference Alignment in K-Transmitter MIMO Interference Channels**
Atul Kumar Sinha and Ajit K. Chaturvedi (Indian Institute of Technology Kanpur, India)

**Performance of Strong Interference Cancellation in flexible UL/DL TDD Systems using Coordinated Muting, Scheduling and Rate Allocation**
Anna Lukowa and Venkatkumar Venkatasubramanian (Nokia Networks - Research, Poland)

**SNR Aware Heterogeneous Blind Interference Alignment in MISO Broadcasting Channel**
Qing Yang (Beijing University of Posts and Telecommunications, P.R. China); Ting Jiang (Beijing University of Posts & Telecommunications, P.R. China); Zheng Zhou (Beijing University of Posts and Telecommunications, P.R. China)

**Performance Analysis of Full-Duplex Multiuser Decode-and-Forward Relay Networks with Interference Management**
Aymen Omri (Qatar University, Qatar); Alireza S. Behbahani and Ahmed M. Eltawil (University of California, Irvine, USA); Mazen Omar Hasna (Qatar University, Qatar)

**A Two Stage PAPR Reduction Technique for The Uplink of LTE-Advanced with Carrier Aggregation**
Abdel-karim Ajami (American University of Beirut (AUB), Lebanon); Hassan A. Artail (American University of Beirut, Lebanon)

PHY10: Cognitive Radio Networks II

Room: Dukhan

**Resource Allocation with SIC under Statistical CSI in Multi-carrier based Cognitive Radio Networks**
Marwa Chami, Mylene Pischella and Didier Le Ruyet (CNAM, France)

**Exact Outage Performance of the SIMO Cognitive Cooperative Network in the Presence of Co-Channel Interference**
Jamal A Hussein (Newcastle University, United Kingdom); Salama Said Ikki (Lakehead University & Electrical Engineering Department, Canada); Said Boussakta and Charalampos C. Tsimenidis (Newcastle University, United Kingdom)

**Dynamic Spectrum Allocation for Heterogeneous Cognitive Radio Network**
Wenjie Zhang (Minnan Normal University, P.R. China); Lei Deng (The Chinese University of Hong Kong, Hong Kong); Chai Kiat Yeo (Nanyang Technological University, Singapore)

**Hybrid Digital-Analog Coding Scheme for Overlay Cognitive Radio Network with Correlated Sources**
Wenbo Xu, Yifan Wang, Wenbo Guo and Jiaru Lin (Beijing University of Posts and Telecommunications, P.R. China)

**Machine Learning Techniques with Probability Vector for Cooperative Spectrum Sensing in Cognitive Radio Networks**
Yingqi Lu (University of Calgary, Canada); Pai Zhu (Carnegie Mellon University, USA); Donglin Wang (New York Institute of Technology, USA); Michel Fattouche (University of Calgary, Canada)
**MAC 4: MAC Design 2**

Room: PR5

**Resilient Misbehaviour Detection MAC Protocol (MD-MAC) for Distributed Wireless Networks**  
Chaminda Alocious, Hannan Xiao and Bruce Christianson (University of Hertfordshire, United Kingdom)

Guerroumi Mohamed (University of USTHB, Algeria); Abdelouahid Derhab (King Saud University, Saudi Arabia); Al-Sakib Khan Pathan (Islamic University in Madinah, Saudi Arabia); Nadjib Badache (University of Sciences and Technology Houari Boumediene (USTHB), Algeria); Samira Moussaoui (USTHB, Algeria)

**Distance-alignment Based Adaptive MAC Protocol for Underwater Acoustic Networks**  
Shuchao Jiang, Feng Liu and Shengming Jiang (Shanghai Maritime University, P.R. China)

**CF-MAC: A Collision-Free MAC Protocol for UAVs Ad-Hoc Networks**  
Anzhou Jiang and Zhichao Mi (PLA University of Science and Technology, P.R. China); Chao Dong (College of Communication Engineering, P. L. A University of Science and Technology, P.R. China); Hai Wang (PLA University of Science and Technology, P.R. China)

**A Generic Framework for Heterogeneous Wireless Network Virtualization: Virtual MAC Design**  
Bo Fan (Beijing University of Posts and Telecommunications, P.R. China); Hui Tian (Beijing university of posts and telecommunications, P.R. China); Xiao Yan (Beijing University of Posts and Telecommunications, P.R. China)

**MAC 5: Energy Efficiency and Energy Harvesting**

Room: PR6

**Energy Harvesting Wireless Networks with Correlated Energy Sources**  
Mehdi Salehi Heydar Abad (University of Sabanci, Turkey); Deniz Gündüz (Imperial College London, United Kingdom); Ozgur Ercetin (Sabanci University, Turkey)

**Integrating Energy Harvesting and Dynamic Spectrum Allocation in Cognitive Radio Networks**  
Ayman Sabbah (Queen's University, Canada); Mohamed Ibnkahla (Carleton University, Canada)

**Delay-optimal Data Transmission in Renewable Energy Aided Cognitive Radio Networks**  
Tian Zhang (Shandong Normal University, P.R. China); Wei Chen (Tsinghua University, P.R. China)

**User Association in Massive MIMO and mmWave Enabled HetNets Powered by Renewable Energy**  
Bingyu Xu and Yue Chen (Queen Mary University of London, United Kingdom); Maged Elkashlan (Queen Mary, University of London, United Kingdom); Tiankui Zhang (Beijing University of Posts and Telecommunications, P.R. China); Kai Kit Wong (University College London, United Kingdom)

**Green Energy Aware User Association in Heterogeneous Networks**  
Qiang Fan and Nirwan Ansari (New Jersey Institute of Technology, USA)

**PHY11: Compressed Sensing**

Room: PR 7
**Compressive Sensing Based NBI Mitigation in UWB Systems in the Presence of Multiuser Interference**

Saleh Alawsh and Ali H Muqaibel (KFUPM, Saudi Arabia)

A **Compressive Channel Sensing Method with Optimal Thresholding for OFDM Systems under Fast Fading Channels**

Da Fu (Beijing University of Posts and Telecommunications, P.R. China); Yuexing Peng (Beijing University of Posts & Telecoms, P.R. China); Senyao Zheng (Beijing University of Posts and Telecommunications, P.R. China)

**Mitigation of Narrow-band Interference in Two-Way AF-OFDM Relaying Systems Using Compressive Sensing**

Hanan Al-Tous and Imad Barhum (United Arab Emirates University, UAE); Naofal Al-Dhahir (University of Texas at Dallas, USA)

**Identifying Non-Adjacent Multiuser Allocations by Joint l1-Minimization**

Dennis Wieruch (Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute, Germany); Peter Jung (TU-Berlin, Communications and Information Theory Group & Fraunhofer HHI - Heinrich Hertz Institute, Germany); Thomas Wirth (Fraunhofer Heinrich Hertz Institute, Germany); Armin Dekorsy (University of Bremen, Germany)

**Modulation Classification of Mixed Signals using Fast Independent Component Analysis**

Lu Wang, Qian Gao, Kezhong Zhang, Sai Huang, Yifan Zhang and Zhilyong Feng (Beijing University of Posts and Telecommunications, P.R. China)

**NET5: Wireless Sensor Networks - 1**

Room: PR 8

**Optimization Framework with Reduced Complexity for Sensor Networks with In-Network Processing**

Sepideh Nazemi Gelyan and Kin K. Leung (Imperial College, United Kingdom); Ananthram Swami (Army Research Lab., USA)

**Ranging In Underwater Wireless Sensor Network: Received Signal Strength Approach**

Saleheh Poursheikhali (Ferdowsi University of Mashhad, Iran); Hossein Zamiri-Jafarian (University of Toronto & Ferdowsi University of Mashhad, Canada)

**On Using BOC Modulation in Ultra-Low Power Sensor Networks for Wildlife Tracking**

Muhammad Nabeel (Paderborn University, Germany); Bastian Bloessl and Falko Dressler (University of Paderborn, Germany)

**Impact of Time Synchronization Error on the Mode-shape Calculation in Wireless Sensor Networks for Structural Health Monitoring**

Abderrazek Abdaoui (Qatar University & College of Engineering, Qatar); Mohamed Hossam Ahmed (Memorial University, Canada); Tarek M. Elfouly (Qatar University, Qatar)

**The Impact of Anchor Misplacement on Sensing Coverage**

Yaser Al Mtawa and Hossam S. Hassanein (Queen's University, Canada); Nidal Nasser (Alfaisal University, Saudi Arabia)

**NET6: Energy-efficient Communications**

Room: Cigar Lounge

**An Energy-efficient Mechanism for Increasing Video Quality of Service in Wireless Mesh Networks**

Adriana Hava and Gabriel-Miro Muntean (Dublin City University, Ireland); John Murphy (University College Dublin, Ireland)
**APP 5: Data Centers and Storage**

**Room: Ghazal**

**Secure Data Storage Structure and Privacy-Preserving Mobile Search Scheme for Public Safety Networks**
Hamidreza Ghafghazi (University of Ottawa, Canada); Amr Elmougy (The German University in Cairo, Egypt); Hussein T Mouftah and Carlisle Adams (University of Ottawa, Canada)

**VacoNet: Variable and Connected Architecture For Data Center Networks**
Zina Chkirbene, Sebti Foufou and Ridha Hamila (Qatar University, Qatar)

**PTNet: A parameterizable Data Center Network**
Emna Baccour, Sebti Foufou and Ridha Hamila (Qatar University, Qatar)

**Optimization of Power and Migration Cost in Virtualized Data Centers**
Muhammad T Anan and Nidal Nasser (Alfaisal University, Saudi Arabia); Ala Al-Fuqaha (Western Michigan University, USA); Azeem Ahmed (Alfaisal University, Saudi Arabia)

**SAM: A Secure Anti-Malware Framework for the Smartphone Operating Systems**
Md Shahreer Iqbal (Queen's University & Bangladesh University of Engineering and Technology, Canada); Mohammad Zulkernine (Queen's University, Canada)

**PAN 3: Roadmap to 5G and Beyond: Global Perspectives**

**Room: Dafna Foyer**

•Malik Gul, National Instruments, USA •Dr. Halim Yanikomeroglu, Carleton University, Canada •Dr. Merouane Debbah, Huawei, Paris, France •Dr. Reinaldo Valenzuela, Bell Labs, Alcatel-Lucent, USA •Dr Geoffrey Li, Georgia Tech, Atlanta, USA

**MAC-P: Poster Session - MAC/Scheduling/Resource Management**

**Room: Dafna Foyer**

**VMR-MAC: A Multi-Round Contention based MAC Protocol for Vehicular Networks**
Yiwei Mao and Lianfeng Shen (National Mobile Communications Research Laboratory, Southeast University, P.R. China)

**A MAC Solution for Distributed Coordination of 5G LAA Operator Networks and Fair Coexistence with WLAN in Unlicensed Spectrum**
Mohamed Salem (Huawei Technologies Co. LTD., Canada); Amine Maaref (Huawei Technologies Canada, Canada)
Fully Distributed Scheduling in Cloud-RAN Systems  
Hazem Soliman and Alberto Leon-Garcia (University of Toronto, Canada)

Cross-Layer QSI-Aware Radio Resource Management for HetNets with Flexible Backhaul  
Naeimeh Omidvar and An Liu (Hong Kong University of Science and Technology, Hong Kong)

Rethinking Mobile Data Offloading in LTE and WiFi Coexisting Systems  
Qimei Chen and Guanding Yu (Zhejiang University, P.R. China); Amine Maaref (Huawei Technologies Canada, Canada); Geoffrey Li (Georgia Tech, USA); Aiping Huang (Zhejiang University, P.R. China)

On the Orchestration of Robust Virtual LTE-U Networks from Hybrid Half/Full-duplex Wi-Fi APs  
Mohammad J. Abdel-Rahman, Mohamed Abdelraheem and Allen B. MacKenzie (Virginia Tech, USA); Kleber V Cardoso (Universidade Federal de Goiás, Brazil); Marwan Krunz (University of Arizona, USA)

Tuesday, April 5

Tuesday, April 5, 09:00 - 10:00

KEY 2: Opportunism and Symbiosis in Mobile Cloud Computing: The Promise and the Challenges

Dr. Mostafa Ammar, Georgia Tech, USA  
Room: Salwa 2

Mostafa Ammar is a Regents' Professor with the School of Computer Science at the Georgia Institute of Technology. He has been with Georgia Tech since 1985. Dr. Ammar received the S.B. and S.M. degrees from the Massachusetts Institute of Technology in 1978 and 1980, respectively and the Ph.D. degree from the University of Waterloo, Ontario, Canada in 1985. Dr. Ammar's research interests are in network architectures, protocols and services. He has contributions in the areas of multicast communication and services, multimedia streaming, content distribution networks, network simulation, disruption-tolerant networks, virtual network design, and most recently in mobile cloud computing. He has published extensively in these areas. To date, 33 PhD students have completed their degrees under his supervision; many have gone on to distinguished careers in academia and industry. Dr. Ammar has served the research community in multiple roles. Most notably, he served as the Editor-in-Chief of the IEEE/ACM Transactions on Networking (ToN) from 1999 to 2003, and he was the co-TPC Chair for the IEEE ICNP 1997, ACM CoNEXT 2006 and ACM SIGMETRICS 2007 conferences. His awards include the IBM Faculty Partnership Award (1996), Best Paper Award at the 7th WWW conference (1998), the Georgia Tech Outstanding Doctoral Thesis Advisor Award (2006), the Outstanding Service Award from the IEEE Technical Committee on Computer Communications (2010), and the ACM Mobihoc Best Paper Award (2012). Dr. Ammar was elected Fellow of the IEEE in 2002 and Fellow of the ACM in 2003.

