2013 IEEE 14th Workshop on Signal Processing Advances in Wireless Communications

(SPAWC 2013)

Darmstadt, Germany
16 – 19 June 2013

IEEE Catalog Number: CFP13AWC-POD
ISBN: 978-1-4673-5576-6

Program

T1: Cooperation and Coordination over Cellular Networks: Taking a New Look at Interference

Pushed by the demand for bandwidth-hungry multimedia and internet-related wireless services, communication engineers seek to maximally exploit the spectral resources in all available dimensions. Together with the increased density of base stations in cellular networks in the most populated areas, the aggressive reuse of frequencies planned in so-called next generation cellular networks results in a novel situation where interference (along with the classical fading problem) is no longer just an issue but rather emerges as the key limiting factor. As an element of the solution lies the notion of network coordination and cooperation which can take place between base stations, or even between the terminals themselves. Although cooperative communications was until recently much associated with the notion of relaying, this concepts is now re-inventing itself to find its way into the cellular network framework, notably as a way to deal with interference using distributed MIMO concepts. A powerful weapon against fading and interference, cooperative communication finds itself particularly well suited to the context and constraints of cellular communications because of pre-existing backhaul infrastructure linking the base stations together. Coordination can take place is a variety of domains such as resource control, scheduling, beamforming, interference alignement, etc. and poses both new theoretical and practical challenges.

Such concepts of MIMO cooperation, interference alignement and coordinated resource control have been the subject of numerous special session and journal issues in the past months. In this tutorial they will be addressed in a unifying manner, under the general framework of interference coordination. In this tutorial we will review the fundamentals as well as the latest evolutions in network multicell cooperation and coordination research with an emphasis on the issue of feedback and information exchange. New concepts for distributed forms of coordination will be discussed. Applications will be described along with the current status of discussion in key standards.

T2: Random Matrix Advances in Signal Processing

This tutorial introduces basic notions of random matrix theory with applications to signal processing in large dimensional systems, such as detection and statistical inference in large population sizes. In a first part, the focus is on the presentation of theoretical tools of random matrix theory, and in a second part on applications of these methods such as eigen-based source detection, improved DoA estimation, statistical inference in large sensor networks, etc. In a third part, we then provide an introduction to recent work on robust estimation and random matrix theory. The objective is for the attendees to get acquainted with the field of random matrix theory and with the methodological tools to tackle signal processing problems.

T3: Game Theory for Wireless Communications and Sensor Networks

The ever-increasing demand for reliable and ubiquitous high-speed data communications and environment sensing services calls for new challenges in the design and the optimization of wireless networks, which may benefit from the adoption of sophisticated signal processing techniques at large. Recently, game theory has emerged as an effective framework for the network design, since it provides analytical tools to predict the outcome of interactions among rational entities. This tutorial provides an overview of the relevant applications of game theory, focusing on state-of-the-art techniques for resource allocation. In the first part, the very basics concepts are introduced by means of many simple examples, and special emphasis is put on how to translate a real-world problem to an analytical game model. In the second part, relevant applications of game theory to wireless networks design are reported, including power and rate control, bandwidth allocation, and spectrum sensing, suited for CDMA and OFDMA systems, and some clues will be given on how to extend such methods to MIMO, cognitive radio, and relay-assisted communications. The main focus will be on noncooperative techniques, although recent advances in the field of cooperative game theory will be also included in the discussion to provide a different perspective in the class of problems.

P1: Plenary Lecture: Towards Emerging 5G Wireless Broadband Systems

The continued demand for ubiquitous connectivity to a plethora of services as well as the expected explosive growth of mobile access to the Internet and other applications (e.g., 3D Internet, augmented reality, social networking, Internet of Things) is fueling the demand for new wireless networks that can realize seamless connectivity amongst different technologies. Mobile data traffic has been particularly increasing every year and this trend is forecast to continue, with an expected 1000x traffic load increase by year 2020! To address this, operators around the world are now starting to deploy 4th Generation or 4G systems. Unfortunately, the overall network capacity improvement brought by 4G systems is still far away from meeting the growing demands and the expected 1000x growth in mobile data traffic by 2020. In this talk, we shall discuss the challenges and opportunities in next-generation wireless communications and networking. We also describe some of the potential solutions that are needed to meet the challenging demands of beyond 4G or 5G wireless systems. Advanced technologies that can dramatically increase the network capacity to address the 1000x increase in mobile traffic challenge, as well as, guarantee ubiquitous connection and uniform coverage for a high-level user experience, will be particularly emphasized.

