2014 12th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks

(WiOpt 2014)

Hammamet, Tunisia
12-16 May 2014
Program

2014 12th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)


Newcom# Session

Adaptive Transmit Policies for Cost-Efficient Power Allocation in Multi-Carrier Systems
Salvatore D’Oro (CNIT Research Unit at University of Catania & CNIT - UdR Catania, Italy), Panayotis Mertikopoulos (French National Center for Scientific Research (CNRS) & Laboratoire d’Informatique de Grenoble, France), Aris Moustakas (University of Athens, Greece), Sergio Palazzo (University of Catania, Italy) .......................................................... 1

Energy-Aware Competitive Link Adaptation in Small-Cell Networks
Giacomo Bacci (University of Pisa & Wireless Systems Engineering and Research (Wiser) Srl, Italy), Elena Veronica Belmega (ENSEA/UCP/CNRS, France), Panayotis Mertikopoulos (French National Center for Scientific Research (CNRS) & Laboratoire d’Informatique de Grenoble, France), Luca Sanguinetti (University of Pisa, Italy) .......................................................... 8

WiNMeE’14: The 10th International Workshop on Wireless Network Measurements and Experimentation (WiNMeE 2014)

Propagation and Channel Modeling

Ray-Tracing Wireless Channel Modeling and Verification in Coordinated Multi-Point Systems
Mohammad Amro (King Fahd University of Petroleum and Minerals (KFUPM), Germany), Michael Grieger (Technische Universität Dresden, Germany), Adnan Landolsi (KFUPM, Saudi Arabia), Salam A. Zummo (KFUPM, Saudi Arabia), Martin Danneberg (Technische Universität Dresden, Germany), Gerhard Fettweis (Technische Universität Dresden, Germany) .......................................................... 16

Crack STIT Tessellations for City Modeling and Impact of Terrain Topology on Wireless Propagation
Xiaoxing Yu (TELECOM ParisTech, France), Thomas Courtat (Télécom ParisTech, France), Philippe Martins (Telecom ParisTech, France), Laurent Decreusefond (Telecom ParisTech & CNRS LTCI, France), Jean-Marc Kelif (Orange Labs, France) .......................................................... 22

A Measurement Study of White Spaces Across Diverse Population Densities
Pengfei Cui (Southern Methodist University, USA), Hui Liu (Southern Methodist University, USA), Dinesh Rajan (Southern Methodist University, USA), Joseph D. Camp (Southern Methodist University, USA) .......................................................... 30

IOSC’14: Fifth International Workshop on Indoor and Outdoor Small Cells 2014

Invited paper session

Cache-Aware User Association in Backhaul-Constrained Small Cell Networks
Francesco Pantisano (European Commission - Joint Research Centre, Italy), Mehdi Bennis (Centre of Wireless Communications, University of Oulu, Finland), Walid Saad (Virginia Tech, USA), Mérouane Debbah (Supelec, France) .......................................................... 37
**Energy-Efficiency and Future Knowledge Tradeoff in Small Cells Prediction-Based Strategies**
Matthieu De Mari (Supelec, France), Emilio Calvanese Strinati (CEA-LETI, France), Mérouane Debbah (Supelec, France) ................................................................. 43

**CoPS: Context Prefetching Handover Scheme on 4G Outdoor Small Cell Testbed**
Ping-Jung Hsieh (National Taiwan University, Taiwan), Po-Hung Lin (National Taiwan University, Taiwan), Yu-Chen Lee (National Taiwan University, Taiwan), Rong-Dong Chiu (National Taiwan University, Taiwan), Hung-Yu Wei (National Taiwan University, Taiwan), Wen-Hsin Wei (Institute for Information Industry, Taiwan) ................................................................. 50

---


**Modeling and Optimization**

**Distributed Cross-Layer Optimization for Healthcare Monitoring Applications**
Alaa Awad Abdelhady (Qatar University, Qatar), Amr Mohamed (Qatar University & Qatar University Wireless Innovations Center, Qatar) ................................................................. 57

**Resource Optimization Over DVB-RCS Satellite Links Through the Use of SPDY**
Francesco Zampognaro (University of Rome Tor Vergata, Italy), Ahmed Said Abdel Salam (University of Rome Tor Vergata, Italy), Michele Luglio (University of Rome Tor Vergata - Dip. Ing. Elettronica, Italy), Cesare Roseti (University of Rome Tor Vergata, Italy) ................................................................. 63

