2007 IEEE Information Theory Workshop on Information Theory for Wireless Networks

Bergen, Norway 1-6 July 2007



IEEE Catalog Number: ISBN 10:

ISBN 13:

CFP07IFO-PRT 1-4244-1199-8 978-1-4244-1199-3

Table of Contents

				ra
Monday, July 2 09:00-09:40	S. Sirianunpiboon, S. D. Howard, A. R. Calderbank	Diversity Gains across Line of Sight and Rich Scattering Environments from Space-Polarization-Time Codes	Invited talk	1
09:40-10:20	Amir Salman Avestimehr, Suhas Diggavi, David Tse	A Deterministic Model for Wireless Relay Networks and its Capacity	Invited talk	6
10:20-10:40	Hsiao-feng (Francis) Lu	Optimal Code Constructions for SIMO-OFDM Frequency Selective Fading Channels		12
11:00-11:40	Mahdi Jafarisiavoshani, Christina Fragouli, Suhas Diggavi	Subspace Properties of Randomized Network Coding	Invited talk	17
11:40-12:20	Deniz Gündüz, Elza Erkip	Reliable Cooperative Source Transmission with Side Information	Invited talk	22
12:20-12:40	Mohammad Jabbarihagh, Farshad Lahouti	A Decentralized Approach to Network Coding Based on Learning		27
14:00-14:20	S. Dusad, S. N. Diggavi, A. R. Calderbank	Rank Distance Codes for ISI channels		32
14:20-14:40	Vaneet Aggarwal, Amir Bennatan, A. Robert Calderbank	On Maximizing Coverage in Gaussian Relay Networks		37
14:40-15:00	Chao Tian, Avi Steiner, Shlomo Shamai (Shitz), Suhas Diggavi	Expected Distortion for Gaussian Source with a Broadcast Transmission Strategy over a Fading Channel		42
15:00-15:20	Chaitanya Rao, Babak Hassibi	Diversity-Multiplexing Gain Trade- off of a MIMO System with Relays		47
15:40-16:00	Petre Stoica, Jian Li, and Ming Xue	On Sequences with Good Correlation Properties: A New Perspective		52
16:00-16:20	Weifeng Jiang, Lei Hu, Xiaohu Tang, Xiangyong Zeng	New Optimal Quadriphase Sequences with Larger Linear Span		57
16:20-16:40	Alexander Zhdanov	Isochronous Data Transmission With Rates Close to Channel Capacity		62

16:40-17:00	Jalil S. Harsini, Farshad Lahouti	Joint Optimization of Adaptive Modulation and Coding, Power Control and Packet Retransmission over Block Fading Channels		Page 67
Tuesday, July 3 09:00-09:40	Amin Shokrollahi	Raptor Codes.	Invited talk	72
09:40-10:20	Christopher Lott, Olgica Milenkovic, Emina	Hybrid ARQ: Theory, State of the Art and Future Directions	Invited talk	73
10:20-10:40	Soljanin J. Chui, A. Chindapol	Design of Cross-Packet Channel Coding with Low-Density Parity Check Codes		78
11:00-11:40	Kaisa Nyberg, Miia Hermelin	Multidimensional Walsh Transform and a Characterization of Bent Functions	Invited talk	83
11:40-12:20	Håkan Englund, Martin Hell, Thomas Johansson	A Note on Distinguishing Attacks	Invited talk	87
12:20-12:40	Rainer Göttfert, Berndt Gammel	On the Frame Length of Achterbahn-128/80		91
14:00-14:40	Jyrki Lahtonen	Dense MIMO Matrix Lattices and Class Field Theoretic Themes in Their Construction	Invited talk	96
14:40-15:00	Camilla Hollanti, Kalle Ranto	Asymmetric Space-Time Block Codes for MIMO Systems		101
15:00-15:20	Roope Vehkalahti	Constructing Optimal Division Algebras for Space-Time Coding		106
15:40-16:00	Igor Bjelakovic, Tobias J. Oechtering, Clemens Schnurr, Holger Boche	On the Strong Converse for the Broadcast Capacity Region of Two- Phase Bidirectional Relaying		111
16:00-16:20	Li Ping, Peng Wang	Multi-User Gain and Maximum Eigenmode Beamforming for MIMO Systems with Rate Constraints		116
16:20-16:40	Zhiguo Ding, Yu Gong, T. Ratnarajah, Colin Cowan	Opportunistic Cooperative Diversity Protocols for Wireless Networks		121

