

# **2007 IEEE Information Theory Workshop**

**Tahoe City, CA  
2-6 September 2007**

**Volume 1 of 2**



**IEEE Catalog Number:**  
**ISBN 10:**  
**ISBN 13:**

**CFP07IFT-PRT**  
**1-4244-1563-2**  
**978-1-4244-1563-2**

# TABLE OF CONTENTS

---

## **P1: CHANNEL CODING I**

### **P1-1: ON THE PSEUDOCODEWORD WEIGHT AND PARITY-CHECK .....1 MATRIX REDUNDANCY OF LINEAR CODES**

*Christine A. Kelley, Department of Mathematics, Department of Mathematics, The Ohio State University;  
Deepak Sridhara, Seagate Technology*

### **P1-2: THE MAXIMUM A POSTERIORI DECODING USING VARIATIONAL .....7 BAYES METHODS FOR DIGITAL MAGNETIC RECORDING CHANNELS**

*Hidetoshi Saito, Department of Information and Communications Engineering, Faculty of Engineering,  
Kogakuin University; Masayuki Masayuki, Ryuji Kohno, Division of Physics, Electrical and Computer  
Engineering, Yokohama National University*

### **P1-3: DESIGN OF NONBINARY QUASI-CYCLIC LDPC CYCLE CODES .....13**

*Rong-Hui Peng, Rong-Rong Chen, Dept. of Electrical and Computer Engineering, University of Utah*

### **P1-4: A UNIFIED DECODING ALGORITHM FOR LINEAR CODES BASED .....19 ON PARTITIONED PARITY-CHECK MATRICES**

*Xiao Ma, Department of Electronics and Communication Engineering, Sun Yat-sen University; Baoming Bai,  
State Key Lab. of ISN, Xidian University*

### **P1-5: EXIT FUNCTIONS FOR RANDOMLY PUNCTURED SYSTEMATIC .....24 CODES**

*Ragnar Thobaben, School of Electrical Engineering, Royal Institute of Technology (KTH)*

### **P1-6: ON THE BINARY SELF-DUAL DOUBLY-EVEN CODES OF LENGTH .....30 112**

*Radinka Yorgova, Department of Informatics, University of Bergen*

### **P1-7: SPECTRAL SHAPING TECHNIQUE FOR PERMUTATION .....36 DISTANCE-PRESERVING MAPPING CODES**

*Khmaies Ouahada, Theo G. Swart, Hendrik C. Ferreira, Ling Cheng, Department of Electrical and Electronic  
Engineering Science, University of Johannesburg*

### **P1-8: SPLIT-TURBO CODES FOR NONUNIFORM SEQUENCES .....42**

*Kai Xie, Gil I. Shamir, Department of Electrical and Computer Engineering, University of Utah*

## **General: GENERAL TOPICS ON INFORMATION THEORY**

### **General-1: POWER ALLOCATION FOR DISCRETE-INPUT NON-ERGODIC .....48 BLOCK-FADING CHANNELS**

*Khoa D. Nguyen, Institute for Telecommunications Research, University of South Australia; Albert  
Guillén i Fàbregas, Engineering Department, University of Cambridge; Lars K. Rasmussen, Institute for  
Telecommunications Research, University of South Australia*

