2012 Information Theory and Applications Workshop

(ITA 2012)

San Diego, California, USA 5-10 February 2012



IEEE Catalog Number: CFP1232C-PRT ISBN:

978-1-4673-1473-2

Table of Contents

Title	Authors	Page Number
Coordinated Downlink Multi-Point Communications in Heterogeneous Cellular Networks	Alan Barbieri, Peter Gaal, Stefang Geirhofer, Tingfang Ji, Durga Malladi, Yongbin Wei, and Feng Xue	7
Modeling Heterogeneous Network Interference	Robert W. Heath Jr. and Marios Kountouris	17
Finite Alphabet Iterative Decoders Approaching Maximum Likelihood Performance on the Binary Symmetric Channel	David Declercq, Bane Vasic, Shiva K. Planjery, and Erbao Li	23
On some linear codes that are proper for error detection	Torleiv Kløve	33
Non-asymptotic Equipartition Properties for Independent and Identically Distributed Sources	En-Hui Yang and Jin Meng	39
Securing Inductively-Coupled Communication	Lav R. Varshney, Pulkit Grover, and Anant Sahai	47
On Capacity-Quality Tradeoffs in HTTP Adaptive Streaming over LTE Networks	Özgür Oyman and Sarabjot Singh	54
On the Implementation of Modified Fuzzy Vault for Biometric Encryption	Xinmiao Zhang, Richard Shi, and James Ritcey	56
A Class of Log-Optimal Utility Functions	Paul Cuff	62
A Hybrid Random-Structured Coding Scheme for the Gaussian Two-Terminal Source Coding Problem Under a Covariance Matrix Distortion Constraint	Yang Yang and Zixiang Xiong	64
A Novel MCMC Algorithm for Near-Optimal Detection in Large- Scale Uplink Multiuser MIMO Systems	Tanumay Datta, N. Ashok Kumar, A. Chockalingam, and B. Sundar Rajan	69
MMSE Interference in Gaussian Channels	Shlomo Shamai and Ronit Bustin	78
Semi-Blind MU-MIMO based on Limited Features of the User Multi-Path Intensity Profiles	Haralabos C. Papadopoulos, Sayandev Mukherjee, and Sean A. Ramprashad	115
On The Limitations of Cooperation in Wireless Networks	Angel Lozano, Jeffrey G. Andrews, and Robert W. Heath, Jr.	123
On Linear Deterministic Interference Channels with Partial Feedback	Sy-Quoc Le, Ravi Tandon, Mehul Motani, and H. Vincent Poor	131
Error Correction on an Insertion/Deletion Channel Applying Codes From RFID Standards	Guang Yang, Angela I. Barbero, Eirik Rosnes, and Øyvind Ytrehus	137
Information Forests	Zhao Yi, Stefano Soatto, Maneesh Dewan, and Yiqiang Zhan	143
Analytical Evaluation of Adaptive Coding for Markov Models of Nakagami Fading	Jason D. Ellis, Michael A. Juang, and Michael B. Pursley	147
On the multiple unicast capacity of 3-source, 3-terminal directed acyclic networks	Shurui Huang and Aditya Ramamoorthy	152
Achievable Rate Regions for Network Coding	Randall Dougherty, Chris Freiling, and Kenneth Zeger	160
Transmission capacity of wireless ad hoc network with non- parametric linear MMSE receiver	Byungju Lee, Sunho Park and Byonghyo Shim	168
On High-Efficiency Optical Communication and Key Distribution	Yuval Kochman and Gregory W. Wornell	172
Interference Mitigation in MIMO Interference Channel via Successive Single-User Soft Decoding	Jungwon Lee, Hyukjoon Kwon, and Inyup Kang	180

