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

Large variety of unprecedented and dispersed use cases of connected society drive the research of 5th generation mobile global network technologies. Targeted >10x user capacity increase and even higher increase in user densities have turned interest to very high frequencies and bandwidth they can provide. However, it is not only the bandwidth but now it is time to scrutinize all aspects of mm-waves from technology and business point of view, not to forget various standardization and regulation standpoints. We need to identify the challenges and opportunities as well as recognize what we know and where more mmW-related research is needed. This is a challenge for all players in 5G value chain: What could be the differentiators mmWs offer for 5G networks?

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

We present, Sprouts, a modern Wireless Sensor Networks (WSN) platform that utilizes unique service-oriented sensors with an energy-aware architecture in a Zigbee-compliant network. Serviceable sensors allow for the rapid conception of a wide spectrum of applications; efficiently shortening the time gap between design and deployment. The Sprouts platform is the result of an industry related research at Queen's University, and has successfully attracted some of the biggest industrial companies in Canada including Oil & Gas mining, steel production, and Power Grid monitoring. We also describe the deployment of the Sprouts platform to monitor the health conditions of the vibration screens and shovel teeth used by Syncrude in the oil sands of Canada. Previous to WSN, wired sensing solutions have been attempted for this project, but failed to sustain integrity in the harsh conditions imposed by the environment. A complete system was developed at Queen's University Telecommunications Research Lab (TRL) and successfully realized on a miniature working lab model.

WS-01-01: Free Space Optical Communications

Performance Analysis of MIMO NLOS UV Communications over Atmospheric Turbulence Channels

Maryam Haghighi, Ardakani, Ali Reza Heidarpour and Murat Uysal (Ozyegin University, Turkey)
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Unequal Error Protection for MPOLSK based MIMO Communication over Atmospheric Turbulence Channels

Tuğba Özbilgin (Bogazici University & TUBITAK Uekae, Turkey); Mutlu Koca (Bogazici University, Turkey)
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WS-03-Keynote-03: Energy Harvesting and Energy Cooperation towards Green and Sustainable Wireless Networks

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

WS-10-Keynote-03: Tutorial: Mobile Edge Computing to Enable Consumer Internet of Things

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.

WS-04-01: Panel: Key challenges for mmWave communications in 5G mobile networks

panel session

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

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

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)
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Quad-LED Complex Modulation (QCM) for Visible Light Wireless Communication

Robbi Tejaswi (Indian Institute of Science, Bangalore, India); T. Lakshmi Narasimhan and A. Chockalingam (Indian Institute of Science, India)
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WS-03-Interactive-01: Networking Break & Poster Session for Morning WS

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)
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A TDMA-Based MAC between Gateway and Devices in M2M Networks

Seungmo Kim (Virginia Tech, USA)
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WS-04-Interactive-01: Networking Break & Poster session for morning WS

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)
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Time-Domain Sounder Validation and Reflectivity Measurements for mm-Wave Applications

Angelos Goulianos (University of Bristol & University of Bristol, United Kingdom); Tom Barratt, Wenfang Yuan, Siming Zhang, Mark Beach, Andrew Nix and Evangelos Mellios (University of Bristol,

United Kingdom); Peter Cain (Keysight Technologies, United Kingdom); Moray Rumney (Keysight Technologies, United Kingdom); Tim Masson (Keysight Technologies, United Kingdom)
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WS-05-Interactive-01: Networking Break & Poster session for morning WS

Image Restoration for Through-The-Earth Communications

Sávio Neves and Lucas Silva (Universidade de Brasília, Brazil); Mylene Farias and Andre Barreto (University of Brasilia, Brazil)
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Resource Allocation for Multibeam MISO Satellite Systems: Sum Rate versus Proportional Fair Optimization

Dai Nguyen and Long Bao Le (INRS, University of Quebec, Canada)
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WS-06-Interactive-01: Networking Break & Poster Session for Morning WS

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)
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Delay-aware and Power-Efficient Resource Allocation in Virtualized Wireless Networks

Saeedeh Parsaeefard and Vikas Jumba (McGill University, Canada); Mahsa Derakhshani (Loughborough University, United Kingdom); Tho Le-Ngoc (McGill University, Canada)
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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)
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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)
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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)
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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)
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User-centric Network Selection in Multi-RAT Systems

Alaa Awad Abdellatif and Amr Mohamed (Qatar University, Qatar); Carla-Fabiana Chiasserini (Politecnico di Torino, Italy)
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Trickle-Plus: Elastic Trickle Algorithm for Low- Power Networks and Internet of Things

Baraq Ghaleb, Ahmed Y Al-Dubai, Elias Ekonomou, Ben Paechter and Mamoun Qasem (Edinburgh Napier University, United Kingdom)
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Dynamic Media Buffer Control Scheme for Seamless Streaming in Wireless Local Area Networks

Hun-je Yeon (Yonsei University & Samsung Electronics, Korea); Seongil Hahm, Pilseob Kang and Hanmin Bang (Samsung Electronics, Korea)
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WS-01-Invited-Talk: Coexistence of Wi-Fi and Li-Fi Toward 5G

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

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

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); Anant Sahai and Borivoje Nikolić (UC Berkeley, USA)
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Towards 5G-Enabled Tactile Internet: Radio Resource Allocation for Haptic Communications

Adnan Aijaz (Toshiba Research Europe Ltd, United Kingdom)
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Software Defined Networking for Cognitive Radio over Fiber systems

Sarra Rebhi, Rim Barrak and Mourad Menif (Higher School of Communications of Tunis, Tunisia)
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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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WS-10-01: Mobile Edge Computing and Internet of Things

A Novel RACH Mechanism for Dense Cellular-IoT Deployments

Sreekanth Dama and Thomas Valerrian Pasca S (IIT Hyderabad, India); Vanlin Sathya (Indian Institute of Technology Hyderabad, India); Kiran Kuchi (IIT Hyderabad, India)
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Sonam Maurya (PDPM-Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, India); Vinod Jain (PDPM IITDM Jabalpur, India)
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Mohammed Ghazal, Yasmina Al Khalil, Assem Marwan Mhanna and Fatemeh Dehbozorgi (Abu Dhabi University, United Arab Emirates (UAE))
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Analysis of recommendation algorithms for Internet of things