<b>General-2: PROBABILISTIC CAPACITY AND OPTIMAL CODING FOR ASYNCHRONOUS CHANNEL</b>	<b>54</b>
<i>Ning Cai, The State Key Lab. of ISN, Xidian University; Siu-Wai Ho, Dept. of Electrical Engineering, Princeton University; Raymond W. Yeung, Dept. of Information Engineering, The Chinese University of Hong Kong</i>	
<b>General-3: THE EFFECT OF FINITE MEMORY ON THROUGHPUT OF WIRELESS PACKET NETWORKS</b>	<b>60</b>
<i>Badri N. Vellambi, Nazanin Rahnavard, Faramarz Fekri, School of Electrical and Computer Engineering, Georgia Institute of Technology</i>	
<b>General-4: ITERATIVE CODED PULSE-POSITION-MODULATION FOR DEEP-SPACE OPTICAL COMMUNICATIONS</b>	<b>66</b>
<i>Maged F. Barsoum, Bruce Moision, Jet Propulsion Laboratory, California Institute of Technology; Michael Fitz, Department of Electrical Engineering, UCLA; Dariush Divsalar, Jon Hamkins, Jet Propulsion Laboratory, California Institute of Technology</i>	
<b>General-5: ON THE ERGODIC SUM-RATE PERFORMANCE OF CDD IN MULTI-USER SYSTEMS</b>	<b>72</b>
<i>Aydin Sezgin, Mohamad Charafeddine, Arogyaswami Paulraj, Stanford University, Information Systems Laboratory</i>	
<b>General-6: LATTICE CODING FOR THE VECTOR FADING PAPER PROBLEM</b>	<b>78</b>
<i>Shih-Chun Lin, Pin-Hsun Lin, Hsuan-Jung Su, National Taiwan University</i>	
<b>General-7: INFORMATION THEORETIC BOUNDS TO SENSING CAPACITY OF SENSOR NETWORKS UNDER FIXED SNR</b>	<b>84</b>
<i>Shuchin Aeron, Manqi Zhao, Venkatesh Saligrama, Department of Electrical and Computer Engineering, Boston University</i>	
<b>NC: NETWORK CODING</b>	
<b>NC-1: AVERAGE THROUGHPUT WITH LINEAR NETWORK CODING OVER THE BINARY FIELD</b>	<b>90</b>
<i>Ali Al-Bashabsheh, Abbas Yongacoglu, School of Information Technology and Engineering, University of Ottawa</i>	
<b>NC-2: DETERMINISTIC SECURE ERROR-CORRECTING (SEC) NETWORK CODES</b>	<b>96</b>
<i>Chi Ngai, Shenghao Yang, The Chinese University of Hong Kong</i>	
<b>NC-3: CONCATENATED RANDOM PARITY FORWARDING IN WIRELESS MULTI-HOP NETWORKS</b>	<b>102</b>
<i>Sang Kim, Iowa State University</i>	
<b>NC-4: PHY-LAYER NETWORK CODING FOR BROADCAST CHANNEL WITH SIDE INFORMATION</b>	<b>108</b>
<i>Feng Xue, Sumeet Sandhu, Intel Research, Corporate Technology Group</i>	
<b>NC-5: CAPACITY OF ERASURE NETWORKS IN THE PRESENCE OF SPATIAL NETWORK CODING</b>	<b>114</b>
<i>Mehrdad Salmasi, S. Jamaloddin Golestani, ECE Department, Isfahan University of Technology</i>	