Tuesday, April 5, 10:30 - 12:10

PHY-I2: Interference Management II

Room: Salwa 2

Invited talk: Interference Management in Wireless Networks  
Babak Hassibi (California Institute of Technology, USA)

Superposition Coding Based Inter-User Interference Cancellation In Full Duplex Cellular System  
Wenping Bi (University of Tsinghua, P.R. China); Xin Su, Limin Xiao and Shidong Zhou (Tsinghua University, P.R. China)

Analysing Self Interference Cancellation in Full Duplex Radios  
Nurul H. Mahmood (Aalborg University, Denmark); Imran Shafique Ansari (Texas A&M University at Qatar (TAMUQ), Qatar); Gilberto Berardinelli (Aalborg University, Denmark);
**PHY12: MIMO-OFDM Systems**

*Room: Salwa 1*

**Robust Precoded MIMO-OFDM for Mobile Frequency-Selective Wireless Channels**
Fatma Kalbat (Khalifa University of Science, Technology and Research, UAE); Arafat Al-Dweik and Bayan S Sharif (Khalifa University, UAE); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece)

**MIMO-OFDM Transmissions Invoking Space-Time/Frequency Linear Dispersion Codes Subject to Doppler and Delay Spreads**
Jiayi Zhang (National Institute of Standards and Technology, USA); Hamid Gharavi (NIST & ITL, USA); Bin Hu (National Institute of Standards and Technology, USA)

**Joint Time-Frequency Estimation DMMIMO-OFDM in presence of ICI**
Sucharita Chakraborty (IIT Kharagpur, India); Debarati Sen (Indian Institute of Technology Kharagpur, India)

**Selective Optimal Detection for MIMO OFDM Systems**
Mohammed Kashoob (The University of York, United Kingdom); Yury Zakharov (University of York, United Kingdom)

**Comparison of Two Channel Shortening Approaches for MIMO-ISI Channels**
Sha Hu and Fredrik Rusek (Lund University, Sweden); Naofal Al-Dhahir (University of Texas at Dallas, USA)

**PHY13: Wireless Networks I**

*Room: Salwa 3*

**Coverage and Capacity of 28 GHz Band in Indoor Stadiums**
Muhammad Nazmul Islam, Sundar Subramanian, Andrzej Partyka and Ashwin Sampath (Qualcomm, USA)

**Multi-Beam Zooming: An Enabler for Energy Efficient 5G Network**
Sai Krishna Karthik Molluru (SASTRA University, India); Ilker Demirkol (Universitat Politecnica de Catalunya & i2CAT Foundation, Spain); Wei-Ho Chung (Academia Sinica, Taiwan)

**Throughput Scaling Laws of Hybrid Wireless Networks with Proximity Preference**
Xin Yuan (Beijing University of Post and Telecommunications, P.R. China); Zhiqing Wei, Zhiyong Feng, Qixun Zhang and Wei Li (Beijing University of Posts and Telecommunications, P.R. China)

**A Novel Link Scheduling Algorithm for Wireless Networks using Directional Antenna**
Zhaoshu Tang, Ming Zhu, Lei Wang and Ma Honglian (Dalian University of Technology, P.R. China)

**Optimal Energy Efficient Association for Small Cell Networks With QoS Requirements**
YuKe Cui, Wei Xu, Hong Shen and Hua Zhang (Southeast University, P.R. China); Xiaohu You (National Mobile Communication Research Lab., Southeast University, P.R. China)
**PHY14: Channel Modeling**

Room: Dukhan

*Radio Channel Characterization at 5.85 GHz for Wireless M2M Communication of Industrial Robots*

Bernd Holfeld, Dennis Wieruch, Leszek Raschkowski and Thomas Wirth (Fraunhofer Heinrich Hertz Institute, Germany)

*When the Whispers Become Noise: A Contemporary Look at Radio Noise Levels*

Alexandros Palaios (RWTH Aachen University, Germany); Vanya Miteva (RWTH Aachen, Germany); Janne Riihijärvi and Petri Mähönen (RWTH Aachen University, Germany)

*Channel Gain Prediction for Wireless Links With Kalman Filters and Expectation-Maximization*

Sami Mekki (France Research Center, Huawei Technologies, France); Mustapha Amara (France Research Center, Huawei Technologies Co., Ltd., France); Afef Feki (France Research Center, Huawei Technologies, France); Stefan Valentin (Huawei Technologies, France)

*Analysis and Comparison of 24 GHz cmWave Radio Propagation in Urban and Suburban Scenarios*

Ignacio Rodriguez (Aalborg Universitet, Denmark); Erika Almeida (INDT - Institute of Technology Development, Brazil); Renato Abreu (INDT, Brazil); Mads Lauridsen (Aalborg University, Denmark); Alexandre Loureiro (INDT, Brazil); Preben Mogensen (Aalborg University, Denmark)

*A Millimeter Wave Spatial Channel Model with Variant Angles and Variant Path Loss*

Yi Wang and Zhenyu Shi (Huawei Technologies Co., Ltd, P.R. China); Mingde Du (Huawei, P.R. China); Wen Tong (Huawei Technologies Canada Co., Ltd., Canada)

**MAC 6: Energy Efficiency in LTE Networks**

Room: PR5

*Multi-RAT Wireless Network Capacity Optimization under Optimal Spectrum Splitting in LTE-U*

Jin Li (Korea Advanced Institute of Science and Technology, Korea); Youngnam Han (KAIST, Korea)

*Impact of the ITU-R Maritime Propagation on the Dimensioning of a Centralized LTE MANET*

Achraf Kessab (Telecom Paristech & Thales Communications & Security, France); Lina Mroueh (Institut Supérieur d'Electronique de Paris, France); Philippe Martins (Telecom Paristech, France); Serge Hethuin (Thales Communication and Security, France)

*Power Allocation in Uplink LTE Femtocells with Zero Forcing Frequency Domain Equalizer*

Behzad Khamidehi and Maryam Sabbaghian (University of Tehran, Iran); Hamid Saeedi (Tarbiat Modares University, Iran)

*Layer Management Through Idle-Mode Parameter Optimization in Multi-Carrier LTE Networks*

Mehrzad Malmirchegini (QUALCOMM, USA); Mutaz Shukair (Qualcomm Technologies Inc & Wichita State University, USA); Peter Rached, Mouaffac Ambriss and Kausik Ray Chaudhuri (Qualcomm, USA); Sandip Sarkar (QualComm, USA)

*Multi-Armed Bandit for LTE-U and WiFi Coexistence in Unlicensed Bands*

Samantha Sriyananda (Florida International University, Finland); Imtiaz Parvez and Ismail Güvenç (Florida International University, USA); Mehdi Bennis (Centre of Wireless Communications, University of Oulu, Finland); Arif Sarwat (Florida International University, USA)
MAC 7: Massive-MIMO Systems
Room: PR6

Adaptive Clustering and CSI Acquisition for FDD Massive MIMO Systems with Two-level Precoding
Apostolos Destounis (Huawei Technologies France Research Center, France); Marco Maso (Mathematical and Algorithmic Sciences Lab, Huawei France Research Center, France)

Adaptive User Grouping Algorithm for the Downlink Massive MIMO Systems
Makram Alkhaled (The University of Manchester, United Kingdom); Emad Alsusa (Manchester University, United Kingdom); Wahyu Pramudito (University of Manchester, United Kingdom)

Adaptive Pilot-Duration and Resource Allocation in Virtualized Wireless Networks with Massive MIMO
Rajesh Dawadi and Saeedeh Parsaeefard (McGill University, Canada); Mahsa Derakhshani (Imperial College London, United Kingdom); Tho Le-Ngoc (McGill University, Canada)

Coverage Analysis for Dense Millimeter Wave Cellular Networks: The Impact of Array Size
Xianghao Yu, Jun Zhang and Khaled B. Letaief (The Hong Kong University of Science and Technology, Hong Kong)

Energy consumption optimization in 5G networks using multilevel beamforming and large scale antenna systems
Fatma Salem, Abdoulaye Tall, Zwi Altman and Azeddine Gati (Orange Labs, France)

NET7: Wireless Sensor Networks - 2
Room: PR 7

Eric Renault (Institut Mines-Telecom -- Telecom SudParis & Samovar UMR CNRS 5157, France); Selma Boumerdassi (Conservatoire National des Arts et Métiers, France); Paul Muhlethaler (INRIA, France)

Monte Carlo Localization for Path-Based Mobility in Mobile Wireless Sensor Networks
Salke Hartung, Ansgar Kellner, Konrad Rieck and Dieter Hogrefe (University of Goettingen, Germany)

Fault Tolerant Placement Strategy for WSN
Hanen Idoudi and Jihen Bennaceur (National School of Computer Science - University of Manouba, Tunisia)

Jun Tao, Jianhua Liu, Tianqi Zhai, Chen Guo, Ziyi Zhang and Jian He (Southeast University, P.R. China)

Evaluating Time Synchronization Using Application-Layer Time-Stamping
Osameh Al Kofahi (Yarmouk University, Jordan)

NET8: Cognitive Radio Networks
Room: PR 8

Primary User Activity Prediction Based Joint Topology Control and Stable Routing in Mobile Cognitive Networks
Yan Xue (Shanghai Jiao Tong University, P.R. China); Can Tang (The Australian National
ChiMaS: A Spectrum Sensing-based Channels Classification System for Cognitive Radio Networks
Lucas Bondan (Federal University of Rio Grande do Sul (UFRGS), Brazil); Marcelo Antonio Marotta and Leonardo Roveda Faganello (Federal University of Rio Grande do Sul, Brazil); Juergen Rochol (University of Rio Grande do Sul, Brazil); Lisandro Z Granville (Federal University of Rio Grande do Sul, Brazil)

A Joint Multi-Channel Assignment and Power Control Scheme for Energy Efficiency in Cognitive Radio Networks
Nasser Shami and Mehdi Rasti (Amirkabir University of Technology, Iran)

Space-Time Opportunistic Interference Alignment in Cognitive Radio Networks
Idris Abdulkadir Yusuf, Oluymomi Simpson, Nnamdi Nwanekezie and Yichuang Sun (University of Hertfordshire, United Kingdom)

An Evolutionary Game Theoretic Approach for Cooperative Spectrum Sensing
Ahmed Mahmoud Salama, Abdulla K Al-Ali and Amr Mohamed (Qatar University, Qatar)

NET9: LTE Systems

Virtual Cell-Based Mobility Enhancement and Performance Evaluation in Ultra-Dense Networks
Na Meng (Beijing University of Posts and Telecommunications, P.R. China); Hongtao Zhang (Beijing University of Posts and Telecommunications & Key Lab of Universal Wireless Communications, Ministry of Education, P.R. China)

Secure and Efficient Uniform Handover Scheme for LTE-A Networks
Zaheer Haddad (Alaqsa University & Cairo University, Palestine); Mohamed M E A Mahmoud (Tennessee Tech University, USA); Imane A. Saroit and Sanaa Taha (Cairo University, Egypt)

Mobility State Estimation in LTE
Majed Haddad (University of Avignon, France); Dalia Georgiana Herculea (Alcatel-Lucent Bell-Labs France, France); Eitan Altman (INRIA, France); Nidham Ben Rached (Alcatel-Lucent, France); Veronique Capdevielle (Alcatel Lucent Bell Labs France, France); Chung Shue Chen (Bell Labs, France); Frederic Ratovelomanana (Alcatel-Lucent, France)

A Study on Single-Cell Point-to-Multipoint Transmission for Public Safety Communications with eMBMS LTE Networks
Ahmad Awada (Nokia Bell Labs, Germany); David Navratil (Nokia Networks, Finland); Mikko Säily (Nokia Bell Labs, Finland)

