2012 IEEE International Conference on Communication Systems

(ICCS 2012)

Singapore 21 – 23 November 2012



IEEE Catalog Number: CFP12806-PRT **ISBN:**

978-1-4673-2052-8

Table of Contents

Sensor Networks I

| Analysis of Optimal Cluster Number in Heterogenous Wireless Sensor Networks Norah TUAH, Mahamod ISMAIL, Kasmiran JUMARI | 1 |
|--|----|
| 1-cm3 Event-driven Wireless Sensor Nodes Shoichi OSHIMA, Kenichi MATSUNAGA, Toshishige SHIMAMURA, Hiroki MORIMURA, Mitsuru HARADA | 6 |
| Distributed Relay Scheduling for Maximizing Lifetime in Clustered Wireless Sensor Networks Pengfei ZHANG, Gaoxi XIAO, Hwee Pink TAN | 11 |
| Wireless Relay Networks | |
| Multicasting MIMO Relay Optimization Based on Min-Max MSE Criterion Muhammad KHANDAKER, Yue RONG | 16 |
| Superimposed Channel Training for Two-Way MIMO Relay Systems Choo CHIONG, Yue RONG, Yong XIANG | 21 |
| Incremental Space-Time Block Codes with Error Protection for Cooperative Relay Networks Ashish JAMES, A MADHUKUMAR, Surya Dharma TIO | 26 |
| Joint Power Allocation and Subchannel-Pairing for Two-Way MIMO-OFDM Relay System Qi JIANG, Xuewen LIAO, Pinyi REN, Zhenzhen GAO | 31 |
| Energy Efficiency and Queue Stability in a Two-Way Relay Network Zhi CHEN, Teng Joon LIM, Mehul MOTANI | 36 |
| Optical Communications and Networks | |
| Low Cost and CD Insensitive Optical Signal to Noise Ratio Monitoring Method Using Beat Noise Yi YU, Jing YANG, Changyuan YU | 41 |
| A Virtual Network to Achieve Low Energy Consumption in Optical Large-scale Datacenter Yuya TARUTANI, Yuichi OHSITA, Masayuki MURATA | 45 |
| Hybrid Graph-Based Traffic Grooming for Multicast Connections in Mesh Optical Networks Tania PANAYIOTOU, Georgios ELLINAS, Neophytos ANTONIADES | 50 |
| Logical Topology Design in IP over WDM Networks with Load Balancing under Traffic Uncertainty Paramet KEERATICHAIRITNARA, Chutima PROMMAK | 55 |
| Security and Privacy | |
| A Zero-Sum Power Allocation Game in the Parallel Gaussian Wiretap Channel with an Unfriendly Jammer <i>Munnujahan ARA, Hugo REBOREDO, Samah GHANEM, Miguel RODRIGUES</i> | 60 |
| Achievable Second-Order Coding Rates for the Wiretap Channel Vincent TAN | 65 |
| On Secrecy above Secrecy Capacity Ramachandran RAJESH, Shahid SHAH, Vinod SHARMA | 70 |

