

IEEE

# COMMUNICATIONS LETTERS

A PUBLICATION OF THE IEEE COMMUNICATIONS SOCIETY



AUGUST 2016

VOLUME 20

NUMBER 8

ICLEF6

(ISSN 1558-2558)

---

## CODING THEORY AND TECHNIQUES

An Efficient Algorithm to Improve the Success Threshold of Node-Based Verification-Based Algorithms in Compressed Sensing .....	<i>S. Khosravi, R. Asvadi, and M. Ahmadian-Attari</i>	1487
Secure Repairable Fountain Codes .....	<i>S. Kumar, E. Rosnes, and A. Graell i Amat</i>	1491
Polar Code Design for Noisy Blackwell Channels .....	<i>L. Zhao, S.-I. Choi, and S.-Y. Chung</i>	1495
Poisson Robust Soliton Distribution for LT Codes .....	<i>W. Yao, B. Yi, T. Huang, and W. Li</i>	1499

## COMMUNICATION THEORY

Staged Growth Codes: Intermediate Performance and Overhead Analysis .....	<i>S. Wu, W. Xiang, Z. Wang, D. Li, and Q. Guo</i>	1503
Transceiver Design for Optimizing the Energy Efficiency in Multiuser MIMO Channels .....	<i>T. T. Vu, H. H. Kha, and H. D. Tuan</i>	1507
Uncoded Space-Time Labeling Diversity .....	<i>H. Xu, K. Govindasamy, and N. Pillay</i>	1511

## COMMUNICATION THEORY AND TECHNIQUES

Simplified Early Stopping Criterion for Belief-Propagation Polar Code Decoders .....	<i>C. Simsek and K. Turk</i>	1515
--	------------------------------	------

## MODULATION AND SIGNAL DESIGN

Rate Balancing Based Tomlinson–Harashima Precoding for G. Fast Systems .....	<i>K. Zu, F. C. B. F. Müller, C. Lu, P.-E. Eriksson, and A. Klautau</i>	1519
Symbol Error Probability of Hexagonal QAM .....	<i>L. Rugini</i>	1523
Multi-User Detection for Spatial Modulation via Structured Approximate Message Passing .....	<i>X. Meng, S. Wu, L. Kuang, D. Huang, and J. Lu</i>	1527

## MULTIPLE ACCESS PROTOCOLS

User Assignment Algorithms for Energy-Efficiency-Aware Multiple Access Systems .....	<i>J. Jounq</i>	1531
--	-----------------	------

## OPTICAL COMMUNICATIONS SYSTEMS

Polarity Information Coded Flip-OFDM for Intensity Modulated Systems .....	<i>L. Wu, Z. Zhang, J. Dang, J. Wang, and H. Liu</i>	1535
--	--	------

(Contents Continued on Page 1485)



**OPTICAL NETWORKS**

Joint Spectrum and IT Resource Allocation for Efficient VNF Service Chaining in Inter-Datacenter Elastic Optical Networks ..... *W. Fang, M. Zeng, X. Liu, W. Lu, and Z. Zhu* 1539

**RELIABILITY AND SURVIVABILITY**

Optimal Polynomial Time Algorithm for Restoring Multicast Cloud Services ..... *S. Ayoubi, C. Assi, L. Narayanan, and K. Shaban* 1543

**SATELLITE COMMUNICATIONS**

A Graph-Based Satellite Handover Framework for LEO Satellite Communication Networks ..... *Z. Wu, F. Jin, J. Luo, Y. Fu, J. Shan, and G. Hu* 1547  
Singular Spectrum Based Smoothing of GNSS Pseudorange Dynamics ..... *M. Tahir and K. Mazher* 1551

**SPREAD SPECTRUM THEORY AND APPLICATIONS**

Unambiguous Tracking of BOC Signals Using Coherent Combination of Dual Sidebands ..... *T. Feng, Z. Kai, and C. Liang* 1555

**WIRELESS COMMUNICATION THEORY**

On Rate, Secrecy, and Network Connectivity Tradeoffs for Wireless Networks ..... *R. Zhang, C. Comaniciu, and H. V. Poor* 1559  
Wireless Information and Power Transfer in Two-Way OFDM Amplify-and-Forward Relay Networks ..... *G. Huang and D. Tang* 1563  
Weighted Sum Rate-Based Coordinated Beamforming in Multi-Cell Multicast Networks ..... *J. Wang, D. Wang, and Y. Liu* 1567  
Robust Optimization for AN-Aided Transmission and Power Splitting for Secure MISO SWIPT System ..... *Z. Chu, Z. Zhu, and J. Hussein* 1571  
An Efficient Zero-Forcing Precoding Design for Cognitive MIMO Broadcast Channels ..... *V.-D. Nguyen, H. V. Nguyen, and O.-S. Shin* 1575  
Average Rate Analysis for the Full-Duplex MISO Interference Channel ..... *K. T. Hemachandra and A. O. Fapojuwo* 1579  
Optimization of Zero Forcing Beamformer for the Full Duplex Relay System .... *D. Hwang, Y. Choi, and T.-J. Lee* 1583  
Timing Channels in Bluetooth Low Energy ..... *X. Fafoutis, E. Tsimbalo, and R. Piechocki* 1587  
Artificial-Noise-Aided Secure MIMO Full-Duplex Relay Channels With Fixed-Power Transmissions ..... *A. El Shafie, D. Niyato, and N. Al-Dhahir* 1591  
Performance of the Massive MIMO Uplink With OFDM and Phase Noise ..... *A. Pitarokoilis, E. Björnson, and E. G. Larsson* 1595  
A Closed-Form Approximate BEP Expression for Cooperative IDMA Systems Over Multipath Nakagami-*m* Fading Channels ..... *M. Bilim, N. Kapucu, and I. Develi* 1599

