# TABLE OF CONTENTS

## 1B: RADIO RESOURCE MANAGEMENT

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investigation on CQI Definition for CoMP in LTE-Advanced Downlink</td>
<td>1</td>
</tr>
<tr>
<td>Jing Wang, Xiang Yun, Satoshi Nagata, Lan Chen</td>
<td></td>
</tr>
<tr>
<td>Joint Scheduling for COMP and eICIC in Heterogeneous Network Deployments</td>
<td>6</td>
</tr>
<tr>
<td>Eugene Visotsky, Bishwarup Mondal, Timothy A. Thomas, Nitin Mangalvedhe, Amitava Ghosh, Xiaoyi Wang</td>
<td></td>
</tr>
<tr>
<td>Scheduling Algorithm for Coordinated Beamforming in Heterogeneous Macro / Pico LTE-Advanced Networks</td>
<td>11</td>
</tr>
<tr>
<td>Jakob Belschner, Daniel De Abreu, Joachim Habermann, Veselin Rakocvic</td>
<td></td>
</tr>
<tr>
<td>SLNR-Based User Scheduling for MISO Downlink Cellular Systems</td>
<td>16</td>
</tr>
<tr>
<td>Minki Ahn, Kilbom Lee, Kwangwon Lee, Inkyu Lee</td>
<td></td>
</tr>
<tr>
<td>The Impact of Combined Physical Layer Cooperation and Scheduling for the Downlink of LTE-Advanced Networks</td>
<td>21</td>
</tr>
<tr>
<td>Michael Kuhn, Tatiana Sarmiento, Marc Kuhn, Raphael Rohny</td>
<td></td>
</tr>
</tbody>
</table>

## 1C: RESOURCE MANAGEMENT

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Novel Pattern Prediction and Bandwidth Management Scheme in Wireless Networks with Mobile Hosts</td>
<td>26</td>
</tr>
<tr>
<td>Mauro Tropea, Salvatore Marano</td>
<td></td>
</tr>
<tr>
<td>An Efficient Resource Reservation for Domain Based Mobile IP Networks: Analytical Approach</td>
<td>31</td>
</tr>
<tr>
<td>Esmat Mirzamany, Aboubaker Lasebae, Orhan Gemikonakli</td>
<td></td>
</tr>
<tr>
<td>Distributed Subchannel and Power Allocation for OFDMA-Based Femtocell Networks</td>
<td>37</td>
</tr>
<tr>
<td>Day T. Ngo, Suman Khakurel, Tho Le-Ngoc</td>
<td></td>
</tr>
<tr>
<td>Dynamic Load Allocation for Multi-Homing via Coded Packets</td>
<td>42</td>
</tr>
<tr>
<td>Carlos Pereira, Ana Aguiar, Daniel E. Lucani</td>
<td></td>
</tr>
<tr>
<td>Radio Resource Management in a Coordinated Cellular Distributed Antenna System by Using Particle Swarm Optimization</td>
<td>47</td>
</tr>
<tr>
<td>Omer Haliloglu, Cenk Toker, Gurhan Bula, Halim Yanikomeroglu</td>
<td></td>
</tr>
</tbody>
</table>

## 1D: PERFORMANCE ANALYSIS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay Performance Analysis of LTE in Various Traffic Patterns and Radio Propagation Environments</td>
<td>52</td>
</tr>
<tr>
<td>Yasuhiro Nagai, Liang Zhang, Takao Okamawari, Teruya Fujii</td>
<td></td>
</tr>
<tr>
<td>Delay Reduction in Persistent Erasure Channels for Generalized Instantly Decodable Network Coding</td>
<td>57</td>
</tr>
<tr>
<td>Sameh Sorour, Neda Aboutorab, Parastoo Sadeghi, Mohammad S. Karim, Tareq Y. Al-Naffouri, Mohamed-Slim Alouini</td>
<td></td>
</tr>
<tr>
<td>On Ergodic Capacity of Wireless Transmission Subject to Poisson Distributed Interferers over Rayleigh Fading Channels</td>
<td>62</td>
</tr>
<tr>
<td>Lei Zhang, Hong-Chuan Yang, Mazen O. Hasna</td>
<td></td>
</tr>
<tr>
<td>Performance Analysis of OFDMA and SC-FDMA Multiple Access Techniques for Next Generation Wireless Communications</td>
<td>68</td>
</tr>
<tr>
<td>Min Hua, Bingying Ren, Mao Wang, Jun Zou, Chunliang Yang, Tingting Liu</td>
<td></td>
</tr>
<tr>
<td>Performance Evaluation of Reference Signal Received Power Strength Based Idle Users' Cell Selection in 3GPP LTE</td>
<td>72</td>
</tr>
<tr>
<td>Cen Qian, Wenzhong Zhang, Wuyang Zhou</td>
<td></td>
</tr>
</tbody>
</table>
**1E: OFDM**

Digital Baseband IC Design of OFDM PHY for a 60GHz Proximity Communication System .......................... 77
Koichiro Ban, Seiichiro Horikawa, Kentaro Taniguchi, Tsuyoshi Kogawa, Hideo Kasami

Eavesdropping-Resilient OFDM System Using CSI-Based Dynamic Subcarrier Allocation .......................... 82
Hao Li, Xianbin Wang, Yanglong Zou, Weikun Hou

Joint Iterative Receiver Design and Multi-Segmental Channel Estimation for OFDM Systems over Rapidly Time-Varying Channels ............................................................. 87
Li Li, Alister G. Burr, Rodrigo C. De Lamare

Optimum Asymptotic Performance for Nonlinearly Amplified OFDM Signals ........................................ 92
João Guerreiro, Rui Dinis, Paulo Carvalho

Secure Transmission in OFDM Systems by Using Time Domain Scrambling ........................................... 97
Hao Li, Xianbin Wang, Weikun Hou

**1F: MASSIVE MIMO**

An EXIT Chart Analysis for Belief-Propagation Based Detection in a Large-Scale MIMO System ................. 102
Takashi Abiko, Wataru Fukuda, Toshihiko Nishimura, Takeo Ohgane, Yasutaka Ogawa, Yusuke Ohwatari, Yoshiiisa Kishiyama

Asymptotic Distribution of System Capacity in Multiuser MIMO Systems with Large Number of Antennas ............................................................. 107
Minchae Jung, Taehyoung Kim, Kyungsik Min, Younsun Kim, Juho Lee, Sooyong Choi

Codebook Design for Uniform Rectangular Arrays of Massive Antennas ............................................... 112
Jingyu Li, Xin Su, Jie Zeng, Yufei Zhao, Shichao Yu, Limin Xiao, Xibin Xu

Low-Complexity Detection Based on Belief Propagation in a Massive MIMO System .............................. 117
Wataru Fukuda, Takashi Abiko, Toshihiko Nishimura, Takeo Ohgane, Yasutaka Ogawa, Yusuke Ohwatari, Yoshiiisa Kishiyama

Subspace-Based Semi-Blind Channel Estimation for Large-Scale Multi-Cell Multiuser MIMO Systems ............................................................. 122
Anzhong Hu, Tiejun Ly, Yueming Lu

**1G: OPTIMIZATION & CAPACITY**

Multi-Objective Portfolio Optimization for Spectrum Selection in Cognitive Radio Systems ..................... 127
Ramiro Samano-Robles, Atílio Gameiro

Optimal Distributed Beamforming for Cooperative Cognitive Radio Networks ...................................... 132
Ardalan Alizadeh, Hamid Reza Bahrami

Performance Evaluation of Energy Detection for Correlated Random Signals ........................................ 137
Rajesh K. Sharma, Anastasia Lavrenko, Reiner S. Thomä

Transmission Capacity of D2D Communication under Heterogeneous Networks with Multi-Bands .......... 142
Ziyang Liu, Tao Peng, Hao Chen, Wenbo Wang

Using Echo State Networks to Characterise Wireless Channels .......................................................... 148
Alan Anderson, Harald Haas

**1H: MOBILITY MANAGEMENT**

A Novel Handover Prediction Scheme in Content Centric Networking Using Nonlinear Autoregressive Exogenous Model ............................................................. 153
Yunqi Luo, Phuong Nga Tran, Chunlei An, Jonas Eymann, Lothar Kreft, Andreas Timm-Giel

Comparative Cost Analysis on Global Mobility Management Schemes in IPv6 Mobile Networks .............. 158
Hassan Ali-Ahmad, Xavier Logrange, Meryem Ouazzif, Philippe Bertin

Selection of Amplify-and-Forward Mobile Relay under Cascaded Rayleigh Fading ............................. 164
Kanghee Lee, Hyuck M. Kwon, Edwin M. Sawan, Yeonggyu Shim, Hyunsand Park, Yong H. Lee

UAV-Based Connectivity Maintenance for Borderline Detection .......................................................... 169
Daniel Behnke, Patrick-Benjamin Bök, Christian Wiegfeld
11: SATELLITE TRANSMISSION AND CODING

An Efficient Data Transfer Method for Distributed Storage System over Satellite Networks ................................................................. 175
Katsuya Suto, Pana Avakul, Hiroki Nishiyama, Nei Kato

Analysis of a State Based Approach for Adaptive Coding and Modulation in Mobile Satellite Environments .................................................................................................................................................................................. 180
Daniele Tarchi, Giovanni E. Corazza, Alessandro Vanelli-Coralli

Multi-User Detection in Multibeam Mobile Satellite Systems: A Fair Performance Evaluation ................................................................. 185
Dimitrios Christopoulos, Symeon Chatzinotas, Jens Krause, Björn Ottersten

Satcom on the Move (SOTM) Terminals Evaluation under Realistic Conditions .......................................................................................... 190
Mostafa Alazab, Giovanni Del Galdo, Wolfgang Felber, Albert Heuberger, Mario Lorenz, Florian Raschke, Gregor Siegert, Markus Landmann

Trade-Off between Spectrum Efficiency and Link Unavailability for Hierarchical Modulation in DVB-S2 Systems ................................................................................................................................. 195
Hugo Méric, Jérôme Lacan, Caroline Amiot-Bazile, Fabrice Arnaud, Marie-Laure Boucheret

1P: COOPERATIVE COMMUNICATION, DISTRIBUTED MIMO AND RELAYING POSTERS

A Cooperative Moving Relay Node System Deployment in a High Speed Train ................................................................................................................. 200
Simon Scott, Jouko Leinonen, Pekka Pirinen, Jaakko Vihriälä, Vinh Van Phan, Matti Latva-Aho

Coded Bit Modulation for UWB Impulse Radio ........................................................................................................................................................................... 205
Arash Maskooki, Cheong Boon Soh, Erry Gunawan, Kay Soon Low