<b>NC-6: ON THE MINIMUM NUMBER OF TRANSMISSIONS IN</b> .....	<b>120</b>
<b>SINGLE-HOP WIRELESS CODING NETWORKS</b>	
<i>Salim El Rouayheb, Mohammad Chaudhry, Alex Sprintson, Dept of Electrical and Computer Engineering, Texas A&amp;M University</i>	
<b>NC-7: FAULT TOLERANT MEMORIES BASED ON EXPANDER GRAPHS</b> .....	<b>126</b>
<i>Shashi Chilappagari, Dept. of Electrical and Computer Eng., University of Arizona; Bane Vasić, Dept. of ECE and Dept. of Mathematics, University of Arizona</i>	
<b>CC: CHANNEL CODING II</b>	
<b>CC-1: ERASURE-BURST AND ERROR-BURST DECODING OF LINEAR</b> .....	<b>132</b>
<b>CODES</b>	
<i>Shumei Song, Shu Lin, Khaled Abdel-Ghaffar, University of California, Davis; Wai H. Fong, NASA Goddard Space Flight Center, Greenbelt, MD 20771, USA</i>	
<b>CC-2: SOFT-INPUT,ITERATIVE REED-SOLOMON DECODING USING</b> .....	<b>138</b>
<b>REDUNDANT PARITY-CHECK EQUATIONS</b>	
<i>Jason Bellorado, Link-A-Media Devices; Aleksandar Kavčić, University of Hawaii; Li Ping, City University of Hong Kong</i>	
<b>CC-3: THE COMPLEXITY LIMITS OF GRAPHICAL MODELS FOR LINEAR</b> .....	<b>144</b>
<b>CODES</b>	
<i>Thomas R. Halford, TrellisWare Technologies, Inc.; Keith M. Chugg, Communication Sciences Institute, University of Southern California</i>	
<b>CC-4: ON THE COMPLEXITY OF EXACT MAXIMUM-LIKELIHOOD</b> .....	<b>150</b>
<b>DECODING FOR ASYMPTOTICALLY GOOD LOW DENSITY PARITY CHECK</b>	
<b>CODES</b>	
<i>Weiyu Xu, Babak Hassibi, EE Department, California Institute of Technology</i>	
<b>CC-5: ADDING A RATE-1 THIRD DIMENSION TO TURBO CODES</b> .....	<b>156</b>
<i>C. Berrou, A. Graell i Amat, Y. Ould Mouhamedou, C. Douillard, Y. Saouter, GET-ENST Bretagne. Electronics Department/PRACOM</i>	
<b>CC-6: A RANDOM INTERLEAVER BASED SUCCESSIVE DECODING</b> .....	<b>162</b>
<b>SCHEME OVER MARKOV CHANNELS</b>	
<i>Teng Li, Marvell Semiconductor; Oliver M. Collins, University of Notre Dame</i>	
<b>CC-7: ON CODES OF BOUNDED TRELIS COMPLEXITY</b> .....	<b>168</b>
<i>Navin Kashyap, Dept. Mathematics &amp; Statistics, Queen's University</i>	
<b>CC-8: ANALYSIS OF ITERATED HARD DECISION DECODING OF</b> .....	<b>174</b>
<b>PRODUCT CODES WITH REED-SOLOMON COMPONENT CODES</b>	
<i>Jørn Justesen, COM, Technical University of Denmark; Tom Høholdt, Department of Mathematics, Technical University of Denmark</i>	
<b>P2: GRAPH-BASED CODES AND ITERATIVE DECODING II</b>	
<b>P2-1: PERFORMANCE OF LDPC CODES UNDER NOISY</b> .....	<b>178</b>
<b>MESSAGE-PASSING DECODING</b>	
<i>Lav R. Varshney, Laboratory for Information and Decision Systems, Massachusetts Institute of Technology</i>	

<b>P2-2: ON THE ERROR EXPONENT OF MARKOV CHANNELS WITH ISI AND FEEDBACK</b>	<b>184</b>
<i>Giacomo Como, Dip. di Matem. Politecnico di Torino, Italy; Serdar Yüksel, Mathematics and Engineering, Queen's University; Sekhar Tatikonda, Electrical Engineering, Yale University</i>	
<b>P2-3: DEGREE OPTIMIZATION AND STABILITY CONDITION FOR THE MIN-SUM DECODER</b>	<b>190</b>
<i>Kapil Bhattad, ECE Department, Texas A&amp;M University; Vishwambhar Rathi, Ruediger Urbanke, School of Computer and Communication Sciences, EPFL</i>	
<b>P2-4: BOUNDS ON THE TRADEOFF BETWEEN DECODING COMPLEXITY AND RATE FOR SPARSE-GRAPH CODES</b>	<b>196</b>
<i>Pulkit Grover, Wireless Foundations, EECS Department, University of California at Berkeley</i>	
<b>P2-5: EVALUATION OF THE LOW FRAME ERROR RATE PERFORMANCE OF LDPC CODES USING IMPORTANCE SAMPLING</b>	<b>202</b>
<i>Lara Dolecek, Zhengya Zhang, Martin Wainwright, Venkat Anantharam, Borivoje Nikolić, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley</i>	
<b>P2-6: IMPROVING LDPC DECODERS VIA INFORMED DYNAMIC SCHEDULING</b>	<b>208</b>
<i>Andres I. Vila Casado, Miguel Griot, Richard D. Wesel, Department of Electrical Engineering, University of California, Los Angeles</i>	
<b>P2-7: ANALYSIS OF THE DISTRIBUTION OF THE NUMBER OF CORRECTABLE ERASURES FOR TURBO CODES WITH DRP INTERLEAVERS</b>	<b>214</b>
<i>M. Ambroze, M. Tomlinson, C. Tjhai, M. Ahmed, School of Computing, Communications and Electronics, University of Plymouth</i>	
<b>P2-8: ON OPTIMIZING XOR-BASED CODES FOR FAULT-TOLERANT STORAGE APPLICATIONS, CHENG HUANG,</b>	<b>218</b>
<i>Cheng Huang, Jin Li, Minghua Chen, Microsoft Research</i>	
 <b>Graph: GRAPH-BASED CODES AND ITERATIVE DECODING I</b>	
<b>Graph-2: APPROXIMATE MESSAGE-PASSING INFERENCE ALGORITHM</b>	<b>224</b>
<i>Kyomin Jung, Mathematics, MIT; Devavrat Shah, EECS, MIT</i>	
<b>Graph-3: REDUCING THE ERROR FLOOR</b>	<b>230</b>
<i>Michael Chertkov, Center for Nonlinear Studies &amp; Theory Division, Los Alamos National Laboratory, Los Alamos</i>	
<b>Graph-4: IS SP BP?</b>	<b>236</b>
<i>Ronghui Tu, Yongyi Mao, Jiying Zhao, School of Information Technology and Engineering, University of Ottawa</i>	
<b>Graph-5: EQUIVALENCE OF LP RELAXATION AND MAX-PRODUCT FOR WEIGHTED MATCHING IN GENERAL GRAPHS</b>	<b>242</b>
<i>Sujay Sanghavi, Laboratory for Information and Decision Systems, Massachusetts Institute of Technology</i>	