Rate Distortion Performance Bounds for Wideband Speech	Jerry D. Gibson and Ying-Yi Li	186
On the Typical Minimum Distance of Protograph-Based Non-Binary LDPC Codes	Dariush Divsalar and Lara Dolecek	192
Beamforming and Aligned Interference Neutralization Achieve the Degrees of Freedom Region of the 2 x 2 x 2 MIMO Interference Network	Chinmay S. Vaze and Mahesh K. Varanasi	199
A Transform Approach for Constructing Quasi-Cyclic Euclidean Geometry LDPC Codes	Qiuju Diao, Wei Zhou, Shu Lin and Khaled Abdel-Ghaffar	204
Optimal Smart Grid Tariffs	Longbo Huang, Jean Walrand, and Kannan Ramchandran	212
On erasure correction coding for streaming	Ömer Faruk Tekin, Tracey Ho, Hongyi Yao, and Sidharth Jaggi	221
Quasi-Cyclic LDPC Codes: Construction and Rank Analysis of Their Parity-Check Matrices	Keke Liu, Qin Huang, Shu Lin, and Khaled Abdel-Ghaffar	227
Compressive Adaptation of Large Steerable Arrays	Dinesh Ramasamy, Sriram Venkateswaran, and Upamanyu Madhow	234
Communicating with Energy Harvesting Transmitters and Receivers	Kaya Tutuncuoglu and Aylin Yener	240
A Unification of Network Coding and Routing	Raymond W. Yeung	246
On Optimal Transmission Policies for Energy Harvesting Devices	Nicolo Michelusi, Kostas Stamatiou, and Michele Zorzi	249
Minimizing Exposure to Electromagnetic Radiation in Portable Devices	Bertrand M. Hochwald and David J. Love	255
Hide and Code: Session Anonymity in Wireless Line Networks with Coded Packets	Hugo Sousa-Pinto, Daniel E. Lucani and João Barros	262
Nearly-optimal associative memories based on distributed constant weight codes	Vincent Gripon and Claude Berrou	269
Long range dependent Markov chains with applications	Barlas Oguz and Venkat Anantharam	274
From Secret Key Agreement to Matroidal Undirected Network	Chung Chan	281
Hot or Not: Interactive Content Search Using Comparisons	Amin Karbasi, Stratis Ioannidis, and Laurent Massoulie	291
PodCastle and Songle: Crowdsourcing-Based Web Services for Spoken Document Retrieval and Active Music Listening	Masataka Goto, Jun Ogata, Kazuyoshi Yoshii, Hiromasa Fujihara, Matthias Mauch, and Tomoyasu Nakano	298
Random Access Sensor Networks: Field Reconstruction From Incomplete Data	Fatemeh Fazel, Maryam Fazel, and Milica Stojanovic	300
First-order Asymptotics of the BICM Mutual Information: Uniform vs. Nonuniform Distributions	Erik Agrell and Alex Alvarado	306
Orthogonal Multiple Access and Information Fusion: How Many Observations Are Needed?	Gianluigi Ferrari, Marco Martalo, Andrea Abrardo, and Riccardo Raheli	311
Spectrum White Space Trade in Cognitive Radio Networks	Gaurav S. Kasbekar and Saswati Sarkar	321
Achieving Gaussian Multiple Access Channel Capacity With Spatially Coupled Sparse Graph Multi-User Modulation	Dmitri Truhachev	331
Capacity of a Gaussian MAC with Energy Harvesting Transmit Nodes	R Rajesh, Deekshith P K, and Vinod Sharma	338
Optimality of Coincidence-Based Goodness of Fit Test for Sparse Sample Problems	Dayu Huang and Sean Meyn	344

On Scheduling Algorithms Robust to Heavy-Tailed Traffic	Krishna Jagannathan, Libin Jiang, and	347
	Eytan Modiano	
Online Learning Algorithms for Stochastic Water-Filling	Yi Gai and Bhaskar Krishnamachari	352
ALOHA Performs Optimal Power Control in Poisson Networks	Xinchen Zhang and Martin Haenggi	357
Online Learning for Stochastic Linear Optimization Problems	Keqin Liu and Qing Zhao	363
Approximate Ergodic Capacity of a Class of Fading 2×2×2	Sang-Woon Jeon, Chien-Yi Wang, and	368
Networks	Michael Gastpar	
Dynamic Pricing Strategies for Social Networks in the Presence of	B. T. Swapna, Atilla Eryilmaz, and Ness	374
Externalities	B. Shroff	
Recovering simple signals	Anna C. Gilbert, Brett Hemenway, Atri	
	Rudra, Martin J. Strauss, and Mary	
	Wootters	382
New Codes on Graphs Constructed by Connecting Spatially	Dmitri Truhachev, David G. M.	392
Coupled Chains	Mitchell, Michael Lentmaier, and Daniel	
	J. Costello, Jr.	
Regenerative Hierarchical Codebooks for Limited	Kyeongjun Ko and Jungwoo Lee	398
Channel Feedback in MIMO Systems		
Scheduling in Heterogeneous Cellular Networks with Mobility	Pooya Monajemi, Richa Sahasrabudhe,	401
	and John Villasenor	
Exchangeable Inconsistent Priors for Bayesian Posterior Inference	Max Welling, Ian Porteous, and Kenichi	407
Exchangeable inconsistent friors for Dayesian Fosterior inference	Kurihara	407
Door to Door Strooming Over Dynamic Danden Hemilton Cycles	Joohwan Kim and R. Srikant	115
Peer-to-Peer Streaming Over Dynamic Random Hamilton Cycles		415
Approaching the ultimate limits of communication efficiency with	Baris Erkmen, Bruce Moision, Samuel J.	420
a photon-counting detector	Dolinar, Kevin M. Birnbaum, and	
	Dariush Divsalar	