Cooperative Uplink Link Adaptation in 3GPP LTE Heterogeneous Networks ........................................................................................................... 210
Qiang Li, Yuchun Wu, Shulan Feng, Philipp Zhang, Yongxing Zhou

Cooperation Spectrum Trading in Cognitive Radio Networks ................................................................................................................................. 215
Liu Cui, Taihe Znati

Cross-Tier Interference Coordination for Heterogeneous Network in MF-HSDPA System ............................................................................................... 220
Chi Zhang, Yongwu Chang, Ke Wang, Dacheng Yang

Influence of CSI Estimation Error and Feedback Delay on Throughput of Layered Partially Non-Orthogonal Block Diagonalization with Adaptive Interference Admission Control for BS Cooperative MU-MIMO ................................................................................................................ 225
Yusuke Oshima, Kenichi Higuchi

Interference Suppression for Railway Radio-over-Fiber Communication Systems .................................................................................................................. 230
Hsien-Wen Chang, Ming-Chien Tseng, Ming-Hung Cheng

Minimization of Expected Distortion with Layer-Selective Relaying of Two-Layer Superposition Coding ........................................................................................................................................................................ 235
Jinsoo Wang, Yun Hee Kim, Pamela C. Cosman, Laurence B. Milstein

Superposed CDMA Relay Cooperation in Wireless Sensor Networks ........................................................................................................... 240
Yizhi Yin, Karine Amis, Ramesh Pyndiah

2B: MIMO RELAYING

Joint Partial Relay Selection, Power Allocation and Cooperative Maximum Likelihood Detection for MIMO Relay Systems with Limited Feedback .................................................................................................................. 245
Thomas Hesketh, Rodrigo C. De Lamare, Stephen Wales

MMSE Based Transceiver Design for MIMO Relay Systems with Mean and Covariance Feedback .................................................................................................................. 250
Lenin Gopal, Yue Rong, Zhuquan Zang

MMSE-Based Precoder Design in Nonregenerative Relay Systems with Direct Link ................................................................................................. 255
Chien-Hsien Wu, Wei-Ho Chung, Chiao-En Chen

Pairwise MSE Balancing Transceiver Designs for Multipoint-to-Multipoint MIMO AF Relay Systems ........................................................................................................ 260
Hyun-Joo Choi, Changick Song, Haewook Park, Minki Ahn, Inkyu Lee

Weighted Sum Rate Maximization for Multi-User Multi-Relay MIMO Systems with Direct Links ............................................................................... 265
Hyun-Joo Choi, Kyoung-Jae Lee, Changick Song, Heejin Kim, Inkyu Lee
2C: RESOURCE ALLOCATION

Downlink Spectrum Allocation for Macro-Femto Networks ................................................................. 270
Fengming Cao, Mahesh Sooriyabandara, Zhong Fan
Effective Resource Allocation Scheme in Macroc/Lemotec OFDMA Uplink Networks ................. 275
Wenting Jiang, Yuehong Gao, Guangde Wang, Dacheng Yang
Adnan Ali, A. Hamid Aghvami
Qing Xu, Hakim Mabed, Frédéric Lassabe, Alexandre Caminada
Utility-Optimal Partial Spectrum Leasing for Future Wireless Services ........................................... 290
Sang Yeob Jung, Seung Min Yu, Seong-Lyun Kim

2D: POWER AND RATE CONTROL

An Innovative Rate Adaptation Algorithm for Multimedia Multicast in Wireless LANs ......................... 295
Stefano Paris, Nicolò Facchi, Francesco Gringoli, Antonio Capone
Analysis of Uplink Power Control in Cellular Mobile Systems ........................................................... 300
Udesh Oruthota, Olav Tirkkonen, Prathapasinghe Dharmawansa
Distributed Downlink Power Self-Optimization for Two-Tier OFDMA-Based Femtocell Networks .... 305
Xidong Wang, Wei Zheng, Wei Li, Jingfang Liu, Xiangming Wen
Flow Control for Multiflow in HSPA+ ........................................................................................................ 310
Ali Yaver, Thomas Höhne, Jani Mollanen, Vesa Hytönen
Simultaneous Polling Mechanism with Uplink Power Control for Low Power Sensor Nodes .......... 315
Taejoon Kim, Sayantan Choudhury, Klaus Doppler, Mikael Skoglund

2E: SPECIAL SESSION: LOCATION AIDED COMMUNICATIONS

A Novel Adaptive Hybrid-ARQ Protocol for Machine-to-Machine Communications ............................ 321
Chuyi Qian, Hong Chen, Yi Ma, Rahim Tafazolli
Channel Prediction for B4G Radio Systems ............................................................................................ 326
Wolfgang Zirwas, Martin Haardt
Exploiting Position Information for Synchronization in Coordinated Multipoint Transmission ......... 331
Armin Dammann, Ronald Raulefs
Degrees of Freedom of Downlink Single- and Multi-Cell Multi-User MIMO Systems with Location Based CSIT ................................................................................................................................. 336
Waël Guibene, Dirk Slock
Optimized Policies for Improving Fairness of Location-Based Relay Selection .................................... 341
Jimmy Jessen Nielsen, Rasmus L. Olsen, Tatiana K. Madsen, Hans-Peter Schwefel

2F: LIMITED FEEDBACK

A Channel Quantization Scheme Based on the Karhunen-Loève Transform ........................................ 346
Fernando Domene, Gema Piñero
Adaptive Feedback Compression for Joint Transmission Coordinated Multi-Point .............................. 351
Lars Schuz, Konstantinos Manolakis, Volker Jungnickel
Stream Maximization Transmission for MIMO Systems with Limited Feedback Unitary Precoding .... 357
Peng Cheng, Zhuo Chen, Chen Qiu, Lin Gui, Y. Jay Guo, Yun Rui
Transceiver Designs Using Non-Linear Precoding for Multiuser MIMO Systems with Limited Feedback ........................................................................................................................................................................ 362
Yanzhi Sun, Miqing Wu, Min Zhao, Chunxiu Xu
Zero-Forcing Precoding with Partially Outdated CSI over Time-Varying MIMO Broadcast Channels .... 367
Manije Bashar, Mohsen Eslami, Mohammad Javad Dehghani
2G: CHANNEL MODEL FOR FUTURE MOBILE RADIO

3D Extension of the 3GPP/ITU Channel Model ................................................................. 372
Timothy A. Thomas, Frederick W. Vook, Evangelos Mellios, Geoffrey S. Hilton, Andrew R. Nix, Eugene Visotsky

Impact of Antenna Tilting on Propagation Shadowing Model ........................................ 377
Dereje W. Kifle, Bernhard Wegmann, Ingo Viering, Anja Klein

Measurement-Based Evaluation of Link Budget Gain from 3GPP LTE Uplink Transmit Antenna
Selection .............................................................................................................................. 382
J. Salo, K. Haneda, V.-M. Kolmonen, A. A. H. Azremi, P. Vattulainen

Performance Measurement Results Obtained in a Heterogeneous LTE Field Trial Network ................................................................. 387
Jürgen Beyer, Jakob Belschner, Jieyan Chen, Ole Klein, Robert Linz, Jürgen Müller, Yanlei Xiang, Xinyu Zhao

Validation of Antenna Modeling Methodology in IMT-Advanced Channel Model ................................................................. 392
Chun Pan, Jianhua Zhang, Feng Pei

2H: ESTIMATION, DETECTION AND DATA AGGREGATION

Distributed Detection in a Wireless Sensor Network Using Hybrid MAC ................................................................. 397
Ju-Chieh Liu, Po-Heng Chou, Char-Dir Chung

Linear Precoding for Distributed Estimation of Correlated Sources in WSN MIMO System ................................................................. 402
Ajib S. Arifin And Tomoaki Ohtsuki

Performance of Low-Cost LTE Devices for Advanced Metering Infrastructure ................................................................. 407
Rapeepat Ratasuk, Sassan Iraji, Klaus Hugl, Lilei Wang, Amitava Ghosh

PSG-DPF: Distributed Particle Filter Using Pairwise Selective Gossiping for Wireless Sensor Network ................................................................. 412
Yubin Zhao, Yuan Yang, Marcel Kyas

Traffic Aggregation Techniques for Environmental Monitoring in M2M Capillary Networks ................................................................. 417
Javier Matamoros, Carles Antón-Haro

2P: COGNITIVE RADIO AND SPECTRUM SENSING

An FPGA Software Defined Radio Platform with a High-Level Synthesis Design Flow ................................................................. 422
Vaibhav Bhatnagar, Ganda Stephane Ouedraogo, Matthieu Gautier, Arnaud Carer, Olivier Sentieys

Hopping-Based Channel Access in Cognitive Radio Systems ................................................................. 427
Gongzheng Zhang, Aiping Huang, Jian Wang, Hangqiang Shan, Tony Q. S. Quek

Non-Asymptotic Analysis of Scaled Largest Eigenvalue Based Spectrum Sensing ................................................................. 432
Lu Wei

Opportunistic Spectrum Access for Cognitive Amplify-and-Forward Relay Networks ................................................................. 437
Thi My Chinh Chu, Hoc Phan, Hans-Jürgen Zepernick

Optimal Power and Density Allocation of D2D Communication under Heterogeneous Networks on Multi-Bands with Outage Constraints ................................................................. 442
Hao Chen, Ziyang Liu, Tao Peng, Wenbo Wang

Secondary Transmitter Design with Imperfect Channel State Information for Cognitive Radio Downlink ................................................................. 448
Jungho Myung, Joonhyuk Kang, Saleh Al-Araji

Sensing-Throughput Tradeoff of Relay-Assisted Random Broadcast Based Cognitive Radio Networks ................................................................. 453
Zhijie Wu, Qi Zhao

Signal Detection Using Watermark Insertion ................................................................. 458
Matthieu Gautier, Dominique Noguet

Transmission Capacity of Cognitive Radio Networks with Interference Avoidance ................................................................. 463
Yuchen Guo, Yingchun Ma, Kai Niu, Jianu Lin

Verification of TVWS Coexistence System Based on P802.19.1 Draft Standard ................................................................. 468
Tuncer Baykas, Stanislav Filin, Hiroshi Harada

3B: HETEROGENEOUS NETWROKS

A Novel Dynamic Interference Coordination Scheme in Macrocell-Picocell Heterogeneous Networks ................................................................. 473
Mengxian Zeng, Xiaohang Chen, Xin Zhang, Lin Sang, Daicheng Yang
Adaptive Mode Switching Based on Statistical CSI for Downlink MIMO in Heterogeneous Network with RRH Deployment
Yongyu Dai, Shi Jin, Leyuan Pan, Xiqi Gao, Lei Jiang, Ming Lei

An Inter-Cell Interference Cancellation for Downlink Layer-1/Layer-2 Control Channels in LTE/LTE-Advanced Heterogeneous Networks
Masayuki Miyashita, Manabu Mikami, Hitoshi Yoshino