| Privacy in Machine-to-machine Communications a State-of-the-art Survey Yi CHENG, Mats NASLUND, Göran SELANDER, Eva FOGELSTRÖM | 75 |
|---|-----|
| Multi-sensor Location Estimation for Illegal Cell-phone Use in Real-Life Indoor Environment Kentaro SANO, Gia Khanh TRAN, Masahiro WATANABE, Kei SAKAGUCHI, Kiyomichi ARAKI, Daisuke HAYASHI, Toshihiro YAMAGUCHI, Shintaro ARATA | 80 |
| Signal Processing for Communications | |
| MIMO-OFDM Radar Array Configuration for Resolving DOA Ambiguity Chee Wee KIM, Bin LUO, Ying-Chang LIANG, Michael, Yan Wah CHIA | 85 |
| Overlapped FFT Scheme with Frames of Non-continuous Samples Shoya UCHIDA, Akihiro SATO, Mamiko INAMORI, Yukitoshi SANADA | 90 |
| An USRP-based Interference Canceller Lay Teen ONG | 95 |
| Odd-Even Quantisation and Cartesian Delta-Sigma Upconverters for Transmitter Design Sirmayanti SIRMAYANTI, Vandana BASSOO, Horace KING, Mike FAULKNER | 100 |
| Determination Method for Complex Valued LTI Transfer Functions Causing Memory Effect of Power Amplifier Eisuke FUKUDA, Yasuyuki OISHI, Takeshi TAKANO, Daisuke TAKAGO, Yoshimasa DAIDO | 105 |
| OFDM Transceiver Design | |
| Theoretical Analysis of ICI Reduction Methods due to Phase Noise and Frequency Offset in OFDM Systems Gia Khanh TRAN, Kei OBARA, Alden Ho CHUN HOE, Kiyomichi ARAKI | 110 |
| Compensation For Nonlinear Distortion IN MIMO OFDM Systems Using MMSE Receiver Maha CHERIF, Rafik ZAYANI, Ridha BOUALLEGUE | 115 |
| Performance of Decision-Feedback Channel Estimation for TDM Based Control Signals in OFDMA Downlink Shunsuke OKANIWA, Nobuhiko MIKI, Teruo KAWAMURA, Mamoru SAWAHASHI | 120 |
| Mobile Transmitters I/Q Imbalances in LTE Uplink: Analysis and Digital Mitigation Adnan KIAYANI, Lauri ANTTILA, Mikko VALKAMA | 125 |
| Predicting Spectral Regrowth of Power Amplifiers in OFDM Systems Ching-Hsiang TSENG, Jen Ho CHENG | 130 |
| Antennas and Propagation I | |
| Performance Evaluation of Artificial Neural Networks in Microstrip Fractal Antenna Parameter Estimation Balwinder DHALIWAL, Shyam S. PATTNAIK | 135 |
| Design of Elliptical Microstrip Patch Antenna Using Genetic Algorithms Simranjit JOSAN, Balwinder DHALIWAL, J. S. SOHAL | 140 |
| On the Use of Characteristic Modes Theory to Optimize the Radiation of a Slotted Waveguide Array Antenna Ali ARAGHI, Gholamreza DADASHZADEH | 144 |
| | |

| Design and Realization of 1.8-2.4 GHz MIMO 2 x 2 Antenna for Handset Application <i>Audhia REZA, Joko SURYANA</i> | 147 |
|---|-----|
| Sensor Networks II | |
| Real-time Power Configuration for Energy Conservation in Wireless Sensor Networks Hoang DUC CHINH, Sanjib Kumar PANDA | 152 |
| Event Detection and Channel Allocation in Cognitive Radio Sensor Networks Amna JAMAL, Chen-Khong THAM, Wai-Choong WONG | 157 |
| Real Time Energy Efficient Approach to Outlier & Event Detection in Wireless Sensor Networks Nauman SHAHID, Ijaz NAQVI, Saad QAISAR | 162 |
| Real Time Information Gathering based on Frequency and Timing Assignment for Wireless Sensor Networks <i>Tomomi ENDO, Takeo FUJII</i> | 167 |
| Using Game Theory to Investigate Stochastic Channel Selection for Multi-channel MAC Protocol Bin HAN, Ken'ichi KAWANISHI | 172 |
| Antennas and Propagation II | |
| An Ultra Wideband Planar Monopole Antenna for Spectrum Sensing Applications Ravikiran NARAYAN, Clément CARADEC, Stefan ATAMAN, Marie MATHIAN | 177 |
| 60 GHz Radio Wave Propagation Studies in an Indoor Office Environment T RAMA RAO, Murugesan DEIVA, Nishesh TIWARI, Vladimir LABAY | 181 |
| A Modified Wave Propagation Model Based on Gaussian Beams Tracing Qiuming ZHU, Ren JIAMIN, Xu DAZHUAN, Xiaomin CHEN, Xiangbin YU, Tang YAPING | 186 |
| Short-Range Near Floor Path Gain Measurements in Indoor Corridors at UHF for Wireless Sensor Communications <i>T RAMA RAO, D BALACHANDER, Nishesh TIWARI</i> | 189 |
| UHF Short-Range Pathloss Measurements in Forest & Plantation Environments for Wireless Sensor Networks TRAMA RAO, D BALACHANDER, Nishesh TIWARI | 194 |
| Optimization and Wireless Networks | |
| Optimal CSMA: A Survey Se-Young YUN, Yung YI, Jinwoo SHIN, Do Young EUN | 199 |
| Energy and Traffic Aware Dynamic Topology Management for Wireless Cellular Networks Hyun-Sik JUNG, Hee-Tae ROH, Jang-Won LEE | 205 |
| On Competition Between Wireless Service Providers Feng ZHANG, Wenyi ZHANG | 210 |
| Some Optimization Problems in Error Free Perfect Secrecy Systems Siu-Wai HO | 215 |

