

2014 Information Theory and Applications Workshop

(ITA 2014)

**San Diego, California, USA
9-14 February 2014**



**IEEE Catalog Number: CFP1432C-POD
ISBN: 978-1-4799-3590-1**

TABLE OF CONTENTS

A

A Class of Compression Systems with Model-Free Encoding	1
<i>Ying-zong Huang and Gregory W. Wornell</i>	

A continuum limit for non-dominated sorting	8
<i>Jeff Calder, Selim Esedoğlu, and Alfred O. Hero III</i>	

A Generalized Boolean Function Generator for Complementary Sequences	15
<i>Srdjan Z. Budišin and Predrag Spasojević</i>	

A Rate-Distortion Approach to Index Coding	22
<i>Sinem Unal and Aaron B. Wagner</i>	

Achievable Performance and Limiting Factors of Echo-Cancellation for Wireless Communications	27
<i>Fuyun Ling</i>	

An asymptotic approximation of the ISI channel capacity	35
<i>Giorgio Taricco and Joseph J. Boutros</i>	

An Information-Theoretic Analysis of Dirty Paper Coding for Informed Audio Watermarking	40
<i>Andrea Abrardo, Mauro Barni, Andrea Gorrieri, and Gianluigi Ferrari</i>	

Assuring Privacy and Reliability in Crowdsourcing with Coding	46
<i>Lav R. Varshney, Aditya Vempaty, and Pramod K. Varshney</i>	

B

Bust or random error correction based on Fire and BCH codes	52
<i>Wei Zhou, Shu Lin, and Khaled Abdel-Ghaffar</i>	

C

Check-hybrid GLDPC Codes Without Small Trapping Sets	57
<i>Vida Ravanmehr, David Declercq, and Bane Vasic</i>	

Closing the Price of Anarchy Gap in the Interdependent Security Game	66
<i>Parinaz Naghizadeh and Mingyan Liu</i>	

Codes and lattices in the l_p metric	74
<i>Sueli I. R. Costa, Antonio Campello, Grasiela C. Jorge, João E. Strapasson, and Claudio Qureshi</i>	

Communication and Interference Coordination	78
<i>Ricardo Blasco-Serrano, Ragnar Thobaben, and Mikael Skoglund</i>	

Complexity reduced zero-forcing beamforming in massive MIMO systems	86
<i>Chan-Sic Park, Yong-Suk Byun, Aman Miesso Bokiye, and Yong-Hwan Lee</i>	
Controlled Sampling using an Energy Harvesting Sensor	91
<i>Alireza Seyed</i>	
D	
Decoding of Quasi-Cyclic LDPC Codes With Section-Wise Cyclic Structure	96
<i>Juane Li, Keke Liu, Shu Lin, and Khaled Abdel-Ghaffar</i>	
Decomposition of Large-Scale MDPs for Wireless Scheduling with Load- and Channel-Awareness ...	106
<i>Huasen Wu, Xiaojun Lin, Xin Liu, Kun Tan, and Yongguang Zhang</i>	
Delay Stability of Back-Pressure Policies in the presence of Heavy-Tailed Traffic	116
<i>Mihalis G. Markakis, Eytan Modiano, and John N. Tsitsiklis</i>	
Distributed control for the smart grid: the case of economic dispatch	126
<i>R. Mudumbai and S. Dasgupta</i>	
Distributed massive MIMO: algorithms, architectures and concept systems	132
<i>U. Madhow, D.R. Brown III, S. Dasgupta, and R. Mudumbai</i>	
Distributed Storage Systems with Secure and Exact Repair - New Results	139
<i>Ravi Tandon, SaiDhiraj Amuru, T. Charles Clancy, and R. Michael Buehrer</i>	
Domain Adaptation Methods for Robust Pattern Recognition	145
<i>David A. Shaw and Rama Chellappa</i>	
E	
Efficient Homomorphic Encryption on Integer Vectors and Its Applications	152
<i>Hongchao Zhou and Gregory Wornell</i>	
Electromagnetic Decoupling and Complexity	161
<i>Ding Nie, Bertrard Hochwald, and Erik Stauffer</i>	
Encoding of cellular positional information and maximum capacity of parallel coupled channels	167
<i>Eduard A. Jorswieck, Andreas I. Reppas, and Haralampos Hatzikirou</i>	
Energy Harvesting Communications with Continuous Energy Arrivals	175
<i>Burak Varan, Kaya Tutuncuoglu, and Aylin Yener</i>	
Estimation of Sensor Input Signals that are Neither Bandlimited Nor Sparse	185
<i>Lukas Bruderer and Hans-Andrea Loeliger</i>	
Eulerian numbers revisited : Slices of hypercube	190
<i>Kingo Kobayashi, Hajime Sato, Mamoru Hoshi, and Hiroyoshi Morita</i>	