Cluster-Based Dynamic DL/UL Reconfiguration Method in Centralized RAN TDD with Dense Deployment of Remote Radio Units
Dalin Zhu, Ming Lei

Throughput Estimation Method for Time-Domain Inter-Cell Interference Coordination in LTE-Advanced
Hitoshi Ishida, Kenzaburo Fujishima, Katsuhiko Tsunehara, Yunjuan Jia

3C: SCHEDULING
A Coordinated Multipoint Scheduler for Packet Loss Reduction
Malcolm Egan, Phee Lep Yeoh, Maged Elkashlan, Iain B. Collings

A Two-Step Scheduler for Dynamically Sharing Wireless Channel Resources among Operators
Osman Aydin, Wahid Jamil, Stefan Valent

A Utility-Based Adaptive Resource Scheduling Scheme for Multiple Services in Downlink Multiuser MIMO-OFDMA Systems
Lidong Zhang, Pengfei Lu, Zhongyuan Yu, Huawei Cao, Chao Sun, Chengjie Wu

Low Complexity Scheduling Algorithm for the Downlink of Distributed Antenna Systems
Eduardo Catarieu, Ramiro Samano-Robles, Atilio Gameiro

3D: SPECIAL SESSION: GREEN COMMUNICATIONS
Cooperative Short Range Routing for Energy Savings in Multi-Interface Wireless Networks
Riccardo Fedrizzi, Tinku Rasheed

Energy Consumption of 4G Cellular Networks: A London Case Study
Weisi Guo, Syi Wang, Tim O’Farrell, Simon Fletcher

Energy Efficient Cooperation in Wireless Networks Based on Network Coding
Hong Li, Henrik Lundqvist, Tao Wu, Georgios P. Koudouridis, Peter Legg

Improving Cell Edge Energy Efficiency through CoMP Beam-Forming
Mythri Hunukumbure, Sanil Vadgama

3E: DETECTION AND ESTIMATION
A Sphere-Packing Exponent Approximation
Fulvio Babich

A Stable Expected Complexity Sphere Detection with IRA Enhancement
Xiaolong Guo, Songlin Sun, Xiaojuan Jing, Hai Huang

Compressed Sensing Bayes Risk Minimization for Under-Determined Systems via Sphere Detection
Fabian Monsees, Carsten Bockelmann, Dirk Wübben, Armin Dekorsy

Coping with CDMA Asynchronicity in Compressive Sensing Multi-User Detection
Henning F. Schepker, Carsten Bockelmann, Armin Dekorsy

Soft Detection of CPM in Multipath Fading
Tri Pham, Philippa A. Martin, Desmond P. Taylor, Clive Horn

3F: PRECODING
A Balanced SLNR-Based Tomlinson-Harashima Precoder for Downlink MU-MIMO Systems
Chiao-En Chen, Wei-Ho Chang

An Improved Leakage-Based Precoding Scheme for Multi-User MIMO Systems
Bingxing Ren, Mao Wang, Chuangiang Yang, Linjiao Wang, Jun Zou, Tingting Liu, Wenjie Yang

Channel Regularization and Vector Perturbation for Dual-Hop Precoded AF Relaying in Downlink Transmission
M. Kafashan, S. Beygi, M. Maleki, A. Danaee, N. H. Tran, H. R. Bahrani
Experimental Results Between Non-linear and Linear Precoding Using Multiuser MIMO Testbed

Tomoko Matsumoto, Yasuyuki Hatakawa, Koichiro Kitagawa, Satoshi Konishi

578

Robust Multi-Branch Tomlinson-Harashima Source and Relay Precoding Scheme in Nonregenerative MIMO Relay Systems

Lei Zhang, Yunlong Cai, Rodrigo C. De Lamare, Minjian Zhao

583

Robust Multi-Branch Tomlinson-Harashima Source and Relay Precoding Scheme in Nonregenerative MIMO Relay Systems

Lei Zhang, Yunlong Cai, Rodrigo C. De Lamare, Minjian Zhao

588

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

593

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

598

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

603

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

608

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

613

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

618

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

623

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

628

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

633

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

638

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

643

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

648

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

653

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

658

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

663

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

668

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

673

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

678

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

683

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

688

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

693

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

698

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

703

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

708

Deterministic Propagation Modeling for the Realistic High-Speed Railway Environment

Ke Guan, Zhangdui Zhong, Bo Ai, Thomas Kürner

713
4A: COORDINATED MULTIPOINT – JOINT TRANSMISSION I

Enabling Downlink Coordinated Multi-Point Transmission in TDD Heterogeneous Network .................................................. 689
Gang Wang, Ming Lei

Field Experiment of CoMP Joint Transmission over X2 Interface for LTE-Advanced .................................................. 694
Atsushi Nagate, Sho Nabatame, Daigo Ogata, Kenji Hoshino, Teruya Fujii

Field Experiment of Multi-BS Cooperative Transmission Control over X2 Interface for LTE/LTE-Advanced .................................................. 699
Daigo Ogata, Atsushi Nagate, Teruya Fujii

Interference Measurement Scheme for CoMP in LTE-Advanced Downlink .................................................. 704
Satoshi Nagata, Wei Xi, Xiang Yan, Yoshihisa Kishiyama, Lan Chen

Point-Wise Sum Capacity Maximization in LTE-A Coordinated Multi-Point Downlink .................................................. 710
S. Alireza Banani, Zhuo Chen, Iain Collings, Rodney Vaughan

4B: TWO-WAY RELAYING

A Network Coding Approach to Non-Regenerative Multi-Antenna Multi-Group Multi-Way Relaying .................................................. 715
Holger Degenhardt, Anja Klein

Achievable Sum-Rate of Two-Way AF Relay Networks with Relay Adaptation .................................................. 720
Leonardo Jiménez Rodríguez, Nghi H. Tran, Tho Le-Ngoc

Network Coding in the Bidirectional Cross: A Case Study for the System Throughput and Energy .................................................. 725
Gergo Ertli, Achuthan Paramanathan, Stephan Alexander Rein, Daniel E. Lucani, Frank H. P. Fitzek

On Indexing of Lattice-Constellations for Wireless Network Coding with Modulo-Sum Decoding .................................................. 730
Miroslav Hekrdla, Jan Sykora

Physical-Layer Network Coding in Coded OFDM Systems with Multiple-Antenna Relay .................................................. 736
Meng Wu, Dirk Wübben, Armin Dekorsy

4C: CELLULAR ARCHITECTURES

AF Wireless Relay Network Analysis under Receiver Power Constraint .................................................. 741
Kanghee Lee, Hyewon J. Kwon, Hyunggi Kim, Sangku Lee, Yeonggyu Shin, Hyeonseol Park, Yong H. Lee

Field Experiment of Network Control Architecture for CoMP JT in LTE-Advanced over Asynchronous X2 Interface .................................................. 746
Liang Zhang, Yasuhiro Nagai, Takao Okamawari, Teruya Fujii

Hybrid Multi-Radio Transmission Diversity Scheme to Improve Wireless TCP Performance in an Integrated LTE and HSDPA Networks .................................................. 751
Ruiiming Yang, Yongyu Chang, Wei Xu, Dacheng Yang

Performance Evaluation of LTE and Wi-Fi Coexistence in Unlicensed Bands .................................................. 756
André M. Cavalcante, Erika Almeida, Robson D. Vieira, Sayantan Choudhury, Esa Tuomala, Klaas Doppler, Fabiano Chaves, Rafael C. D. Paiva, Fuad Abinader

User Relay Assisted Traffic Shifting in LTE-Advanced Systems .................................................. 762
Lexi Xu, Yue Chen, Kok Keong Chai, Dantong Liu, Shaoshi Yang, John Schormans

4D: ENERGY EFFICIENT COMMUNICATIONS

Downlink Joint Beamforming and Power Control for Energy Efficient Multiuser MISO System .................................................. 768
Shengsen Wang, Chunyan Feng, Caili Guo

Energy-Aware Competitive Power Control in Relay-Assisted Interference Channels with Direct Transmitters-Receivers Link .................................................. 773
Alessio Zappone, Eduard Jorswieck, Stefano Buzzi

Energy-Efficient Resource Allocation for Two-Way Multiple Relay OFDM System .................................................. 778
Yinjun Liu, Qimei Cui, Ting Fu, Jarno Niemela

Source Energy-Saving Performance in Amplify-and-Forward Relay-Assisted Wireless Systems .................................................. 783
Pan Cao, Eduard Jorswieck
4E: CHANNEL MODELING AND ESTIMATION I

Channel Estimation and Feedback in OFDM Systems .......................................................... 788
Xiao-An Wang, Stephen B. Wicker

Impact of Imperfect Channel Estimation on SC-FDE ............................................................. 793
Nuno Souto, Rui Dinis, João Carlos Silva

Pilot Aided 3D Channel Estimation for MIMO-OFDM Systems ........................................ 798
Xiaodan He, Jianhua Zhang, Wei Bao

Subspace Decomposition for Channel Estimation in SC-FDE Systems ............................. 803
Claude D'Amours, Benoît Champagne, Adel Omar Dahmane

4G: VEHICULAR AND MILLIMETER-WAVE ACCESS CHANNELS

28 GHz Angle of Arrival and Angle of Departure Analysis for Outdoor Cellular Communications Using Steerable Beam Antennas in New York City .......................................................... 808
Mathew Samimi, Kevin Wang, Yaniv Azar, George N. Wong, Rimma Mayzus, Hang Zhao, Jocelyn K. Schulz, Shu Sun, Felix Gutierrez, Theodore S. Rappaport

Comparison of Ray Tracing and Channel-Sounder Measurements for Vehicular Communications .......................................................... 814
Jörg Nuckelt, Taimoor Abbas, Fredrik Tufvesson, Christoph Mecklenbräuker, Laura Bernadó, Thomas Kürner

EMI Suppression Techniques for Broadcast Reception in Electric Vehicles .......................... 819
Daniel Sonner, Thomas Müller, Matthias Düll, Robert Weigel

Radar Scattering Design Elements for a Pre-Collision System Surrogate Target ............... 824
W. Buller, B. Wilson, J. Ebling, L. Van Nieuwstadt, R. Sherony, D. Leblanc

The Effect of Human Blockage on the Performance of Millimeter-Wave Access Link for Outdoor Coverage .......................................................... 829
Mohamed Abouelseoud, Gregg Charlton

4H: RANDOM ACCESS AND MEDIUM ACCESS

A Mixed Strategy-Based Mechanism for Multi-Rate Multi-Channel Allocation in Wireless Networks .......................................................... 834
Bo Lv, Muqing Wu, Jingrong Wen, Dongyang Wang