<b>Graph-6: ON THE HARDNESS OF APPROXIMATING STOPPING AND TRAPPING SETS IN LDPC CODES</b>	<b>248</b>
<i>Andrew McGregor, Center for Information Theory and Applications, University of California, San Diego; Olgica Milenkovic, Dept. of Electrical and Computer Engineering, University of Colorado, Boulder</i>	
<b>Graph-7: PERFORMANCE OF ITERATIVE ALGEBRAIC DECODING OF CODES DEFINED ON GRAPHS: AN INITIAL INVESTIGATION</b>	<b>254</b>
<i>Xiangyu Tang, Department of Electrical and Computer Eng., University of Illinois at Urbana-Champaign; Ralf Koetter, Institute for Communications Eng., Technische Universitaet Muenchen</i>	
 <b>JSCC: JOINT SOURCE-CHANNEL CODING</b>	
<b>JSCC-1: THE CASE OF STRUCTURED RANDOM CODES IN NETWORK COMMUNICATION THEOREMS</b>	<b>260</b>
<i>Bobak Nazer, Michael Gastpar, University of California, Berkeley, Wireless Foundations Research Center, Dept. of EECS</i>	
<b>JSCC-2: ON SEPARATION IN THE PRESENCE OF FEEDBACK</b>	<b>266</b>
<i>Haim Permuter, Tsachy Weissman, EE Department, Stanford University</i>	
<b>JSCC-3: RESOURCE-AWARE JOINT SOURCE-CHANNEL MULTIPLE DESCRIPTION ESTIMATION AND COMPRESSION IN NETWORKS</b>	<b>271</b>
<i>Xiaolin Wu, Xiaohan Wang, Zhe Wang, ECE, McMaster University</i>	
<b>JSCC-4: JOINT SOURCE-CHANNEL CODING FOR QUASI-STATIC FADING CHANNELS WITH NOISY QUANTIZED FEEDBACK</b>	<b>277</b>
<i>Farzad Etemadi, Center for Pervasive Comm. and Comp, EECS Department, University of California Irvine; Siavash Ekbatani, EECS Department, University of California Irvine; Hamid Jafarkhani, Center for Pervasive Comm. and Comp, EECS Department, University of California Irvine</i>	
<b>JSCC-5: ON REAL-TIME COMMUNICATION SYSTEMS WITH NOISY FEEDBACK</b>	<b>283</b>
<i>Aditya Mahajan, Demosthenis Teneketzis, Department of EECS, Univ. of Michigan</i>	
<b>JSCC-6: OPTIMALITY OF DIMENSION EXPANDING SHANNON-KOTEL'NIKOV MAPPINGS</b>	<b>289</b>
<i>Pål Anders Floor, Tor A. Ramstad, Dept. of Electronics and Telecommunications, Norwegian University of Science and Technology</i>	
<b>JSCC-7: IMAGE ENCRYPTION AND DATA HIDING: DUALITY AND CODE DESIGNS</b>	<b>295</b>
<i>Yang Yang, Dept of Electrical and Computer Engineering, Texas A&amp;M University; Vladimir Stanković, Dept of Communication Systems, Lancaster University; Zixiang Xiong, Dept of Electrical and Computer Engineering, Texas A&amp;M University</i>	
 <b>NIT: NETWORK INFORMATION THEORY</b>	
<b>NIT-1: ON THE DUALITY AND DIFFERENCE BETWEEN SLEPIAN-WOLF CODING AND CHANNEL CODING</b>	<b>301</b>
<i>Jun Chen, Da-ke He, Ashish Jagmohan, Luis A. Lastras-Montaño, IBM T. J. Watson Research Center</i>	