**Flow-level Modeling of Multi-User Beamforming in Mobile Networks**
Ahlem Khlass (TELECOM ParisTech, France), Thomas Bonald (Telecom ParisTech, France), Salah Eddine Elayoubi (Orange Labs & IRT SystemX, France) ................................................................. 70

**Modelling Load Balancing and Carrier Aggregation in Mobile Networks**
Florence Bénézit (ENS Paris, France), Salah Eddine Elayoubi (Orange Labs & IRT SystemX, France), Raluca Indre (Orange Labs, France), Alain Simonian (Orange Labs, France) ................................................................. 78

---

**WiNMe’14: The 10th International Workshop on Wireless Network Measurements and Experimentation (WiNMeE 2014)**

**Underwater and Sensor Networks**

**Experiments with Cooperative and Non-Cooperative Combined Localization and Time-Synchronization in Underwater Acoustic Networks**
Wouter van Kleunen (University of Twente, The Netherlands), Nirvana Meratnia (University of Twente, The Netherlands), Paul Havinga (University of Twente, The Netherlands), Niels A Moseley (University of Twente, The Netherlands) ................................................................. 86

**Performance Evaluation of Censoring-Enabled Systems for Sequential Detection in Large Wireless Sensor Networks**
Mohammed Karmoose (Alexandria University, Egypt), Karim G Seddik (American University in Cairo & Alexandria University, Egypt), Ahmed Sultan (Alexandria University, Egypt) ................................................................. 92

**Improving Coverage and Connectivity in Mobile Sensor Networks Using Harmony Search**
Shaimaa M. Mohamed (Cairo University, Egypt), Haitham S. Hamza (Cairo University, Egypt), Imane A. Saroit (Cairo University, Egypt) ................................................................. 99
Wireless Networks

Efficient Network Resources Utilization for Ka-band High Capacity Satellite Systems
Francesco Zampognaro (University of Rome Tor Vergata, Italy), Luca Carniato (Open-sky s.r.l, Italy), Federica Fongher (Opensky, Italy), Walter Munarini (Opensky, Italy), Michele Luglio (University of Rome Tor Vergata - Dip. Ing. Elettronica, Italy), Cesare Roseti (University of Rome Tor Vergata, Italy) .................................................. 105

A Novel BWA System Based on Time and Frequency Domain United Processing
Xin Su (Tsinghua University, P.R. China), Jie Zeng (Tsinghua University, P.R. China), Xibin Xu (Tsinghua University, P.R. China), Limin Xiao (Tsinghua University, P.R. China) ........................................ 112

Pilot Assisted Channel Estimation in MIMO-STBC Systems Over Time-varying Fading Channels
Emna Ben Slimane (National Engineering School of Tunis, Tunisia), Slaheddine Jarboui (National School of Engineers of Tunis, Tunisia) .......................................................... 119

IOSC'14: Fifth International Workshop on Indoor and Outdoor Small Cells 2014

Regular paper session I

Pricing Games in Multihop Wireless Networks Under Interference Constraints
Anil Kumar Chorppath (Technical University of Munich, Germany), Edmund Yeh (Northeastern University, USA), Holger Boche (Technical University Munich, Germany) .................................................. 125

WiNMeE'14: The 10th International Workshop on Wireless Network Measurements and Experimentation (WiNMeE 2014)

Cross-Layer

A Measurement Based Study of TCP Protocol Efficiency in Cellular Networks
Johan Garcia (Karlstad University, Sweden), Stefan Alfredsson (Karlstad University, Sweden), Anna Brunstrom (Karlstad University, Sweden) .......................................................... 131

REACTIVE: A Peaceful Coexistence Between Deluge and Low Power Listening
Andrea Di Cagno (Sapienza University of Rome, Italy), Mario Paoli (Sapienza University of Rome, Italy), Ugo Maria Colesanti (Sapienza University of Rome, Italy), Andrea Vitaletti (DIS Sapienza Universita' di Roma, Italy) .......................................................... 137

Revisiting Optimal Power Control: Dual Effects of SNR and Contention
Yang Liu (University of Michigan, Ann Arbor, USA), Mingyan Liu (University of Michigan, USA), Jing Deng (University of North Carolina at Greensboro, USA) .................................................. 143
IOSC'14: Fifth International Workshop on Indoor and Outdoor Small Cells 2014