An Optimized Random Access Algorithm for MTC Users over Wireless Networks .................. 839
Jinhong Li, Hui Tian, Lingling Xu, Yao Huang

Full Duplex Media Access Control for Wireless Multi-Hop Networks ................................... 844
Kenta Tamaki, Ari Raptino H., Yasuke Sugiyama, Masaki Bandai, Shunsuke Saruwatari, Takashi Watanabe

Performance of CSMA/CA Multi-Hop Network Considering Intra-Flow Interference under Fading Environment .......................................................... 849
Jingze Dai, Yasushi Yamao

Transmission Power Control for FlashLinQ Device-to-Device Communication System .......... 854
Sueng Jae Bae, Dong Hyoung Kim, Bum-Gon Choi, Min Young Chung

4I: SATELLITE COMMUNICATIONS AND NETWORKING

An Energy-Efficient Strategy to Improve Coverage in a Network of Wireless Mobile Sensors with Nonidentical Sensing Ranges .......................................................... 859
Hamid Mahboubi, Amir G. Aghdam

BGAN Radio Interface Enhancements for SatCom-on-the-Move .......................................... 864
P. Fines, E. Christofyllaki, P. Febvre, A. H. Khan

Measurement-Based Performance Analysis of Cooperative Diversity for Satellite Terminals in a Moving Convoy .......................................................... 869
Jonas König, Alexander Ihlow, Daniel Arndt, Albert Heuberger, Giovanni Del Galdo

Packet Transfer Delay Minimization by Network-Wide Equalization of Unbalanced Traffic Load in Multi-Layered Satellite Networks .......................................................... 874
Yuichi Kawamoto, Hiroki Nishiyama, Nei Kato, Naoko Yoshimura, Naoto Kadokawa

Spatial Reuse for Location-Aided Multi-User Beamforming in 60 GHz WPAN Systems .......... 879
Xiaoyi Zhu, Congzheng Han, Angela Doufexi
### 4P: MULTIPLE ANTENNA SYSTEMS AND SPACE-TIME-FREQUENCY PROCESSING

**POSTERS**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Low Complexity PMI/RI Selection Scheme in LTE-A Systems</td>
<td>884</td>
</tr>
<tr>
<td>Daisuke Ogawa, Chimato Koike, Takashi Seyama, Takashi Dateki</td>
<td></td>
</tr>
<tr>
<td>Adaptive Basis Patterns Computation for Electronically Steerable Passive Array Radiator Antennas</td>
<td>889</td>
</tr>
<tr>
<td>Panagiotis N. Vassileiou, Evangelos D. Thomatos, Konstantinos Malatsos, Athanasios G. Kanatas</td>
<td></td>
</tr>
<tr>
<td>Beamforming Strategies for Energy Efficient Transmission in LTE</td>
<td>894</td>
</tr>
<tr>
<td>Filipe D. Cardoso, Luis M. Correia, Sven Petersson, Mauro Boldi</td>
<td></td>
</tr>
<tr>
<td>Downlink Energy Efficiency Analysis of Some Multiple Antenna Systems</td>
<td>899</td>
</tr>
<tr>
<td>Marcos Tomio Kakitani, Glausber Brante, Richard Demo Souza, Muhammad Ali Imran</td>
<td></td>
</tr>
<tr>
<td>Energy-Efficient MIMO Detection Using Link-Adaptive Parameter Adjustment</td>
<td>904</td>
</tr>
<tr>
<td>Liang Liu</td>
<td></td>
</tr>
<tr>
<td>Multi-Ary EXIT Chart Analysis with Chi-Square Distributed A Priori Information for Concatenation of USTM and Signal-Based Turbo Coding</td>
<td>909</td>
</tr>
<tr>
<td>Da-Peng Zhang, Ju Liu, Heng-Yang Zhang</td>
<td></td>
</tr>
<tr>
<td>On the Performance of Diagonal Lattice Space-Time Codes for the Quasi-Static MIMO Channel</td>
<td>914</td>
</tr>
<tr>
<td>Walid Abediseidei, Mohamed-Slim Alouini</td>
<td></td>
</tr>
<tr>
<td>Recursive Joint Transmit and Receive Antenna Selection in Spatial Multiplexing Systems</td>
<td>919</td>
</tr>
<tr>
<td>Liang Zhou, Yoji Ohashi</td>
<td></td>
</tr>
<tr>
<td>Scheduling Algorithms for MU-MIMO with Partial Current CSIT and Full Delayed CSIT</td>
<td>924</td>
</tr>
<tr>
<td>Ankil Singh Rawat, Ozgun Y. Bursalioglu, Haralabos C. Papadopoulos</td>
<td></td>
</tr>
<tr>
<td>Transmit Antenna Selection in Space Shift Keying Modulation</td>
<td>931</td>
</tr>
<tr>
<td>Enzhi Zhou, Li Hao</td>
<td></td>
</tr>
</tbody>
</table>

### 5A: AF RELAYING

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Novel Channel Estimation Scheme on Amplify-and-Forward Cooperative OFDM-Based Wireless LAN Systems</td>
<td>936</td>
</tr>
<tr>
<td>Hayato Fukuzono, Yusuke Asai, Ritschi Kudo, Masato Mizoguchi</td>
<td></td>
</tr>
<tr>
<td>Amplify-and-Forward Relaying in Nakagami-m Frequency-Selective Fading Channels</td>
<td>941</td>
</tr>
<tr>
<td>Tsan-Ming Wu, Szu-Liang Wang</td>
<td></td>
</tr>
<tr>
<td>An Analytical Approach to the Outage Probability of Amplify-and-Forward Relaying with an MRC Receiver</td>
<td>946</td>
</tr>
<tr>
<td>Mehdi Molu, Norbert Goertz</td>
<td></td>
</tr>
<tr>
<td>Combining of Loop Signals in Frequency Offset Amplify-and-Forward Relay</td>
<td>951</td>
</tr>
<tr>
<td>Naoki Kikuchi, Mamiko Inamori, Yukiyo Sanada</td>
<td></td>
</tr>
<tr>
<td>Outage Performance of Dual-Hop Fixed Gain Amplify-and-Forward Relaying over Nakagami-m Fading with kappa-µ and eta-µ Interference</td>
<td>956</td>
</tr>
<tr>
<td>Zhengwei Ni, Xiaoyi Liu, Xin Zhang, Dacheng Yang</td>
<td></td>
</tr>
</tbody>
</table>

### 5B: COOPERATIVE NETWORKS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Energy Efficient Hierarchical Cooperation Based TDMA MAC Protocol in Ad Hoc Wireless Networks</td>
<td>961</td>
</tr>
<tr>
<td>Seung Hyun Jeon, Kyeong Min Lee, Seonghwa Yun, Jun Kyun Choi</td>
<td></td>
</tr>
<tr>
<td>CORE: COPE with MORE in Wireless Meshed Networks</td>
<td>966</td>
</tr>
<tr>
<td>Jeppe Krigslund, Jonas Hansen, Martin Hundeberl, Daniel E. Lucani, Frank H. P. Fitzek</td>
<td></td>
</tr>
<tr>
<td>Energy Efficient Constellation Size Design for Green Radios in Semi-Blind Relay Networks</td>
<td>972</td>
</tr>
<tr>
<td>Yuning Wang, Jianhua Zhang, Ping Zhang</td>
<td></td>
</tr>
<tr>
<td>On Achievable Rate and Ergodic Capacity of OAF Multi-Relay Networks with CSI</td>
<td>977</td>
</tr>
<tr>
<td>Tuyen X. Tran, Nghii H. Tran, Hamid Reza Bahrami, Hang Dinh, Shivakumar Sastry</td>
<td></td>
</tr>
<tr>
<td>On Network Codes for Multiuser Cooperative Communication in a Line Network</td>
<td>983</td>
</tr>
<tr>
<td>Juliana Camilo Inácio, João Luiz Rebelatto, Bartolomeu F. Uchoa-Filho</td>
<td></td>
</tr>
</tbody>
</table>
5C: POWER SAVING AND RENEWABLE ENERGY

Energy Saving in OFDMA Networks through Base Station Sleep Mode Using Genetic Algorithm ........................................................... 988
Suvra Sekhar Das, Prachi Agrawal, Prabhu Chandhar

Jie Gong, Sheng Zhou, Zhizheng Niu, John S. Thompson

LTE UE Energy Saving by Applying Carrier Aggregation in a HetNet Scenario ................................................................................ 998
Mads Lauridsen, Hua Wang, Preben Mogensen

Polarization Mode Dispersion Tolerant Subcarrier-Power Allocation for Improving the Power Amplifier Energy Efficiency of Joint Polarization-Amplitude-Phase Modulation ............................................................ 1003
Dong Wei, Chunyan Feng, Caili Guo

Renewable Energy Use in Cellular Networks ................................................................................................................................. 1009
Mauro Carreño, Loutfi Nuaymi

5D: LTE

A New Downlink Control Channel Scheme for LTE ............................................................................................................................... 1015
Yu-Chun Wu, Yong-Ping Zhang, Shulan Feng, Philipp Zhang

Cross-Subframe Co-Channel Interference Mitigation Scheme for LTE-Advanced Dynamic TDD System .................................................... 1021
Lei Jiang, Ming Lei, Jun Du

Field Experiments on 1-Gbps Data Transmission Using 4-by-2 Multi-User MIMO with Cross-Polarized Linear Antenna Array in LTE-Advanced Downlink ......................................................................................... 1026
Keisuke Saito, Yuki Inoue, Teruo Kawamura, Hidehiro Andoh

Interference Cancellation for HetNet Deployment in 3GPP LTE-Advanced Rel-11 .................................................................................. 1031
Baojin Li, Jiangfeng Ji, Xin Wang

Suppression of Cyclic Prefix in Down-Link LTE like Systems to Increase Capacity .................................................................................. 1036
Carlos Prieto Del Amo, M. Julia Fernández-Getino García

5E: ERROR CORRECTION CODING

A Reduced-Complexity Successive Cancellation List Decoding of Polar Codes ...................................................................................... 1041
Kai Chen, Kai Niu, Jiaru Lin

Enhanced EMD-Driven PEG Construction for Structured LDPC Codes ................................................................................................. 1046
C. T. Healy, R. C. De Lamare

Iterative Correction of Clipped OFDM Signals with Unknown Clipping Levels ......................................................................................... 1051
Wilson D. Wellisch, Ian A. Ulian, André Noll Barreto

Memory-Optimized Hybrid Decoding Method for Multi-Rate Turbo Codes ............................................................................................. 1056
Injae Yoo, Bongjin Kim, In-Cheol Park

Quasi-Cyclic Doubly Generalized LDPC Codes ................................................................................................................................. 1061
Raffaele Soloperto, Giuliano Garramone, Gianluigi Liva, Oreste Andrisano