Experiences Building Network-Coding-Based Distributed Storage Systems	200
<i>Patrick P. C. Lee</i>	
F	
Fair Resource Allocations for OFDMA Multi-cell Networks	202
<i>Wuwen Li and Greg Pottie</i>	
Fast Multi-dimensional Polar Encoding and Decoding	209
<i>Hessam MahdaviFar, Mostafa El-Khamy, Jungwon Lee, and Inyup Kang</i>	
G	
Generalized weights and bounds for error probability over erasure channels	214
<i>Leandro Cruvinel Lemes and Marcelo Firer</i>	
H	
High SNR Capacity of Millimeter Wave MIMO Systems with One-Bit Quantization	222
<i>Jianhua Mo and Robert W. Heath, Jr.</i>	
HRTF Phase Synthesis via Sparse Representation of Anthropometric Features	227
<i>Ivan Tashev</i>	
Hybrid Compression and Message-Sharing Strategy for the Downlink Cloud Radio-Access Network	232
<i>Pratik Patil and Wei Yu</i>	
I	
Impact of Regularization on Spectral clustering	238
<i>Antony Joseph and Bin Yu</i>	
Increasing Flash Memory Lifetime by Dynamic Voltage Allocation for Constant Mutual Information	240
<i>Tsung-Yi Chen, Adam R. Williamson, and Richard D. Wesel</i>	
Information exchange for routing protocols	245
<i>Ángela I. Barbero and Øyvind Ytrehus</i>	
Information spread in networks: Control, games, and equilibria	253
<i>Ali Khanafer and Tamer Başar</i>	
Interpolation-based Chase BCH Decoder	263
<i>Xinmiao Zhang</i>	
L	
Large-Scale Multiuser SM-MIMO Versus Massive MIMO	268
<i>T. Lakshmi Narasimhan, P. Raviteja, and A. Chockalingam</i>	
LDPC Code Designs Based on $\mathbf{vI}$ Matrices	277
<i>Shayan G. Srinivasa</i>	

Link Failure Recovery in Large Arbitrary Networks via Network Coding	280
<i>Serhat Nazim Avci and Ender Ayanoglu</i>	

Low Complexity Encoding Algorithm of RS-based QC-LDPC Codes	290
<i>Mu Zhang, Li Tang, Qin Huang, and Zulin Wang</i>	

Low Complexity Power and Scheduling Policies for Wireless Networks to Provide Quality of Service.....	294
<i>Satya Kumar V and Vinod Sharma</i>	

M

Massive MIMO and Inter-Tier Interference Coordination	300
<i>Ansuman Adhikary, Ebrahim Al Safadi, and Giuseppe Caire</i>	

MIMO Broadcast Channels with Gaussian CSIT and Application to Location based CSIT	310
<i>Manijeh Bashar, Yohan Lejosne, Dirk Slock, and Yi Yuan-Wu</i>	

Modeling Wireless Channels Under Spherical Invariance Assumptions	317
<i>Cheng-An Yang, Kung Yao, and Ezio Biglieri</i>	

N

Neural Shaping with Joint Optimization of Controller and Plant under Restricted Dynamics	322
<i>Bryan D. He and Lakshminarayan Srinivasan</i>	

Non-Asymptotic and Asymptotic Analyses on Markov Chains in Several Problems	328
<i>Masahito Hayashi and Shun Watanabe</i>	

O

On a Problem of Massey	338
<i>Jon Hamkins</i>	

On Code Design for Simultaneous Energy and Information Transfer	343
<i>Anshoo Tandon, Mehul Motani, and Lav R. Varshney</i>	

On Discrete Alphabets for the Two-user Gaussian Interference Channel with One Receiver Lacking Knowledge of the Interfering Codebook	349
<i>Alex Dytso, Daniela Tuninetti, and Natasha Devroye</i>	