Regular paper session II

Admission Control in Interference-Coupled Wireless Data Networks: A Queuing Theory-Based Network Model
Henrik Klessig (Technische Universität Dresden, Germany), Albrecht J Fehske (Technische Universität Dresden, Germany), Gerhard Fettweis (Technische Universität Dresden, Germany) ................................................................. 151

Load Dependent Optimal ON-OFF Policies in Cellular Heterogeneous Networks
Deeksha Sinha (Indian Institute of Technology, Bombay, India), Veeraruna Kavitha (IIT Bombay, India), Abhay Karandikar (IIT Bombay, India) ................................................................. 159

Modeling the Effect of Interferences Among N Collocated Heterogeneous Wireless Networks
Bilal Khan (Dongguk University, Korea), Jong-Suk Ahn (University of Dongguk, Korea) .................. 167


Cooperative Networks

Resource Allocation and Sharing in Cooperative Networks
Fatma Baccar (ISECS, Tunisia), Inès Kammoun (ENIS, Tunisia), Antonio M. Cipriano (Thales Communications and Security, France) ................................................................. 173

A Multi-tier Cooperative Resource Partitioning Technique for Interference Mitigation in Heterogeneous Cellular Networks
Rajkarn Singh (Indian Institute of Technology Madras, India), Sudeepa Mishra (Indian Institute of Technology Madras, India), Siva Ram Murthy (IIT Madras, India) .................................. 181


Physical Layer and Resource Allocation

Low Complexity Spatial Interpolation for Cellular Coverage Analysis
Hajer Braham (Telecom Paris Tech & Orange Labs, France), Sana Ben Jemaa (Orange Labs, France), Berna Sayrac (Orange Labs, France), Eric Moulines (Télécom Paris Tech, France), Gersende Fort (CNRS, France) ................................................................. 188

On the Statistical Properties of Selection Combining Cooperative Diversity Over Double Rice Fading Channels
Rym Khedhiri (Ecole Superieure des Communications de Tunis, Sup'com, Tunisia), Nazih Hajri (Ecole Supérieure de Communications de Tunis, Sup’Com, Tunisia), Neji Youssef (Ecole supérieure des communications de Tunis, Tunisia) ................................................................. 196

Layered Coding with Non-Coherent and Coherent Layers Over Fading Channels
Mohammad Tarek Hussien (Alexandria University, Egypt), Karim G Seddik (American University in Cairo & Alexandria University, Egypt), Mohammad Shaqfeh (Texas A&M University at Qatar, Qatar), Hussein Alnuweiri (Texas A&M University, Qatar) ................................................................. 203

Jamming Defense Against a Resource-Replenishing Adversary in Multi-channel Wireless Systems
Qingsi Wang (University of Michigan, USA), Shang-Pin Sheng (University of Michigan, USA), Jacob Abernethy (University of Michigan, USA), Mingyan Liu (University of Michigan, USA) ............... 210
A Near-Optimal Randomized Algorithm for Uplink Resource Allocation in OFDMA Systems
Yang Yang (Ohio State University, USA), Changwon Nam (Seoul National University, Korea), Ness B. Shroff (The Ohio State University, USA) .......................................................... 218

Game Theory and Localization

A Pricing-Based Cooperative Spectrum Sharing Stackelberg Game
Ramy E. Ali (Nile University, Egypt), Karim G Seddik (American University in Cairo & Alexandria University, Egypt), Mohammed Nafie (Nile University & Cairo University, Egypt), Fadel Digham (NTRA, Egypt) ........................................................................................................ 226

Modeling Rewards and Incentive Mechanisms for Delay Tolerant Networks
Olivier Brun (Laboratoire d'Analyse et d'Architecture des Systemes & CNRS, France), Rachid El-Azouzi (University of Avignon, France), Balakrishna Prabhu (LAAS-CNRS, France), Tatiana Seregina (LAAS-CNRS, France) ........................................................................................................ 233

A Game Theoretic Analysis for Energy Efficient Heterogeneous Networks
Majed Haddad (INRIA, France), Piotr Wiecek (Wroclaw University of Technology, Poland), Habachi Oussama (LIA, France), Yezekael Hayel (LIA, University of Avignon, France) .......................................................... 241