5F: MIMO DETECTION

A Modified Successive Interference Cancellation Algorithm for Hybrid Diversity/Spatial Multiplexing MIMO Schemes ................................................................................................................................. 1066
Walter C. Freitas Jr., Carlos I. R. Bandeira, Francisco M. C. Caldas, Wilkinson T. F. Moura

A Reduced-Complexity Blind Detector for MIMO System Using K-Means Clustering Algorithm ................................................................. 1071
Han-Wen Liang, Ronald Y. Chang, Wei-Ho Chang, Sy-Yen Kuo

Adaptive Metric Calculation for Improving Detection Capability of MIMO Detectors ........................................................................... 1076
Byeong Tong Kong, In-Cheol Park

Dual Layer Switch-and-Examine / Selection Diversity Receivers ........................................................................................................... 1081
Sébastien Roy

Low-Complexity Channel Selection and Iterative Detection for Overloaded Uplink Multiuser MIMO OFDM System ......................... 1086
Min Chen, Alister G. Burr
5G: SPECTRUM SHARING IN CRS

Gray-Space Spectrum Sharing between Multiple Rotating Radars and Cellular Network Hotspots ..................... 1091
Rathapon Saruthirathanaworakun, Jon M. Peha, Luis M. Correia

Improved Idle Channel Utilization in Distributed Multi-Channel Cognitive Radio Systems ................................. 1096
Xiaofan Li, Qichu Song, Junfeng Wang, Hongbo Tao, Jianhua Zhang

On the Value of Spectrum Sharing among Operators in Multicell Networks ......................................................... 1102
Rajeev Gangula, David Gesbert, Johannes Lindblom, Erik G. Larsson

Optimum Power Allocation for OFDM Based Cognitive Radio Systems with Arbitrary Input Distributions ................................................................. 1107
Ahmed Sohail, Mohammed Al-Imari, Pei Xiao, Barry G. Evans

Spatial Interweave Opportunistic Spectrum Reuse by Employing Distributed Interference Alignment .................. 1112
Jiancao Hou, Yi Ma, Rahim Tafazolli

5H: DATA RELAYING AND FORWARDING

A Token Scheduled High Throughput Multi-Channel Data Collection Protocol for Wireless Sensor Network ................................................................. 1117
Jinzhi Liu, Makoto Suzuki, Doohwan Lee, Hiroyuki Morikawa

Adverse Wireless Communication Environment Impacts on AF Wireless Relay Networks .................................... 1122
Kanghee Lee, Hyuck M. Kwon, Deawon Kim, Yeonggyu Shim, Hyuncheol Park, Yong H. Lee, Inha Hyun

Morteza Hashemi, Wei Si, Moshe Laijnfeld, David Starobinskas, Ari Trachtenberg

On End-to-End Delay of Multi-Hop Wireless Networks .......................................................................................... 1132
Wangguo Jiao, Min Sheng, Yang Zhang, King-Shan Lui

Two-Way Relay Networks Using Unmanned Aircraft Systems ........................................................................... 1137
Fumie Ono, Hideki Ochiati, Kenichi Takizawa, Mikio Suzuki, Ryu Miura

5I: ITS APPLICATIONS

A Novel Emergency Vehicle Dispatching System .................................................................................................. 1142
Chia-Ying Chen, Po-Yu Chen, Wen-Tsuen Chen

Adaptive Urban Traffic Signal Control System with Bus Priority ........................................................................ 1147
Andy An-Kai Jeng, Rong-Hong Jan, Chien Chen, Tzu-Lin Chang

Evaluating the Feasibility of Using Smartphones for ITS Safety Applications ....................................................... 1152
Sergio M. Tornell, Carlos T. Calafate, Juan-Carlos Cano, Pietro Monzoni, Manuel Figue, Francisco J. Martinez

Implementing Situation Awareness for Car-to-X Applications Using Domain Specific Languages .................. 1157
Jörg Schäfer, David Klein

VANET-Enabled Eco-Friendly Road Characteristics-Aware Routing for Vehicular Traffic ........................................ 1162
Ronan Doolan, Gabriel-Miro Muntean

5P: WIRELESS ACCESS POSTERS

A Pricing Based Algorithm for Cell Switching Off in Green Cellular Networks ....................................................... 1167
Ali Yildiz, Tolga Girici, Halim Yanikomeroglu

Adaptive Device Discovery in Bluetooth Low Energy Networks ........................................................................ 1173
Jia Liu, Canfeng Chen, Yan Ma, Ying Xu

Analyzing IEEE 802.11 DCF for FU-FB Systems under Multipath Fading Channels Using TUA ......................... 1178
Khurram Masood, Muhammad S. Sohail, Asrar U. H. Sheikh

Channel Prediction Based Rate Adaptation Scheme in Wireless USB Networks ................................................... 1183
Changwon Nam, Saewoong Bahk

Dual-Diversity Combining for Constrained Resource Allocation and Throughput Maximization in OFDMA Networks ........................................................................ 1188
Anas F. Al Rawi, Emiliano Garcia-Palacios, Sonia Aissa, Charalampos C. Tsimenidis, Bayan S. Sharif

Ecologically Inspired Load Balancing for LTE SON .................................................................................. 1193
Kumudu S. Munasinghe, Abbas Jamalipour
Opportunistic Energy Aware Scheduler for Wireless Networks ................................................................. 1198
Cédric Gueguen

Search Space Design in Enhanced Physical Downlink Control Channel for LTE-Advanced ................................... 1203
Qin Mu, Liu Liu, Lan Chen, Kazuaki Takeda

Spatio-Temporal Ensemble Prediction on Mobile Broadband Network Data ..................................................... 1208
Saulya Samulevicius, Yoann Pitarch, Torben Bach Pedersen, Troels Bundgaard Sørensen

Game Theory Based Hybrid Access for Macrocell-Edge Users in a Macro-Femto Network ................................ 1213
Yanwei Li, Zhenyu Zhou, Nam Nguyen, Takuro Sato

6A: COORDINATED MULTIPOINT – JOINT DETECTION

Decision-Feedback Multiuser Detection in Multicell Multicarrier DS-CDMA Systems with/without BS Cooperation ................................................................................................................................. 1218
Xiaojie Ju, Youguang Zhang, Lie-Liang Yang

Impact of Channel Estimation Error on LTE-Advanced Uplink Using CoMP Joint Reception in a Heterogeneous Network ................................................................................................................................. 1223
Kazuaki Takeda, Yasuaki Yuda, Masayuki Hoshino, Takashi Iwai, Atsushi Matsumoto, Akihiko Nishio

Joint MIMO Filter-and-Forward Relay and Base Station Post-Processing for Uplink CoMP Reception with Frequency-Selective Channels .................................................................................................................. 1228
Mehrdad Kiamari, Hossein Pilaram, Babak Hossein Khalaj

Multi-stage Channel Estimation Across Multiple Cells in Uplink Joint Reception ................................................ 1233
Thorsten Wild, Le-Hang Nguyen, Stephan Ten Brink

The Distribution of Link Distances in Distributed Multiple-Input Multiple-Output Cellular Systems .......... 1239
Olli Apilo, Mika Lasanen, Sandrine Boumard, Aarne Mämmelä

6B: ARQ IN RELAYING NETWORKS

Distributed Turbo Coding Techniques with HARQ at Relays for LTE-A ................................................................ 1244
Luc Maret, Dimitri Kténas

Efficient ARQ Protocols for a Two-Way Amplify-and-Forward Relaying System .................................................. 1249
Chin-Liang Wang, Ting-Nan Cho, Wen-Chieh Lo, Jyun-Yu Chen

Performance Analysis of Amplify-and-Forward Cooperative Truncated ARQ with Partial Relay Selection ...................................................................................................................................................... 1254
Maymouna Ben Said, Hatem Boujemaa

Performance of HARQ with Reduced Size Retransmissions Using Network Coding Principles .................................. 1259
Matthias Woltering, Dirk Wübben, Armin Dekorsy, Volker Braun, Uwe Doetsch

Power and Rate Optimisation for Multi-Hop Networks and DF with Incremental Redundancy .......................... 1265
Stephan Schedler, Volker Kaehn

6C: ENERGY EFFICIENCY

Distributed Energy-Efficient Inter-Cell Interference Coordination (ICIC) in Multi-Cell HetNets ............................... 1270
Chrysostomantis Kosta, Bernard Hunt, Atta Qudwas, Rahim Tafazolli

Energy Efficient Power and Time Allocation in a Macrocell/Femtocell Network .................................................. 1275
K. B. Shashika Manosha, N. Rajatheva, M. Latva-Aho

Energy Efficient Small-Cell Discovery Using Received Signal Strength Based Radio Maps ................................ 1280
Athul Prasad, Petteri Lundén, Olav Tirkkonen, Carl Wijting

Impact of Hidden Nodes on Wake-Up Signaling Based on Frame Length Modulation for Energy-Efficient WLAN ............................................................................................................................................. 1285
Yuma Asada, Hiroyuki Yomo

Trade-Off between Spectral and Energy Efficiencies in a Fading Communication Link ...................................... 1290
Suman Khakurel, Leila Musavian, Tho Le-Ngoc

6D: SPECIAL SESSION: NON-ORTHOGONAL MODULATION

Analysis of Pilot Decontamination Based on Power Control .................................................................................. 1295
Laura Cottatellucci, Ralf R. Müller, Mikko Vehkaperä
Low Complexity GFDM Receiver Based on Sparse Frequency Domain Processing .................................................. 1300
Ivan Gaspar, Nicola Michailow, Ainoa Navarro, Eckhard Ohlmer, Stefan Krone, Gerhard Fettweis

On the Use of Filter Bank Based Multicarrier Modulation for Professional Mobile Radio ........................................ 1306
Markku Renfors, Faouzi Bader, Leonardo Baltar, Didier Le Rayet, Daniel Roviras, Philippe Mege, Martin Haardt, Tobias Hidalgo Sitz

Peak Behavior and Information Rates for Orthonormal Systems ........................................................................ 1311
Holger Boche, Brendan Farrell

6E: SYNCHRONIZATION

A Message Passing Approach to Joint Channel Estimation and Decoding with Carrier Frequency Offset in Time Selective Rayleigh Fading Channel .............................................................. 1315
Hongjie Zhao, Hua Wang, Nan Wu, Jingming Kuang

A Novel Hierarchical Low Complexity Synchronization Method for OFDM Systems ................................................. 1320
Pramod Udupa, Olivier Sentieys, Pascal Scalart

Design of a Configurable Complex IF Receiver Supporting LTE Carrier Aggregation ........................................... 1325
Leif R. Wilhelmsson, Jim Svensson, Martin Anderson, Staffan Ek, Roland Strandberg, Lars Sundström