<b>NIT-2: ON NETWORK INTERFERENCE MANAGEMENT .....</b>	<b>307</b>
<i>Aleksandar Jovičić, Qualcomm Flarion Technologies; Hua Wang, Pramod Viswanath, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign</i>	
<b>NIT-3: CAPACITY OF BROADCAST CHANNELS WITH RECEIVER SIDE INFORMATION .....</b>	<b>313</b>
<i>Gerhard Kramer, Communications and Statistical Sciences Department, Bell Labs, Alcatel-Lucent; Shlomo Shamai (Shitz), Department of Electrical Engineering, Technion - Israel Institute of Technology</i>	
<b>NIT-4: SUCCESSIVE REFINEMENT OF VECTOR SOURCES UNDER INDIVIDUAL DISTORTION CRITERIA .....</b>	<b>319</b>
<i>Jayanth Nayak, Ertem Tuncel, University of California, Riverside, CA; Deniz Gunduz, Elza Erkip, Polytechnic University</i>	
<b>NIT-5: ON COGNITIVE INTERFERENCE NETWORKS .....</b>	<b>325</b>
<i>Amos Lapidoth, ETH Zurich; Shlomo Shamai (Shitz), Technion; Michéle A. Wigger, ETH Zurich</i>	
<b>NIT-6: UNICAST TRANSMISSION OVER MULTIPLE ACCESS ERASURE NETWORKS: CAPACITY AND DUALITY .....</b>	<b>331</b>
<i>Brian Smith, Sriram Vishwanath, Department of ECE, University of Texas at Austin</i>	
<b>NIT-7: SECURE NESTED CODES FOR TYPE-II WIRETAP CHANNELS .....</b>	<b>337</b>
<i>Ruoheng Liu, Yingbin Liang, H. Vincent Poor, Department of Electrical Engineering, Princeton University; Predrag Spasojević, WINLAB, ECE, Rutgers University</i>	
<b>NIT-8: RELIABLE COMMUNICATION IN NETWORKS WITH MULTI-ACCESS INTERFERENCE .....</b>	<b>343</b>
<i>Danail Traskov, Coordinated Science Laboratory, University of Illinois at Urbana-Champaign; Gerhard Kramer, Communications and Statistical Sciences Department, Bell Labs, Alcatel-Lucent</i>	
 <b>P3: WIRELESS AND COOPERATIVE COMMUNICATIONS</b>	
<b>P3-1: THE CONSTRAINED CAPACITY OF SINGLE AND MULTIUSER CHANNELS WITH UNKNOWN FADING .....</b>	<b>349</b>
<i>Sundeep Venkatraman, Krishnan Padmanabhan, Oliver M. Collins, Department of Electrical Engineering, University of Notre Dame</i>	
<b>P3-2: ASYNCHRONY RESILIENT SPACE-TIME BLOCK CODES.....</b>	<b>355</b>
<i>Haralabos Papadopoulos, DoCoMo USA Labs</i>	
<b>P3-3: NEW LIST SPHERE DECODING (LSD) ALGORITHMS FOR MIMO-OFDM DETECTION .....</b>	<b>361</b>
<i>A. Kora, J. P. Cances, V. Meghdadi, ENSIL</i>	
<b>P3-4: A GENERALIZED MIXED STRATEGY FOR MULTITERMINAL RELAY NETWORKS .....</b>	<b>366</b>
<i>Peter Rost, Gerhard Fettweis, Technische Universität Dresden, Vodafone Chair Mobile Communications Systems</i>	
<b>P3-5: A NEW CODING SCHEME FOR THE RELAY CHANNEL .....</b>	<b>372</b>
<i>Wei Kang, Sennur Ulukus, Department of Electrical and Computer Engineering, University of Maryland</i>	