A Heuristic Approach to Mobility Robustness in 4G LTE Public Safety Networks
Riccardo Fedrizzi (Create-Net, Italy); Leonardo Goratti (Create-net, Italy); Tinku Rasheed (Create-Net Research, Italy); Sithamparanathan Kandeepan (RMIT University, Australia)

APP 6: Intelligent Transportation Systems

Design, Implementation and Experiments of a Wi-Fi D2D-based Automatic Vehicle Location (AVL) system
Ping-Fan Ho and Jyh-Cheng Chen (National Chiao Tung University, Taiwan)

Cyber Physical Systems: A Framework for Dynamic Traffic Light Control at Road Intersections
Ossama Younis (National Institute of Standards and Technology, USA); Nader Moayeri (NIST, USA)

Versatile Real-Time Traffic Monitoring System Using Wireless Smart Sensors Networks
Walid Balid and Hasan Tafish (University of Oklahoma, USA); Hazem Refai (Oklahoma University, USA)

Traffic Signs Localisation and Recognition Using A Client-Server Architecture
Abdelhamid Mammeri, Azzedine Boukerche and Jingwen Feng (University of Ottawa, Canada)

Context-Aware Traffic Light Self-Scheduling (CA-TLS) Algorithm
Maram Bani Younes (University of Ottawa & Philadelphia University, Jordan); Azzedine Boukerche and Abdelhamid Mammeri (University of Ottawa, Canada)

PAN 4: The Internet of Things (IoT): Challenges and Opportunities

Room: Dafna

- Dr. Emilio Strinati, Smart Devices & Telecommunications Strategy Program Director, CEA-LETI, France.
- Dr. Guillaume Chelius, Founder and CEO, HiKoB, France.
- Mr. Jurgen Hase, Group Director M2M, Group B2B Commercial, Ooredoo, Qatar.
- Dr. Fadel Digham, Executive Director, Research & Development, National Telecom Regulatory Authority (NTRA), Egypt.

APP-P: Poster Session - Advances in Wireless Networks

Room: Dafna Foyer

A Distributed D-hop Cluster Formation for VANET
Meysam Azizian (Université de Sherbrooke, Quebec, Canada); Soumaya Cherkaoui (Université de Sherbrooke, Canada); Abdelhakim Hafid (University of Montreal, Canada)

Quantifying Caching Effects in Urban VANETs
Chaoyi Bian, Tong Zhao and Xiaoming Li (Peking University, P.R. China); Xiaojiang Du (Temple University, USA); Mohsen Guizani (QU, USA); Wei Yan (Peking University, P.R. China)

Measuring Safety Awareness in Cooperative ITS Applications
Muhammad Awais Javed (Qatar Mobility Innovations Center, Qatar); Elyes Ben Hamida (Qatar Mobility Innovations Center (QMIC), Qatar)

COUP in VANETs: Vehicular Content Distribution Using Collaborative Urban Parking Clusters
Ma Chunmei (Tianjin Normal University & University of Electronic Science and Technology, P.R. China); Haigang Gong and Xiaomin Wang (University of Electronic Science and Technology of China, P.R. China); Han Hu (Nanyang Technological University, Singapore); Ming Liu (University of Electronic Science and Technology of China, P.R. China)

A Distributed Prevention Scheme from Malicious Nodes in VANETs’ Routing Protocols
Tarek Bouali (DRIVE Lab, ISAT Nevers, France); Hichem Sedjelmaci (University of Bourgogne, DRIVE Lab, France); Sidi-Mohammed Senouci (University of Bourgogne - ISAT Nevers, France)

A Stochastic Geometry-based Demand Response Management Framework for Cellular Networks Powered by Smart Grid
Muhammad Junaid Farooq (Qatar Mobility Innovations Center (QMIC), Qatar); Hakim Ghazzai (Qatar Mobility Innovations Center & QMIC, Qatar); Abdullah Kadri (Qatar Mobility Innovations Center, Qatar)

Verification of 3G and 4G Received Power Measurements in a Crowdsourcing Android App
Mads Lauridsen (Aalborg University, Denmark); Ignacio Rodriguez (Aalborg Universitet,
A User Centric Self-optimizing Grid-based approach for Antenna Steering Based on Call Detail Records
Naim Bitar (The University of Oklahoma, USA); Ali Imran (University of Oklahoma, USA); Hazem Refai (Oklahoma University, USA)

Intercept Probability Analysis of Relay Selection for Wireless Communications in the Presence of Multiple Eavesdroppers
Xiaojin Ding (Southeast University, P.R. China); Tiecheng Song (National Mobile Communications Research Laboratory, Southeast University, P.R. China); Yulong Zou (Nanjing University of Posts and Telecommunications, P.R. China); Xiaoshu Chen (University of Southeast, P.R. China)

Tuesday, April 5, 14:00 - 15:40

MAC-I2: Energy Efficiency in LTE Networks 2

Room: Salwa 2

Invited Talk: Unlicensed LTE
Geoffrey Ye Li (Georgia Institute of Technology, USA)

Iterative Greedy Algorithms for Energy Efficient LTE Small Cell Networks
Ying Wang, Xiangming Dai, Jason Min Wang and Brahim Bensaou (The Hong Kong University of Science and Technology, Hong Kong)

Battery Life Extension for WLAN-LTE Aggregation
Sunheui Ryoo, Jungsoo Jung and Jung-Min Moon (Samsung Electronics, Korea); Byoung Hoon Jung and Seung-Hoon Park (Samsung, Korea)

Downlink HARQ Enhancement for Listen-Before-Talk Based LTE in Unlicensed Spectrum
Jing Wang (DOCOMO Beijing Communication Laboratories Co., Ltd, P.R. China); Liu Liu (DOCOMO Beijing Communications Laboratories Co., Ltd, P.R. China); Hiroki Harada (NTT DoCoMo, Inc., Japan); Huiling Jiang (DOCOMO Beijing Communications Laboratories Co., Ltd., P.R. China)

PHY15: MIMO Relaying

Room: Salwa 1

Outage Probability of Spatially Correlated MIMO Full-Duplex Relaying with Imperfect CSI
Ahmed M Almrad (The University of Manchester, United Kingdom); Khairi A. Hamdi (University of Manchester, United Kingdom)

A Low Complexity Relay Selection & Power Allocation Schemes for Cognitive MIMO Buffer-Aided DF Relay Networks
Yasser F. Al-Eryani (King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia); Anas M. Salhab (King Fahd University of Petroleum & Minerals, Saudi Arabia); Salam A. Zummo (KFUPM, Saudi Arabia)

Cooperative Communication in Spatially Modulated MIMO systems
Neeraj Varshney (Indian Institute of Technology Kanpur, India); Amish Goel (Indian Institute of Technology Kanpur India, India); Aditya K Jagannatham (Indian Institute of Technology Kanpur, India)

RF-Chain Constrained Multi-pair Massive MIMO Relaying Using Hybrid Precoding and Detection
Jian Liu, Wei Xu and Shi Jin (Southeast University, P.R. China); Xiaodai Dong (University of
**PHY16: Wireless Networks II**

Room: Salwa 3

*Impact of 3D Propagation on Wi-Fi Performance in MIMO System*
Reham Almesaeed (University Of Bristol, United Kingdom); Angela Doufexi and Andrew Nix (University of Bristol, United Kingdom)

*Joint Rate Adaptation, Frame Aggregation and MIMO Mode Selection for IEEE 802.11ac*
Saeed Abdallah (University of Sharjah, UAE); Steven D Blostein (Queen's University, Canada)

*MU-MIMO Channel Emulator with Automatic Channel Sounding Feedback for IEEE 802.11ac*
Tran Thi Thao Nguyen, Leonardo Jr. Lanante, Yuhei Nagao, Masayuki Kurosaki and Hiroshi Ochi (Kyushu Institute of Technology, Japan)

*Calculation of Optimum Transmit Power in an IEEE 802.15.4-Based Wireless Sensor Network Employing Cooperative Relaying*
Syed Muhammad Haider Aejaz and Andreas Springer (Johannes Kepler University Linz, Austria)

*Cooperative Routing for Collision Probability Minimization in Wireless Sensor Networks*
Fatemeh Mansourkiaie (Memorial University of Newfoundland, Canada); Mohamed Hossam Ahmed (Memorial University, Canada)

**PHY17: Cellular Networks II**

Room: Dukhan

*Low Complexity Base Station Cooperation in Cellular Networks with Blockages*
Christodoulos Skouroumounis, Constantinos Psomas and Ioannis Krikidis (University of Cyprus, Cyprus)

*Computation Capacity Constrained Joint Transmission Design for C-RANs*
Vu Nguyen Ha and Long Bao Le (INRS, University of Quebec, Canada)

*An Efficient Reduced Complexity PAPR Reduction Approach For 3GPP LTE System*
Mouna Sghaier and Fatma Abdelkefi (High School of Communications of Tunis (SUPCOM), Tunisia); Aymen Omri (Qatar University, Qatar); Mohamed Siala (Sup'Com, Tunisia)

*3D MU-MIMO Transmission in LTE-A Downlink Systems*
Wei Guo (School of Electronics and Information Engineering, Xi'an Jiaotong University, P.R. China); Jiancun Fan (Xi'an Jiaotong University, P.R. China); Geoffrey Li (Georgia Tech, USA); Qinye Yin (Xia'an Jiaotong University, P.R. China); Xiaolong Zhu and Yusun Fu (Huawei Shanghai Rearch Institute, P.R. China)

*Gram-Schmidt Precoding for Two-Tier Cellular Networks with Massive MIMO*
Namal Rajatheva and Elvino Silveira Sousa (University of Toronto, Canada)

**PHY18: Multicarrier Modulation**

Room: PR5

*WFRFT Precoding for Generalized Frequency Division Multiplexing*
Zhenduo Wang and Lin Mei (Harbin Institute of Technology, P.R. China); Xiaolu Wang (HIT, P.R. China); Naitong Zhang (Communication Research Center, Harbin Institute of Technology, P.R. China)
**Optimal Lattice Spacing for GFDM with Gaussian Waveform**  
Stephan Schedler (Universität Rostock, Germany); Volker Kuehn (University of Rostock, Germany)

**Multi-taper implementation of GFDM**  
Shravan Kumar Bandari and Venkata Mani Vakamulla (National Institute of Technology Warangal, India); Anastasios Drosopoulos (TEI of Western Greece, Greece)

**Coded Constellation Rotated Vector OFDM with Generalized Linear Interleaver**  
Chenggao Han (University of Electro-Communications, Japan)

**On ISI and ICI cancellation for FBMC/OQAM system using iterative decoding and ML detection**  
Yahya Jasim Harbi and Alister G. Burr (University of York, United Kingdom)

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**MAC 8: Energy Efficiency in Multihop Networks**

Room: PR6

**Topology-Transparent Scheduling in Mobile Multihop Ad Hoc Networks with Directional Antennas**  
Yiming Liu (China Acedamy of Electronics and Information Technology, P.R. China); Lina Weng (Beijing University of Posts and Telecommunications, P.R. China); Victor O. K. Li (University of Hong Kong, P.R. China); Shangfeng Xu (China Acedamy of Electronics and Information Technology, P.R. China)

**A Delay-aware Packet Prioritisation Mechanism for Voice over IP in Wireless Mesh Networks**  
Cristian Olariu (University College Dublin, Ireland); John Fitzpatrick (Rapid7, Ireland); Yacine Ghamri-Doudane (University of la Rochelle, France); Liam Murphy (University College Dublin, Ireland)

**Performance Analysis of SCMA Ad Hoc Networks: A Stochastic Geometry Approach**  
Lei Liu, Min Sheng, Junyu Liu, Yuzhou Li and Jiandong Li (Xidian University, P.R. China)

**Fast Synchronisation Protocol with Collision Handling for Wireless Ad Hoc Networks**  
Imen Jemili (University of Manouba, Tunisia); Abdelfettah Belghith (University of Manouba & National School of Computer Sciences ENSI, Tunisia); Mosbah Mohamed (University of Bordeaux & LaBRI, France)

**End-to-end Distortion Analysis of Multicasting over Orthogonal Receive Component Decode-Forward Cooperative Broadcast Channels**  
Payam Padidar, James Ho and Pin-Han Ho (University of Waterloo, Canada)

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**NET10: Heterogeneous Cellular Networks - 1**

Room: PR 7

**Trajectory based Mobility State Estimation for Heterogeneous Cellular Networks**  
Pravijot Singh Deogun (Indian Institute of Technology (IIT) Bombay, India); Mahima Mehta (Intel Mobile Communications India Pvt. Ltd., India); Abhay Karandikar (IIT Bombay, India); Nadeem Akhtar (Mojo Networks, India)