Over-The-Air Phase Synchronization Mechanism for LTE Small Cells in Interference-Limited Scenarios ............... 1330
Javier Lorca

Self-Successive Interference Canceller for Uplink OFDMA with Carrier Frequency Offsets ..................................... 1335
Babar Aziz, Inbar Fijalkow, Myriam Ariado

6F: MIMO SYSTEMS

Field Experiments on Antenna Configuration Associated with Fading Correlation for Downlink Multi-User MIMO in LTE-Advanced ................................................................. 1340
Yuki Inoue, Keisuke Saito, Teruo Kawamura, Hidehiro Andoh

IEEE 802.11n: Effects of Feedback Non-Idealities on Performance of Transmit Beamforming Transceivers .............. 1345
Roger Pierre, Fabris Hoefel

LTE-A Field Measurements: 8x8 MIMO and Carrier Aggregation ................................................................. 1350
Karl Werner, Henrik Asplund, Björn Halvarsson, Anton K. Kathrein, Niklas Jaldén, Daniel V. P. Figueiredo

Performance of VoIP in Presence of MIMO Interference in OFDMA (LTE) Networks .......................................... 1355
Priyabrata Parida, Suvarna Sekhar Das, Subhajit Paul

System-Level Assessment of Non-Orthogonal Spectrum Sharing via Transmit Beamforming .......................... 1361
Remco Litjens, Halbin Zhang, Ivo Noppen, Lei Ya, Eleftherios Karipidis, Kai Börner

6G: CR RELAYING

A Cognitive Radio Relay Selection Scheme with Fairness Analyses in Two-Tier Femtocell Networks ..................... 1367
Xiaolong Zhao, Tiejun Lv, Yueming Lu

A Novel Adaptive Mode PAPR Reduction Scheme for NC-OFDM Based Cognitive Radios .................................... 1372
Saadia Tabassum, Sajjad Hussain, Abdul Ghafoor

Cognitive MIMO Relaying in Nakagami-m Fading .............................................................................. 1377
Phoe Lep Yeoh, Maged Elkashlan, Trung Q. Duong, Nan Yang, Cyril Leung

Multi-Pair Cognitive Two-Way Relaying and Power Allocation under Imperfect CSI .......................................... 1382
P. Ubaidulla, Mohamed-Slim Alouini, Sonia Aissa

Serveh Shalmashi, Slimane Ben Slimane

6H: DEVICE APPLICATION & LTE

Community-Based Sequential Paging for LTE-A Cellular Network .......................................................... 1392
Da Yang, Joaquim Bastos, Shahid Muntaz, C. Verikoukis, Jonathan Rodríguez

Investigating Call Drops with Field Measurements on Commercial Mobile Phones ........................................... 1397
Alessandro Messina, Gabriel Caragea, Pol Torres Compta, Frank H. P. Fitzek, Stephan A. Rein
61: ACCESS AND NETWORKING ASPECTS

A Probability Based MAC Channel Congestion Control Mechanism for VANET
Mark Chih-Wei Hsu, Tien-Yuan Heh

Improving Effective Contact Duration in Vehicular Delay-Tolerant Networks
David Chaves-Dieguez, Jorge Munoz-Castañer, Francisco J. Gonzalez-Castañero, Felipe Gil-Castiñeira

Performance of BSM Dissemination in Multi-Channel DSRC
Xiaoyan Yin, Xiaomin Ma, Kishor S. Trivedi

6P: SECURITY, APPLICATION AND NETWORK OPTIMIZATION

An Adaptive Guiding Protocol for Crowd Evacuation Based on Wireless Sensor Networks
Chi-Han Lin, Po-Yu Chen, Wen-Tsuen Chen

An Energy-Efficient and Load-Balancing Cluster-Based Routing Algorithm for CSMA-Based Wireless Sensor Networks
Rwan Ibrahim, Quang-Dung Ho, Tho Le-Ngoc

Assessment of the One-Dimensional Generalized New Mersenne Number Transform for Security Systems
Nick Rutter, Said Boussakta, Alex Bystrov

Caching Proxying for Mobile Users
Patrick Seeling

Low-Power, End-to-End Reliable Collection Using Glossy for Wireless Sensor Networks
Makoto Suzuki, Yosuta Yamashita, Hiroki Mori

Radio-Frequency Tomographic Tracking of a Time-Varying Number of Targets with Wireless Sensor Networks
Hang Liu, Chonghao Liu, Weiping Shu, Aiqiong Men, Yi Zheng

Simple Active Period Selection Scheme for Cluster-Based IEEE 802.15.4 WSNs with Dynamic Network Changes
Kazu Mori, Kazutahiro Naito, Hideo Kobayashi

Utilize Adaptive Spreading Code Length to Increase Energy Efficiency for WSN
Fei Qin, Yongrui Chen, Xuewu Dai

7A: COOPERATIVE BEAMFORMING

Beamforming Design and Relay Selection for Multiple MIMO AF Relay Systems with Limited Feedback
Tao Tao, Andreas Czylwik

Cooperative Beamforming for a Two-Cell System with Limited Feedback
Bo Zhao, Andreas Czylwik

Distributed Receive Beamforming: A Scalable Architecture and Its Proof of Concept
François Quitin, Andrew Irish, Upamanyu Madhow

Linear Beamforming with One-Way Cooperation for MISO Interference Channels
Jayal Lee, Keunyoung Kim, Seong-Chul Cho, Seung-Hwan Lee

Low Complexity Cooperative Multicast Beamforming in Heterogeneous Networks
Guido Dartmann, Xitao Gong, Gerd Ascheid
7B: INTERFERENCE ALIGNMENT

Feasibility Conditions for Relay-Aided Interference Alignment in Partially Connected Networks .......................... 1511
Xiang Li, Hussein Al-Shatri, Rakash Sivasiva Ganesan, Anja Klein, Tobias Weber

Feasibility Study of Interference Alignment Based Two-Cell Coordinated Beamforming in TD-LTE-A System .......................... 1516
Chengming Na, Xiaolin Hou, Atsushi Harada

Multi-User Scheduling and Interference Alignment for Cooperative Multi-Cell Downlink Transmissions .......................... 1522
Huan Sun, Wei Fang

Performance Analysis of OFDMA Based Wireless Cooperative Networks with Interference Management .......................... 1527
Aymen Omri, Mazen O. Hasna

Performance of Joint Antenna and User Selection Schemes for Interference Alignment in MIMO Interference Channels .......................... 1533

7C: QoS AND FAIRNESS

A Master-Slave Channel Selection Scheme to Improve Fairness among Cells in IEEE 802.11 Wireless LANs .......................... 1538
B. A. Hirantha Sithara Abeysekera, Koichi Ishihara, Yasuhiko Inoue, Takeo Ichikawa, Masato Mizoguchi

Dynamic Scheduling with Statistical Delay Guarantees and Traffic Dropping .......................................................... 1543
Khoa T. Phan, Tho Le-Ngoc

Proactive Bandwidth Estimation for IEEE 802.15.4-Based Networks .......................................................... 1548
Muhammad Omer Farooq, Thomas Kunz

Quality of Service Support under DRX Mechanism in LTE Advanced Wireless Networks .......................................................... 1553
Tsern-Huei Lee, Cheng-Jie Tsai, Tzu-Han Wu

7D: HETEROGENEOUS NETWORKS

Addressing 4G Demand: Picos vs. Macros, a Suburban Case Study .......................................................... 1558
Mark Cadak, William J. Hillery, Amitava Ghosh, Zhubo Huang, Benny Vejlgaard

Cross-Layer Optimization for Opportunistic Multi-MAC Aggregation .......................................................... 1563
Tariq Elkourdi, Amith Chincholi, Tan Le, Alpaslan Demir

Joint Power Reduction and Time-Domain Scheduling for Interference Mitigation in Macro-Pico Heterogeneous Networks with Differential Evolution .......................................................... 1568
Rui Han, Chunyan Feng, Hailun Xia, Qi Li, Yu Xu

Radio Resource Management for OFDMA-Based Mobile Relay Enhanced Heterogenous Cellular Networks .......................................................... 1573
Ilhan Basturk, Berna Ozbek, Cagatay Edemen, Ahmet Serdar Tan, Engin Zeydan, Salih Ergut

Throughput Utility Optimization in HetNets .......................................................... 1578
Sem Borst, Stephen Hanly, Phil Whiting

7E: PERFORMANCE ANALYSIS AND MODELS

Lower Bound on Averages of the Product of L Gaussian Q-Functions over Nakagami-m Fading .......................................................... 1583
Hua Fu, Ming-Wei Wu, Pooi-Yuen Kam

On the Sum of Squared eta-µ Random Variates with Application to the Performance of Wireless Communication Systems .......................................................... 1588
Imran Shafique Ansari, Ferkan Yilmaz, Mohamed-Slim Alouini

Outage Probability and Capacity for Two-Tier Femtocell Networks by Approximating Ratio of Rayleigh and Log Normal Random Variables .......................................................... 1594
Sumudu Samarakoon, Nandana Rajatheva, Mehdi Bennis, Matti Latva-Aho
Performance Analysis of Communication Systems over Generalized alpha-lambda-eta-µ Fading Radio Channels ................................................................. 1599
Natalia Y. Ermolova, Olav Tirkkonen

Performance Analysis of the Frequency-Despreading Structure for OFDM/OQAM Systems ......................................................... 1604
Davide Mattera, Mario Tanda, Maurice Bellanger

7F: BEAMFORMING

Cone Codebook for Limited Feedback Beamforming over Correlated MIMO Channels ......................................................... 1609
Yating Wu, Yidong Cui, Fei Ya, Yuanzhe Sun

Opportunistic Beamforming with Precoder Diversity in Multi-User MIMO Systems ......................................................... 1614
Meng Wang, Feng Li, Jamie S. Evans

Optimal Combining of Instantaneous and Statistical CSI in the SIMO Interference Channel ......................................................... 1619
Miltiades C. Filippou, David Gesbert, George A. Ropokis

Outage Constrained Robust Transmit Beamforming for Limited Feedback Multiuser MIMO Downlinks ......................................................... 1624
Yu Zhang, Ming Lei, Zhi Ding, Gang Wang

Practical Multiuser MIMO Beamforming Using the Strongest Eigenmodes ................................................................. 1629
Bruhtesfa Godana, Torbjörn Ekman

7G: SPECTRUM SENSING

A Novel Cross-Correlation Combining Based Spectrum Sensing Approach ................................................................. 1634
Asma Ben Hadj Hmida, Sofiane Cherif, Hichem Beshes

A Novel Wavelet-Based Energy Detection for Compressive Spectrum Sensing ................................................................. 1639
Xiao Han, Wenbo Xu, Kai Niu, Zhiqiang He