Game Theoretic Anti-jamming Dynamic Frequency Hopping and Rate Adaptation in Wireless Systems
Manjesh Kumar Hanawal (INRIA, Sophia Antipolis, France), Mohammad J. Abdel-Rahman (University of Arizona, USA), Marwan Krunz (University of Arizona, USA) .......................................................... 247

Effect of Clutter Topology on Multi-Hop Localizer Placement
Muzammil Hussain (Samsung Research Institute (SRI) Delhi, India), Niki Trigoni (University of Oxford, United Kingdom) ........................................................................................................ 255

Cognitive Radio

Cooperative Access in Cognitive Radio Networks: Stable Throughput and Delay Tradeoffs
Mahmoud Ashour (Qatar University, Qatar), Amr El-Sherif (Alexandria University, Egypt), Tamer ElBatt (Faculty of Engineering, Cairo University & WINC, Nile University, Egypt), Amr Mohamed (Qatar University & Qatar University Wireless Innovations Center, Qatar) ........................................ 263

Opportunistic Scheduling and Relaying in a Cooperative Cognitive Network
Dibakar Das (Rensselaer Polytechnic Institute, USA), Alhussein A. Abouzeid (Rensselaer Polytechnic Institute, USA), Marian Codreanu (University of Oulu, Finland) ........................................................................................................ 271

The Mutual Benefits of Primary-Secondary User Cooperation in Wireless Cognitive Networks
Evangelia Matskani (Aristotle University of Thessaloniki, Greece), Nestor Chatzidiamantis (Aristotle University of Thessaloniki, Greece), Leonidas Georgiadis (Aristotle University of Thessaloniki, Greece), Iordanis Koutsopoulos (Athens University of Economics and Business and CERTH & CERTH, Greece), Leandros Tassiulas (University of Thessaly, Greece) ........................................................................................................ 279

Maximum Throughput of a Secondary User Cooperating with an Energy-Aware Primary User
Ahmed El Shafie (Wireless Intelligent Networks Center (WINC), Nile University, Egypt), Ahmed Sultan (Alexandria University, Egypt), Tamer Khattab (Qatar University, Qatar) .......................................................... 287

MIMO and Interference Management

Maximum MIMO Flow in Wireless Networks Under the SINR Model
Eyjólfr I. Asgeirsson (Reykjavik University, Iceland), Magnús M. Halldórsson (Reykjavik University, Iceland), Pradipta Mitra (Reykjavik University, Iceland) ........................................................................................................ 295
On the Low SNR Capacity of MIMO Fading Channels with Imperfect Channel State Information
Fatma Benkhelifa (King Abdullah University of Science and Technology, Tunisia), Abdoulaye Tall (Orange Labs, France), Zouheir Rezki (King Abdullah University of Science and Technologie (KAUST), Saudi Arabia), Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia) ........................................................................................................................................................................... 303

On the Throughput of a Relay-Assisted Cognitive Radio MIMO Channel with Space Alignment
Lokman Sboui (King Abdullah University of Science and Technology (KAUST), Saudi Arabia), Hakim Ghazzai (King Abdullah University of Science and Technology (KAUST) & KAUST, Saudi Arabia), Zouheir Rezki (King Abdullah University of Science and Technologie (KAUST), Saudi Arabia), Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia) ........................................................................................................................................................................... 311

Self Organizing Strategies for Enhanced ICIC (eICIC)
Abdoulaye Tall (Orange Labs, France), Zwi Altman (Orange Labs, France), Eitan Altman (INRIA, France) ........................................................................................................................................................................... 318

Ad Hoc and Heterogeneous Networks

Mitigation of Electromagnetic Radiation in Heterogeneous Home Network Using Routing Algorithm
Hanane El abdellaouy (Télécom Bretagne & Orange Labs, France), Alexander Pelov (Institut Mines-Telecom / Telecom Bretagne, France), Laurent Toutain (Telecom Bretagne, France), David Bernard (Orange Labs, France) ........................................................................................................................................................................... 326

Why are Relays Not Always Good for You? Performance of Different Relay Deployment Configurations in a Heterogeneous Network
Jagadish Ghimire (University of Waterloo, Canada), Catherine Rosenberg (University of Waterloo, Canada), Shalini Periyalwar (BlackBerry, Canada) ........................................................................................................................................................................... 333

Self-Optimizing Mechanisms for EMF Reduction in Heterogeneous Networks
Habib B.A. Sidi (Orange Labs, France), Zwi Altman (Orange Labs, France), Abdoulaye Tall (Orange Labs, France) ........................................................................................................................................................................... 341