**On Revenue Efficiency for Coordinated Multipoint Transmission in Heterogeneous Cellular Networks**  
Min Xu, Xiaofeng Tao and Fan Yang (Beijing University of Posts and Telecommunications, P.R. China)

**Analysis of Heterogeneous Cellular Network with Hexagonal Tessellated Macrocells and Randomly Positioned Small Cells**  
Xiaobin Yang and Abraham O Fapojuwo (University of Calgary, Canada)
Performance Analysis of Frequency Reuse Techniques under varying Cellular Network scenarios
Achonu Oluwole Adejo and Said Boussakta (Newcastle University, United Kingdom)

Performance Analysis for Cross-tier Cooperation in Heterogeneous Cellular Networks: A Stochastic Geometry Approach
Junxu Zhao and Qiang Wang (Beijing University of Posts and Telecommunications, P.R. China); Yue Dong (Beijing University of Post and Telecommunications, P.R. China); Wei Wei (Beijing University of Posts and Telecommunications, P.R. China)

NET11: Security and Privacy
Room: PR 8

A Probabilistic Energy-Efficient Approach for Monitoring and Detecting Malicious/Selfish Nodes in Mobile Ad-hoc Networks
Andrea Lupia and Floriano De Rango (University of Calabria, Italy)

Misbehaviour Detection in Vehicular Networks using Logistic Trust
Saneeha Ahmed (University of Windsor & University of Windsor, Canada); Kemal Tepe (University of Windsor, Canada)

Privacy-Aware Power Charging Coordination in Future Smart Grid
Mohamed M E A Mahmoud (Tennessee Tech University, USA); Muhammad Ismail (Texas A&M University at Qatar, Qatar); Prem Kumar Akula (Tennessee Technological University, USA); Kemal Akkaya (Florida International University, USA); Erchin Serpedin (Texas A&M University, USA); Khalid A. Qaraqe (Texas A&M University at Qatar, USA)

A Practical Group Matching Scheme for Privacy-Aware Users in Mobile Social Networks
Fenghua Li (State Key Laboratory of Information Security, Institute of Information Engineering, CAS, P.R. China); Hanyi Wang (University of Science and Technology of China, P.R. China); Ben Niu and Yuanjuan He (State Key Laboratory of Information Security, Institute of Information Engineering, CAS, P.R. China); Jiafeng Hua and Hui Li (Xidian University, P.R. China)

Trust-Based and Privacy-Preserving Fine-Grained Data Retrieval Scheme For MSNs
Enahoro Oriero and Khaled Rabieh (Tennessee Technological University, USA); Mohamed M E A Mahmoud (Tennessee Tech University, USA); Muhammad Ismail (Texas A&M University at Qatar, Qatar); Erchin Serpedin (Texas A&M University, USA); Khalid A. Qaraqe (Texas A&M University at Qatar, USA)

NET12: Resource Allocation and QoS Support
Room: Cigar Lounge

QoS-aware Joint RRH Activation and Clustering in Cloud-RANs
Hazem Soliman and Alberto Leon-Garcia (University of Toronto, Canada)

A Novel Streaming Method using QoS Control Function of LTE to Prevent Video Freezing
Yasuhiro Nagai (SoftBank Corp., Japan); Takao Okamawari (Softbank Mobile Corp., Japan); Teruya Fujii (Softbank Mobile, Japan)

Minimum Complexity APP Prioritization by Bandwidth Apportioning in Smart Phones
Karthikveyan Subramaniam (Samsung Research India, India); Kannan Govindan (Samsung Advanced Institute of Technology SAIT India, India); Sweta Jaiswal and Srihari Das Sunkada Gopinath (Samsung Research India, India)

A New Approach for Routing Plane Construction in Future Multi-Plane Routing based Wireless IP Access Networks
Mohammad Farhoudi, Alexandre Jaron, Andrej Mihailovic and Hamid Aghvami (King's College London)
Optimal Protection Resource Allocation: A Perspective of Network Science
Zeqi Zhang (Tsinghua University, P.R. China); Chunxiao Jiang and Yong Ren (Tsinghua University, Beijing, P.R. China)

APP 7: Wearable Sensing and Applications

Room: Ghazal

The Case of Face Recognition on Mobile Devices
Galal Hassan (Queen's University, Canada); Khalid Elgazzar (Carnegie Mellon University, USA)

Secure Data Access for Wireless Body Sensor Networks
Zhitao Guan and Tingting Yang (North China Electric Power University, P.R. China); Xiaojiang Du (Temple University, USA); Mohsen Guizani (QU, USA)

WBAN on NS-3: Novel Implementation with High Performance of IEEE 802.15.6
Wenwei Yue, Changle Li, Yueyang Song, Li Yang and Xiaoming Yuan (Xidian University, P.R. China)

Joint Throughput and Channel Aware (TCA) Dynamic Scheduling Algorithm for Emerging Wearable Applications
Muhammad Mahtab Alam (Qatar Mobility Innovation Center, Qatar); Elyes Ben Hamida (Qatar Mobility Innovations Center (QMIC), Qatar); Dhafer Ben Arbia (Qatar Mobility Innovations Center & SERCOM Lab, Polytechnic School of Tunis, University of Carthage- Tunisia, Qatar)

QoE-Based Network Interface Selection for Heterogeneous Wireless Networks: A survey and e-Health case proposal
Mohamed Abdelkrim Senouci (UPEC, France); Sami Souihi (University Paris Est UPEC, France); Abdelhamid Mellouk and Said Hoceini (UPEC, University Paris-Est Creteil Val de Marne, France)

PAN 5: Connected and Autonomous Vehicles: From Vision to Reality

Room: Dafna

•Dr. Dawn Tilbury, Professor at University of Michigan, USA•Dr. Mehrdad Dianati, Associate Professor, University of Surrey, Guildford, United Kingdom•Dr. Fethi Filali, Head, Technology Development, Qatar Mobility Innovations Center (QMIC), Doha, Qatar•Mr. Malike Bouaoud, Head of Technology Trend and Smart Innovation Lab/Cyber Security expert, Ministry of Transport and Communications, Doha, Qatar.

PHY-P2: Poster Session II - PHY and Fundamentals

Room: Dafna Foyer

Reference Sequence design for Zero-Tail DFT-spread-OFDM
Gilberto Berardinelli (Aalborg University, Denmark); Frank Frederiksen (Nokia Siemens Networks, Denmark); Klaus Pedersen (Nokia Networks, Denmark); Preben Mogensen (Aalborg University, Denmark); Kari Pajukoski (Nokia, Finland)

Reed-Muller Lattice Coding for the Rayleigh Block Fading Channel
Carole Al Bechlawi (TELECOM Bretagne, France); Jean-Claude Belfiore (Telecom Paristech & Huawei Technologies, France); Frederic Guilloud (Institut Telecom - Telecom Bretagne, France)

MAP Optimum Receiver Mitigating Correlated Impulsive Noise
Fabien Sacuto, Gaëtan Ndo and Fabrice Labeau (McGill University, Canada); Basile Landaabalo Agba (Institut de Recherche d'Hydro-Québec & École de technologie superieure, Canada)
A Generalized Algorithm for the Generation of Arbitrary Correlated Nakagami Fading Channels

Yuming Bi (Beijing University of Posts and Telecommunications, P.R. China)

Optimal Joint Source-Relay Multi-Resolution Multicast Networks

Chen Zhi and Pin-Han Ho (University of Waterloo, Canada); James She (Hong Kong University of Science and Technology, Hong Kong); Sagar Naik (University of Waterloo, Canada)

Tuesday, April 5, 16:00 - 17:40

APP-I: Cloud Services

Room: Salwa 2

Invited Talk: Services in the Cloud and Big Data Era

Albert Zomaya (The University of Sydney, Australia)

Urban Traffic Characterization for Enabling Vehicular Clouds

Tao Zhang, Robson De Grande and Azzedine Boukerche (University of Ottawa, Canada)

Continuous Double Auction for Cloud Market: Pricing and Bidding Analysis

Yuchao Zhang, Ke Xu and Xuelin Shi (Tsinghua University, P.R. China); Haiyang Wang (University of Minnesota at Duluth, USA); Jiangchuan Liu (Simon Fraser University, Canada); Yong Wang (Tsinghua University, P.R. China)

PHY19: Physical Layer Security I

Room: Salwa 1

Cross MAC PHY Layer Security Design Using ARQ with MRC and Adaptive Modulation

Jehad Hamamreh, Marwan Yusuf and Tuncer Baykas (Istanbul Medipol University, Turkey); Huseyin Arslan (University of South Florida, USA)

An Efficient Physical Layer Security Algorithm for Two-Way Relay Systems

Mohanad Obeed and Wessam Mesbah (King Fahd University of Petroleum and Minerals, Saudi Arabia)

Enhancing Physical Layer Security in Dual-Hop Multiuser Transmission

Waqas Aman (COMSATS Institute of Information Technology, Pakistan); Guftaar Ahmad Sardar Sidhu (COMSATS Institute of Information Technology, Germany); Tayyaba Jabeen (COMSATS Institute of Information Technology, Pakistan); Feifei Gao (Tsinghua University, P.R. China); Shi Jin (Southeast University, P.R. China)

A Practical Physical-Layer Security Method for Precoded OSTBC-Based Systems

Jehad Hamamreh (Istanbul Medipol University, Turkey); Ertugrul Güvenkaya (University of South Florida, USA); Tuncer Baykas (Istanbul Medipol University, Turkey); Huseyin Arslan (University of South Florida, USA)

Secrecy Rate Maximization for SIMO Wiretap Channel with Uncoordinated Cooperative Jamming under Secrecy Outage Probability Constraint

Xiaoyan Hu, Pengcheng Mu, Bo Wang, Zongmian Li and Hui-Ming Wang (Xi'an Jiaotong University, P.R. China); Ying Ju (Xi'an Jiaotong University & State Radio Monitoring Center, P.R. China)

PHY20: Wireless Networks III

Room: Salwa 3

Spatially-Coupled LDPC Coding in Cooperative Wireless Networks
Dushantha Nalin K. Jayakody and Vitaly Skachek (University of Tartu, Estonia); Bin Chen (University College Dublin, Ireland)

**A Novel Multi-User Grouping Scheme for Downlink Non-Orthogonal Multiple Access Systems**
Lei Yao (Beijing University of Posts and Telecommunications, P.R. China); Jie Mei (BUPT, P.R. China); Hang Long (Beijing University of Posts & Telecommunications, P.R. China); Long Zhao (BUPT, P.R. China); Kan Zheng (Beijing University of Posts & Telecommunications, P.R. China)

**Optimal Channel Switching for Average Capacity Maximization in the Presence of Switching Delays**
Ahmet Sezer and Sinan Gezici (Bilkent University, Turkey)

**Maximization of Correct Decision Probability via Channel Switching over Rayleigh Fading Channels**
Furkan Keskin, Mehmet Kurt, Mehmet Tutay, Sinan Gezici and Orhan Arikan (Bilkent University, Turkey)

**Network Sum-Rate Maximizing Power Allocation Over Time-Varying Multiple-Access Interference Channels**
Mohammed W. Baidas (Kuwait University, Kuwait); Emad Alsusa (Manchester University, United Kingdom); Khairi A. Hamdi (University of Manchester, United Kingdom)

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**PHY21: Relaying and Cooperative Communications I**
Room: Dukhan

**Enhancing Spectral Efficiency in Cooperative Cognitive Two-Way Amplify-and-Forward Relaying Networks**
Ahmed Hassan Abd El-Malek (King Fahd University of Petroleum and Minerals, Saudi Arabia); Anas M. Salhab (King Fahd University of Petroleum & Minerals, Saudi Arabia); Salam A. Zummo (KFUPM, Saudi Arabia)

**Beamforming in Asymmetric Two-Way Relay Systems with Imperfect Channel Estimation**
Prabhat Kumar Upadhyay and Devendra Singh Gurjar (Indian Institute of Technology Indore, India)

**Statistical Rate Analysis for Multi-Pair Two-Way Full-Duplex Relaying with Massive Antennas**
Zhanzhan Zhang and Zhiyong Chen (Shanghai Jiao Tong University, P.R. China); Hao Feng (Shanghai Jiao Tong University, P.R. China); Manyuan Shen and Bin Xia (Shanghai Jiao Tong University, P.R. China); Ling Luo (Electric Power Research Institute, SMEPC, State Grid, P.R. China)

**Full Duplex Relay in Millimeter wave Backhaul Links**
Hatem Abbas and Khairi A. Hamdi (University of Manchester, United Kingdom)

**Distributed Multi-Relay Selection via Political Coalition Formation in Cooperative Wireless Networks**
Mohammed S. Bahbahani (University of Manchester, United Kingdom); Mohammed W. Baidas (Kuwait University, Kuwait); Emad Alsusa (Manchester University, United Kingdom)