Energy-Efficient Partial-Cooperative Spectrum Sensing in Cognitive Radio over Fading Channels ................................................................. 1644
Saud Althunibat, Sandeep Narayanan, Marco Di Renzo, Fabrizio Granelli

Exploiting Spatial Dimension in Spectrum Sensing Using a Sector Antenna: A Ray Tracer Based Analysis ................................................................. 1649
Bilal H. Qureshi, Rajesh K. Sharma, Noman Murtaza, Michael Grimm, Alexander Krah, Matthias A. Hein, Albert Heuberger, Reiner S. Thomä

Factor Graph Based Cooperative Spectrum Sensing in Cognitive Radio over Time-Varying Channels ................................................................. 1654
Debasish Bera, Indrajit Chakrabarti, Priyadip Ray, S. S. Pathak

7H: PERFORMANCE EVALUATION & VANET

ConProVA: A Smart Context Provisioning Middleware for VANET Applications ................................................................. 1659
Fabrício A. Silva, Thais Regina M. B. Silva, Linnery B. Ruiz, Antonio A. F. Loureiro

Markov-History Based Modeling for Realistic Mobility of Vehicles in VANETs ................................................................. 1664
Salim Bitam, Abdelhamid Mellouk

Performance Evaluation and Accuracy Upgrading of PESQ in Chinese Environment ................................................................. 1669
Yitong Liu, Yun Shen, Qianhong Liu, Ran Shi, Hongwen Yang, Dacheng Yang, Lin Sang

Performance Evaluation of ROHC Reliable and Optimistic Mode for Voice over LTE ................................................................. 1674
Andreas Maeder, Arne Felber

VeSense: Energy-Efficient Vehicular Sensing ................................................................. 1679
Jong Hoon Ahhn, Miodrag Potkonjak

7I: POSITIONING AND LOCALIZATION

A Joint Positioning and Communication Paradigm Using Relay Nodes as Anchors ................................................................. 1684
Javier Perez-Ramirez, Deva K. Borah, David Voelz

A Low Complexity UWB Localization Algorithm Using Finite-Resolution Quantization ................................................................. 1690
Fei Su, Yanlong Zhang, Huarui Yin, Weidong Wang

An Accurate 3D UWB Hyperbolic Localization in Indoor Multipath Environment Using Iterative Taylor-Series Estimation ................................................................. 1695
Yongbin Qi, Cheong Boon Soh, Erry Gunawan, Kay-Soon Low, Arash Maskooki
Using Building Plans and Self-Contained Sensors with GNSS Initialization for Indoor Navigation
Martti Kirkko-Jaakkola, Jussi Collin, Jarmo Takala

Weighted Least-Squares by Bounding-Box (B-WLS) for NLOS Mitigation of Indoor Localization
Yuan Yang, Yubin Zhao, Marcel Kyas

8A: DISTRIBUTED ANTENNA SYSTEMS

Adaptive Distributed Space-Time Coding for Cooperative MIMO Relaying Systems with Limited Feedback
Tong Peng, Rodrigo C. De Lamare, Auke Schmeink

Closed-Form Solutions for Minimizing Sum MSE in Multiuser Relay Networks
Hussein Al-Shatri, Xiang Li, Rakash Sivasiva Ganesan, Anja Klein, Tobias Weber

Distributed Cooperative Spatial Multiplexing with Slepian Wolf Code
Nian Xie, Alister Burr

Optimal Amplify-and-Forward Precoding and Relay Amplifying Matrices
Hyunggi Kim, Hyuck M. Kwon, Kanghee Lee, Yeonggyu Shin, Hyuncheol Park, Yong H. Lee

Sum Rate Based Transmission Selection Schemes in Distributed Antenna Systems
Heejin Kim, Sang-Rim Lee, Inkyu Lee

8B: RADIO RESOURCE MANAGEMENT - RELAYING

Algorithms for Adaptive Radio Resource Management in Relay-Assisted LTE-A Networks
Paul Arnold, Veselin Rakocvic, Oscar Ramos, Joachim Habermann

Cooperative Communications against Jamming with Half-Duplex and Full-Duplex Relaying
Gan Zheng, Eduard A. Jorswieck, Björn Ottersten

Joint Optimal Power Allocation and Relay Location for Amplify-and-Forward Multihop Relaying over Lognormal Channel
Chinmoy Kundu, Ranjan Bose

Joint-Iterative Power Allocation and Interference Suppression Using MBER Technique for Cooperative CDMA Systems
Guijie Wang, Yunlong Cai, Minjian Zhao, Jie Zhong

Transmission Scheduling and Relay Assignment for Multiuser Uplink with Partial Channel Knowledge
Stefano Tomasin

8C: INTERFERENCE MANAGEMENT

Inter-Cell Interference Management in LTE-A Small-Cell Networks
Yong-Ping Zhang, Shulan Feng, Philipp Zhang, Liang Xia, Yu-Chun Wu, Xiaotao Ren

Interference Mitigation Based on Partial CSI Feedback and Overhearing in an OFDMA Heterogeneous System
Toshikiho Nakano, Megumi Kaneko, Kazunori Hayashi, Hideaki Sakai

Power Allocation-Based Adjacent Channel Interference Reduction for Coexisting TD-LTE and LTE-FDD Networks
Yang Lan, Atsushi Harada

Resource Allocation Based Uplink Intercell Interference Model in Multi-Carrier Networks
Hina Tabassum, Ferkhan Yilmaz, Zaher Davy, Mohamed-Slim Alouini

System Level Performance Evaluation of Dynamic TDD and Interference Coordination in Enhanced Local Area Architecture
Bo Yu, Hiroyuki Ishii, Liuqing Yang

8D: MOBILITY AND COOPERATION

Analytical Evaluation of Offloading Gain in Macrocell-Femtocell OFDMA Networks
Prabhu Chandhar, Suvera Sekhar Das

Inter-eNB Coordination-Free Algorithm for Mobility Robustness Optimization in LTE HetNet
Yoshinori Watanabe, Hiroto Sugahara, Yasuhiko Matsuura, Kojiro Hamabe
Load Balancing with Multi-Cell Cooperation in Cellular Networks
Chongtao Guo, Min Sheng, Yan Shi, Yan Zhang, Xiao Ma

On Mobile Data Offloading Policies in Heterogeneous Wireless Networks
Mojdeh Amani, Adnan Aijaz, Nazir Uddin, A. Hamid Aghvami

Parameter Optimization for LTE Handover Using an Advanced SOM Algorithm
Neil Sinclair, David Harle, Ian A. Glover, James Irvine, Robert C. Atkinson

8E: RESOURCE ALLOCATION AND INTERFERENCE MITIGATION

Frequency-Hopping Narrowband Interference Suppression in Spread-Spectrum Systems
Hui Zhao, Zan Yang, Yuying Zhao

Frequency-Space Interference Alignment in Multi-Cell MIMO OFDM Downlink Systems
Venceslav Kafedziski, Tomaz Javornik

Novel Transmission Schemes for Multicell Downlink MC/DS-CDMA Systems Employing Time- and
Frequency-Domain Spreading
Jia Shi, Lie-Liang Yang

Optimal Power Allocation and Optimal Precoding with Multi-Cell Processing
Samah A. M. Ghanem

Stable Matching for Adaptive Cross-Layer Scheduling in the LTE Downlink
Bernd Holfeld, Rami Mochaourab, Thomas Wirth

8F: PROPAGATION AND CHANNEL MODELS

An Experimental Evaluation of WiFi-Based Vehicle-to-Vehicle (V2V) Communication in a Tunnel
Harri Viittala, Simone Soderi, Jani Saloranta, Matti Hämäläinen, Jari Ilnti

with VANETs - The GAIN Approach
Sven Bauer, Marcus Obst, Robin Streiter, Gerd Wanielik

Improved Performance Modeling and Anti-Interference Approaches for the Coexistence Problem in
High-Speed Railway Scenario
Citing Song, Bingjun Han, Xin Zhang, Li Yu, Xi Cao

MUE-Aided Interference Avoidance Mechanism for High-Speed Railway Communications
Shaoyi Xu, Su Yi, Ming Lei

Study of Receiver Concepts for Vehicular Channels in IEEE 802.11p Systems
Robert Budde, Stefan Nowak, Rüdiger Kays

8G: PROTOCOLS AND ALGORITHMS

A Two-Phase Scheduling Scheme for Cognitive Radio Networks Based on Opportunistic
Beamforming
Ayman Massaoudi, Noura Sellami, Mohamed Siala

Analysis of a Token Based MAC Protocol for OFDMA Cognitive Radio Environments
Daniele Tarchi, Romano Fantacci

Dynamic Channel Reservation Based on Forecast in Cognitive Radio
Sumin Deng, Lei Du, Ben Wang, Weidong Wang, Yuchen Zheng, Kok Keong Chai

Experimental Validation of a Distributed Algorithm for Dynamic Spectrum Access in Local Area
Networks
Oscar Tonelli, Gilberto Berardinelli, Fernando M. L. Tavares, Andrea F. Cattoni, István Z. Kovács, Troels B.
Sørensen, Petar Popovski, Preben E. Mogensen

Hierarchical Power Control in Cognitive Networks
Chungang Yang, Jiadong Li, Min Sheng, Hongyan Li, Qin Liu, Chao Xu

8H: MULTICAST & ENERGY CONSUMPTION

Balancing Transmission and Storage Cost for Reducing Energy Consumption in Mobile Devices
Bi Zhao, Vasilis Friderikos

Data Download on Move in Indoor Hybrid (Radio-Optical) WLAN-VLC Hotspot Coverages
Helal Chowdhury, Marcos Katz
Energy-Efficient Flexible Inter-Frequency Scanning Mechanism for Enhanced Small Cell Discovery
Athul Prasad, Petteri Lundén, Olav Tirkkonen, Carl Wijting

GAMLL: Gateway Assisted Multicast Algorithm Towards Low Latency for Wireless Mesh Networks
Yuan Yuan, Chaoyi Bian, Tong Zhao, Wei Yan

9A: RELAYING

An Iterative Unified Decoding for Decode-Quantize-Forward Relaying
Yuichiro Nogawa, Shinsuke Ibı, Seiichi Sampei

Energy and Spectral Efficient Inter Base Station Relaying in Cellular Systems
Efstathios Katranaras, Janwei Tung, Muhammad Ali Imran

On the Error Analysis of Fixed-Gain Relay Networks over Composite Multipath/Shadowing Channels
Omer Waqar, Muhammad Ali Imran, Mehrdad Dianati

On the Performance of Mixed RF/FSO Dual-Hop Transmission Systems
Imran Shaﬁque Ansari, Ferkan Yılmaz, Mohamed-Slim Alouini