Ibrahim Mashal, Osama Alsaryrah and Tein Yaw Chung (Yuan Ze University, Taiwan)
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WS-04-02: Millimeter wave-based mobile networks

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)
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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 Technology, Japan); Roya Ebrahim Rezagah (Advanced Telecommunications Research Institute International, Japan); Kei Sakaguchi (Tokyo Institute of Technology & Fraunhofer HHI, Japan); Kiyomichi Araki (Tokyo Institute of Technology, Japan)
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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)
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WS-05-02: System Design and Channel Models for Communication in Extreme Conditions

Architecture for Public Safety Network Using D2D Communication

Kamran Ali (Middlesex University 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 Bhuvanandaram (Middlesex University, United Kingdom)
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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)
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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)
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Unmanned Aerial Vehicle based Missing People Detection System employing Phased Array Antenna

Hikari Inata, Sotheera 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-01-02: Visible Light Communications

Space Division Multiple Access in Optical Attocell Networks

Zhe Chen, Dushyantha Basnayaka and Harald Haas (The University of Edinburgh, United Kingdom)
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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)
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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 (Ilmenau University of Technology, Germany); Klaus Langer (HHI, Germany); Volker Jungnickel (Fraunhofer Heinrich Hertz Institute & Technische Universität Berlin, Germany)
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WS-02-Keynote-01: Promising PHY Research Directions for 5G+ Wireless

The 5G exploratory phase is winding down as 2016 marks the beginning of the 5G standardization phase. Accordingly, it is time to reinstate 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. 3) Noncoherent communications: Getting away with pilot signals. 4) Faster-than-Nyquist signaling: How fast is too fast?

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

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

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.

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

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

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

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

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 active 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.

WS-12-Keynote-02: Device-to-device: from 4G to future 5G

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.

WS-08-Keynote-02: Vehicle Communications and Spectrum Allocation: State of the Art & Trends

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 relying 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 between vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communication. Such a technology offers a low latency communication which is necessary to enable 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 a 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 a 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.

WS-09-Keynote-02: Lattice Codes for Wiretap Channels: A Finite Dimensional Analysis

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.

WS-02-Keynote-03: Resource Allocation and Cross Layer Design in 5G Wireless Networks

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.

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

Far-field Wireless Power Transfer (WPT) and Simultaneous Wireless Information and Power Transfer (SWIPT) have attracted significant attention in the RF and communication communities. Despite the rapid progress, the problem of waveform design to enhance the output DC power of wireless energy harvester has received limited attention so far. In this talk, we bridge communication and RF design and derive novel multisine waveforms for WPT and SWIPT. The waveforms are adaptive to the channel state information and result from a posynomial/signomial maximization problem that originates from the inherent non-linearity of the wireless power channel (concatenation of the propagation channel and rectenna). They are shown through realistic simulations to provide significant gains (in terms of harvested DC power and rate-energy region) over state-of-the-art waveforms under a fixed transmit power constraint.

WS-12-01: Panel: M2M Communication in 5G: Challenges and Opportunities

WS-08-01: Spectrum Occupancy Measurements and Techniques

Long Term Spectrum Survey of the 2.4 GHz ISM Band in Multiple Hospital Environments

Mohamad Omar Al Kalaa, Gregory Butron and Walid Balid (University of Oklahoma, USA); Hazem Refai (Oklahoma University, USA); Nickolas J LaSorte (University of Oklahoma-Tulsa, USA)
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A study on Welch FFT segment size selection method for spectrum awareness

Hiroki Iwata, Kenta Umebayashi and Samuli Tiiri (Tokyo University of Agriculture and Technology, Japan); Janne Lehtomäki (University of Oulu, Finland); Yasuo Suzuki (Tokyo University of Agriculture and Technology, Japan)
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WS-09-01: Fundamental Results

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)
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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)
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WS-02-Interactive-02: Networking Break & Poster session for afternoon WS

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)
pp. 270-275

Centralised and Distributed Interference Management in Coordinated Downlink Beam-forming

Swagato Barman Roy and A S Madhukumar (Nanyang Technological University, Singapore);
Francois Chin (Institute for InfoComm Research, Singapore)
pp. 276-281

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 Lähtekangas (Nokia Networks, Finland); Ville Syrjäjä and Mikko Valkama (Tampere University of Technology, Finland)
pp. 282-288

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)
pp. 289-295

SDRAN-Based User Association and Resource Allocation in Heterogeneous Wireless Networks

Mohamad Zalgout (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 Hélar (INSA Rennes & IETR Institute of Electronics and Telecommunications of Rennes, France)
pp. 296-302

Block Lower Multi-diagonalization for Multiuser MIMO Downlink

Hiroshi Nishimoto and Hiroki Iura (Mitsubishi Electric Corporation, Japan); Akinori Taira (Mitsubishi Electric Corp., Japan); Akihiro Okazaki and Atsushi Okamura (Mitsubishi Electric Corporation, Japan)
pp. 303-308

Codeword based power loading in MU-MIMO

Filippo Tosato (Toshiba Research Europe, United Kingdom); Magnus Sandell (Toshiba TRL, United Kingdom)
pp. 309-314

On Handovers in Uplink/Downlink Decoupled LTE HetNets

Mukesh Giluka (Indian Institute Of Technology Hyderabad, India); Sibgath Khan (Indian Institute of Technology Hyderabad, India); Gadde Murali Krishna (Indian Institute of Technology, Hyderabad, India); Touheed Atif and Vanlin Sathya (Indian Institute of Technology Hyderabad, India); Bheemarjuna Reddy Tamma (IIT Hyderabad, India)
pp. 315-320

Performance of Wireless Backhaul in Satellite Communication system

Abdurrahman Alfitouri (Manchester University, United Kingdom); Khairi A. Hamdi (University of Manchester, United Kingdom)
pp. 321-326