Green Communications

| SEP-optimal Adaptive Gain and Transmit Power Amplify-and-Forward Relaying B. SAINATH, Neelesh MEHTA | 220 |
|---|-----|
| Cognitive Energy Harvesting and Transmission from a Network Perspective Seunghyun LEE, Kaibin HUANG, Rui ZHANG | 225 |
| Joint Power and Antenna Selection Optimization for Energy-Efficient Large Distributed MIMO Networks An LIU, Vincent LAU | 230 |
| On Energy-Delay Tradeoff in Base Station Sleep Mode Operation Zhisheng NIU, Jianan ZHANG, Xueying GUO, Sheng ZHOU | 235 |
| Spectrum and Energy Efficient Cognitive Relay for Spectrum Leasing Chao ZHAI, Wei ZHANG | 240 |
| Cognitive Radio and White Space Networks | |
| Performance Analysis of Cognitive Machine-to-Machine Communications Dinh Thai HOANG, Dusit NIYATO | 245 |
| Adaptive Multi-Channel Spectrum Sensing Throughput Tradeoff Yan FENG, Lingyang SONG, Bingli JIAO | 250 |
| Sensing and Power Control in Cognitive Radio with Location Information Edward PEH, Ying-Chang LIANG, Yonghong ZENG | 255 |
| Physical Interference Model Based Spectrum Sharing with Generalized Spatial Congestion Games <i>Richard SOUTHWELL, Jianwei HUANG, Biying SHOU</i> | 260 |
| Routing and Relaying Protocols | |
| Multicast Anypath Routing in Wireless Networks Sanjay Kumar BOSE, Sudha Parimala MAZUMDAR, Wen-De ZHONG | 265 |
| A MANET Routing Protocol using Q-Learning Method Integrated with Bayesian Network Ke WANG, Wai-Choong WONG, Teck Yoong CHAI | 270 |
| Power Efficient Integrated Routing with Reliability Constraints in IP over WDM Networks Gaofeng WU, Gurusamy MOHAN | 275 |
| MPSCTP: A Multipath Variant of SCTP and its Performance Comparison with Other Multipath Protocols Samar SHAILENDRA, Ratnajit BHATTACHARJEE, Sanjay Kumar BOSE | 280 |
| A Novel Beacon Frame Scheduling Algorithm Based on Cluster-Tree IEEE 802.15.4 Wireless Sensor Networks <i>Chi-Ming WONG</i> | 285 |

Detection and Estimation

| A MAP-Based Channel Estimation Algorithm for SIMO Systems over Extended SV Channel Model | 290 |
|--|-----|
| Li ZHANG, Yong Huat CHEW, Wai-Choong WONG | |