A Cost Analysis of Wireless Mesh Networks
Valerio Targon (Queen Mary University of London, Italy) ........................................................................................................................................................................... 349

Network Layer

Participation and Reporting in Participatory Sensing
Man Hon Cheung (The Chinese University of Hong Kong, Hong Kong), Fen Hou (University of Macau, Macao), Jianwei Huang (The Chinese University of Hong Kong, Hong Kong) ........................................................................................................................................................................... 357

OF-FL: QoS-Aware Fuzzy Logic Objective Function for the RPL Routing Protocol
Olfa Gaddour (National School of ENgineers of Sfax, Tunisia), Anis Koubâa (Al-Imam Mohamed bin Saud University Riyadh / Cister Research Group Porto, Saudi Arabia), Nouha Baccour (RedCAD Research Unit, National school of Engineers of Sfax, Sfax, Tunisia, Tunisia), Mohamed Abid (CES-ENIS, Tunisia) ........................................................................................................................................................................... 365

An Adaptive Route Optimization Scheme for Nested Mobile IPv6 NEMO Environment
Li Qiang (University of Tsukuba, Japan), Jie Li (University of Tsukuba, Japan), Mohsen Guizani (QU, USA), Yusheng Ji (National Institute of Informatics, Japan) ........................................................................................................................................................................... 373

Optimal Surplus Capacity Utilization in Polling Systems Via Fluid Models
Ayush Rawal (IIT Bombay, India), Veeraruna Kavitha (IIT Bombay, India), Manu K. Gupta (IIT Bombay, India) ........................................................................................................................................................................... 381

Enabling Network Programmability in LTE/EPC Architecture Using OpenFlow
Malla Reddy Sama (Orange Labs, France), Siwar Ben Hadj Said (Orange Labs, France), Karine Guillouard (Orange Labs, France), Lucian Suciu (France Télécom R&D, France) ........................................................................................................................................................................... 389
Session 7

**Distributed Online Submodular Maximization in Resource-Constrained Networks**
Andrew Clark (University of Washington, USA), Basel Alomair (King Abdullah City for Science and Technology, Saudi Arabia), Linda Bushnell (University of Washington, USA), Radha Poovendran (University of Washington, USA) .......................................................... 397

**Trade Information, Not Spectrum: A Novel TV White Space Information Market Model**
Yuan Luo (The Chinese University of Hong Kong, Hong Kong), Lin Gao (The Chinese University of Hong Kong, Hong Kong), Jianwei Huang (The Chinese University of Hong Kong, Hong Kong) .......................................................................................................................................................... 405

**Not Always Sparse: Flooding Time in Partially Connected Mobile Ad Hoc Networks**
Lorenzo Maggi (Create-Net, Italy), Francesco De Pellegrini (Create-Net, Italy) .................................................. 413

**On the Throughput of Full-duplex MIMO in the Multi-link Case**
Diep N. Nguyen (University of Arizona, USA), Marwan Krunz (University of Arizona, USA), Stephen Hanly (Macquarie University, Australia) .................................................................................................................. 421

**Pricing and Economic Models**

**Realistic Per-category Pricing Schemes for LTE Users**
Aymen Belghith (University of Sfax, Tunisia), Selem Trabelsi (University of Sfax, Tunisia), Bernard Cousin (University of Rennes 1 & IRISA Research Laboratory, France) ................................................................. 429

**On the Economic Effects of User-oriented Delayed Wi-Fi Offloading**
Hanjin Park (KAIST, Korea), Youngmi Jin (KAIST, Korea), Jooho Yoon (KAIST, Korea), Yung Yi (KAIST, Korea) .............................................................................................................................................. 436

**An Economic Model of Subscriber Offloading Between Mobile Network Operators and WLAN Operators**
Cameron Patterson (Virginia Tech, USA), Allen B. MacKenzie (Virginia Tech, USA), Savo Glisic (University of Oulu, Finland), Beatriz Lorenzo (University of Vigo, Spain), Juha Röning (University of Oulu, Finland), Luiz A. DaSilva (Virginia Polytechnic Institute and State University & Trinity College Dublin, Ireland) .................................................................................................................................. 444