WS-07-Interactive-02: Networking Break & Poster Session for afternoon WS

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)
pp. 333-339

Traffic and Energy-Aware Access in Wireless Powered Cognitive Radio Networks

Muhammad Ejaz Ahmed (Sungkyunkwan University, Korea); Dong In Kim (Sungkyunkwan University (SKKU), Korea)
pp. 340-345

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

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)
pp. 346-350

Performance Evaluation of Multi-Target Tracking for PhyC-SN

Minato Oriuchi, Osamu Takyu and Keiichiro 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)
pp. 351-354

Energy Detection Based Estimation of Primary Channel Occupancy Rate in Cognitive Radio

Miguel López-Benítez (University of Liverpool, United Kingdom); Janne Lehtomäki (University of Oulu, Finland)
pp. 355-360

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)
pp. 361-366

Energy-Efficient Based On Cluster Selection and Trust Management in Cooperative Spectrum Sensing

Zina Chkirbene, Mazen Omar Hasna and Ridha Hamila (Qatar University, Qatar); Nouredine Hamdi (INSAT, Carthage University & ENIT SYSCOM Laboratory, Tunisia)
pp. 367-372

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

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

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)
pp. 373-378

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)
pp. 379-384

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

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.

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

Long-term throughput optimization in WPCN with Battery-Powered Devices

Alessandro Biazon (University of Padova, Italy); Michele Zorzi (Università degli Studi di Padova, Italy)
pp. 391-397

Distributed Energy Beamforming with One-Bit Feedback

Seunghyun Lee and Rui Zhang (National University of Singapore, Singapore)
pp. 398-403

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 In Kim (Sungkyunkwan University (SKKU), Korea)
pp. 404-409

Energy and Data Cooperation in Energy Harvesting Multiple Access Channel

Berk Gurakan (University of Maryland, USA); Berrak Sisman and Onur Kaya (Isik University, Turkey); Sennur Ulukus (University of Maryland, USA)
pp. 410-415

WS-12-02: D2D Communications for 5G Networks

A Hierarchical Radio Resource Management Scheme for Next Generation Cellular Networks

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)
pp. 416-420

Topology Formation in Mesh networks considering Role Suitability

Mohit Agnihotri (KTH Royal Institute of Technology & Eindhoven Technical University, Sweden); Roman Chirikov (Ericsson AB, Sweden); Francesco Militano (Ericsson, Sweden); Cicek Cavdar (KTH Royal Institute of Technology, Sweden)
pp. 421-427

NB-IoT System for M2M Communication

Rapeepat Ratasuk (Nokia Bell Labs, USA); Benny Vejlgard (Nokia Siemens Networks, Denmark); Nitin Mangalvedhe (Nokia Bell Labs & Nokia, USA); Amitava Ghosh (Nokia Networks, USA)
pp. 428-432

A Two Dimensional Beam Scanning Array Antenna for 5G Wireless Communication

Stella Ifeoma Orakwue (Universiti Teknologi Malaysia (UTM), Malaysia); Razali Ngah (Universiti Teknologi Malaysia, Malaysia); Tharek Abdul Rahman (Wireless Communication Centre, Malaysia)
pp. 433-436

WS-08-02: Cognitive Radio Networks and Dynamic Spectrum Access

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)
pp. 437-442

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)
pp. 443-448

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)
pp. 449-454

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)
pp. 455-458

WS-09-02: Practical Schemes

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)
pp. 459-464

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)
pp. 465-470

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 (Jiangnan University, P.R. China)
pp. 471-476

WS-02-01: Uplink waveform for 5G

Resource Block Management for Uplink UFMC Systems

Hyunsoo Kim (Yonsei University, Korea); Jonghyun Bang (University of Yonsei, Korea); Sooyong Choi and Daesik Hong (Yonsei University, Korea)
pp. 477-480

MIMO Uplink NOMA with Successive Bandwidth Division

Soma Qureshi (National University of Sciences and Technology); Syed Ali Hassan (National University of Sciences and Technology, Pakistan)
pp. 481-486

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

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.

PHY-I1: Cellular Networks I

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 Khunteta (Samsung Electronics, India)
pp. 487-493

Non-Feedback Vertical Plane Beamforming for LTE-Advanced Systems

Kenji Hoshino (Softbank Corp., Japan); Teruya Fujii (Vodafone K.K., Japan)
pp. 494-498

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)
pp. 499-504

PHY1: MIMO Detection

Spectral Efficiency of Distributed MIMO Systems with ZF Receivers

Hisham Almelah and Khairi A. Hamdi (University of Manchester, United Kingdom)
pp. 505-510

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

Hisham Almelah and Khairi A. Hamdi (University of Manchester, United Kingdom)
pp. 511-516

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)
pp. 517-522

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

Hadi Sareddeen and Mohammad Mansour (American University of Beirut, Lebanon); Louay Jalloul (Qualcomm Inc., USA); Ali Chehab (American University of Beirut, Lebanon)
pp. 523-528

Detection Issues with Many BS Antennas Available for Bandwidth-Efficient Uplink Transmission in a MU-MIMO System

Paulo Torres (Instituto Politecnico de Castelo Branco); António Gusmao (Instituto Superior Técnico, Portugal)
pp. 529-534

PHY2: Device to Device Communications

FREDDY: A Framework for VANET aided D2D Discovery

Hussein Chour, Youssef Nasser, Hassan A. Artail and Alaa Kachouh (American University of Beirut, Lebanon)
pp. 535-540

Resource Allocation for Device-to-Device and Small Cell Uplink Communication Networks

Haibo Dai, Yongming Huang and Chunguo Li (Southeast University, P.R. China); Kang Song (Qingdao University & Southeast University, P.R. China); Luxi Yang (Southeast University, P.R. China)
pp. 541-546

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)
pp. 547-552

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)
pp. 553-558

Energy Costs for Traffic Offloading by Cache-enabled D2D Communications

Binqiang Chen and Chenyang Yang (Beihang University, P.R. China)
pp. 559-564

PHY3: Estimation and Detection

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)
pp. 565-570

Parameter Estimation of Inverse Gaussian Channel for Diffusion-Based Molecular Communication