R1: Resource allocation

Resource Allocation for Type-I HARQ-based Wireless Networks with Finite-Length Codes
Sébastien Marcille (Telecom Paristech & Thales Communications, France); Philippe Ciblat (Telecom ParisTech, France); Christophe J. Le Martret (Thales Communications & Security & Signal Processing and Multimedia Dept., France)
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Joint Base Station Association and Power Allocation for Uplink Sum-Rate Maximization
Krishna Chitti (University of Stuttgart, Germany)
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Distributionally Robust Joint Power and Admission Control via SOCP Deflation
Ya-Feng Liu (Chinese Academy of Sciences, P.R. China); Enbin Song (Sichuan University/University of Minnesota, P.R. China)
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Primal Decomposition based Decentralized Weighted Sum Rate Maximization with QoS Constraints for Interfering Broadcast Channel
Jarkko Kaleva (University of Oulu, Finland); Antti Tölli (University of Oulu, Finland); Markku Juntti (University of Oulu, Finland)
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A Dual Stochastic DFP algorithm for Optimal Resource Allocation in Wireless Systems
Aryan Mokhtari (University of Pennsylvania, USA); Alejandro Ribeiro (University of Pennsylvania, USA)
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Joint allocation of computation and communication resources in multiuser mobile cloud computing
Sergio Barbarossa (University of Rome, Italy); Stefania Sardellitti (University of Cassino, Italy); Paolo Di Lorenzo (University of Rome La Sapienza, Italy)
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Optimal Power Allocation for the Chance-Constrained Vector Broadcast Channel and Rank-One Channel Approximation
Andreas Gründinger (Technische Universität München, Germany); Romain Bethenod (Technische Universität München, Germany); Michael Joham (Technische Universität München, Germany); Maximilian Riemensberger (Technische Universität München, Germany); Wolfgang Utschick (Technische Universität München, Germany)
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Predicting a User's Next Cell With Supervised Learning Based on Channel States
Xu Chen (Princeton University, USA); Francois Meriaux (SUPELEC, France); Stefan Valentin (Bell Labs & Alcatel-Lucent Deutschland AG, Germany)
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S1: Relaying

Bidirectional Relay Communication with Additional Private Message
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Huaping Liu (Peking University, P.R. China); Fan Sun (Aalborg University, Denmark); Elisabeth de Carvalho (Aalborg University, Denmark); Petar Popovski (Aalborg University, Denmark); Henning Thomsen (Aalborg University, Denmark); Yuping Zhao (Peking University, P.R. China)
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Non-cooperative Broadcast Game for Distributed Decision Map Selection of Relay Wireless Network Coding Processing
Tomas Hynek (Czech Technical University in Prague, Czech Republic); Jan Sykora (Czech Technical University in Prague, Czech Republic)
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On the Performance of Two-Way Half-Duplex and One-Way Full-Duplex Relaying
Hirley Alves (University of Oulu & Federal University of Technology of Parana - Brazil, Finland); Daniel Benevides da Costa (Federal University of Ceara (UFC) & Area: Telecommunications, Brazil); Richard Demo Souza (Federal University of Technology - Paraná (UTFPR), Brazil); Matti Latva-aho (UoOulu, Finland)
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Distributed Bayesian Detection for the Butterfly Network
Joakim Jaldén (KTH Royal Institute of Technology, Sweden); Tobias J. Oechtering (KTH Royal Institute of Technology & School of Electrical Engineering, EE, Sweden)
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Relay-aided interference alignment for bidirectional communications in multi-pair multi-relay networks
Rakash SivaSiva Ganesan (TU Darmstadt, Germany); Hussein A Al-Shatri (University of Rostock, Germany); Tobias Weber (Uni Rostock, Germany); Anja Klein (TU Darmstadt, Germany)
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R2: Cooperative communications

Analysis of Cooperative HARQ with Opportunistic Routing
Amogh Rajanna (University of Minnesota, Twin Cities, USA); Mostafa Kaveh (University of Minnesota, USA)
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Jin-Taek Seong (Gwangju Institute of Science and Technology, Korea); Heung-No Lee (Gwangju Institute of Science and Technology, Korea)
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Khalid Zeineddine (Northwestern University & Nokia Siemens Networks, USA); Michael Honig (Northwestern University, USA); Shirish Nagaraj (Nokia Siemens Networks, USA); Philip J Fleming (Nokia Siemens Networks USA, USA)
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Ali A Nasir (Australian National University, Australia); Hani Mehrpouyan (California State University, USA); Salman Durrani (The Australian National University, Australia); Steven D Blostein (Queen's University, Canada); Rodney Andrew Kennedy (The Australian National University, Australia); Björn Ottersten (University of Luxembourg, Luxemburg)
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Combined Adaptive Lattice Reduction-Aided Detection and Antenna Shuffling for DSTTD-OFDM Systems
Ngoc Phuc Le (University of Wollongong, Australia); Le Chung Tran (University of Wollongong, Australia); Farzad Safaei (ICT Research Institute, University of Wollongong, Australia)
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R3: Cognitive radio