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**MAC 9: Energy Efficiency in WLAN, WPAN, and Sensor Networks**
Room: PR5

**A Centralized Scheduling Algorithm for IEEE 802.15.4e TSCH based Industrial Low Power Wireless Networks**
Yichao Jin (Toshiba Research Europe Ltd, United Kingdom); Parag Kulkarni (Toshiba Research
Cooperative WiFi Management: Nash Bargaining Solution and Implementation
Chunxiao Jiang (Tsinghua University, Beijing, People's Republic of China); Yaodong Zhang (Tsinghua University, Beijing, People's Republic of China); Jian Yuan (Tsinghua University, Beijing, People's Republic of China); Yong Ren (University of Houston, USA)

On the Impact of RN16 Decoding Errors on Time Throughput of RFID Systems
Ezzeldin Zaki (German University in Cairo, Egypt); Tallal Elshabrawy (The German University in Cairo, Egypt); Mohamed Ashour (GUC, Egypt)

Dynamic Sensitivity Control Algorithm leveraging adaptive RTS/CTS for IEEE 802.11ax
M. Shahwaiz Afaqui, Eduard Garcia-Villegas and Elena Lopez-Aguilera (Technical University of Catalonia (UPC), Spain)

Energy Consumption and Performance of IEEE 802.15.4e TSCH and DSME
Iacob Juc (University of Grenoble, France); Andrzej Duda (Grenoble Institute of Technology, France); Michel Favre (STMicroelectronics, France); Olivier Alphand (Grenoble Institute of Technology, France); Roberto Guizzetti (STMicroelectronics, France)

PHY22: Wireless Energy Transfer

Downlink Power Allocation for Wireless Information and Energy Transfer in Macrocell-Small Cell Networks
Sudha Lohani (The University of British Columbia, Canada); Ekram Hossain (University of Manitoba, Canada); Vijay Bhargava (University of British Columbia, Canada)

Power Transfer in Multi-Pair Two-way AF Relaying Networks with Zero-Forcing
Abdelhamid Salem and Khairi A. Hamdi (University of Manchester, United Kingdom)

Optimal Scheduling and Power Allocation for Wireless Powered Two-Way Relaying Systems
Runfa Zhou (The Hong Kong University of Science and Technology, Hong Kong); Roger Cheng (HKUST, Hong Kong)

A joint power and information transfer system using retransmissions
Behrooz Makki and Tommy Svensson (Chalmers University of Technology, Sweden); Michele Zorzi (Università degli Studi di Padova, Italy)

A saddle-point based approach for semi-analytical performance evaluation of a digital communication system
Fatima ezzahra Naamane (ENSIAS, Morocco); Mohamed Et-tolba (INPT, Morocco); Mostafa Belkasmi (ENSIAS - Mohammed V University - Rabat, Morocco)

NET13: LTE/WiFi Coexistence

Enabling Media Streaming over LTE-U Small Cells
Wessam Affi (University of Arizona, USA); Mohamed Hassan (American University of Sharjah, UAE); Marwan Krunz (University of Arizona, USA)

Performance Evaluation of User Centric Multihoming Strategies in LTE/WiFi Networks
Ghina Dandachi (Institut Mines-Telecom, Telecom SudParis, France); Salah Eddine Elayoubi (Orange Labs, France); Tijani Chahed (Telecom SudParis, France); Nada Chendeb Taher (Lebanese University, Lebanon)

Channel Occupancy Cognition Based Adaptive Channel Access and Back-off Scheme for
**LTE System on Unlicensed Band**
Tuoy Yang, Chunxia Guo, Siwen Zhao, Qixun Zhang and Zhiyong Feng (Beijing University of Posts and Telecommunications, P.R. China)

**Spectrum Sharing for LTE and WiFi Coexistence Using Decision Tree and Game Theory**
Fengen Cai, Yuehong Gao, Lei Cheng, Lin Sang and Dacheng Yang (Beijing University of Posts and Telecommunications, P.R. China)

**A Field Trial of LTE in Unlicensed Bands with SDL (Supplemental Downlink) Transmission**
Yang Lan and Lihui Wang (DOCOMO Beijing Communications Laboratories Co., Ltd, P.R. China); Huiling Jiang (DOCOMO Beijing Communications Laboratories Co., Ltd., P.R. China); Kazuki Takeda (NTT DOCOMO, INC., Japan); Hiroki Harada and Satoshi Nagata (NTT DoCoMo, Inc., Japan); Wenfang Tang (Huawei Technologies Co., Ltd., Beijing, P.R. China); Qiang Li (Huawei Technologies Co. Ltd., P.R. China)

**NET14: Localization - 2**
Room: PR 8

**Accurate Range-Free Node Localization in Mobile Ad Hoc Networks**
Slim Zaidi (University of Quebec, INRS-EMT, Canada); Ahmad El Assaf (INRS, Canada); Sofiene Affes (INRS-EMT, Canada); Nahi Kandil (Université du Québec en Abitibi-Témiscamingue, Canada)

**Applying Kriging Interpolation for WiFi Fingerprinting based Indoor Positioning Systems**
Hailong Zhao, Baoqi Huang and Bing Jia (Inner Mongolia University, P.R. China)

**HED: Handling Environmental Dynamics in Indoor WiFi Fingerprint Localization**
Yu Gu and Mengni Chen (Hefei University of Technology, P.R. China); Fuji Ren (The University of Tokushima, Japan); Jie Li (University of Tsukuba, Japan)

**A Sparsity-Based Algorithm for Power-Efficient Node Localization**
Zacharias Psarakis (Rutgers University, USA); Dimitris Toumpakaris (University of Patras, Greece)

**Range-Free Node Localization in Multi-Hop Wireless Sensor Networks**
Slim Zaidi (University of Quebec, INRS-EMT, Canada); Ahmad El Assaf (INRS, Canada); Sofiene Affes (INRS-EMT, Canada); Nahi Kandil (Université du Québec en Abitibi-Témiscamingue, Canada)

**NET15: Localization and Sensing**
Room: Cigar Lounge

**Three Dimensional (3D) Underwater Sensor Network Architectures for Intruder Localization Using EM Wave**
Md. Farhad Hossain (Bangladesh University of Engineering and Technology (BUET), Bangladesh); Musbih Binte Wali (Bangladesh University of Engineering & Technology (BUET), Bangladesh); Kumudu S Munasinghe (University of Canberra, Australia); Abbas Jamalipour (University of Sydney, Australia)

**An Indoor Localization System Based On Backscatter RFID Tag**
Jun Wang, Yiyin Wang and Xinping Guan (Shanghai Jiao Tong University, P.R. China)

**S-TDoA - Sequential Time Difference of Arrival - A Scalable and Synchronization Free Approach for Positioning**
Mathias Pelka (Fachhochschule Lübeck, Germany); Horst Hellbrück (University of Applied Sciences Lübeck & CoSA Center of Excellence, Germany)

**Fair QoI and Energy-aware Task Allocation in Participatory Sensing**
Rim Ben Messaoud (LIGM - University Paris-Est, France); Yacine Ghamri-Doudane (University of la Rochelle, France)

MagiCrowd: A Crowd based Incentive for Location-aware Crowd Sensing
Yao Wu, Yuncheng Wu, Hui Peng, Hong Chen and Cuiping Li (Renmin University of China, P.R. China)

PHY23: Network Coding and Index Coding

Room: Ghazal

Optimization Scheme of Noisy Network Coding in the Two Way Relay Channels
Di Chen and Volker Kuehn (University of Rostock, Germany)

Optimal Coefficients for Channel-Coded Linear Physical Layer Network Coding
Mehrdad Tahernia and Soung Chang Liew (The Chinese University of Hong Kong, Hong Kong)

Index Coded PSK Modulation
Anjana Ambika Mahesh (Indian Institute of Science, Bangalore, India); B. Sundar Rajan (Indian Institute of Science, India)

On The Number Of Optimal Linear Index Codes For Unicast Index Coding Problems
Kavitha Radhakumar, Niranjana Ambadi and B. Sundar Rajan (Indian Institute of Science, India)

Estimation of an approximated likelihood ratio for iterative decoding in impulsive environment
Vincent Dimanche (University of Reims Champagne Ardennes, France); Alban Goupil (Université de Reims Champagne-Ardenne, France); Laurent Clavier (Institut Mines-Telecom, Telecom Lille & IEMN / IRCICA, France); Guillaume Gelle (University of Reims Champagne-Ardenne & CReSTIC, France)

PAN 6: Personalized Medicine and Mobile Health: Role of ICT

Room: Dafna

• Dr. Julio C. Silva, MD, MPH Chief Medical Informatics Officer, Sidra Medical and Research Center. • Dr. Lakshman Tamil, Professor, The University of Texas at Dallas, USA. • Dr. Waleed Qoronfleh, Director of Biotechnology Development, Qatar Biomedical Research Institute (QBRI), Qatar. • Dr. Roozbeh Jafari, Associate Professor, Center for Remote Health Technologies and Systems, College of Engineering, Texas A&M Univ. College Station, USA

Wednesday, April 6

Wednesday, April 6, 09:00 - 10:00

KEY 3: Resilient Wireless Communications - A Frontier to Be Challenged

Dr. Gerhard Fettweis, TU Dresden, Germany
Room: Salwa 2

Gerhard Fettweis earned his Ph.D. under H. Meyr's supervision from RWTH Aachen in 1990. After one year at IBM Research in San Jose, CA he moved to TCSI Inc., Berkeley, CA. Since 1994 he is Vodafone Chair Professor at TU Dresden, Germany, with currently 20 companies from Asia/Europe/US sponsoring his research on wireless transmission and chip design. He coordinates 2 DFG centers at TU Dresden, cfaED and HAEC. Gerhard is IEEE Fellow, member of acatech, has an honorary doctorate from TU Tampere, and has received multiple awards. In Dresden he has spun-out ten start-ups, and setup funded projects of more than EUR 1/3 billion volume. He has helped organizing IEEE conferences, most notably as TPC Chair of IEEE ICC 2009, IEEE TTM 2012, and General Chair of VTC Spring 2013. He remains active within IEEE.
Wednesday, April 6, 10:30 - 12:10

PHY-I3: Energy Harvesting II

Room: Salwa 2

**Invited Talk: Energy Harvesting for the Internet-of-Things**
Ross Murch (HKUST, Hong Kong)

**Wireless RF-based Energy Harvesting for Two-Way Relaying Systems**
Ahmad Alsharoa (Iowa State University, USA); Hakim Ghazzai (Qatar Mobility Innovations Center & QMIC, Qatar); Ahmed E. Kamal (Iowa State University, USA); Abdullah Kadri (Qatar Mobility Innovations Center, Qatar)

**Optimal Collaborative Energy Harvesting Spectrum Sensing With Limited Time Resource**
Fariba Mohammadian (Qazvin International University, Iran); Zahra Pourgharehkhan and Abbas Taherpour (Imam Khomeini International University, Iran); Tamer Khattab (Qatar University, Qatar)

**Energy Harvesting for Wearable Wireless Health Care Systems**
Riad Kanan (Abu Dhabi University ADU, UAE)

PHY24: Physical Layer Security II

Room: Salwa 1

**Secure Transmission with Artificial Noise in Millimeter Wave Systems**
Ying Ju (Xi'an Jiaotong University & State Radio Monitoring Center, P.R. China); Hui-Ming Wang (Xi'an Jiaotong University, P.R. China); Tong-Xing Zheng (Xi'an Jiaotong University, P.R. China); Qinye Yin (Xi'an Jiaotong University, P.R. China)

**A Low-Complexity Antenna Subset Modulation for Secure Millimeter-Wave Communication**
Nafel Alotaibi and Khairi A. Hamdi (University of Manchester, United Kingdom)

**Secrecy Beamforming Design for Large Millimeter-Wave Two-Way Relaying Networks**
Shiqi Gong, Chengwen Xing, Fei Zesong and Jingming Kuang (Beijing Institute of Technology, P.R. China)

**Secrecy Outage Probability for The Multiuser Downlink with Several Curious Users**
Na Li and Xiaofeng Tao (Beijing University of Posts and Telecommunications, P.R. China); Hui Chen (Beijing University of Posts and Telecommunications (BUPT), P.R. China); Huici Wu (Beijing University of Posts and Telecommunications, P.R. China)

**Secrecy Outage Probability Analysis for Cooperative Communication with Relay Selection Under Non-Identical Distribution**
Esa R. Alotaibi and Khairi A. Hamdi (University of Manchester, United Kingdom)