Lin Lin (Tongji University, P.R. China); Chengfeng Yang and Shiwei Ma (Shanghai University, P.R. China); Maode Ma (Nanyang Technological University, Singapore)
pp. 571-576

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)
pp. 577-582

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)
pp. 583-588

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)
pp. 589-594

MAC 1: Machine-to-Machine Communications

Spectrum sharing for M2M applications through Whitetime exploitation in WiFi networks

John Harris (University of Bristol, United Kingdom)
pp. 595-600

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)
pp. 601-605

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)
pp. 606-611

Clustering and Radio Resource Partitioning for Machine-Type Communications in Cellular Networks

Utku Tefek and Teng Joon Lim (National University of Singapore, Singapore)
pp. 612-617

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)
pp. 618-622

MAC 2: Game Theory for Wireless Networks

Gale-Shapley-Algorithm Based Resource Allocation Scheme for Device-to-Device Communications Underlying Downlink Cellular Networks

Wenson Chang, You-Ting Jau and Szu-Lin Su (National Cheng Kung University, Taiwan); Yinman Lee (National Chi Nan University, Taiwan)
pp. 623-628

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)
pp. 629-634

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)
pp. 635-640

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)
pp. 641-646

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)
pp. 647-652

NET1: Routing and Localization in Vehicular Networks

An Intersection UAV-Assisted VANET Routing Protocol

Omar Sami Oubbati (University of Laghouat, Algeria); Abderrahmane Lakas (UAE University, United Arab Emirates (UAE)); Nasreddine Lagraa (Amar Thelidji University, Laghouat & LIM Laboratory, Algeria); Mohamed Bachir Yagoubi (University of Laghouat, Algeria)
pp. 653-658

An Enhanced Directional Greedy Forwarding for VANETs using Link Quality Estimation

Ohoud Alzamzami and Imad Mahgoub (Florida Atlantic University, USA)
pp. 659-665

Mobility Data Verification For Vehicle Localization in Vehicular Ad Hoc Networks

Lina Altoaimy and Imad Mahgoub (Florida Atlantic University, USA)
pp. 666-671

A Sparsity-Based Algorithm for Power-Efficient Node Localization

Zacharias Psarakis (Rutgers University, USA); Dimitris Toumpakaris (University of Patras, Greece)
pp. 672-677

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)
pp. 678-683

NET2: Heterogeneous Cellular Networks - 2

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)
pp. 684-689

Load-aware Handover Decision Algorithm in Next-generation HetNets

Konstantinos Alexandris and Nikolaos Sapountzis (EURECOM, France); Navid Nikaein (Eurecom, France); Thrasyvoulos Spyropoulos (EURECOM, France)
pp. 690-695

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)
pp. 696-701

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)
pp. 702-707

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)
pp. 708-714

APP 1: Cellular Networks

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

Rung-Hung Gau and Pei-Kan Tsai (National Chiao Tung University, Taiwan)
pp. 715-720

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)
pp. 721-727

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)
pp. 728-733

Cell Search Evaluation: A Step Towards the Next Generation LTE-MTC Systems

Abdelmohsen Ali and Walaa Hamouda (Concordia University, Canada)
pp. 734-739

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 Xiamen, P.R. China); Lianfen Huang (Xiamen University, P.R. China); Xiaojiang Du (Temple University, USA); Mohsen Guizani (QU, USA)
pp. 740-745

APP 2: Testbeds and Simulators

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)
pp. 746-752

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)
pp. 753-759

A Sensor Cloud Test-bed for Multi-Model and Multi-User Sensor Applications

Sanjay Madria (Missouri University of Science and Technology, USA)
pp. 760-766

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 Tassioulas (Yale University, USA)
pp. 767-773

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)
pp. 774-780

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

- Dr. Abdul Sattar Al-Taie, Executive Director, Qatar National Research Fund (QNRF), Qatar
- Dr. AbdulAziz AlSwaiem, 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

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)
pp. 781-786

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)
pp. 787-792

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)
pp. 793-799

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)
pp. 800-804

MAC-I1: MAC Design 1

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)
pp. 805-810

DTMC Modeling for Performance Evaluation of DW-MAC in Wireless Sensor Networks

Lakshmikanth Guntupalli and Frank Y. Li (University of Agder, Norway)
pp. 811-816

S-CW FD: A MAC Protocol for Full-Duplex in Wireless Local Area Networks

Deniz Marlali and Ozgur Gurbuz (Sabanci University, Turkey)
pp. 817-822

PHY4: Beamforming

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)
pp. 823-829

Energy Efficient Transmit Beamforming Under Queueing Stability Constraints

Amira Akra and Mohamad Assaad (CentraleSupélec, France)
pp. 830-835

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)
pp. 836-841

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)
pp. 842-846

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)
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- 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

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Invited talk: Fog Networking for 5G and IoT

Mung Chiang (Princeton University, USA)

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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)
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Fateh Singh (Indian Institute of Technology Madras, India); Vijeth J Kotagi and Siva Ram Murthy (IIT Madras, India)
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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)
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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)
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Masoud Sajadieh (Intel Corporation, USA); Ali Esswie (Memorial University of Newfoundland, Canada); Abdurrahman Fouda (Vodafone Egypt Telecommunications); Hooman Shirani-Mehr and Debdeep Chatterjee (Intel Corporation, USA)
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Anna Lukowa (Nokia Networks - Research); Venkatkumar Venkatasubramanian (Nokia Networks - Research, Poland)
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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)
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Abdel-karim Ajami (American University of Beirut (AUB), Lebanon); Hassan A. Artail (American University of Beirut, Lebanon)
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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)
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Guerroumi Mohamed (University of USTHB, Algeria); Abdelouahid Derhab (King Saud University, Saudi Arabia); Al-Sakib Khan Pathan (Southeast University, Bangladesh); Nadjib Badache (University of Sciences and Technology Houari Boumediene (USTHB), Algeria); Samira Moussaoui (USTHB, Algeria)
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Shuchao Jiang, Feng Liu and Shengming Jiang (Shanghai Maritime University, P.R. China)
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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)
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Tian Zhang (Shandong Normal University, P.R. China); Wei Chen (Tsinghua University, P.R. China)
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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)
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Emna Baccour, Sebti Foufou and Ridha Hamila (Qatar University, Qatar)
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- 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

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

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.