An Investigation of Inter-cell Subcarrier Collisions in OFDM-Based Cognitive Radio Networks
Sabit Ekin (Texas A&M University, USA); Mohamed M. Abdallah (Texas A&M University at Qatar & Cairo University, Cairo, Qatar); Khalid A. Qaraqe (Texas A&M University at Qatar, USA); Erchin Serpedin (Texas A&M University, USA)
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Exploiting Cognitive Cyclostationary Noise Subspace for Noncognitive Spectrum Sensing
Josep Font-Segura (Technical University of Catalonia, Spain); Gregori Vazquez (Technical University of Catalonia, Spain); Jaume Riba (UPC, Spain)
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Michele Guerrini (University of Perugia, Italy); Luca Rugini (University of Perugia, Italy); Paolo Banelli (University of Perugia, Italy)
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Cognitive Access Algorithms For Multiple Access Channels
Yichuan Hu (University of Pennsylvania, USA); Alejandro Ribeiro (University of Pennsylvania, USA)
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Marjan Zandi (University of Ontario Institute of Technology, Canada); Min Dong (University of Ontario Institute of Technology, Canada); Ali Grami (University of Ontario Institute of Technology, Canada)
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Daniel Romero (University of Vigo, Spain); Roberto López-Valcarce (Universidad de Vigo, Spain)
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Hierarchical spectrum sharing using interference tweets
Emiliano Dall'Anese (University of Minnesota, USA); Antonio G. Marques (Universidad Rey Juan Carlos, Spain); Georgios B. Giannakis (University of Minnesota, USA)
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Non-convex Power Allocation Games in MIMO Cognitive Radio Networks
Xiaoge Huang (University of Valencia, Spain); Baltasar Beferull-Lozano (Universidad de Valencia, Spain); Carmen Botella (University of Valencia, Spain)
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P2: Plenary Lecture: Rényi information dimension and degrees of freedom in vector interference channels

We present a unified framework for the study of degrees of freedom (DoF) in interference channels and elucidate the role played by singularity in achieving full degrees of freedom. Specifically, we continue the Wu-Shamai-Verdú program on characterizing the degrees of freedom in constant interference channels (ICs) through Rényi information dimension. We present a general formula for the DoF of vector ICs, encompassing multiple-input multiple-output (MIMO) ICs, time- and/or frequency-selective ICs, and combinations thereof, as well as constant single-antenna ICs, as considered by Wu, Shamai, and Verdú. As in the case of constant single-antenna ICs, achieving full DoF requires the use of singular input distributions. Strikingly, in the vector case it suffices to enforce singularity on the joint distribution of individual transmit vectors. This can be realized through signaling in subspaces of the ambient signal space, which is in accordance with the idea of interference alignment, and, most importantly, allows the scalar components of the transmit vectors to have non-singular distributions. Based on this observation, we systematically develop the role played by singularity - either in terms of input distributions or in terms of canne coefficients - in achieving full degrees of freedom in ICs. We conclude by showing how the DoF-formula we obtain leads to a unified framework for interference alignment.

R4: Distributed processing over adaptive networks

Reduced-Complexity Distributed Least-Squares Estimation over Adaptive Networks
Reza Arablouei (University of South Australia, Australia); Kutluyıl Doğançay (University of South Australia, Australia); Stefan Werner (Aalto University, Finland)
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Reducing Aggregation Bias and Time in Gossiping-based Wireless Sensor Networks
Zhiliang Chen (TU Darmstadt, Germany); Alexander Kuehne (TU Darmstadt, Germany); Anja Klein (TU Darmstadt, Germany)
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Decentralized Dynamic Optimization Through the Alternating Direction Method of Multipliers
Qing Ling (University of Science and Technology of China, P.R. China); Alejandro Ribeiro (University of Pennsylvania, USA)
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On the Performance of Average Consensus in Mobile Wireless Sensor Networks
Valentin Schwarz (Vienna University of Technology, Austria); Gerald Matz (Vienna University of Technology, Austria)
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Parallel Stochastic Decomposition Algorithms for Multi-Agent Systems
Yang Yang (The Hong Kong University of Science and Technology, Hong Kong); Gesualdo Scutari (State University of New York at Buffalo, USA); Daniel P Palomar (Hong Kong University of Science and Technology, Hong Kong)
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Sachin Chaudhari (Aalto University School of Electrical Engineering, Finland); Visa Koivunen (Aalto University, Finland)
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S2: Feedback in wireless systems