**P3-6: RATELESS CODING WITH PARTIAL CSI AT THE DECODER .....378**  
*Anand D. Sarwate, Michael Gastpar, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley*

**P3-7: ON THE CAPACITY OF A CLASS OF MIMO COGNITIVE RADIOS .....384**  
*Sriram Sridharan, Sriram Vishwanath, Department of Electrical and Computer Engineering, University of Texas Austin*

**P3-8: OPTIMAL-TRANSMISSION STRATEGY AND CAPACITY REGION FOR .....390**  
**BROADCAST-Z CHANNELS**  
*Bike Xie, Miguel Griot, Andres I. Vila Casado, Richard D. Wesel, Department of Electrical Engineering, University of California, Los Angeles*

## **Bio: CODING FOR BIOLOGY AND COMPRESSIVE SENSING**

**Bio-1: AN INFORMATION THEORETIC APPROACH TO QUANTIFYING .....396**  
**EVOLUTIONARY FUNCTIONAL TRENDS**  
*Gil Alterovitz, Division of Health Sciences and Technology, Harvard Medical School and Massachusetts Institute of Technology; Taro Muso, Harvard Partners Center for Genetics, and Genomics, Harvard Medical School; Paresh Malalur, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology; Marco F. Ramoni, Division of Health Sciences and Technology, Harvard Medical School and Massachusetts Institute of Technology*

**Bio-2: GEOMETRIC LOCAL STRUCTURE IN BIOLOGICAL NETWORKS.....402**  
*Nataša Pržulj, Computer Science Department, University of California, Irvine*

**Bio-3: ON OPTIMAL INFORMATION STORAGE IN SYNAPSES.....408**  
*Lav R. Varshney, Massachusetts Institute of Technology; Dmitri B. Chklovskii, Cold Spring Harbor Laboratory*

**Bio-4: EFFICIENT COMPRESSIVE SENSING WITH DETERMINISTIC .....414**  
**GUARANTEES USING EXPANDER GRAPHS**  
*Weiyu Xu, Babak Hassibi, EE Department, California Institute of Technology*

**Bio-5: LEARNING FROM COMPRESSED OBSERVATIONS.....420**  
*Maxim Raginsky, Beckman Institute and University of Illinois*

## **Wireless: CODING FOR WIRELESS SYSTEMS**

**Wireless-1: DECENTRALIZED ALGORITHMS FOR OPERATING CODED .....472**  
**WIRELESS NETWORKS**  
*Fang Zhao, Desmond S. Lun, Muriel Médard, Ebad Ahmed, Massachusetts Institute of Technology*

**Wireless-2: INTERMEDIATE PERFORMANCE OF RATELESS CODES.....478**  
*Sujay Sanghavi, Laboratory for Information and Decision Systems, Massachusetts Institute of Technology*

**Wireless-3: LINEAR SPACE-TIME CODES WITH OPTIMAL .....483**  
**DIVERSITY-MULTIPLEXING TRADEOFF**  
*Kambiz Azarian, J. Nicholas Laneman, Department of Electrical Engineering, University of Notre Dame*