PHY-I2: Interference Management II

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)
pp. 1444-1449

Analyzing 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); Preben Mogensen (Nokia Siemens Networks, Aalborg, Denmark); Khalid A. Qaraqe (Texas A&M University at Qatar, USA)
pp. 1450-1455

Interference Coordination-based Downlink Scheduling for Heterogeneous LTE-A Networks

Rico Mendrzik (Hamburg University of Technology, Germany); Rodrigo Justavino (TU Hamburg-Harburg, Germany); Gerhard Bauch (Hamburg University of Technology, Germany); Eiko ES Seidel (Nomor Research GmbH, Germany)
pp. 1456-1461

PHY12: MIMO-OFDM Systems

Robust Precoded MIMO-OFDM for Mobile Frequency-Selective Wireless Channels

Fatma Kalbat (Khalifa University of Science, Technology and Research, United Arab Emirates (UAE)); Arafat Al-Dweik and Bayan S Sharif (Khalifa University, United Arab Emirates (UAE)); George K. Karagiannidis (Aristotle University of Thessaloniki, Greece)
pp. 1462-1467

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)
pp. 1468-1473

Joint Time-Frequency Estimation DMIMO-OFDM in presence of ICI

Sucharita Chakraborty (IIT Kharagpur, India); Debarati Sen (Indian Institute of Technology Kharagpur, India)
pp. 1474-1479

Selective Optimal Detection for MIMO OFDM Systems

Mohammed Kashoob (The University of York, United Kingdom); Yury Zakharov (University of York, United Kingdom)
pp. 1480-1485

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)
pp. 1486-1491

PHY13: Wireless Networks I

Coverage and Capacity of 28 GHz Band in Indoor Stadiums

Muhammad Nazmul Islam (Qualcomm, USA); Sundar Subramanian (Qualcomm); Andrzej Partyka and Ashwin Sampath (Qualcomm, USA)
pp. 1492-1498

Multi-Beam Zooming: An Enabler for Energy Efficient 5G Network

Sai Krishna Karthik Molluru (SASTRA University, India); Ilker Demirkol (Universitat Politècnica de Catalunya & i2CAT Foundation, Spain); Wei-Ho Chung (Academia Sinica, Taiwan)
pp. 1499-1504

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 and Qixun Zhang (Beijing University of Posts and Telecommunications, P.R. China); Wei Li (Beijing University of Posts and Telecommunications, Canada)
pp. 1505-1510

A Novel Link Scheduling Algorithm for Wireless Networks using Directional Antenna

Zhaoshu Tang, Ming Zhu and Lei Wang (Dalian University of Technology, P.R. China); Ma Honglian (Dalian University of Technology)

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)

pp. 1517-1522

PHY14: Channel Modeling

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

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

pp. 1523-1529

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)

pp. 1530-1536

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)

pp. 1537-1543

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 Barbosa Abreu (Aalborg University & Nokia Bell Labs Aalborg, Denmark); Mads Lauridsen (Aalborg University, Denmark); Alexandre Loureiro (INDT, Brazil); Preben Mogensen (Aalborg University, Denmark)

pp. 1544-1550

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)

pp. 1551-1556

MAC 6: Energy Efficiency in LTE Networks 1

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

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

pp. 1557-1562

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)

pp. 1563-1567

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)

pp. 1568-1573

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)

pp. 1574-1579

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

Samantha Sriyananda (Florida International University); 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)
pp. 1580-1585

MAC 7: Massive-MIMO Systems

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)
pp. 1586-1591

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)
pp. 1592-1597

Adaptive Pilot-Duration and Resource Allocation in Virtualized Wireless Networks with Massive MIMO

Rajesh Dawadi and Saeedeh Parsaeefard (McGill University, Canada); Mahsa Derakhshani (Loughborough University, United Kingdom); Tho Le-Ngoc (McGill University, Canada)
pp. 1598-1603

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)
pp. 1604-1609

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)
pp. 1610-1615

NET7: Wireless Sensor Networks - 2

A Stateless Time-based Authenticated-Message Protocol for Wireless Sensor Networks (STAMP)

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)
pp. 1616-1621

Monte Carlo Localization for Path-Based Mobility in Mobile Wireless Sensor Networks

Salke Hartung (University of Goettingen, Germany); Ansgar Kellner (TU Braunschweig, Germany); Konrad Rieck and Dieter Hogrefe (University of Goettingen, Germany)
pp. 1622-1628

Fault Tolerant Placement Strategy for WSN

Hanen Idoudi and Jihen Bennaceur (National School of Computer Science - University of Manouba, Tunisia)
pp. 1629-1633

PITM: Passive Indoor Object Tracking with Markov Probability Estimation in Wireless Sensor Networks

Jun Tao, Jianhua Liu, Tianqi Zhai, Chen Guo, Ziyi Zhang and Jian He (Southeast University, P.R. China)
pp. 1634-1639

Evaluating Time Synchronization Using Application-Layer Time-Stamping

Osameh Al Kofahi (Yarmouk University, Jordan)
pp. 1640-1645

NET8: Cognitive Radio Networks

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 University, Australia); Feilong Tang (Shanghai Jiao Tong University, P.R. China); Yanqin Yang (East China Normal University, P.R. China); Jie Li (University of Tsukuba, Japan); Minyi Guo (Shanghai Jiao Tong University, P.R. China)
pp. 1646-1651

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 Federal do Rio Grande do Sul, Brazil); Lisandro Z Granville (Federal University of Rio Grande do Sul, Brazil)
pp. 1652-1658