Rate Loss Analysis of Transmitter Cooperation with Distributed CSIT
Paul de Kerret (EURECOM, France); Jakob Hoydis (Alcatel-Lucent Bell Labs, Germany); David Gesbert (Eurecom Institute, France)
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MIMO BC with Imperfect and Delayed Channel State Information at the Transmitter and Receivers
Jinyuan Chen (EURECOM, France); Petros Elia (EURECOM, France)
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Time-Correlated MISO Wiretap Channel with Delayed CSIT
Mari Kobayashi (Supelec, France); Sheng Yang (Supélec, France); Giovanni Geraci (University of New South Wales, Australia)
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Interference Channels with Bursty Traffic and Delayed Feedback
I-Hsiang Wang (EPFL, Switzerland); Suhas Diggavi (University of California Los Angeles, USA)
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R5: Collaborative sensing and sparse signal recovery

R6: Secrecy in communications

Enhancing Secrecy with Sectorized Transmission in Decentralized Wireless Networks
Xi Zhang (Hong Kong University of Science and Technology, Hong Kong); Xiangyun Zhou (The Australian National University, Australia); Matthew R McKay (Hong Kong University of Science and Technology, Hong Kong)
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Secrecy in the 2-User Symmetric Deterministic Interference Channel with Transmitter Cooperation
Parthajit Mohapatra (Indian Institute of Science, India); Chandra R Murthy (Indian Institute of Science, India)
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On the Effects of Colluded Statistical Attacks in Cooperative Spectrum Sensing
Chung-Kai Yu (University of California, Los Angeles, USA); Mihir Laghate (University of California, Los Angeles, USA); Ali H. Sayed (University of California, Los Angeles, USA); Danijela Cabric (University of California Los Angeles, USA)
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User Selection Schemes for Multiuser MISO Downlink with Eavesdropping
Sotiris Karachontzitis (University of Patras, Greece); Ioannis Krikidis (University of Cyprus, Cyprus); Kostas Berberidis (University of Patras, Greece)
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Adaptive limited feedback for MISO wiretap channels with cooperative jamming
Minyan Pei (National University of Defense Technology, P.R. China); Dongtang Ma (National University of Defense Technology, P.R. China); Ji-Bo Wei (National University of Defense Technology, P.R. China)
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P3: Plenary Lecture: Generalized Frequency Division Multiplexing - Signal Design in Time and Frequency

Harnessing the complexity of equalization has been one major aspect for moving from single-carrier to spread-spectrum modulation. With the introduction of OFDM the complexity of demodulation has been reduced enough to cope with the implementation of MIMO systems. In addition, OFDM has enabled to design systems with flexible bandwidth requirements, adding subcarriers as needed. Examples of systems exploiting this feature are e.g. LTE or 802.11. Also, OFDMA allows for flexible resource sharing. However, OFDM comes at a price of requiring synchronous subcarrier spacing, and synchronous timing of multiple OFDMA sub-channels. The out-of-band power emission follows the sinc-function which poses a problem in particular when needing to design signals with a discontinuous spectrum and deep power notches in frequency. Reigning the overhead of the OFDM cyclic prefix comes at the cost of a long symbol duration, which again requires many subcarriers. Subcarrier spacing, however, dramatically limits the allowable phase noise for implementation. FBMC (Filter Bank Multi Carrier) is an alternative to OFDM which has attracted increasing attention for overcoming some challenges. GFDM is a novel multi-dimensional modulation technique in frequency and time (and space) which allows for overcoming many of the challenges posed by OFDM. By tail-biting the symbol filtering compact data bursts can be optimized for spectral shaping. In this talk an introduction and overview of GFDM will be given, including current state-of-the art research results. It's flexibility of designing the modulation in time and in frequency opens-up new possibilities, making it a contender in particular for multiple-access systems with highly heterogeneous user requirements.