PHY25: Selected Topics in Communications I

Room: Salwa 3

**Efficient Near-Optimal 8x8 MIMO Detector**
Hadi Sarieddeen, Mohammad Mansour and Ali Chehab (American University of Beirut, Lebanon)

**Latency aware Decoder for High-Order Modulations MIMO transmissions with parallel processing architectures**
Zhipeng Zhao (Huawei Technologies, FRC, France); Loig Godard (Huawei, France); Mohamed Kamoun (Huawei France, France)
Evaluation of the Hardware Complexity of the ADMM approach for LDPC decoding
Imen Debbabi (SUPCOM, Tunisia); Bertrand Le Gal (University of Bordeaux, France); Nadia Khouja (CIRTA/COM Laboratory Sup'Com Tunis, Tunisia); Fethi Tlili (Ecole Supérieure de Communications de Tunis, Tunisia); Christophe Jego (IMS CNRS Laboratory & IPB ENSEIRB-MATMECA, France)

A New Family of Filters for PAPR Reduction of Carrier Aggregated Signals
Sylvain Traverso (Thales Communications, France)

Properties of Faster-than-Nyquist Channel Matrices and Folded-Spectrum, and Their Applications
Yong Jin Daniel Kim (Rose-Hulman Institute of Technology, USA)

PHY26: Relaying and Cooperative Communications II
Room: Dukhan

Joint Optimization of Power Allocation and Relay Position for Lossy-Forwarding Relaying
Shen Qian (Japan Advanced Institute of Science and Technology & University of Oulu, Finland); Markku Junnti (University of Oulu, Finland); Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan)

On Relay Selection in Bursty Impulsive Noise Channel
MD. Sahabul Alam and Fabrice Labeau (McGill University, Canada)

Energy-Aware Relay Selection and Power Allocation for Multiple-User Cooperative Networks
Sabyasachi Gupta (Indian Institute of Technology Delhi, India); Ranjan Bose (Indian Institute of Technology, India)

Delay- and diversity-aware buffer-aided relay selection policies in cooperative networks
Dimitrios Poulimenesas (Royal Institute of Technology (KTH), Sweden); Themistoklis Charalambous (Chalmers University of Technology, Sweden); Nikolaos Nomikos (University of the Aegean, Greece); Ioannis Krikidis (University of Cyprus, Cyprus); Demosthenes Vouyioukas (University of the Aegean, Greece); Mikael Johansson (Royal Institute of Technology, Sweden)

Large Scale Opportunistic Antenna and User Selection in AF Relay Networks with Interference
Imene Trigui (INRS - Centre Energie, Materiaux et Telecommunications, Canada); Sofiene Affes (INRS-EMT, Canada); Alex Stéphenne (Ericsson & INRS-EMT, Canada)

MAC 10: Spectrum Management and Cognitive Radio
Room: PR5

An Opportunistic Guard-band-aware Channel Assignment: A batch-based Approach
Haythem Bany Salameh (Yarmouk University, Jordan); Hadi Kasasbeh (The University of Mississippi, USA); Bassam Harb (Yarmouk University, Jordan)

Energy Efficient Cross Layer Design for Spectrum Sharing Systems
Abdulrahman Alabbasi (King Abdullah University of Science and Technology (KAUST), Saudi Arabia); Basem Shihada (KAUST, Saudi Arabia)

Optimizing Dynamic Spectrum Allocation for Cognitive Radio Networks Using Hybrid Access Scheme
Ayman Sabbah (Queen's University, Canada); Mohamed Ibnkahla (Carleton University, Canada)

Optimizing Multi-node Multi-carrier Cognitive Radio Transmission
Tayyaba Jabeen (COMSATS Institute of Information Technology, Pakistan); Guftaar Ahmad
Sardar Sidhu (Jacobs University Bremen, Germany); Feifei Gao (Tsinghua University, P.R. China); Shi Jin (Southeast University, P.R. China)

Channel Aggregation with Guard-Band in D-OFDM based CRNs: Modeling and Performance Evaluation
Songpu Ai (University of Agder, Norway); Lei Jiao (University of Agder & Department of Information and Communication Technology, Norway); Frank Y. Li and Milka Radin (University of Agder, Norway)

NET16: LTE Network Planning and Configuration
Room: PR6

Exploiting Multi-homing in Hyper Dense LTE Small-Cells Deployments
Abdellaziz Walid (ENSIAS, Mohammed V University of Rabat, Morocco); Essaid Sabir (ENSEM/UH2C, Morocco); Abdellatif Kobbane (ENSIAS, Mohammed V University of Rabat, Morocco); Tarik Taleb (Aalto University, Finland); Mohammed El Koutbi (ENSIAS, Morocco)

Cell Planning Based on Minimized Power Consumption for LTE Networks
Zhaohui Yang, Ming Chen, Linqiong Jia and Yun-Peng Wen (Southeast University, P.R. China); Zhang Yuan (Tsinghua University, P.R. China)

Cell cluster-based dynamic TDD DL/UL reconfiguration in TD-LTE systems
Fanglei Sun (Alcatel-Lucent, P.R. China); Yan Zhao (Alcatel-lucent shanghai bell, P.R. China)

Cell Outage Compensation Algorithm for Frequency Reuse One and ICIC LTE Networks
Omar Nasr (Cairo University, Egypt); Mai Said (Axcerlera Broadband Wireless Egypt, Egypt); Tamer ElBatt (Faculty of Engineering, Cairo University & WINC, Nile University, Egypt)

Study on the Impact of Pico Site Antenna Pattern and Tilt on TD-LTE Networks in 3D Scenario
Sa Zhang (Beijing University of Posts and Telecommunications, P.R. China); ZhuYan Zhao and Hao Guan (Nokia Siemens Networks, P.R. China); Hongwen Yang (Beijing University of Posts and Telecommunications, P.R. China)

NET17: Multicast
Room: PR 7

An Energy-Efficient Multicast Protocol for ZigBee-based Networks
Shu-Chiung Hu, Chia-Hung Tsai and Yi-Cheng Lu (National Chiao-Tung University, Taiwan); Meng-Shiu Pan (Tamkang University, Taiwan); Yu-Chee Tseng (National Chiao-Tung University, Taiwan)

Energy Optimal Multi-resolution Multicast With Asynchronous Relaying
Chen Zhi and Pin-Han Ho (University of Waterloo, Canada); James She (Hong Kong University of Science and Technology, Hong Kong)

PEMSE: A High-throughput Multicast Routing Protocol for Multi-rate IEEE802.11
Asma Ben Hassouna (Cristal Lab, ENSI, University of Manouba, Tunisia); Hend Koubaa (ISI Ariana, Tunisia); Leila Azouz Saidane (ENSI tunisia, Tunisia); Farouk Kamoun (SESAME University, Tunisia)

Mathematical Model of QoS-aware Multicast Transmission via Periodic Reservations
Aleksandr Sergeevich Ivanov, Evgeny Khorov, Egor Kuznetsov and Andrey Lyakhov (IITP RAS, Russia)

Cooperative Live Video Multicast for Small Cell Base Stations with Overlapping Coverage
Ozgu Alay (Simula Research Laboratory, Norway); Antonios Argyriou (University of Thessaly, Greece)
NET18: Network Coding

Room: PR 8

**Security Enhanced via Dynamic Fountain Code Design for Wireless Delivery**
Wanyu Li (Xi'an JiaoTong University, P.R. China); Qinghe Du, Li Sun, Pinyi Ren and Yichen Wang (Xi'an Jiaotong University, P.R. China)

**Leaner and Meaner: Network Coding in SIMD enabled Commercial Devices**
Chres W. Sorensen and Achuthan Paramanathan (Aalborg University, Denmark); Juan A Cabrera (Technische Universität Dresden, Germany); Morten V. Pedersen and Daniel E. Lucani (Aalborg University, Denmark); Frank H.P. Fitzek (Technische Universität Dresden & ComNets - Communication Networks Group, Germany)

**Delivery Time Reduction for Order-Constrained Applications using Binary Network Codes**
Ahmed Douik (California Institute of Technology, USA); Mohammad S. Karim and Parastoo Sadeghi (The Australian National University, Australia); Sameh Sorour (King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia)

**A Novel Systematic Raptor Network Coding Scheme for Mars-to-earth Relay Communication**
Shushi Gu and Jian Jiao (Harbin Institute of Technology Shenzhen Graduate School, P.R. China)

NET19: D2D, UAV, and IOT Systems

Room: Cigar Lounge

**Flow level analysis of the offloading capacity of D2D communications**
Antonia Masucci, Salah Eddine Elayoubi and Berna Sayrac (Orange Labs, France)

**A Two-Stages Relay Selection And Resource Allocation Joint Method for D2D Communication System**
Ming Zhao, Xinyu Gu, Di Wu and Luming Ren (Beijing University of Posts and Telecommunications, P.R. China)

**Distributed Sleep Management for Heterogeneous Wireless Machine-to-Machine Networks**
Evripidis Paraskevas (University Of Maryland College Park, USA); Jianlin Guo (Mitsubishi Electronic Research Laboratories, USA); Philip Orlik (Mitsubishi Electric Research Laboratories, USA); Kentaro Sawa (Mitsubishi Electric Corporation, Japan)

**A Three Dimensional Scalable and Distributed Conflict Detection Algorithm for Unmanned Aerial Vehicles**
Imen Mahjri and Amine Dhraief (University of Manouba, Tunisia); Abdelfettah Belghith (College of Computer and Information Sciences, Tunisia)

**Role of altitude when exploring optimal placement of UAV access points**
Markus Gruber (Nokia Bell Labs, Germany)

APP 8: Applications Using Emerging wireless technologies

Room: Ghazal

**A VLC-based System for Optical SPR Sensing Facility**
Noha Anous, Mohamed M. Abdallah and Mohamed Kashef (Texas A&M University at Qatar, Qatar); Khalid A. Qaraque (Texas A&M University at Qatar, USA)

**An Implementation of Multichannel Multi-Interface MANET for Fire Engines and Experiments with WINDS Satellite Mobile Earth Station**
Non-audible Acoustic Communication and its Application in Indoor Location-based Services
Kashif Ali (University of California, Berkeley, USA); Hossam S. Hassanein and Sharief M.A. Oteafy (Queen's University, Canada)

Seamless Convergence of Radio-over-Fiber and Millimeter-Wave Links for Highly Resilient Access Networks
Abdelmoula Bekkali (KDDI R&D Laboratories Inc., Japan); Kosuke Nishimura (KDDI R&D Laboratories Inc. & Optical Access Network Laboratory, Japan)

A Highly-accurate Device-free Passive Motion Detection System Using Cellular Network
Zengshan Tian and Luyan Shao (Chongqing University of Posts and Telecommunications, P.R. China); Mu Zhou (Chongqing University of Posts and Telecommunications & Chongqing Key Lab of Mobile Communications Technology, P.R. China); Xiangyong Wang (Chongqing University of Posts and Telecommunications, P.R. China)
PHY28: Molecular Communications

Room: Salwa 1

Performance Comparison of Message Encoding Techniques for Bacterial Nanonetworks
Vitaly Petrov, Boya Deng, Dmitri Moltchanov, Sasitharan Balasubramaniam and Yevgeni Koucheryavy (Tampere University of Technology, Finland)

Demodulation of Reaction Shift Keying Signals in Molecular Communication Network with Protein Kinase Receiver Circuit
Hamdan Awan and Chun Tung Chou (University of New South Wales, Australia)

Offset Estimation for Clock Synchronization in Mobile Molecular Communication System
Zhan Luo and Lin Lin (Shanghai University, P.R. China); Maode Ma (Nanyang Technological University, Singapore)

Molecular Code Division Multiple Access in Nano Communication Systems
Yeganeh Zamiri-Jafarian (Queen's University, Canada); Saeed Gazor (Queens University, Canada); Hossein Zamiri-Jafarian (University of Toronto & Ferdowsi University of Mashhad, Canada)

Performance Analysis of Convolutionally-Coded Telegram Splitting Telemetry Systems under Different ISM/SRD Collision Behaviors
Tallal Elshabrawy (The German University in Cairo, Egypt); Joerg Robert (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Sally Nafie (German University in Cairo, Egypt)

PHY29: mmWave Communications

Room: Salwa 3

MMSE Hybrid Precoder Design for Millimeter-Wave Massive MIMO Systems
Ruikai Mai (McGill University, Canada); Duy H. N. Nguyen (University of Texas, Austin, USA); Tho Le-Ngoc (McGill University, Canada)

Hybrid Precoding with Data Stream Adaptation for High Throughput mmWave MIMO Systems
Liang Zhou (Fujitsu Laboratories Ltd., Japan); Yoji Ohashi (Fujitsu, Japan)