| Sensing OFDM Signals Using Periodically Inserted Pilots Yonghong ZENG, Ying-Chang LIANG, The-Hanh PHAM | 295 |
|---|-----|
| Multiuser Detection of Overloaded Systems Employing HARQ Zahid RAUF, Philippa MARTIN, Desmond TAYLOR | 300 |
| A Novel Region Graph Construction Based on Trapping Sets for the Generalized Belief Propagation Jean-Christophe SIBEL, Sylvain REYNAL, David DECLERCQ | 305 |
| Detection of Interference in Slow FH/16-QAM Systems Using Generalized Likelihood Ratio Test Aye AUNG, Kah Chan TEH, Kwok Hung LI | 310 |
| Multi-User Systems | |
| Minimum-Length Scheduling in Wireless Networks with Multi-User Detection and Interference Cancellation:Optimization and Performance Evaluation Di YUAN, Vangelis ANGELAKIS, Lei LEI | 315 |
| Precoded Opportunistic Multiuser Detection Nirul KUMAR, Aditya TRIVEDI | 320 |
| Enhancing User Fairness in Non-orthogonal Access with Successive Interference Cancellation for Cellular Downlink Junpei UMEHARA, Yoshihisa KISHIYAMA, Kenichi HIGUCHI | 324 |
| Downlink Capacity Improvement and Interference Reduction through Reverse Frequency Allocation Ponnu JACOB, Ashish JAMES, A MADHUKUMAR | 329 |
| Diversity Techniques | |
| A Novel Approach for using Extended LDPC codes in Cooperative Diversity Hussain ALI, Maan KOUSA | 334 |
| Cross-layer Design for MIMO Systems with Antenna Selection over Nakagami-m Fading Channels Xiangbin YU, Xiaomin CHEN, Qiuming ZHU | 339 |
| Analysis of Antenna Selection Rate in Bi-Directional Network Coded Multi-Antenna Relay Mahshad ESLAMIFAR, Chau YUEN, Woon Hau CHIN, Guan Yong LIANG | 344 |
| Analysis of Transmit Antenna Selection/Switch-and-Examine Combining over Nakagami-m Fading Channels Beng Soon TAN, Kwok Hung LI, Kah Chan TEH | 349 |
| Hybrid Relay Diversity Scheme for OFDM-based System Nur ABDUL RAZAK, Fatin SAID | 354 |
| Emerging Networking Concepts | |
| Game-theoretic Analysis for Multibandwidth WLAN Channel Selection by Coordinated APs Kohei HANADA, Koji YAMAMOTO, Koichi ISHIHARA, Riichi KUDO, Masahiro MORIKURA | 358 |
| Network-virtualization Nodes that Support Mutually Independent Development and Evolution of Node Components | 363 |
| Yasusi KANADA, Kei SHIRAISHI, Akihiro NAKAO | 269 |
| Network Resource Aware Association Control in Wireless Mesh Networks Jinqiang YU, Wai-Choong WONG | 368 |

| A Modest CSMA for Control over Wireless Michiya FUJIWARA, Shinsuke HARA | 373 |
|---|-----|
| A Fast, Simple and Near-optimal Content Placement Scheme for a Large-scale VoD System Jun HE, Xiaoming ZHAO, Baohua ZHAO | 378 |
| Information Theory and Coding | |
| An Accurate Approximation to Channel Capacity of Wireless Communications Systems Qinghua SHI | 383 |
| On the Duality of Source and Channel Correlations: Slepian-Wolf Relaying Viewpoint Meng CHENG, Khoirul ANWAR, Tad MATSUMOTO | 388 |
| Serially Concatenated Codes with Euclidean Geometry LDPC and Convolutional Codes Sina VAFI, Huu-Dung PHAM | 393 |
| Iterative Detection Scheme with LDPC Codes for Two-Dimensional Interference Channels Jun YAO, Kah Chan TEH, Kwok Hung LI | 398 |
| Resource Allocation | |
| Optimal Power Allocation for OFDMA-Based Cooperative Base Stations by Limiting Interference Anousheh TAVAKOLI DEHKORDI, Amir SHADMAND, Chau YUEN, Zander LEI | 403 |
| QoS-Aware Radio Resource Allocation for Multi-Cell OFDMA Network Yue LIU, Laurie CUTHBERT, Xu YANG, Yapeng WANG | 408 |
| OFDMA Resource Allocation for Multicasting Videos to Users with Diverse Screen Sizes Daeyeon KIM, Takeo FUJII, Kyesan LEE | 413 |
| Price-Based Distributed Resource Allocation for Femtocell Networks Pu YUAN, Ying-Chang LIANG, Guoan BI | 418 |
| Application of Cognition based Resource Allocation Strategies on a Multi-hop Backhaul Network <i>Qiyang ZHAO, David GRACE</i> | 423 |
| Cognitive Radio and Spectrum Sensing | |
| A Guard Band Aggregation Scheme for Cognitive Radio using TV White Space Noriyuki YAGINUMA, Masahiro UMEHIRA, Ryuhei FUNADA, Hiroshi HARADA | 428 |
| A Study on the Performance of Multifilter Bank based Cognitive Radio Transceiver for Multi-user Applications Manju MATHEW, A. Benjamin PREMKUMAR, A MADHUKUMAR | 433 |
| A Robust Two-stage Spectrum Sensing Method Using Filter Bank based Energy Detector and Fourth Order Cumulants for Cognitive Radios <i>M NARENDAR, A.P. VINOD, A MADHUKUMAR, Anoop Kumar KRISHNA</i> | 438 |
| A Low-Complexity Spectrum Sensing Technique for Cognitive Radios Based on Correlation of Intra- Segment Decimated Vectors Syed Naveen ALTAF AHMED, Pramod Kumar MEHER, A.P. VINOD | 443 |
| Spectrum Sensing using Feature Vectors Farrukh Aziz BHATTI, Gerard B. ROWE, Kevin W. SOWERBY | 448 |