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)
pp. 1659-1664

Space-Time Opportunistic Interference Alignment in Cognitive Radio Networks

Idris Abdulkadir Yusuf, Oluyomi Simpson, Nnamdi Nwanekezie and Yichuang Sun (University of Hertfordshire, United Kingdom)
pp. 1665-1670

An Evolutionary Game Theoretic Approach for Cooperative Spectrum Sensing

Ahmed Mahmoud Salama, Abdulla K Al-Ali and Amr Mohamed (Qatar University, Qatar)
pp. 1671-1676

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)
pp. 1677-1682

Secure and Efficient Uniform Handover Scheme for LTE-A Networks

Zaher Haddad (Alaqa University & Cairo University, Palestine); Mohamed M E A Mahmoud (Tennessee Tech University, USA); Imane A. Saroit and Sanaa Taha (Cairo University, Egypt)
pp. 1683-1688

Mobility State Estimation in LTE

Majed Haddad (University of Avignon, France); Dalia Georgiana Herculea (Nokia 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, Nokia, France); Frederic Ratovelomanana (Alcatel-Lucent, France)
pp. 1689-1694

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)
pp. 1695-1700

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)
pp. 1701-1706

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)
pp. 1707-1712

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)
pp. 1713-1718

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)
pp. 1719-1724

Traffic Signs Localisation and Recognition Using A Client-Server Architecture

Abdelhamid Mammeri, Azzedine Boukerche and Jingwen Feng (University of Ottawa, Canada)
pp. 1725-1730

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)
pp. 1731-1736

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

- 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

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)
pp. 1737-1742

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)
pp. 1743-1747

Measuring Safety Awareness in Cooperative ITS Applications

Muhammad Awais Javed (Qatar Mobility Innovations Center, Qatar); Elyes Ben Hamida (Qatar Mobility Innovations Center (QMIC), Qatar)
pp. 1748-1754

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)
pp. 1755-1760

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)
pp. 1761-1766

Verification of 3G and 4G Received Power Measurements in a Crowdsourcing Android App

Mads Lauridsen (Aalborg University, Denmark); Ignacio Rodriguez (Aalborg Universitet, Denmark); Lars M Mikkelsen, Lucas Chavarria Gimenez and Preben Mogensen (Aalborg University, Denmark)
pp. 1767-1772

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)
pp. 1773-1778

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)
pp. 1779-1784

MAC-I2: Energy Efficiency in LTE Networks 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)
pp. 1785-1790

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)
pp. 1791-1796

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)
pp. 1797-1802

PHY15: MIMO Relaying

Outage Probability of Spatially Correlated MIMO Full-Duplex Relaying with Imperfect CSI

Ahmed M Almradi (Azzaytuna University, Libya & University of Manchester, United Kingdom); Khairi A. Hamdi (University of Manchester, United Kingdom)
pp. 1803-1808

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)
pp. 1809-1814

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)
pp. 1815-1820

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 Victoria, Canada)
pp. 1821-1826

PHY16: Wireless Networks II

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)
pp. 1827-1831

Joint Rate Adaptation, Frame Aggregation and MIMO Mode Selection for IEEE 802.11ac

Saeed Abdallah (University of Sharjah, United Arab Emirates (UAE)); Steven D Blostein (Queen's University, Canada)
pp. 1832-1837

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)
pp. 1838-1843

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)
pp. 1844-1849

Cooperative Routing for Collision Probability Minimization in Wireless Sensor Networks

Fatemeh Mansourkiaie (Memorial University of Newfoundland, Canada); Mohamed Hossam Ahmed (Memorial University, Canada)
pp. 1850-1855

PHY17: Cellular Networks II

Low Complexity Base Station Cooperation in Cellular Networks with Blockages

Christodoulos Skouroumounis, Constantinos Psomas and Ioannis Krikidis (University of Cyprus, Cyprus)
pp. 1856-1861

Computation Capacity Constrained Joint Transmission Design for C-RANs

Vu Nguyen Ha and Long Bao Le (INRS, University of Quebec, Canada)
pp. 1862-1867

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)
pp. 1868-1873

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 (Xi'an Jiaotong University, P.R. China); Xiaolong Zhu and Yusun Fu (Huawei Shanghai Research Institute, P.R. China)
pp. 1874-1879

Gram-Schmidt Precoding for Two-Tier Cellular Networks with Massive MIMO

Namal Rajatheva and Elvino Silveira Sousa (University of Toronto, Canada)
pp. 1880-1885

PHY18: Multicarrier Modulation

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)
pp. 1886-1891

Optimal Lattice Spacing for GFDM with Gaussian Waveform

Stephan Schedler (Universität Rostock, Germany); Volker Kuehn (University of Rostock, Germany)
pp. 1892-1897

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)
pp. 1898-1902

Coded Constellation Rotated Vector OFDM with Generalized Linear Interleaver

Chenggao Han (University of Electro-Communications, Japan)
pp. 1903-1908

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)
pp. 1909-1914

MAC 8: Energy Efficiency in Multihop Networks

Topology-Transparent Scheduling in Mobile Multihop Ad Hoc Networks with Directional Antennas

Yiming Liu (China Academy 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); Shanfeng Xu (China Academy of Electronics and Information Technology, P.R. China)
pp. 1915-1920

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)
pp. 1921-1927

Performance Analysis of SCMA Ad Hoc Networks: A Stochastic Geometry Approach

Lei Liu, Min Sheng and Junyu Liu (Xidian University, P.R. China); Yuzhou Li (Huazhong University of Science and Technology, P.R. China); Jiandong Li (Xidian University, P.R. China)
pp. 1928-1933

Fast Synchronisation Protocol with Collision Handling for Wireless Ad Hoc Networks

Imen Jemili (University of Manouba, Tunisia); Abdelfettah Belghith (King Saud University & College of Computer and Information Sciences, Saudi Arabia); Mosbah Mohamed (University of Bordeaux & LaBRI, France)
pp. 1934-1939

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)
pp. 1940-1945

NET10: Heterogeneous Cellular Networks - 1

Trajectory based Mobility State Estimation for Heterogeneous Cellular Networks

Pravjyot 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)
pp. 1946-1951

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)
pp. 1952-1956

Analysis of Heterogeneous Cellular Network with Hexagonal Tessellated Macrocells and Randomly Positioned Small Cells