R7: Interference alignment and mitigation

Min-Maxing Interference Alignment Algorithm as a Semidefinite Programming Problem
Mohammed El-Absi (University of Duisburg-Essen, Germany); Mohamed El-Hadidy (University of Duisburg-Essen, Germany); Thomas Kaiser (Universität Duisburg-Essen, Germany)
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An Interference Alignment Algorithm for Structured Channels
Christian Lameiro (University of Cantabria, Spain); Óscar González (University of Cantabria, Spain); Ignacio Santamaría (University of Cantabria, Spain)
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S3: Function Computation in Wireless Networks

R8: Relay communications I

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Karthik Kuntikana Shrikrishna (Indian Institute of Technology Madras, India); Bhaskar Ramamurthi (Indian Institute of Technology, India)
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Low-Complexity SNR-Based Channel Pairing in Multichannel MABC-Based Two-Way Relaying
Fangzhi Zuo (University of Ontario Institute of Technology, Canada); Min Dong (University of Ontario Institute of Technology, Canada)
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Optimal Joint Cooperative Beamforming and Artificial Noise Design for Secrecy Rate Maximization in AF Relay Networks
Ye Yang (Xidian University, P.R. China); Qiang Li (The Chinese University of Hong Kong, Hong Kong); Wing-Kin Ma (The Chinese University of Hong Kong, Hong Kong); Jianhua Ge (Xidian University, P.R. China); MeiLu Lin (Xidian University, P.R. China)
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On the Performance of Spectrum Sharing Two-Way Relay Networks with Distributed Beamforming
Ali Afana (Concordia University, Canada); Ali Ghrayeb (Texas A&M University at Qatar, Qatar); Vahid Asghari (University of Quebec, INRS-EMT, Canada); Sofiene Affes (INRS-EMT, Canada)
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Adaptive Self-interference Cancellation in Wideband Full-Duplex Decode-and-Forward MIMO Relays
Emilio Antonio-Rodríguez (Aalto University, Finland); Roberto López-Valcarce (Universidad de Vigo, Spain); Taneli Riihonen (Aalto University School of Electrical Engineering, Finland); Stefan Werner (Aalto University, Finland); Risto Wichman (Aalto University School of Electrical Engineering, Finland)
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Filter-and-Forward Beamforming in Asynchronous Relay Networks
Nils Bornhorst (Technische Universität Darmstadt, Germany); Marius Pesavento (Technische Universität Darmstadt, Germany)
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Decoding Options for Trellis Codes in the Two-Way Relay Channel
Carmine Vitiello (University of Pisa, Italy); Stephan F. Pfletschinger (Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), Spain); Marco Luise (University of Pisa & WISER srl, Italy)
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Relay Selection Problem in Wireless Networks: A Solution Concept Based on Stochastic Bandits and Calibrated Forecasters
Setareh Maghsudi (Technische Universität Berlin, Germany); Slawomir Stanczak (Fraunhofer Heinrich Hertz Institute & Technische Universität Berlin, Germany)
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Performance Analysis of Relay Selection Schemes in OFDM-Based Underlay Cognitive Networks
Hela Chamkhia (Qatar University, Qatar); Mazen Omar Hasna (Qatar University, Qatar)
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R9: Estimation and detection techniques

New Expression for the Functional Transformation of the Vector Cramer-Rao Lower Bound
Ali A Nasir (Australian National University, Australia); Hani Mehrpouyan (California State University, USA); Rodney Andrew Kennedy (The Australian National University, Australia)
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Joint Data and Channel Estimation Using Semi-Blind MLSE Algorithms
Chia-Lung Wu (Royal Institute of Technology, Sweden); Ming Xiao (Royal Institute of Technology, Sweden); Mikael Skoglund (KTH Royal Institute of Technology, Sweden)
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Line Spectrum Estimation from Broadband Power Detection Bits
Omar Mehanna (University of Minnesota, USA); Nikolaos D Sidiropoulos (University of Minnesota, USA); Efthymios Tsakonas (KTH, Sweden)
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Robust Detection Under Communication Constraints
Gökhan Gül (Darmstadt University of Technology, Germany); Abdelhak M Zoubir (Darmstadt University of Technology, Germany)
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An Optimal Error Nonlinearity for Robust Adaptation Against Impulsive Noise
Sara Al-Sayed (TU Darmstadt, Germany); Abdelhak M Zoubir (Technische Universitat Darmstadt, Germany); Ali H. Sayed (University of California, Los Angeles, USA)
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Siouar Bensaid (EURECOM, France); Dirk Slock (Eurecom, France)
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An Improved SVD-based Wall Clutter Mitigation Method for Through-the-Wall Radar Imaging
Fok Hing Chi Tivive (University of Wollongong, Australia); Abdesselam Bouzerdoum (University of Wollongong, Australia)
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Joint Activity and Data Detection for Machine to Machine Communication via Bayes Risk Optimization
Fabian Monsees (University of Bremen & Institute for Telecommunications and High-Frequency Techniques (ITH), Germany); Carsten Bockelmann (University of Bremen, Germany); Armin Dekorsy (University of Bremen & Institute for Telecommunications and High-Frequency Techniques, Germany)
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P4: Plenary Lecture: Linear Transceiver Design for Interference Alignment: Feasibility and Computation