Network Simulations

| Tracking Indoor Pedestrian using Cricket Indoor Location System Qinfeng GUO, Wai-Choong WONG | 453 |
|--|-----|
| Cluster Based Localization Algorithm in Wireless Networks Haitao BAO, Wai-Choong WONG, T T TAY | 458 |
| Channel Segregation Based Dynamic Channel Assignment for WLAN Yuki MATSUMURA, Shinya KUMAGAI, Tatsunori OBARA, Tetsuya YAMAMOTO, Fumiyuki ADACHI | 463 |
| Energy Consumption Analysis of ZigBee-Based Energy Harvesting Wireless Sensor Networks Jiaying SONG, Yen Kheng TAN | 468 |
| Small-Cell and Heterogeneous Networks | |
| Evolution Concept and Candidate Technologies for Future Steps of LTE-A Yoshihisa KISHIYAMA, Anass BENJEBBOUR, Hiroyuki ISHII, Takehiro NAKAMURA | 473 |
| On the Decentralized Management of Scrambling Codes in Small Cell Networks Samir PERLAZA, Zhu HAN, H. Vincent POOR, Dusit NIYATO | 478 |
| Stochastic Mutual Induction Computing in Het-CoMP Empowered Cellular Networks Shao-Yu LIEN, Kwang-Cheng CHEN | 483 |
| Mode Selection for Energy-Efficient D2D Communications in LTE-Advanced Networks: A Coalitional Game Approach Khajonpong AKKARAJITSAKUL, Phond PHUNCHONGHARN, Ekram HOSSAIN, Vijay BHARGAVA | 488 |

Wireless PHY

| Joint Tx/Rx Filtering for Single-carrier MIMO Spatial Multiplexing and HARQ Packet Combining Shinya KUMAGAI, Tatsunori OBARA, Tetsuya YAMAMOTO, Fumiyuki ADACHI | 493 |
|---|-----|
| Training Sequence Inserted Single-Carrier Transmission Using 2-Step QRM-ML Block Signal Detection <i>Katsuhiro TEMMA, Tetsuya YAMAMOTO, Fumiyuki ADACHI</i> | 498 |
| Throughput Performance of Layered Partially Non-orthogonal Block Diagonalization with Adaptive Interference Admission Control in Distributed Antenna System <i>Yusuke OSHIMA, Anass BENJEBBOUR, Kenichi HIGUCHI</i> | 503 |
| Performance Analysis of Synchronous FFH-MA Systems with ML Receiver over Frequency- Selective Rayleigh-Fading Channels Ly-Minh-Duy LE, Kah Chan TEH, Kwok Hung LI | 508 |
| Comparative Study of Open-Loop Transmit Diversity Schemes with Four Antennas in DFT-Precoded OFDMA Using Turbo FDE and Iterative Channel Estimation <i>Lianjun DENG, Teruo KAWAMURA, Hidekazu TAOKA, Mamoru SAWAHASHI</i> | 513 |
| Cooperative Networks | |

 Applicability of Distributed Transmit Power Control Based on Uplink-Downlink Duality to Multiuser Distributed Antenna Systems
 519

 Shigemasa KUMAGAWA, Koji YAMAMOTO, Hidekazu MURATA, Susumu YOSHIDA, Daisuke UMEHARA, Satoshi DENNO, Masahiro MORIKURA
 519

| Downlink Beamforming in Clustered Cooperative Multicell MIMO Systems Zhiyu ZHANG, Kah Chan TEH, Kwok Hung LI | 524 |
|---|-----|
| Challenges of Emergency Communication Network for Disaster Response Jyh-Shyan HUANG, Yao-Nan LIEN | 528 |
| A Dynamic Approach for Cell Range Expansion in Interference Coordinated LTE-Advanced Heterogeneous Networks <i>Mohammed AL-RAWI</i> | 533 |
| Author Index | 538 |