**On the Delay/Cost Tradeoff in Wireless Mobile Delay-Tolerant Networks**
Anna Sidera (University of Cyprus, Cyprus), Stavros Toumpis (Athens University of Economics and Business, Greece) .............................................................................................................................. 452

**Energy-Efficient Networks**

**Power Control Policies for a Wireless Link with Energy Harvesting Transmitter and Receiver**
Tingjun Chen (Tsinghua University, P.R. China), Sheng Zhou (Tsinghua University, P.R. China), Wei Chen (Tsinghua University, P.R. China), Zhisheng Niu (Tsinghua University, P.R. China) ...................................................................................................................................... 460

**Optimizing Queueing Cost and Energy Efficiency in a Wireless Network**
Antonis Dimakis (Athens University of Economics and Business, Greece), Spyros Papafragkos (Athens University of Economics and Business, Greece) ............................................................................................................ 468

**Impact of Channel State Information on Energy Efficient Transmission in Interference Channels**
Gam Nguyen (Naval Research Laboratory, USA), Sastry Kompella (Naval Research Laboratory, USA), Clement Kam (Naval Research Laboratory, USA), Jeffrey Wieselthier (Wieselthier Research, USA), Anthony Ephremides (University of Maryland at College Park, USA) ................................................................................................................................. 474

**Power Aware Wireless File Downloading: A Constrained Restless Bandit Approach**
Xiaohan Wei (University of Southern California, USA), Michael J. Neely (University of Southern California, USA) ........................................................................................................................................ 482
Spectrum Management

On the Expiration Date of Spectrum Sharing in Mobile Cellular Networks
Thom Janssen (TNO, The Netherlands), Remco Litjens (TNO, The Netherlands), Kevin W Sowerby (The University of Auckland, New Zealand) ................................................................. 490

Joint Spectrum Pricing and Admission Control for Heterogeneous Secondary Users
Changkun Jiang (The Chinese University of Hong Kong, P.R. China), Lingjie Duan (Singapore University of Technology and Design (SUTD), Singapore), Jianwei Huang (The Chinese University of Hong Kong, Hong Kong) ................................................................. 497

Asymmetric-valued Spectrum Auction and Competition in Wireless Broadband Services
Sang Yeob Jung (Yonsei University, Korea), Seung Min Yu (Samsung Electronics, Korea), Seong-Lyun Kim (Yonsei University, Korea) ................................................................. 505

ADAPTIVE: A Dynamic Index Auction for Spectrum Sharing with Time-Evolving Values
Mehrdad Khaledi (Rensselaer Polytechnic Institute, USA), Alhussein A. Abouzeid (Rensselaer Polytechnic Institute, USA) ................................................................. 513

White Space Device Emission Limits in Alternative DTT Planning Strategies
Valeria Petrini (Fondazione Ugo Bordoni, Italy), Maria Missiroli (Fondazione Ugo Bordoni, Italy), Guido Riva (Fondazione Ugo Bordoni, Italy), Giovanni Emanuele Corazza (University of Bologna, Italy) ................................................................. 521

Vehicular and Relay Networks

Energy-Efficient Two-Hop LTE Resource Allocation in High Speed Trains with Moving Relays
Ahmad Alsharoa (King Abdullah University of Science and Technology (KAUST), Saudi Arabia), Hakim Ghazzai (King Abdullah University of Science and Technology (KAUST) & KAUST, Saudi Arabia), Elias Yaacoub (Qatar Mobility Innovations Center (QMIC), Qatar), Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia) ................................................................. 528

Joint Placement and Sleep Scheduling of Grid-Connected Solar Powered Road Side Units in Vehicular Networks
Vageesh Devarayasamudra Chandramouli (Indian Institute of Technology Madras, India), Moumita Patra (Indian Institute of Technology Madras, India), Siva Ram Murthy (IIT Madras, India) ................................................................. 534

Relaying and Stability in Energy Harvesting Simple Networks
Mohamed Kashef (University of Texas A&M at Qatar, Qatar), Anthony Ephremides (University of Maryland at College Park, USA) ................................................................. 541

A Vehicular Backbone Network (VBN) with Joint Transportation-Wireless Capacity Utilization
Bo Tan (Qualcomm Research, USA), Jubin Jose (Qualcomm Research, USA), Xinzhou Wu (Qualcomm, USA), Lei Ying (Arizona State University, USA) ................................................................. 549