Performance Analysis of OSTBC for Fixed Gain Relay Network over Nakagami-m Fading with Correlated Antennas
Tachpor Nguanpuak, Nandana Rajatheva, Attaphongse Taparugssanagorn, Poompat Saengudomlert

9B: COORDINATED MULTIPART – JOINT TRANSMISSION II

Channel Prediction by Doppler-Delay Analysis and Beneﬁts for Base Station Cooperation
Konstantinos Manolakis, Stephan Jaeckel, Volker Jungnickel, Volker Braun

Evaluation of Implicit Feedback in Coordinated Multipoint Transmission beyond LTE-Advanced
Zijian Bai, Stanislaw Ivelski, Guido Bruck, Peter Jung, Biljana Badic, Tobias Scholand, Rajarajan Balraj

Investigation on Multi-Cell Sounding Reference Signal Coordination for TD-LTE-Advanced CoMP
Xiaolin Hou, Chongning Na, Atsushi Harada

On Feedback Requirements for CoMP Joint Transmission in the Quasi-Static User Regime
Lars Thiele, Martin Karras, Michael Olbrich, Kai Börner

QoS-Aware Traffic Scheduling in LTE-Advanced Relay-Enhanced Networks
Thiago Martins De Moraes, Abdallah Bou Saleh, Gerhard Bauch, Eiko Seidel

9C: FEMTOCELLS

Cell Identifier Assignment in Two-Tier Femtocell Networks
Jan Oppolzer, Robert Bestak

Downlink Power Control for Femtocell Networks
Fengming Cuo, Zhong Fan

Dynamic Frequency Selection Based on Carrier Pricing between Cells
Parth Amin, Olav Tirkkonen, Tero Henttonen, Esa Pernila

Dynamic Optimization of Neighbor Cell List for Femtocells
Zdenek Becvar, Michal Vondra, Pavel Mach

Heterogeneous LTE-Advanced Network Expansion for 1000x Capacity
Liang Hu, Laura Luque Sanchez, Michal Maternia, István Kovács, Benny Vejlgaard, Preben Mogensen, Hidekazu Taoka

9D: HIGH-SPEED MOBILITY MANAGEMENT

Enhanced Spring Clustering in VANETs with Obstruction Considerations
Leandros A. Maglaras, Dimitrios Katsaros

Inter-Cell Interference Coordination for Highly Mobile Users in LTE-Advanced Systems
Shady S. Khalifa, Haitham S. Hamza, Khaled Elsayed

Position Assisted Coordinate HARQ in LTE Systems for High Speed Railway
Wantuan Luo, Xuning Fang, Shasha Li, Yingying Xia

TIGeR: A Traffic-Aware Intersection-Based Geographical Routing Protocol for Urban VANETs
Rasool Tavakoli, Majid Nabi
Vehicular Relay Nodes for Cellular Deployments: Uplink Channel Modeling and Analysis

Nadav Lavi, Jacob Scheim

9E: CHANNEL MODELING AND ESTIMATION II

An Investigation on Number of Effective Taps for Multicarrier Schemes

Alphan Sahin, Sultan Aldormaz, Ismail Güvenç, Hüseyin Arslan

Analysis and Modeling for Train-Ground Wireless Wideband Channel of LTE on High-Speed Railway

................................................................. 2021

Design and Analysis of Bit Selections in HARQ Algorithm for Hybrid FSO/RF Channels

Javier Perez-Ramirez, Deva K. Borah

Reliability of an IB-DFE in the Presence of Channel Estimation Errors

Nuno Souto, Rui Dinis, João Carlos Silva

Rotation Invariant Subcarrier Mapping over DVB-T2 Reserved Tones

S. Rosati, E. A. Candreva, G. E. Corazza

9F: IN-VEHICULAR COMMUNICATION AND COMMUNICATION SECURITY

Electronic Decal: A Security Function Based on V2X Communication

Peter Knappik, Elmar Schoch, Frank Kargl

Failure Detection in FlexRay Networks through Asymmetry Assessment

Daniela Trombetti, Dieter Metzner, Magnus M. Hell, Stephan Frei

High Rate and High Multiplexing CAN by Short Pulse Line Codes

Shingo Nitta, Daisuke Umemura, Koichiro Wakassagi, Shinichio Itohiko, Toshiyasu Tsubouchi

Multi-Carrier Medium Access Control for In-Vehicle Power Line Communication with Imperfect Sensing

Amir Kenarsari-Anhari, Victor C. M. Leung

Stuck in Traffic (SiT) Attacks: A Framework for Identifying Stealthy Attacks That Cause Traffic Congestion

Mina Guirguis, George Atia

9G: BODY AREA, UNDERWATER AND THROUGH-WALL CHANNELS

First- and Second-Order Statistics of On-Body Propagation Channels

Lingfeng Liu, Philippe De Doncker, Claude Oestges

MIMO Capacity Analysis of Off-Body Radio Channels in a Street Environment

Michal Mackowiak, Luís M. Correia

Signal Correlation and Power Imbalance in Dynamic On-Body Communications

Carlo Oliveira, Luís M. Correia

Simulation Model for Wideband Mobile-to-Mobile Underwater Fading Channels

Bryan Blankenagel, Alenka G. Zajic

Singular Value Decomposition and Akaike Information Criterion Based through Wall Image Enhancement

Muhammad Mohsin Riaz, Abdul Ghafoor, Victor Sreeram

9H: ROUTING AND CLUSTERING IN DTNS AND VANETS

A Cooperative Safety Zone Approach to Enhance the Performance of VANET Applications

Muhammad A. Javed, Jamil T. Khan

A Three-Dimensional Scenario Oriented Routing Protocol in Vehicular Ad Hoc Networks

Qin Lin, Changle Li, Xin Wang, Lina Zhu

An Efficient Routing Algorithm Based on Social Awareness in DTNs

Kun Wang, Huang Guo, Meng Wu, Zhen Yang, Yan Liu

Timer-Based Distributed Dissemination Protocols for VANETs and Their Interaction with MAC Layer

Pierpaolo Salvo, Mario De Felice, Andrea Baiocchi, Francesca Cuomo, Itzhak Rubin
3RD INTERNATIONAL WORKSHOP ON DELF-ORGANIZING NETWORKS (IWSON)

An Evolved Mobility Robustness Optimization Algorithm for LTE Heterogeneous Networks......................................................... 216
Guohua Zhou, Peter Legg

Carrier Aggregation Based Interference Coordination for LTE-A Macro-Pico HetNet................................................................. 2121
Huailin Jiang, Hao Wang, Wenxiang Zhu, Zhiwang Li, Zhiwen Pan, Nan Liu, Xiaohou You, Li Yang

Efficient, Dynamic Coordination of Request Batches in C-SON Systems........................................................................ 2127
Raphael Romeikat, Henning Sunneck, Tobias Bandh

Inter-RAT MRO in 3GPP Rel.11: What Works, and What Does Not ................................................................................ 2133
B. Wegmann, A. Awada, K. Kondybach, I. Viering

Minimizing Handover Performance Degradation Due to LTE Self Organized Mobility Load Balancing................................................................. 2138
Stephen S. Mwanje, Andreas Mitschele-Thiel

Mobility Robustness Optimization in Enterprise LTE Femtocells........................................................................... 2143
V. Buenestado, J. M. Ruiz-Avilés, M. Toril, S. Luna-Ramirez

Multi-Layer Traffic Steering: RRC Idle Absolute Priorities & Potential Enhancements............................................................. 2148
Panagiota Faliadis, Michele Polignano, Lucas Chavarria, Ingo Viering, Cinzia Sartori, Andreas Lobinger, Klaus Pedersen

On Heterogeneous Networks Mobility Robustness .................................................................................................................. 2153
Kristina Zetterberg, Pradeep Ramachandra, Fredrik Gunnarsson, Mehdi Amirjoo, Stefan Wagner, Torsten Dudda

Self-Management for Unified Heterogeneous Radio Access Networks............................................................................. 2158
Remco Lijten, Fredrik Gunnarsson, Berna Sayrac, Kathleen Spaej, Colin Willcock, Andreas Eisenblätter, Beatriz Gonzalez Rodriguez, Thomas Körner

SON Coordination in a Unified Management Framework ......................................................................................................... 2163
Kostas Tsagkaris, Nikos Koutourias, Panagiota Demestichas, Richard Combes, Zvi Attan

Surrogate Based Centralized SON: Application to Interference Mitigation in LTE-A HetNets ................................................ 2168
Yasir Khan, Berna Sayrac, Eric Moulines

MOBILE AND WIRELESS COMMUNICATION SYSTEMS FOR 2020 AND BEYOND

5GNOW: Challenging the LTE Design Paradigms of Orthogonality and Synchronicity................................................................. 2173

An Improved Model of LTE Random Access Channel ............................................................................................................. 2178
Evgeny Ospiov, Laurynas Riliskis, Albin Eldstål-Damlin, Michael Burakov, Mats Nordberg, Min Wang

Complexity Reduction Strategy for RAID in Multi-User Relay Systems.................................................................................. 2183
F. Lenkeit, D. Wübben, A. Dekorsy

Dynamic Demand Control with Differentiated QoS in User-in-the-Loop Controlled Cellular Networks............................................. 2188
Rainer Schoenen, Halim Yankomerosoglou

Future Wireless Communications ..................................................................................................................................................... 2194
Robert Baldemair, Erik Dahlman, Stefan Parkvall, Yngve Selen, Kumar Balachandran, Tim Irnich, Gabor Fodo, Hugo Tullberg

Multihop Relaying for Local Area Access ........................................................................................................................................ 2199
Olav Torkkonen, Eeva Lähetkangas, Kari Pajukoski, Esa Türola, Ilka Harjula

Non-Orthogonal Multiple Access (NOMA) for Cellular Future Radio Access .................................................................................. 2204
Yaya Saito, Yoshitsa Kishiyama, Anna Benjebbour, Takehiro Nakamura, Anxin Li, Kenichi Higuchi

Overview of Faster-than-Nyquist for Future Mobile Communication Systems........................................................................... 2209
Marwa El Hefnawy, Taoka Hidekazu

Spatial Degrees of Freedom in Small Cells: Measurements with Large Antenna Arrays ................................................................. 2214

Street-Specific Handover Optimization for Vehicular Terminals in Future Cellular Networks ....................................................... 2220
Zhe Ren, Peter Fertl, Qi Liao, Federico Penna, Slawomir Stanczak

The Foundation of the Mobile and Wireless Communications System for 2020 and Beyond: Challenges, Enablers and Technology Solutions ........................................................................................................................................... 2225
Affif Osseiran, Volker Braun, Taoka Hidekazu, Patrick Marsch, Hans Schotten, Hugo Tullberg, Mikko A. Uusitalo, Malte Schellman

Author Index