Consider a multiple input-multiple output (MIMO) interference channel whereby each transmitter and receiver are equipped with multiple antennas. An effective approach to practically achieving high system throughput is to deploy linear transceivers (or beamformers) that can optimally exploit the spatial characteristics of the channel. The recent work of Cadambe and Jafar suggests that optimal beamformers should maximize the total degrees of freedom and achieve interference alignment in the high signal to noise ratio (SNR) regime. In this talk, we examine several issues related to the design of a linear interference alignment scheme including its computational complexity, feasibility and practical algorithms to maximize the channel throughput.

R10: Beamforming

Two-Dimensional Direction of Arrival Estimation Method for A Mixture of Noncoherent and Coherent Narrowband Signals
Hao Tao (Xi'an Jiaotong University, P.R. China); Jingmin Xin (Xi'an Jiaotong University, P.R. China); Jiasong Wang (State Key Laboratory of Astronautic Dynamics, P.R. China); Nanning Zheng (Xi'an Jiaotong University, P.R. China); Akira Sano (Keio University, Japan)
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Predistortion and Precoding Vector Assignment in Codebook-based Downlink Beamforming
Yong Cheng (Technische Universität Darmstadt, Germany); Marius Pesavento (Technische Universität Darmstadt, Germany)
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S4: Cooperative sensor networks: hardware implementations, demonstrations, and measurements

R11: Relay communications II

Partial Decode-and-Forward Rates for the Gaussian MIMO Relay Channel: Inner Approximation of Non-Convex Rate Constraints
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Throughput Maximization Through Adaptive Decode-Remodulate-and-Forward Relaying Scheme
Naoufel Debbabi (Sup'Com, Tunisia); Inès Kammoun (ENIS, Tunisia); Mohamed Siala (Sup'Com, Tunisia)
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A Spatial Incremental Relaying-Based User Transparent ARQ Protocol
Radwa Aly Sultan (Alexandria University, Egypt); Karim G Seddik (American University in Cairo & Alexandria University, Egypt)
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Context-Aware Handover Optimization for Relay-Aided Vehicular Terminals
Qi Liao (Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institute, Germany); Federico Penna (Fraunhofer Heinrich Hertz Institute, Germany); Slawomir Stanczak (Fraunhofer Heinrich Hertz Institute & Technische Universität Berlin, Germany); Zhe Ren (BMW Group Research and Technology, Germany); Peter Fertl (BMW Group Research and Technology, Germany)
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Finite Dimension Wyner-Ziv Lattice Coding for Two-Way Relay Channel
Sinda Smirani (CEA, France); Mohammed Kamoun (CEA-LIST, France); Mireille Sarkiss (CEA LIST, France); Abdellatif Zaidi (Université Paris-Est Marne La Vallée, France); Pierre Duhamel (Lss Supelec & CNRS, France)
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Performance Analysis of Relay Networks with Channel code in Low SNR Regime
Xuan-Thang Vu (LSS-SUPELEC & University Paris sud 11, France); Vo Nguyen Quoc Bao (Posts and Telecommunications Institute of Technology, Vietnam); Marco Di Renzo (French National Center for Scientific Research (CNRS), France); Pierre Duhamel (Lss Supelec & CNRS, France)
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Novel lower bound on the Ergodic rate density of random ad-hoc networks
Yaniv George (Bar-Ilan University, Israel); Itsik Bergel (Bar Ilan University, Israel); Ephraim Zehavi (Bar-Ilan University, Israel)
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R12: MIMO and multiuser communications

Sum-Rate Analysis of Spectrum Sharing Spatial Multiplexing MIMO Systems with Zero-Forcing and Multiuser Diversity
Liang Yang (Jinan University, P.R. China); Khalid A. Qaraqe (Texas A&M University at Qatar, USA); Erchin Serpedin (Texas A&M University, USA); Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)
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Multiple Precoder Codebooks for MIMO Systems with Limited Feedback of Precoder and Bit Loading

Hung-Chun Chen (National Chiao Tung University, Taiwan); Yuan-Pei Lin (National Chiao Tung University, Taiwan)

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Lattice Reduction Aided Detection in Large-MIMO Systems

Kamal Singhal (Indian Institute of Science, Bangalore, India); Tanumay Datta (Indian Institute of Science, India); A. Chockalingam (Indian Institute of Science, India)