Game theoretic tools for wireless communications

Pricing for Distributed Resource Allocation in MAC Without SIC Under QoS Requirements with Malicious Users
Fei Shen (Dresden University of Technology, Germany), Eduard Jorswieck (TU Dresden, Germany), Anil Kumar Chorppath (Technical University of Munich, Germany), Holger Boche (Technical University Munich, Germany) ................................................................. 557
Distributed Energy-Efficient Power Optimization for Relay-Aided Heterogeneous Networks
Ivan Stupia (Université Catholique de Louvain, Belgium), Luca Sanguinetti (University of Pisa, Italy), Giacomo Bacci (University of Pisa & Wireless Systems Engineering and Research (Wiser) Srl, Italy), Luc Vandendorpe (University of Louvain, Belgium) ......................................................... 563

Many-to-Many Matching Games for Proactive Social-Caching in Wireless Small Cell Networks
Kenza Hamidouche (Supelec, France), Walid Saad (Virginia Tech, USA), Mériouane Debbah (Supelec, France) ........................................................................................................... 569

Applications of Stationary Anonymous Sequential Games to Multiple Access Control in Wireless Communications
Eitan Altman (INRIA, France), Piotr Wiecek (Wroclaw University of Technology, Poland) ............ 575

Implicit Coordination in Two-Agent Team Problems; Application to Distributed Power Allocation
Benjamin Larrousse (University Paris 11, France), Achal Agrawal (University Paris 11, France), Samson E Lasaulce (CNRS - Supelec, France) ................................................................. 579

PHYSCOMNET 2014: Workshop on Physics-Inspired Paradigms in Wireless Communications and Networks 2014

Invited Paper Session 1

Interference Alignment Using Variational Mean Field Annealing
Mihai Alin Badiu (Aalborg University, Denmark), Maxime Guillaud (Vienna University of Technology, Austria), Bernard Henri Fleury (Aalborg University, Denmark) .................................................. 585

Invited Paper Session 2

Statistical Mechanics Approach for the Detection of Interfering Sources
Aris Moustakas (University of Athens, Greece), Spyridon C Evangelatos (University of Athens, Greece) ................................................................. 591

Asymptotic Bounds on the Optimum Multiuser Efficiency of Randomly Spread CDMA
Mohammad Ali Sedaghat (Norwegian University of Science and Technology, Norway), Ralf R. Müller (University of Erlangen-Nuremberg, Germany), Farokh Marvasti (Sharif university of Technology, Iran) ................................................................. 599

Physical Limits of Point-To-Point Communication Systems
Bhanukiran Perabathini (Supelec & Alcatel Lucent Bell labs France, France), Vineeth S Varma (Supelec & ORANGE LABS, France), Mériouane Debbah (Supelec, France), Marios Kountouris (Supélec, France), Alberto Conte (Alcatel-Lucent & Bell Labs France, France) ................................................................. 604

SpaSWiN 2014: 10th International Workshop on Spatial Stochastic Models for Wireless Networks 2014

Session 1

How User Throughput Depends on the Traffic Demand in Large Cellular Networks
Bartlomiej Błaszczyszyn (Inria-Ens, France), Miodrag Jovanovic (Orange Labs, France), Mohamed Kadhem Karray (Orange Labs, France) ................................................................. 611

Percolation on the Information Theoretic Secure SINR Graph: Upper and Lower Bounds
Rahul Vaze (TIFR Mumbai, India), Srikanth Iyer (IISC, India) ................................................................. 620
Connectivity in Dense Networks Confined Within Right Prisms
Justin P Coon (University of Oxford, United Kingdom), Orestis Georgiou (Toshiba Telecommunications Research Laboratory, United Kingdom), Carl Dettmann (University of Bristol, United Kingdom) ................................................................. 628

PHYSCOMNET 2014: Workshop on Physics-Inspired Paradigms in Wireless Communications and Networks 2014

Regular Paper Session 1

Energy-efficiency in Decentralized Wireless Networks: A Game-theoretic Approach Inspired by Evolutionary Biology
Andrej Gajduk (Macedonian Academy of Sciences and Arts, Macedonia, the former Yugoslav Republic of), Zoran Utkovski (Macedonian Academy of Sciences and Arts, Macedonia, the former Yugoslav Republic of), Lasko Basnarkov (MANU, Macedonia, the former Yugoslav Republic of), Ljupco Kocarev (University of California San Diego, USA) ................................................................. 636