<b>Wireless-4: THE DIVERSITY-MULTIPLEXING TRADEOFF OF LINEAR MIMO RECEIVERS</b>	<b>487</b>
<i>K. Raj Kumar, Giuseppe Caire, Department of EE - Systems, University of Southern California; Aris L. Moustakas, Department of Physics, National &amp; Capodistrian Univ. of Athens</i>	
<b>Wireless-5: TRADEOFF BETWEEN DIVERSITY AND DECODABLE-RATE: DIVERSITY MULTIPLEXING TRADEOFF FOR FIXED ENCODING</b>	<b>493</b>
<i>Kapil Bhattad, Krishna R. Narayanan, Department of Electrical and Computer Engineering, Texas A&amp;M University</i>	
<b>Wireless-6: JOINT CHANNEL ESTIMATION AND TRANSMISSION: ACHIEVABLE RATES</b>	<b>499</b>
<i>Satish Vedantam, Wenyi Zhang, Urbashi Mitra, Department of Electrical Engineering, University of Southern California; Ashutosh Sabharwal, Department of Electrical and Computer Engineering, Rice University</i>	
<b>Wireless-7: TRANSMITTER CHANNEL STATE INFORMATION AND REPETITION PROTOCOLS IN BLOCK FADING CHANNELS</b>	<b>505</b>
<i>Daniela Tuninetti, ECE, University of Illinois at Chicago</i>	
<b>Wireless-8: A HOT CHANNEL</b>	<b>511</b>
<i>Tobias Koch, Amos Lapidoth, ETH Zurich; Paul P. Sotiriadis, Johns Hopkins University</i>	
 <b>DSC: DISTRIBUTED SOURCE CODING</b>	
<b>DSC-1: NETWORK DISTRIBUTED QUANTIZATION</b>	<b>426</b>
<i>David Rebollo-Monedero, Bernd Girod, Information Systems Laboratory, Department of Electrical Engineering, Stanford University</i>	
<b>DSC-2: ON APPROXIMATING THE RATE REGION FOR SOURCE CODING</b>	<b>432</b>
<i>WeiHsin Gu, Michelle Effros, Department of Electrical Engineering, California Institute of Technology</i>	
<b>DSC-3: PRACTICAL CODING FOR MULTI-HOP NETWORKS</b>	<b>436</b>
<i>Meritxell Lamarca, TSC Department, Technical University of Catalonia; Kejing Liu, Javier Garcia-Frias, ECE Department, University of Delaware</i>	
<b>DSC-4: ON SECURE DISTRIBUTED SOURCE CODING</b>	<b>442</b>
<i>Vinod Prabhakaran, Kannan Ramchandran, Dept of EECS, University of California at Berkeley</i>	
<b>DSC-5: CHALLENGES AND RECENT ADVANCES IN DISTRIBUTED PREDICTIVE CODING</b>	<b>448</b>
<i>Ankur Saxena, Kenneth Rose, Dept. of Electrical and Computer Engineering, University of California, Santa Barbara</i>	
<b>DSC-6: MINIMUM EXPECTED DISTORTION IN GAUSSIAN SOURCE CODING WITH UNCERTAIN SIDE INFORMATION</b>	<b>454</b>
<i>Chris T. K. Ng, Dept. of Electrical Engineering, Stanford University; Chao Tian, School of Computer and Communication Sciences, LICOS, EPFL; Andrea J. Goldsmith, Dept. of Electrical Engineering, Stanford University; Shlomo Shamai (Shitz), Dept. of Electrical Engineering, Technion - Israel Institute of Technology</i>	
<b>DSC-7: ACHIEVABLE REGION FOR MULTITERMINAL SOURCE CODING WITH LOSSLESS DECODING IN ALL SOURCES EXCEPT ONE</b>	<b>460</b>
<i>Soumya Jana, Richard Blahut, Department of Electrical and Computer Eng., University of Illinois at Urbana-Champaign</i>	