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Energy Efficiency Optimization in MIMO Broadcast Channels with Fairness Constraints

Christoph Hellings (Technische Universität München, Germany); Wolfgang Utschick (Technische Universität München, Germany)

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Multicast Performance of Large-Scale Antenna Systems

Hong Yang (Bell Laboratories & Alcatel-Lucent, USA); Tom Marzetta (Bell Labs, USA); Alexei Ashikhmin (Bell Labs, Alcatel-Lucent, USA)

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Achieving the Degrees of Freedom for the Two-Cell MIMO Interfering Broadcast Channel with Limited Feedback

Ahmed Medra (McMaster University, Canada); Timothy N. Davidson (McMaster University, Canada)

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Energy Efficient Design in MIMO Multi-cell Systems with Time Average QoS Constraints

Subhash Lakshminarayana (SUPELEC, France); Mohamad Assaad (Supelec, France); Mérouane Debbah (Supelec, France)

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Power Minimization and QoS Feasibility Region in the Multiuser MIMO Broadcast Channel with Imperfect CSI

José P González-Coma (University of A Coruña, Spain); Michael Joham (Technische Universität München, Germany); Paula M. Castro (University of A Coruña, Spain); Luis Castedo (University of A Coruña, Spain)

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Adaptive V-BLAST Type Channel Equalizer Design for Cognitive MIMO-OFDM Radios

Mehmet T. Ozden (Piri Reis University, Turkey)

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P5: Plenary Lecture: Feedback in Wireless Networks: Recent Results & Discoveries

Feedback has long played a major role in the development of wireless networks, from its earliest and simplest uses in protocols such as Aloha, to its more sophisticated uses in advanced multiple-antenna systems. Recent years have seen a considerable research effort in this area, both on the practical uses of feedback and on the fundamental, and sometimes surprising, properties that it can impart to networks. This talk will review some of the latter developments, notably as they relate to physical layer security, the capacities of interference channels, multi-media (i.e. finite-block-length) communication, and related problems.

R13: OFDM systems

Impact of Sampling Rate on PSD of OFDM Signal with SSOP Sidelobe Suppression

Antonio Cantoni (The University of Western Australia, Australia); Jian (Andrew) Zhang (CSIRO ICT Centre, Australia); Xiaojing Huang (CSIRO ICT Centre, Australia); Y Jay Guo (CSIRO, Australia)

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Frequency-Domain Processing for Synchronization and Channel Estimation in OQAM-OFDM Systems

Christoph Thein (Leibniz Universität Hannover, Germany); Martin Fuhrwerk (Leibniz Universität Hannover, Germany); Jürgen Peissig (Leibniz Universität Hannover, Germany)

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An Improved ESPRIT-Based Blind CFO Estimation for OFDM in the Presence of I/Q Imbalance
Tzu-Chiao Lin (National Taiwan University, Taiwan); Yen-Chang Pan (National Taiwan University, Taiwan); Wei-Jen Tai (National Taiwan University, Taiwan); See-May Phoong (National Taiwan Universityiversity, Taiwan)
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A low-complexity precoding technique for N-continuous OFDM
Yamin Zheng (Zhejiang University, P.R. China); Jie Zhong (Zhejiang University, P.R. China); Minjian Zhao (Zhejiang University, P.R. China); Ming Lei (Zhejiang University, P.R. China)
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Phase Noise and Carrier Frequency Offset in OFDM systems: Joint Estimation and Hybrid Cramer-Rao Lower Bound
Omar Salim, Omar (University of Southen Queensland & USQ, Australia); Ali A Nasir (Australian National University, Australia); Hani Mehrpouyan (California State University, USA); Wei Xiang (University of Southern Queenslan, Australia)
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KLT-based Estimation of Rapidly Time-Varying Channels in MIMO-OFDM Systems
Pedro Suárez-Casal (University of A Coruña, Spain); José A. García-Naya (University of A Coruña, Spain); Luis Castedo (University of A Coruña, Spain); Markus Rupp (Vienna University of Technology, Austria)
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S5: Physical layer security

MIMO Gaussian Broadcast Channels with Private and Confidential Messages and with Receiver Side Information
Rafael F. Schaefer (Technische Universität München, Germany); H. Vincent Poor (Princeton University, USA); Holger Boche (Technical University Munich, Germany)
pp. 659-663