Wireless Network Characterization Via Phase Diagrams
Maria Michalopoulou (RWTH Aachen University, Germany), Petri Mähönen (RWTH Aachen University, Germany) ........................................................................................................................................................................ 644

Energy Efficient Multiuser Scheduling: Statistical Guarantees on Bursty Packet Loss
Majid Butt (Qatar University, Qatar), Eduard Jorswieck (TU Dresden, Germany), Amr Mohamed (Qatar University & Qatar University Wireless Innovations Center, Qatar) ......................... 649

WiVid’14: Second International Workshop on modeling, measurements and optimization of video performance over wireless networks 2014

WiVid main session

SSIM-based Video Admission Control and Resource Allocation Algorithms
Marco Zanforlin (University of Padova, Italy), Daniele Munaretto (University of Padova, Italy), Andrea Zanella (University of Padova, Italy), Michele Zorzi (Università degli Studi di Padova, Italy) ........................................................................................................................................................................................................................................... 656

Practical Implementation of Mobile TV Delivery in Cooperative LTE/DVB Networks
Amal Abdel Razac (Universite Pierre et Marie Curie, France), Salah Eddine Elayoubi (Orange Labs & IRT SystemX, France), Tijani Chahed (Telecom SudParis, France), Bachar A. ElHassan (Lebanese University, Faculty of Engineering, Branch1 & order of Engineers and Architects - Tripoli, Lebanon) ........................................................................................................................................................................................................................................... 662


Cooperation in wireless networks

Energy Efficiency Analysis of Relay-Assisted Cellular Networks Using Stochastic Geometry
Huan Yu (Tsinghua University, P.R. China), Yunzhou Li (Tsinghua University, P.R. China), Marios Kountouris (Supélec, France), Xibin Xu (Tsinghua University, P.R. China), Jing Wang (EE. Tsinghua University, P.R. China) ........................................................................................................................................................................... 667
On the Benefits of Random FDMA Schemes in Ultra Narrow Band Networks
Minh-Tien Do (Centre of Innovation in Telecoms and Integration Service, INSA Lyon & SIGFOX, France), Claire Goursaud (INSA-Lyon, France), Jean-Marie Gorce (INSA-Lyon, France) .......................................................... 672

Analytic Quantification of Outage Probability and Radiated Power of Cooperative Base Stations
Matthias Herlich (University of Paderborn, Germany), Holger Karl (University of Paderborn, Germany) .......................................................... 678

SpaSWiN 2014: 10th International Workshop on Spatial Stochastic Models for Wireless Networks 2014

Session 2

Homology Based Algorithm for Disaster Recovery in Wireless Networks
Anaïs Vergne (TELECOM ParisTech, France), Ian Flint (Nanyang Technological University, Singapore), Laurent Decreusefond (Telecom ParisTech & CNRS LTCI, France), Philippe Martins (Telecom ParisTech, France) .......................................................... 685

Padé Approximation for Coverage Probability in Cellular Networks
Naoto Miyoshi (Tokyo Institute of Technology, Japan), Nagamatsu Hitoshi (Tokyo Institute of Technology, Japan), Tomoyuki Shirai (Kyushu University, Japan) .......................................................... 693

PHYSCOMNET 2014: Workshop on Physics-Inspired Paradigms in Wireless Communications and Networks 2014

Regular Paper Session 2

Degrees of Freedom Per Communication Node
Mohammad Khojastepour (NEC Laboratories America, USA), Karthikeyan Sundaresan (NEC Labs America, USA), Mohammad Farajzadeh-Tehrani (Simons Center for Geometry and Physics, Stony Brook University, USA), Sampath Rangarajan (NEC Labs America, USA) ....................... 701

Sequential Decoders for Large MIMO Systems
Konpal Ali (King Abdullah University of Science and Technology, Saudi Arabia), Walid Abediseid (King Abdullah University of Science and Technology (KAUST), Saudi Arabia), Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia) ........................................................................... 709

SpaSWiN 2014: 10th International Workshop on Spatial Stochastic Models for Wireless Networks 2014

Session 3

Downlink Analysis for a Heterogeneous Cellular Network
Prasanna Madhusudhanan (University of Colorado at Boulder, USA), Juan Restrepo (University of Colorado at Boulder, USA), Youjian (Eugene) Eugene Liu (University of Colorado at Boulder, USA), Timothy X Brown (University of Colorado, USA) ........................................... 717