Xiaobin Yang and Abraham O Fapojuwo (University of Calgary, Canada)
pp. 1957-1962

Performance Analysis of Frequency Reuse Techniques under varying Cellular Network scenarios

Achonu Oluwole Adejo (Newcastle University); Said Boussakta (Newcastle University, United Kingdom)
pp. 1963-1968

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)
pp. 1969-1974

NET11: Security and Privacy

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)
pp. 1975-1980

Misbehaviour Detection in Vehicular Networks using Logistic Trust

Saneeha Ahmed (University of Windsor & University of Windsor, Canada); Kemal Tepe (University of Windsor, Canada)
pp. 1981-1986

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)
pp. 1987-1992

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 Yuanyuan 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)
pp. 1993-1998

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)
pp. 1999-2004

NET12: Resource Allocation and QoS Support

QoS-aware Joint RRH Activation and Clustering in Cloud-RANs

Hazem Soliman and Alberto Leon-Garcia (University of Toronto, Canada)
pp. 2005-2010

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)
pp. 2011-2016

Minimum Complexity APP Prioritization by Bandwidth Apportioning in Smart Phones

Karthikeyan 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)
pp. 2017-2022

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, United Kingdom)
pp. 2023-2028

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Secure Data Access for Wireless Body Sensor Networks

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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 Tunisia, University of Carthage- Tunisia, Qatar)
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- 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

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Reference Sequence design for Zero-Tail DFT-spread-OFDM

Gilberto Berardinelli (Aalborg University, Denmark); Frank Frederiksen (Nokia & Networks, Denmark); Klaus Pedersen (Nokia - Bell Labs, Denmark); Preben Mogensen (Aalborg University, Denmark); Kari Pajukoski (Nokia, Finland)
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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)
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MAP Optimum Receiver Mitigating Correlated Impulsive Noise

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

Yuming Bi (Beijing University of Posts and Telecommunications, P.R. China)
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Optimal Joint Source-Relay Multi-Resolution Multicast Networks

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Albert Zomaya (The University of Sydney, Australia)

Urban Traffic Characterization for Enabling Vehicular Clouds

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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)
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PHY19: Physical Layer Security I

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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)
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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); Tayyaba Jabeen (COMSATS Institute of Information Technology, Pakistan); Feifei Gao (Tsinghua University, P.R. China); Shi Jin (Southeast University, P.R. China)
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A Practical Physical-Layer Security Method for Precoded OSTBC-Based Systems

Jehad Hamamreh (Istanbul Medipol University, Turkey); Ertugrul Guvenkaya (Maxlinear Inc, USA); Tuncer Baykas (Istanbul Medipol University, Turkey); Huseyin Arslan (University of South Florida, USA)
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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)
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Dushantha Nalin K. Jayakody and Vitaly Skachek (University of Tartu, Estonia); Bin Chen (Eindhoven University of Technology, The Netherlands)
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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)
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Ahmet Sezer and Sinan Gezici (Bilkent University, Turkey)
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Maximization of Correct Decision Probability via Channel Switching over Rayleigh Fading Channels

Furkan Keskin, Mehmet Necip Kurt, Mehmet Tutay, Sinan Gezici and Orhan Arikan (Bilkent University, Turkey)
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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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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)
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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)
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Full Duplex Relay in Millimeter wave Backhaul Links

Hatem Abbas and Khairi A. Hamdi (University of Manchester, United Kingdom)
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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)

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

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 Europe Ltd., United Kingdom); James Wilcox (Toshiba Research Europe Ltd, United Kingdom); Mahesh Sooriyabandara (Toshiba Research Europe Limited, United Kingdom)
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Cooperative WiFi Management: Nash Bargaining Solution and Implementation

Chunxiao Jiang (Tsinghua University, Beijing, P.R. China); Yaodong Zhang (Tsinghua University, P.R. China); Jian Yuan (Tsinghua University, P.R. China); Yong Ren (Tsinghua University, Beijing, P.R. China); Zhu Han (University of Houston, USA)
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Ezzeldin Zaki (German University in Cairo, Egypt); Tallal Elshabrawy (The German University in Cairo, Egypt); Mohamed Ashour (GUC, Egypt)
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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)
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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)
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Sudha Lohani (The University of British Columbia, Canada); Ekram Hossain (University of Manitoba, Canada); Vijay Bhargava (University of British Columbia, Canada)
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Abdelhamid Salem and Khairi A. Hamdi (University of Manchester, United Kingdom)
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Runfa Zhou (The Hong Kong University of Science and Technology, Hong Kong); Roger Cheng (HKUST, Hong Kong)
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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)
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Fatima ezzahra Naamane (ENSIAS, Morocco); Mohamed Et-tolba (INPT, Morocco); Mostafa Belkasmı (ENSIAS - Mohammed V University - Rabat, Morocco)
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Wessam Afifi (University of Arizona, USA); Mohamed Hassan (American University of Sharjah, United Arab Emirates (UAE)); Marwan Krunz (University of Arizona, USA)
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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)
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Tuo Yang, Chunxia Guo, Siwen Zhao, Qixun Zhang and Zhiyong Feng (Beijing University of Posts and Telecommunications, P.R. China)
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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)
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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)
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NET14: Localization - 2

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-Temiscamingue, Canada)
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Applying Kriging Interpolation for WiFi Fingerprinting based Indoor Positioning Systems

Hailong Zhao, Baoqi Huang and Bing Jia (Inner Mongolia University, P.R. China)
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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)
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VALS: Vehicle-Aided Location Service in Urban Environment

Raik Aissaoui (Qatar University, Qatar); Amine Dhraief (University of Manouba, Tunisia); Abdelfettah Belghith (King Saud University & College of Computer and Information Sciences, Saudi Arabia); Hamid Menouar (Qatar Mobility Innovations Center, Qatar); Fethi Filali (QMIC, Qatar); Hassan Mathkour (King Saud University, Saudi Arabia)
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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-Temiscamingue, Canada)
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Three Dimensional (3D) Underwater Sensor Network Architectures for Intruder Localization Using EM Wave