On feedback in Gaussian multi-hop networks	357
<i>Farzan Farnia and Ayfer Özgür</i>	

On the Capacity of HetNets	362
<i>S. V. Hanly and Philip A. Whiting</i>	

On the Diversity-Multiplexing Tradeoff of Unconstrained MIMO Fading Channels	371
<i>Yair Yona and Meir Feder</i>	

On the riddle of coding equality function in the garden hose model	381
<i>Oded Margalit</i>	
Optimal Bounds on Approximation of Submodular and XOS Functions by Juntas	386
<i>Vitaly Feldman and Jan Vondrák</i>	
Optimal policies for two-user Energy Harvesting Device networks with imperfect State-of-Charge knowledge	396
<i>Davide Del Testa and Michele Zorzi</i>	
P	
Parallel algorithms for addition in non-standard number systems	401
<i>Christiane Frougny, Pavel Heller, Edita Pelantová, and Milena Svobodová</i>	
Performance improvement with decoder output smoothing in differential predictive coding	408
<i>Jerry D. Gibson and Malavika Bhaskaranand</i>	
Precise Semidefinite Programming Formulation of Atomic Norm Minimization for Recovering d-Dimensional ($D \geq 2$) Off-the-Grid Frequencies	414
<i>Weiyu Xu, Jian-Feng Cai, Kumar Vijay Mishra, Myung Cho, and Anton Kruger</i>	
Q	
Quickest Anomaly Detection: A Case of Active Hypothesis Testing	418
<i>Kobi Cohen and Qing Zhao</i>	
R	
Reinforcement learning, particle filters and the EM algorithm	423
<i>Vivek S. Borkar and Ankushkumar Jain</i>	
Relay-aided Networking for Power Line Communications	428
<i>Izhak Rubin, Yu-Yu Lin, and Daniel Kofman</i>	
Reliable, Deniable and Hidable Communication	434
<i>Pak Hou Che, Mayank Bakshi, Chung Chan, and Sidharth Jaggi</i>	
S	
Secrecy coverage in two dimensions	444
<i>Amites Sarkar</i>	
Some reflections about the Lambert W Function as inverse of $x \cdot \log(x)$	450
<i>Ulrich Tamm</i>	
Spectrum Pricing Games with Correlated Bandwidth Availabilities and Demands	454
<i>Gaurav S. Kasbekar and Saswati Sarkar</i>	
Spin glasses with attitude: opinion formation in a partisan Erdos-Rényi world	463
<i>M. H. Afrasiabi, R. Guérin, and S. S. Venkatesh</i>	

Sub-Baud Coding: James L. Massey and Early Research on Sequences for Spread Spectrum 468
Michael B. Pursley and Dilip V. Sarwate

Symmetric two-user MIMO BC with Evolving Feedback 472
Jinyuan Chen and Petros Elia

T

TCP-Aware Backpressure Routing and Scheduling 477
Hulya Seferoglu and Eytan Modiano

The Belfiore-Solé Conjecture and a Certain Technique for Verifying it for a Given Lattice 486
Julia Pinchak and B.A. Sethuraman

The Bethe and Sinkhorn Approximations of the Pattern Maximum Likelihood Estimate and their Connections to the Valiant-Valiant Estimate 489
Pascal O. Vontobel

Total Variation Distance and the Distribution of Relative Information 499
Sergio Verdú

Traffic Management in Random Cellular Networks 50H
Kostas Stamatiou and Martin Haenggi

U

Unconventional Behavior of the Noisy Min-Sum Decoder over the Binary Symmetric Channel 507
Christiane L. Kameni Ngassa, Valentin Savin, and David Declercq

User Association and Load Balancing for Cellular Massive MIMO 517
Dilip Bethanabhotla, Ozgun Y. Bursalioglu, Haralabos C. Papadopoulos, and Giuseppe Caire

V

Virtual Pilot Signal for Massive MIMO-OFDM Systems 527
Sunho Park, Jun Won Choi, Ji-Yun Seol, and Byonghyo Shim

Z

Zeta functions of finite-type-Dyck shifts are N-algebraic 531
Marie-Pierre Béal, Michel Blockelet, and Cătălin Dima