**WIRELESS NETWORKS**

A New Wireless Multicast Queuing Design Using Network Coding and Data-Flow Model ..... *N. Moghadam and H. Li* 1603  
Breathe to Save Energy: Assigning Downlink Transmit Power and Resource Blocks to LTE Enabled IoT Networks ..... *V. J. Kotagi, R. Thakur, S. Mishra, and C. S. R. Murthy* 1607  
Dual Antenna Selection in Self-Backhauling Multiple Small Cell Networks ..... *G. Chen, Y. Gong, P. Xiao, and R. Tafazolli* 1611  
Pricing in Small Cell Deployment ..... *J.-B. Seo and P. Lohan* 1615  
Uplink Pilot Design for Multi-Cell Massive MIMO Networks ..... *Y. Han and J. Lee* 1619  
On the Repair Time Scaling Wall for MANETS ..... *V. Kulathumani, A. Arora, M. Sridharan, K. Parker, and B. Lemon* 1623  
Analytic Modeling of SIR in Cellular Networks With Heterogeneous Traffic ..... *M. Mirahsan, H. Yanikomeroglu, G. Senarath, and N.-D. Đào* 1627

---

An Energy-Aware Resource Design Model for Constrained Networks .....	1631
..... <i>N. Correia, G. Schütz, A. Mazayev, J. Martins, and A. Barradas</i>	
A Traffic-Light-Aware Routing Protocol Based on Street Connectivity for Urban Vehicular Ad Hoc Networks .....	1635
..... <i>Q. Ding, B. Sun, and X. Zhang</i>	
Suboptimal Online Resource Allocation in Hybrid Energy Supplied OFDMA Cellular Networks .....	1639
..... <i>J. Yang, Q. Yang, Z. Shen, and K. S. Kwak</i>	
Profit Versus Energy Efficiency Maximization in Regular Topology Cellular Networks .....	1643
..... <i>J.-B. Seo and S.-Y. Kim</i>	
Efficient Deployment of Multiple Unmanned Aerial Vehicles for Optimal Wireless Coverage .....	1647
..... <i>M. Mozaffari, W. Saad, M. Bennis, and M. Debbah</i>	
Dynamic Joint Carrier Aggregation Group Formation and Interference Alignments for Femtocell in LTE-A .....	1651
..... <i>B. Al-Doori and X. Liu</i>	
WiFi in Licensed Band .....	1655
..... <i>S. Mumtaz, A. Al-Dulaimi, K. M. S. Huq, F. B. Saghezchi, and J. Rodriguez</i>	
Extending Video Playback Time With Limited Residual Battery .....	1659
..... <i>H. Ahmad, N. Saxena, A. Roy, and P. De</i>	
Game-Theoretic Queue-Stabilizing Backoff Algorithm in S-ALOHA and CSMA Systems .....	1663
..... <i>J.-B. Seo</i>	
<b>WIRELESS SYSTEMS</b>	
Wireless Energy Transfer Beamforming With Löwner-John Ellipsoidal Approximation .....	1667
..... <i>B. Li, Z. Zeng, N. C. Beaulieu, and T. Zhang</i>	
Optimal Power Allocation for Artificial Noise in a Poisson Interference Field .....	1671
..... <i>S. H. Chae and W. Choi</i>	
Outage Bound for Max-Based Downlink Scheduling With Imperfect CSIT and Delay Constraint .....	1675
..... <i>W. Santipach, K. Mamat, and C. Charoenlarnpopparut</i>	
<b>WIRELESS TECHNIQUES AND FADING</b>	
Novel Receiver Design for the Cooperative Relaying System With Non-Orthogonal Multiple Access .....	1679
..... <i>M. Xu, F. Ji, M. Wen, and W. Duan</i>	
On Alternate Relaying With Improper Gaussian Signaling .....	1683
..... <i>M. Gaafar, O. Amin, A. Ikhlef, A. Chaaban, and M.-S. Alouini</i>	
Path-Following Algorithms for Beamforming and Signal Splitting in RF Energy Harvesting Networks .....	1687
..... <i>A. A. Nasir, H. D. Tuan, D. T. Ngo, S. Durrani, and D. I. Kim</i>	
Lower Bound for Finite-SNR DMT With Position Estimation Errors in MIMO Channels .....	1691
..... <i>T.-W. Chiang and J.-H. Lee</i>	
Outage Performance for Dynamic Power Allocation in Hybrid Non-Orthogonal Multiple Access Systems .....	1695
..... <i>Z. Yang, Z. Ding, P. Fan, and Z. Ma</i>	

---