Md. Farhad Hossain (Bangladesh University of Engineering and Technology (BUET), Bangladesh);
Musbiha Binte Wali (Bangladesh University of Engineering & Technology (BUET), Bangladesh);
Kumudu S Munasinghe (University of Canberra, Australia); Abbas Jamalipour (University of
Sydney, Australia)
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An Indoor Localization System Based On Backscatter RFID Tag

Jun Wang, Yiyin Wang and Xinping Guan (Shanghai Jiao Tong University, P.R. China)
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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)
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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)
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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.
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Optimization Scheme of Noisy Network Coding in the Two Way Relay Channels

Di Chen and Volker Kuehn (University of Rostock, Germany)
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Optimal Coefficients for Channel-Coded Linear Physical Layer Network Coding

Mehrdad Tahernia and Soung Chang Liew (The Chinese University of Hong Kong, Hong Kong)
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Index Coded PSK Modulation

Anjana Ambika Mahesh (Indian Institute of Science, Bangalore, India); B. Sundar Rajan (Indian
Institute of Science, India)
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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)
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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)
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PAN 6: Personalized Medicine and Mobile Health: Role of ICT

- 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

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

Dr. Gerhard Fettweis, TU Dresden, Germany

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.

PHY-I3: Energy Harversting II

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)
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Optimal Collaborative Energy Harvesting Spectrum Sensing With Limited Time Resource

Fariba Mohammadian (Qazvin International University, Iran); Zahra Pourgharehkhani and Abbas Taherpour (Imam Khomeini International University, Iran); Tamer Khattab (Qatar University, Qatar)
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Energy Harvesting for Wearable Wireless Health Care Systems

Riad Kanan (Abu Dhabi University ADU, United Arab Emirates (UAE))
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PHY24: Physical Layer Security II

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)
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A Low-Complexity Antenna Subset Modulation for Secure Millimeter-Wave Communication

Nafel Alotaibi and Khairi A. Hamdi (University of Manchester, United Kingdom)
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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)
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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)
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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)
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PHY25: Selected Topics in Communications I

Efficient Near-Optimal 8x8 MIMO Detector

Hadi Sardeddeen, Mohammad Mansour and Ali Chehab (American University of Beirut, Lebanon)
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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)
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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)
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A New Family of Filters for PAPR Reduction of Carrier Aggregated Signals

Sylvain Traverso (Thales Communications, France)
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Properties of Faster-than-Nyquist Channel Matrices and Folded-Spectrum, and Their Applications

Yong Jin Daniel Kim (Rose-Hulman Institute of Technology, USA)
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PHY26: Relaying and Cooperative Communications II

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 Juntti (University of Oulu, Finland); Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan)
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On Relay Selection in Bursty Impulsive Noise Channel

MD. Sahabul Alam and Fabrice Labeau (McGill University, Canada)
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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)
pp. 2476-2482

Large Scale Opportunistic Antenna and User Selection in AF Relay Networks with Interference

Imene Trigui (INRS - Centre Energie, Matériaux et Télécommunications, Canada); Sofiene Affes (INRS-EMT, Canada); Alex Stéphanne (Ericsson & INRS-EMT, Canada)
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MAC 10: Spectrum Management and Cognitive Radio

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)
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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)
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Optimizing Dynamic Spectrum Allocation for Cognitive Radio Networks Using Hybrid Access Scheme

Ayman Sabbah (Carleton University, Canada); Mohamed Ibnkahla (Carleton University)
pp. 2508-2513

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)
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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)
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NET16: LTE Network Planning and Configuration

Exploiting Multi-homing in Hyper Dense LTE Small-Cells Deployments

Abdellaziz Walid (ENSIAS, Mohammed V University of Rabat, Morocco); Essaid Sabir (Hassan II University of Casablanca & ENSEM, Morocco); Abdellatif Kobbane (ENSIAS, Mohammed V University of Rabat, Morocco); Tarik Taleb (Aalto University, Finland); Mohammed El Koutbi (ENSIAS, Morocco)
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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)
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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)
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Cell Outage Compensation Algorithm for Frequency Reuse One and ICIC LTE Networks

Omar Nasr (Cairo University, Egypt); Mai Said (Axxcerlera Broadband Wireless Egypt, Egypt); Tamer ElBatt (Faculty of Engineering, Cairo University & WINC, Nile University, Egypt)
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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)
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NET17: Multicast

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-Shiuan Pan (Tamkang University, Taiwan); Yu-Chee Tseng (National Chiao-Tung University, Taiwan)
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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)

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Mathematical Model of QoS-aware Multicast Transmission via Periodic Reservations

Aleksandr Sergeevich Ivanov, Evgeny Khorov, Egor Kuznetsov and Andrey Lyakhov (IITP RAS, Russia)

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Cooperative Live Video Multicast for Small Cell Base Stations with Overlapping Coverage

Ozgu Alay (Simula Research Laboratory, Norway); Antonios Argyriou (University of Thessaly, Greece)

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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)

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NET18: Network Coding

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)

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Leaner and Meaner: Network Coding in SIMD enabled Commercial Devices

Chres W. Sørensen 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)

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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)

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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)

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NET19: D2D, UAV, and IOT Systems

Flow level analysis of the offloading capacity of D2D communications

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- Dr. Munir Tag, Director, ICT Program, Qatar National Research Fund, Qatar
- Mr. Malike Bouaoud, Head of Technology Trend and Smart Innovation Lab/Cyber Security expert, Ministry of Transport and Communications, Doha, Qatar
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Seif eddine Hammami (Institute Mines-Telecom, Télécom SudParis, France); Hossam Afifi (Télécom SudParis, Institut Telecom & Paris Saclay, France); Michel Marot (Institut TELECOM Telecom SudParis, France); Vincent Gauthier (Institut TELECOM; Telecom SudParis; SAMOVAR UMR, France)
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