Wednesday, July 4

July 4				
09:00-09:40	Shenghao Yang, Raymond Yeung	Refined Coding Bounds for Network Error Correction	Invited talk	126
09:40-10:20	Zhen Zhang , Xijin Yan, Huseyin Balli	Some Key Problems in Network Error Correction Coding Theory	Invited talk	131
10:20-10:40	Hossein Bahramgiri, Mohammad Jabbari, Farshad Lahouti	Robust Network Coding in the Presence of Link Failure Using a Multicast Rate-Diversity Trade off		136
11:00-11:40	Hesham El Gamal	Non Traditional Relay Channels: Diversity and Secrecy Gains	Invited talk	141
11:40-12:20	Sheng Yang, Jean- Claude Belfiore	Distributed (Space-Time) Codes for the MIMO Multihop Channel via Partitions of the Channel	Invited talk	142
12:20-12:40	Babak Hassibi, Sormeh Shadbakht	Normalized Entropy Vectors, Network Information and Theory and Convex Optimization		143
Thursday, July 5				
09:00-09:40	Guang Gong	Correlation of Multiple Bent Function Signal Sets	Invited talk	148
09:40-10:00	Gregory Cresp, Hans- Jürgen Zepernick, Hai Huyen Dam	On the Classification of Large Area Sequences		153
10:00-10:20	Ying Li	On the Construction of 64-QAM Golay Complementary Sequences		158
10:20-10:40	Solomon W. Golomb, Guang Gong	Actions of the Unitary Group on Irreducible/ Primitive Polynomials and Their Applications to Randomness of Sequences		163
11:00-11:40	Mikael Gidlund	Packet Retransmission Diversity Schemes for Higher Modulation Order with High Power and Bandwith Efficiency	Invited talk	168
11:40-12:20	Eirik Rosnes	On the Effects of Pseudo-Codewords on Independent Rayleigh Flat-Fading Channels	Invited talk	169
12:20-12:40	Alexandre Graell i Amat, Charbel Abdel Nour, Catherine Douillard	Serially Concatenated Continuous Phase Modulation with Extended BCH Codes		174

14:00-14:20	Aitor del Coso, Christian Ibars	The Amplify-based Multiple-Relay Multiple-Access Channel: Capacity Region and MAC-BC Duality		179
14:20-14:40	Amir J. Salomon, Ofer Amrani	Space-Time Block Codes using Diversity Transform		184
14:40-15:00	Behrouz Maham, Are Hjørungnes	Distributed GABBA Space-Time Codes in Amplify-and-Forward Cooperation		189
15:00-15:20	Mohamed Chouayakh, Andreas Knopp, Berthold Lankl	Low Complexity Two Stage Detection Scheme for MIMO Systems		194
15:40-16:00	Jared Grubb, Sriram Vishwanath, Yingbin Liang, H. Vincent Poor	Secrecy Capacity for Semi- deterministic Wire-tap Channels		199
16:00-16:20	Manav R. Bhatnagar, Are Hjørungnes	SER Expressions for Double Differential Modulation		203
16:20-16:40	Albert W. C. Lim, Vincent K. N. Lau	Achieving Optimal Distortion Exponent of Parallel Quasi-Static Fading Channel with Imperfect CSIT		208
Friday, July 6				
09:00-09:40	Jay Kumar Sundararajan, Devavrat Shah, Muriel Medard	On queueing in coded networks - queue size follows degrees of freedom	Invited talk	212
09:40-10:20	Jörg Kliewer, Thedoros Dikaliotis, Tracey Ho	On the Performance of Joint and Separate Channel and Network Coding in Wireless Fading Networks	Invited talk	218
10:20-10:40	Hsiao-feng (Francis) Lu	Binary Linear Network Codes		223
11:00-11:40	Danilo Silva, Frank R. Kschischang, Ralf Koetter	A Rank-Metric Approach to Error Control in Random Network Coding	Invited talk	228
11:40-12:00	Cemal Akçaba, Patrick Kuppinger, Helmut Bölcskei	Distributed Transmit Diversity in Relay Networks		233
12:00-12:20	Venkatesh Ramaiyan, Anurag Kumar	On the Limits of Spatial Reuse and Cooperative Communication for Dense Wireless Networks		238
12:20-12:40	Chen Sun, Jun Cheng, Makoto Taromaru	Achieving the Lowest Outage Probability for Multi-Phase Cooperative Wireless Networks		243