An Efficient Beam Training Technique for mmWave Communication Under NLoS Channel Conditions
Wenfang Yuan, Simon Armour and Angela Doufexi (University of Bristol, United Kingdom)

Spectral Efficiency Analysis for Analog Beamforming in Millimeter Wave Communication
Hatem Abbas and Khairi A. Hamdi (University of Manchester, United Kingdom)

Non-Coherent FSK: An Attractive Modulation Set for Millimeter-Wave Communications
Ali A Nasir (National University of Sciences and Technology (NUST), Pakistan); Hani Mehrpooyan (Boise State University, USA); David W Matolak (University of South Carolina, USA); Salman Durrani (The Australian National University, Australia)

PHY30: Selected Topics in Communications II

Room: Dukhan

Planar Ultra-Wideband Elliptical Antenna for Communication Applications
Mousa Hussein and Ali Hakam (UAE University, UAE); Mohammed Ouda (Majmaah University, Saudi Arabia)
Power Performance Enhancement of Underlay Spectrum Sharing using Microstrip Patch ESPAR Antenna
Ahmad Abdalrazik (Port Said University, Egypt); Heba Soliman (Port Said University, Egypt); Mohamed F. Abdelkader (Port Said University, Egypt); Tamer Abulfadl (Cairo University, Egypt)

Millimeter-Wave Ultra-Wideband (UWB) Bandpass Filter (BPF) Using Microstrip Parallel Coupled Lines
Hussein Shaman (King Abdulaziz City for Science and Technology (KACST), Saudi Arabia); Ahmed AlAmoudi (King Abdulaziz City for Science and Technology, Saudi Arabia); Sultan Almorqi (King Abdulaziz City for Science and Technology (KACST), Saudi Arabia)

Enhancing Passive UHF RFID Backscatter Energy Using Chirp Spread Spectrum Signals and Channel Shortening
Taoufik Ben-Jabeur (Qatar University, Qatar); Abdullah Kadri (Qatar Mobility Innovations Center, Qatar); Khalifa Hazaa (Qatar University, Qatar)

Optimal Impersonation of CSI for Maximizing Leaked Information to Untrusted Relay in PLNC
Osamu Takyu and Kengo Matsumoto (Shinshu University, Japan); Takeo Fujii (The University of Electro-Communications, Japan); Tomoaki Ohtsuki (Keio University, Japan); Fumihito Sasamori and Shiro Handa (Shinshu University, Japan)

MAC 11: Energy-Efficient Resource Allocation

Energy-Efficient Mode Selection and Power Control for Device-to-Device Communications
Dingzhu Wen, Guanding Yu and Lukai Xu (Zhejiang University, P.R. China)

Energy Efficiency Optimization for 2D Antenna Arrays in Self-Organizing Wireless Networks
Maciej Soszka (Vodafone Chair Mobile Communications Systems, Germany); Sascha Berger, Meryem Simsek and Gerhard Fettweis (Technische Universität Dresden, Germany)

Coordinated OVSF Code Allocation for Improved Sum Rate and Energy Efficiency in 3G Small Cells
Hanifa Nabuuma (University of Manchester, United Kingdom); Emad Alsusa (Manchester University, United Kingdom)

Queue-aware Energy-efficient Scheduling and Power Allocation in Small-cell Networks with Interference
Hongxin Wei, Limin Xiao, Yunzhou Li and Shidong Zhou (Tsinghua University, P.R. China)

Energy Efficient Resource Allocation for Heterogeneous Cloud Radio Access Networks With User Cooperation and QoS Guarantees
Yuan Zhang and Ying Wang (Beijing University of Posts and Telecommunications, P.R. China); Weidong Zhang (China Academy of Electronics and Information Technology, P.R. China)

NET20: Mobility Management in SDNs

Forging Client Mobility with OpenFlow: an experimental study
Nikos Makris, Kostas Choumas and Christos Zarafetass (University of Thessaly, Greece); Thanasis Korakis (New York University, USA); Leandros Tassiulas (Yale University, USA)

Mobility Management for Low-Latency Handover in SDN-Based Enterprise Networks
Ce Chen, Yu-Ting Lin and Li-Hsing Yen (National Chiao Tung University, Taiwan); Min-Cheng Chan (National Chiao Tung University, USA); Chien-Chao Tseng (National Chiao-Tung
**SDN-Based Distributed Mobility Management for 5G Networks**
Tien-Thinh Nguyen (EURECOM, France); Christian Bonnet (Institut Eurecom, France); Jérôme Härri (EURECOM, France)

**OpenFlow-based Mobility Management scheme in Software Defined Networking**
Pill-Won Park, Seong-Mun Kim and Sung-Gi Min (Korea University, Korea)

**Mobility Management in Three-Tier SDN Architecture for DenseNets**
Ibrahim Elgendi (Canberra University, Australia); Kumudu S Munasinghe (University of Canberra, Australia); Abbas Jamalipour (University of Sydney, Australia)

**NET21: Media Streaming in Wireless Networks**
Room: PR 7

**Streaming Variable Bitrate Video Over Mobile Networks with Predictable Performance**
Yan Liu and Jack Y. B. Lee (The Chinese University of Hong Kong, Hong Kong)

**eTVSQ based Video Rate Adaptation in Cellular Networks With a -Fair Resource Allocation**
Nagabhushan Eswara, Sumohana Channappayya and Abhinav Kumar (Indian Institute of Technology Hyderabad, India); Kiran Kuchi (IIT Hyderabad, India)

**The Role of Multimedia Source Codecs in Green Cellular Networks**
Andres Kwasinski (Rochester Institute of Technology, USA); Alexis Kwasinski (University of Texas, USA)

**Design and Performance Impact of Long Cyclic Prefixes for eMBMS in LTE Networks**
Ahmad Awada (Nokia Bell Labs, Germany); Mikko Säily (Nokia Bell Labs, Finland); Lauri Kuru (Nokia Solutions and Networks, Finland)

**Impact of Chunk Duration on Adaptive Streaming Performance in Mobile Networks**
Yu-Ting Lin (Orange Labs, France); Thomas Bonald (Telecom ParisTech, France); Salah Eddine Elayoubi (Orange Labs, France)

**NET22: Resource Allocation and QoS Support**
Room: PR 8

**A QoS-Guaranteed Dynamic Two-Way Cooperation Approach in Cognitive Networks**
Xinyu Fang (Shanghai Jiao Tong University, P.R. China); Can Tang (The Australian National University, Australia); Feilong Tang (Shanghai Jiao Tong University, P.R. China); Jie Li (University of Tsukuba, Japan); Wenchao Xu (East China Normal University, P.R. China); Minyi Guo (Shanghai Jiao Tong University, P.R. China)

**A QoS Controlled Spectrum Switching Resource Allocation Technique for Cognitive Wi-Fi Networks**
Samoda L Okanda Gamage, Jamil Y Khan and Duy T Ngo (The University of Newcastle, Australia)

**Adaptive Modulation Transmission in High Speed Railway Environment with QoS Provisioning**
Qian Gao (Beijing Jiaotong University, P.R. China); Gang Zhu (Electronics and Information College of Beijing Jiaotong University, P.R. China); Siyu Lin, Shichao Li and Xiong Lei (Beijing Jiaotong University, P.R. China)

**A Dependency-Aware QoS System for Mobile Satellite Communication**
Markus Brückner (Technische Universität Ilmenau, Germany); Philipp Driess (TU-Ilmenau, Germany); Manuel Osdoba and Andreas Mitschele-Thiel (Ilmenau University of Technology, Germany)
**Scalability and Satisfiability of Quality-of-Information in Wireless Networks**

Scott Rager (Pennsylvania State University, USA); Ertugrul Necdet Ciftcioglu (IBM Research, USA); Ram Ramanathan (BBN Technologies, USA); Tom La Porta (Pennsylvania State University, USA); Ramesh Govindan (University of Southern California, USA)

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**NET23: Cooperative Communications**

**Energy Efficient Antenna Selection for a MIMO Relay Using RF Energy Harvesting**

Islam Samy (Qatar University, Egypt); M. Majid Butt (Trinity College Dublin, Ireland); Amr Mohamed (Qatar University, Qatar); Mohsen Guizani (QU, USA)

**Cooperative and Collaborative Forwarding in Heterogeneous Mobile Opportunistic Networking**

Adnan Noor Mian (Information Technology University, Pakistan); Abderrahmen Mtibaa (Texas A&M University, USA); Hussein Alnuweiri (Texas A&M University, Qatar); Farah Amjad (Information Technology University, Pakistan)

**Sparsity-Aware Multiple Relay Selection in Large dual-hop Decode-and-Forward Broadband Relay Networks**

Ala Gouissem and Ridha Hamila (Qatar University, Qatar); Naofal Al-Dhahir (University of Texas at Dallas, USA); Sebti Foufou (Qatar University, Qatar)

**Graph-Based Path Selection and Power Allocation for Relay-Aided Transmission**

Lu Lu, Dawei He and Qiqin Xie (Georgia Institute of Technology, USA); Geoffrey Li (Georgia Tech, USA); Xingxing Yu (Georgia Institute of Technology, USA)

**Capacity Analysis of Dense Wireless Networks with Joint Optimization of Reservation and Cooperation**

Yongping Zhang, Bo Li and Mao Yang (Northwestern Polytechnical University, P.R. China); Zhongjiang Yan (Northwestern Polytechnical University, P.R. China)

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**APP 9: Smart Grids and Energy-Aware Protocols for UAV**

**PMUs Placement with Max-Flow Min-Cut Communication Constraint in Smart Grids**

Ali Gaber Mohamed Ali (Virginia Tech, USA); Karim G Seddik (American University in Cairo, Egypt); Ayman Y Elezabi (American University, Cairo, Egypt)

**Flexible Charging and Discharging Algorithm for Electric Vehicles in Smart Grid Environment**

Osama Aloqaily (University of Ottawa, Canada); Irfan S. Al-Anbagi (University of Regina, Canada); Dhaou Said (University of Ottawa & INTERLAB Research Laboratory, Canada); Hussein T Mouftah (University of Ottawa, Canada)

**MK-AMI: efficient Multi-group Key management scheme for secure communications in AMI systems**

Mourad Benmalek (Ecole Nationale Supérieure d'Informatique ESI (ex. INI), Algeria); Yacine Challal (University of Technology of Compiegne & Heudiasyc lab. UMR CNRS, France)

**Network Connectivity and Area Coverage for UAV Fleet Mobility Model with Energy Constraint**

Mohamed-Ayoub Messous (University of Bourgundy & DRIVE Lab, France); Sidi-Mohammed Senouci (University of Bourgogne - ISAT Nevers, France); Hichem Sedjelmaci (University of Bourgogne, DRIVE Lab, France)

**Energy Efficient Path Planning Techniques for UAV-based Systems with Space Discretization**
Wednesday, April 6, 16:00 - 17:40

**PHY31: Modulation and Coding**

Room: Salwa 2

**Automatic Modulation Classification Using Hierarchical Polynomial Classifier and Stepwise Regression**
Ameen Abdelmutalab, Khaled Assaleh and Mohamed El-Tarhuni (American University of Sharjah, UAE)

**Performance of Quadrature Spatial Modulation with Imperfect Channel Information over Correlated $\alpha - \mu$ Fading Channels**
Osamah S. Badarneh (University of Tabuk, Saudi Arabia); Raed Mesleh (German Jordan University, Jordan)

**Capacity Bounds and Performance of Precoder Index Modulation**
Yalagala Naresh (Indian Institute of Science, India); T. Lakshmi Narasimhan (National Instruments, Bangalore, India); A. Chockalingam (Indian Institute of Science, India)

**A Direct-Code to Increase the Spectral Efficiency of Generalized Space Shift Keying Modulation**
Nafel Alotaibi and Khairi A. Hamdi (University of Manchester, United Kingdom)

**Feature based Modulation Classification using Multiple Cumulants and Antenna Array**
Sai Huang, Zhiyong Feng, Yifan Zhang, Kezhong Zhang and Wei Li (Beijing University of Posts and Telecommunications, P.R. China)

**PHY32: Space Time Block Codes**

Room: Salwa 1

**A Low-Complexity Sub-Optimal Decoder for OSTBC-Based Mobile Cooperative Systems**
Yazid Khattabi and Mustafa Muhammad Matalgah (University of Mississippi, USA)

**Implementing Differential Distributed Orthogonal Space Time Block Coding using Coefficient Vectors**
Nnamdi Nwanekezie, Gbenga Owojaie and Yichuang Sun (University of Hertfordshire, United Kingdom)

**OSTBC Transmission over Cooperative Diversity Systems under Nodes Mobility Impact**
Yazid Khattabi and Mustafa Muhammad Matalgah (University of Mississippi, USA)