Spherical Codes for the Gaussian Wiretap Channel with Continuous Input Alphabets
Joao Almeida (Faculdade de Engenharia da Universidade do Porto & Instituto de Telecomunicações, Portugal); Cristiano Torezzan (State University of Campinas, Brazil); Joao Barros (Instituto de Telecomunicações & Universidade do Porto, Portugal)
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Experimental Aspects of Secret Key Generation in Indoor Wireless Environments
Alex J Pierrot (Georgia Institute of Technology, USA); Remi A Chou (Georgia Institute of Technology, USA); Matthieu Bloch (Georgia Institute of Technology & Georgia Tech Lorraine, France)
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Secure Key Agreement Over Reciprocal Fading Channels in the Low SNR Regime
Mattias Andersson (KTH Royal Institute of Technology, Sweden); Ashish Khisti (University of Toronto, Canada); Mikael Skoglund (KTH Royal Institute of Technology, Sweden)
pp. 674-678

Layered Decoding and Secrecy over Degraded Broadcast Channels
Shaofeng Zou (Syracuse University, USA); Yingbin Liang (Syracuse University, USA); Lifeng Lai (Worcester Polytechnic Institute, USA); Shlomo (Shitz) Shamai (The Technion, Israel)
pp. 679-683

Secure Degrees of Freedom on Widely Linear Instantaneous Relay-Assisted Interference Channel
Zuleita Ka Ming Ho (Technical University of Dresden, Germany); Eduard Jorswieck (Dresden University of Technology, Germany)
pp. 684-688

R14: Multicarrier systems

Data Predistortion for Multicarrier Satellite Channels using Orthogonal Memory Polynomials
Roberto Piazza (University of Luxembourg, Luxemburg); Bhavani Shankar Mysore Rama Rao (Interdisciplinary Centre for Security, Reliability and Trust & University of Luxembourg, Luxemburg); Björn Ottersten (University of Luxembourg, Luxemburg)
pp. 689-693

Power Allocation Approaches for Combined Positioning and Communications OFDM Systems
Rafael Montalban (Universitat Autonoma de Barcelona, Spain); José A. López-Salcedo (Universitat Autònoma de Barcelona, Spain); Gonzalo Seco-Granados (Universitat Autonoma de Barcelona, Spain); Lee Swindlehurst (University of California at Irvine, USA)
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Low complexity optimization and implementation of pulse shapes for BFDM systems
Raouia Ayadi (Ecole Supérieure des Commmunications de Tunis, Tunisia); Inès Kammoun (ENIS, Tunisia); Mohamed Siala (Sup'Com, Tunisia)
pp. 699-703

Analog Joint Source-Channel Coding for OFDM Systems
Óscar Fresnedo (University of A Coruña, Spain); Francisco J. Vazquez-Araujo (University of A Coruña, Spain); Luis Castedo (University of A Coruña, Spain); Javier Garcia-Frias (University of Delaware, USA)
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SDMA for FBMC with block diagonalization
Màrius Caus (Universitat Politecnica de Catalunya (UPC), Spain); Ana Perez-Neira (UPC, Spain); Marco Moretti (Università di Pisa, Italy)
pp. 709-713

A New Subspace-Based Algorithm for Blind Channel Identification in ZP-OFDM Systems Using Few Received Blocks
Yen-Chang Pan (National Taiwan University, Taiwan); See-May Phoong (National Taiwan Universityiversity, Taiwan)
pp. 714-718

An Outer Loop Link Adaptation for BICM-OFDM That Learns
Sander Wahls (Princeton University, USA); H. Vincent Poor (Princeton University, USA)
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R15: Localization, synchronization and implementation issues

A Multi-standard Efficient Column-layered LDPC Decoder for Software Defined Radio on GPUs
Rongchun Li (National University of Defense Technology, P.R. China); Jie Zhou (National University of Defense Technology, P.R. China); Yong Dou (National University of Defense Technology (NUDT), P.R. China); Song Guo (National University of Defense Technology, P.R. China); Dan Zou (National University of Defense Technology, P.R. China); Shi Wang (Changsha Military Delegate Bureau, P.R. China)
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Optimum Frame Synchronization over Binary Symmetric Channel for Data with Known, Unequal Distribution
Boladale Isawhe (Kingston University, United Kingdom); Maria G. Martini (Kingston University, United Kingdom)
pp. 729-733

Cell Identification Performance Based on Hierarchical Synchronization Channels in Dense Small Cell Environment
Hideyuki Moroga (NTT DOCOMO, INC., Japan); Hiroki Harada (Ntt Docomo, Inc., Japan); Akihito Morimoto (NTT DOCOMO, INC., Japan); Satoshi Nagata (NTT DoCoMo, Inc., Japan); Hiroyuki Ishii (DOCOMO Innovations, Inc, Japan); Yukihiko Okumura (NTT DOCOMO, INC., Japan)
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