**Rateless Space Time Block Code for Antenna Failure in Massive MU-MIMO Systems**
Ali H. Alqahtani (College of Telecommunication and Information Technology (CTI), Saudi Arabia); Ahmed Iyanda Sulyman and Abdulhameed Alsanie (King Saud University, Saudi Arabia)

**Cognitive MIMO Quadrature Spatial Modulation Systems with Mutual Primary-Secondary Co-channel Interference**
Islam Abu Mahady and Ali Afana (Lakehead University, Canada); Raed Mesleh (German Jordan University, Jordan); Salama Said Ikki (Lakehead University & Electrical Engineering Department, Canada); Ibrahem E. Atawi (University of Tabuk, Saudi Arabia)
PHY33: Selected Topics in Communications III

Room: Salwa 3

*An Enhanced DCO-OFDM Scheme for Visible Light Communication System*
Yang Yang, Zhimin Zeng and Caili Guo (Beijing University of Posts and Telecommunications, P.R. China)

*Security-Reliability Analysis and Power Allocation in Multiuser SIMO Mixed RF/FSO Relay Networks*
Ahmed Hassan Abd El-Malek (King Fahd University of Petroleum and Minerals, Saudi Arabia); Anas M. Salhab (King Fahd University of Petroleum & Minerals, Saudi Arabia); Salam A. Zummo (KFUPM, Saudi Arabia)

*Digital Weighted Autocorrelation Receiver Using Channel Characteristic Sequences for Transmitted Reference UWB Communication Systems*
Zhonghua Liang (Chang'an University, P.R. China); Xiaodai Dong (University of Victoria, Canada); Xiaojun Yang (Chang'an University, P.R. China); Huansheng Song (Chang'an University, P.R. China)

*IR-UWB Detection and Fusion Strategies using Multiple Detector Types*
Vijaya Parampalli Yajnanarayana and Satyam Dwivedi (KTH Royal Institute of Technology, Sweden); Peter Händel (Royal Institute of Technology, Sweden)

PHY34: Spectrum Sensing

Room: Dukhan

*Energy Detection Based Spectrum Sensing over Enriched Multipath Fading Channels*
Ali Reza Bagheri (New Jersey Institute of Technology, USA); Paschalis C. Sofotasios (Tampere University of Technology & Aristotle University of Thessaloniki, Finland); Theodoros Tsiftsis (Nazarbayev University & Technological Educational Institute of Central Greece, Kazakhstan); Khuong Ho Van (HoChiminh City University of Technology, Vietnam); Michalis Loupis (Technological Educational Institute of Central Greece, Greece); S. Freear (University of Leeds, United Kingdom); Mikko Valkama (Tampere University of Technology, Finland)

*An Accurate Multi-Stage Energy Detection Spectrum Sensing*
Amr Shata (CWS Faculty of Engineering Cairo University, Egypt); Omar Nasr and Yasmine Fahmy (Cairo University, Egypt)

*On the Performance of Spectrum Sensing Based on GLR for Full-Duplex Cognitive Radio Networks*
Ahmed Badawy (Politecnico di Torino, Italy); Tamer Khattab and Tarek M. Elfouly (Qatar University, Qatar); Carla-Fabiana Chiasserini (Politecnico di Torino, Italy); Daniele Trinchero (Politecnico di Torino & iXem Labs, Italy)

*On Cooperative Spectrum Sensing with Improved Energy Detector over Erroneous Control Channel*
Narasimha Rao Banavathu and Mohammed Zafar Ali Khan (Indian Institute of Technology, Hyderabad, India)

*On the Sensing Sample Size for the Estimation of Primary Channel Occupancy Rate in Cognitive Radio*
Miguel López-Benítez (University of Liverpool, United Kingdom); Janne Lehtomäki (University of Oulu, Finland)

MAC 12: MAC Design 3

Room: PR5
Context-Aware Mobility Resource Allocation for QoE-Driven Streaming Services
Imen Triki, Majed Haddad and Rachid El-Azouzi (University of Avignon, France); Afef Feki (France Research Center, Huawei Technologies, France); Marouen Guechaoui (University of Avignon, France)

Efficient random access control scheme with reservation channel for QZSS short message SS-CDMA communication
Kei Ohya, Tomohide Takahashi and Suguru Kameda (Tohoku University, Japan); Hiroshi Oguma (National Institute of Technology, Toyama College, Japan); Akinori Taira, Noriharu Suematsu, Tadashi Takagi and Kazuo Tsubouchi (Tohoku University, Japan)

A Hybrid Collision Coordination-based Multiple Access Scheme for Super Dense Aerial Sensor Networks
Sotheara Say and Hikari Inata (Waseda University, Japan); Shigeru Shimamoto (Waseda University & Graduate School of Global Information and Telecommunication Studies, Japan)

Optimal Power Allocation and User Selection in Non-Orthogonal Multiple Access Systems
Soumendra Nath Datta (Nokia Networks - Bangalore, India); Suresh Kalyanasundaram (Nokia Networks, India)

Success Coverage Probability for Dynamic Resource Allocation in Small Cell Networks
Lei Li (BUPT, P.R. China); Mugen Peng (Beijing University of posts & Telecommunications, P.R. China); Zhipeng Yan (BUPT, P.R. China); Zhongyuan Zhao and Yong Li (Beijing University of Posts and Telecommunications, P.R. China)

NET24: D2D Communications
Room: PR6

Yanpeng Dai, Min Sheng, Kepeng Zhao, Junyu Liu, Lei Liu and Jiandong Li (Xidian University, P.R. China)

Efficient Selection of Source Devices and Radio Interfaces for Green Ds2D Communications
Muhammad Ismail (Texas A&M University at Qatar, Qatar); Muhammad Zeeshan Shakir (Carleton University, Canada); Erchin Serpedin (Texas A&M University, USA); Khalid A. Qaraqe (Texas A&M University at Qatar, USA)

A Resource Allocation Scheme for Multiple Device-to-Device Multicasts in Cellular Networks
Ajay Bhardwaj and Samar Agnihotri (Indian Institute of Technology Mandi, India)

Discrete Location-aware Power Control for D2D Underlaid Cellular Networks
Wenping Chen (Beijing University of Posts and Telecommunications, P.R. China); Zebing Feng (Beijing University of Posts and Telecommunications & Wireless Technology Innovation Lab, P.R. China); Zhiyong Feng, Qixun Zhang and Baoling Liu (Beijing University of Posts and Telecommunications, P.R. China)

A Distributed Joint Power Control and Mode Selection Scheme for D2D Communication Underlaying LTE-A Networks
Ehsan Naghipour and Mehdi Rasti (Amirkabir University of Technology, Iran)

NET25: MIMO and Beamforming
Room: PR 7

Beam focusing antenna array technology for non-stationary mobility
Hind Zaaraoui (Orange labs & University of Avignon, France); Zwi Altman (Orange Labs, France); Eitan Altman (INRIA, France)

A Novel Hierarchical Channel State Information Measurement and Feedback Scheme in Massive MIMO Systems
Leiming Zhang (Huawei Technologies Co., Ltd., P.R. China); Jianghua Liu (Huawei Technologies Co. Ltd., P.R. China); Jiangguo Wang (Huawei Technologies Co., Ltd., P.R. China)

Efficient Beamforming in Multi-cell Multi-antenna Networks: Exploiting Network Duality
Haythem Bany Salameh (Yarmouk University, Jordan); Tha'er F. Hailat (Yarmouk, Greece)

Weighted MMSE Iterative Alignment Algorithm for Faster Convergence
Zhenzhe Sun (ZTE Corporation, P.R. China); Chengnian Long (Shanghai Jiao Tong University, P.R. China); Jian Lin and Qiongjie Lin (Georgia Institute of Technology, USA); Mary Ann Weitnauer (Georgia Tech, USA)

3-way Multi-carrier Asynchronous Neighbor Discovery Algorithm Using Directional Antennas
Siwen Zhao, Yunfeng Liu, Tuo Yang, Zhiyong Feng, Qixun Zhang and Chao Gao (Beijing University of Posts and Telecommunications, P.R. China)

NET26: DTNs and Opportunistic Communications
Room: PR 8

A Data Forwarding Scheme with Reachable Probability Centrality in DTNs
Jiagao Wu (Nanjing University of Posts and Telecommunications & University of Victoria, P.R. China); Jianming Wang and Linfeng Liu (Nanjing University of Posts and Telecommunications, P.R. China); Maryam Tanha and Jianping Pan (University of Victoria, Canada)

A Non-Cooperative File Caching for Delay Tolerant Networks: A Reward-based Incentive Mechanism
Sidi Ahmed Ezzahidi (University Mohamed V, Morocco); Essaid Sabir (ENSEM/UH2C, Morocco); Mohamed El Kamili (LIMS, Sidi Mohammed Ben Abdellah University, Fez, Morocco); Bouyakhf Houssine (Univérsité Mohammed V Agdal, Morocco)

Social-Aware Data Forwarding through Scattered Caching in Disruption Tolerant Networks
HyunAe Kim and HyungJune Lee (Ewha Womans University, Korea)

Analytic Latency Model for Message Dissemination in Opportunistic Networks
Qi Wang (Southeast University, P.R. China); Sanfeng Zhang (School of Computer Science and Engineering, Southeast University, P.R. China)

Explore K-Anycast information dissemination in Mobile Opportunistic Networks
Peng Liu (Hangzhou Dianzi University & Temple University, P.R. China); Jia Xu and Biao Xu (Hangzhou Dianzi University, P.R. China)

NET27: Network Planning and Simulation
Room: Cigar Lounge

Adaptive Network Selection based on Attractor Selection in Data offloading
Zhiqun Hu, Zhaoming Lu, Zhaoxing Li and Xiangming Wen (Beijing University of Posts and Telecommunications, P.R. China)

Network planning tool based on network classification and load prediction
Seif eddine Hammami (Institute Mines-Telecom, Télécom SudParis, France); Hossam Affifi (Institut Telecom & Paris South, France); Michel Marot (Institut TELECOM Telecom SudParis, France); Vincent Gauthier (Institut TELECOM; Telecom SudParis; SAMOVAR UMR, France)
Simulating Dense Small Cell Networks
Pedro Alvarez (CTVR, Trinity College, Ireland); Carlo Galiotto (CTVR, Trinity College Dublin, Ireland); Jonathan van de Belt (Trinity College Dublin, Ireland); Danny Finn (Trinity College Dublin & CTVR Telecommunications Research Centre, Ireland); Hamed Ahmadi (University College Dublin, Ireland); Luiz DaSilva (Trinity College & Trinity College Dublin, Ireland)

Sensitivity Analysis of Small Cells and DAS Techno-economic Models in Mobile 5G
Christos J Bouras (University of Patras CTI&P-Diophantus & University of Patras, Greece); Anastasia Kollia (University of Patras, Greece); Andreas Papazois (University of Patras & GRNET S.A., Greece)

WiDiSi: A Wi-Fi Direct Simulator
Luciano Baresi (Politecnico di Milano, Italy); Naser Derakhshan (Politecnico di Milano & TELECOM Italia, Italy); Guinea Sam (Politecnico di Milano, Italy)

APP 10: QoE-QoS of Cellular Networks
Room: Ghazal

Towards Elastic Application-oriented Bearer Management for enhancing QoE in LTE Networks
Tarik Taleb (Aalto University, Finland); Konstantinos Samdanis (NEC Europe Ltd., Germany); Adlen Ksentini (University of Rennes 1 / IRISA Lab, France)

Service-oriented Resource Virtualization for Evolving TDD Networks Towards 5G
Salvatore Costanzo (University of Athens, Greece); Rudraksh Shrivastava and Konstantinos Samdanis (NEC Europe Ltd., Germany); Dionysis Xenakis (University of Athens, Greece); Xavier Costa Pérez (NEC Europe Ltd, Germany); David Grace (University of York, United Kingdom)

QoE Based Random Sleep-Awake Scheduling in Heterogeneous Cellular Networks
Abbas Farrokhi and Ozgur Ercetin (Sabanci University, Turkey)

QoE in 5G Cloud Networks using Multimedia Services
Muhammad Sajid Mushtaq (University of Paris-Est Creteil (UPEC) & Image, Signal and Intelligent Systems Laboratory-LISSI, France); Scott Fowler (Linköping University, Sweden); Brice Augustin (UPEC, University Paris-Est, France); Abdelhamid Mellouk (UPEC, University Paris-Est Creteil Val de Marne, France)

A Traffic-Driven Analysis for Small Cells Backhaul Planning
Btissam Er-rahmadi (University Rennes 1 & Orange Labs, France); Adlen Ksentini (University of Rennes 1 / IRISA Lab, France); Djamal-Eddine Meddour (Orange Labs, France)