<b>DSC-8: DIPHANTINE INDEX ASSIGNMENT FOR DISTRIBUTED SOURCE CODING</b>	<b>466</b>
<i>Gerhard Maierbacher, João Barros, Instituto de Telecomunicações, Department of Computer Science, Universidade do Porto</i>	
<b>P4: SOURCE AND SOURCE-CHANNEL CODING</b>	
<b>P4-1: DISTRIBUTED ESTIMATION: THREE THEOREMS</b>	<b>517</b>
<i>Amin Zia, James P. Reilly, Shahram Shirani, Department of ECE, McMaster University</i>	
<b>P4-2: EFFICIENT CODING OF LABELLED GRAPHS</b>	<b>523</b>
<i>Anthony Almudevar, Department of Biostatistics and Computational Biology, University of Rochester</i>	
<b>P4-3: ON A CONJECTURE ON ERROR RECOVERY FOR VARIABLE LENGTH CODES</b>	<b>529</b>
<i>Jiantao Zhou, Oscar C. Au, Xiaopeng Fan, ECE Department, Hong Kong Univ. Sci and Tech</i>	
<b>P4-4: UNIVERSAL FIXED-LENGTH CODING REDUNDANCY</b>	<b>535</b>
<i>Cheng Chang, Anant Sahai, UC Berkeley EECS</i>	
<b>P4-5: NONLINEAR SPARSE-GRAPH CODES FOR LOSSY COMPRESSION OF DISCRETE NONREDUNDANT SOURCES</b>	<b>541</b>
<i>Ankit Gupta, Sergio Verdú, Department of Electrical Engineering, Princeton University</i>	
<b>P4-6: JOINT MULTIPLE DESCRIPTION CODING AND FEC FOR DELAY-CONSTRAINED APPLICATIONS IN CONGESTED NETWORKS</b>	<b>547</b>
<i>Xunqi Yu, James W. Modestino, Dian Fan, Electrical and Computer Engineering Department, University of Miami</i>	
<b>P4-7: FAST JOINT SOURCE-CHANNEL DECODING OF CONVOLUTIONAL CODED MARKOV SEQUENCES WITH MONGE PROPERTY</b>	<b>553</b>
<i>Sorina Dumitrescu, ECE Department, McMaster University</i>	
<b>P4-8: DISTORTION METRICS OF COMPOSITE CHANNELS WITH RECEIVER SIDE INFORMATION</b>	<b>559</b>
<i>Yifan Liang, Andrea Goldsmith, Department of Electrical Engineering, Stanford University; Michelle Effros, Department of Electrical Engineering, California Institute of Technology</i>	
<b>Decoder: DECODER DESIGN</b>	
<b>Decoder-1: ASYNCHRONOUS LOGIC IMPLEMENTATION OF TREE-STRUCTURED SISOS</b>	<b>565</b>
<i>Peter A. Beerel, Keith M. Chugg, Georgios D. Dimou, Pankaj Golani, Mallika Prakash, Dept. of Electrical Engineering, University of Southern California</i>	
<b>Decoder-2: LDPC DECODER MESSAGE FORMATTING BASED ON ACTIVITY FACTOR MINIMIZATION USING DIFFERENTIAL DENSITY EVOLUTION</b>	<b>571</b>
<i>Vincent C. Gaudet, Christian Schlegel, Russell Dodd, Department of Electrical and Computer Engineering, University of Alberta</i>	

<b>Decoder-3: FUNCTIONS AND ARCHITECTURES FOR LDPC DECODING .....</b>	<b>577</b>
<i>C Jones, S. Dolinar, K. Andrews, D. Divsalar, Jet Propulsion Laboratory, California Institute of Technology; Y. Zhang, W. Ryan, Electrical and Computer Engineering, University of Arizona</i>	
<b>Decoder-4: LOW-COMPLEXITY CAPACITY ACHIEVING TWO-STAGE DEMODULATION/DECODING FOR RANDOM MATRIX CHANNELS .....</b>	<b>584</b>
<i>Dmitri Truhachev, Christian Schlegel, Lukasz Krzymien, Department of Electrical and Computer Engineering, University of Alberta</i>	
<b>Decoder-5: FAST DECODING OF THE GOLDEN CODE BY DIOPHANTINE APPROXIMATION .....</b>	<b>590</b>
<i>S. D. Howard, S. Sirianunpiboon, Defence Science and Technology Organisation; A. R. Calderbank, Electrical Engineering and Mathematics, Princeton University</i>	
 <b>Coop: COOPERATIVE COMMUNICATIONS</b>	
<b>Coop-1: SECURE COMMUNICATION WITH A RELAY HELPING THE WIRE-TAPPER .....</b>	<b>595</b>
<i>Melda Yuksel, Elza Erkip, Department of Electrical and Computer Engineering, Polytechnic University</i>	
<b>Coop-2: DETERMINISTIC CAPACITY OF NETWORKS.....</b>	<b>601</b>
<i>Anders Høst-Madsen, Department of Electrical Engineering, University of Hawaii</i>	
<b>Coop-3: A DETERMINISTIC MODEL FOR WIRELESS CHANNELS AND ITS APPLICATIONS .....</b>	<b>607</b>
<i>David N. C. Tse, Wireless Foundations, UC Berkeley</i>	
<b>Coop-4: MULTIPLE ACCESS CHANNELS WITH GENERALIZED FEEDBACK AND CONFIDENTIAL MESSAGES .....</b>	<b>608</b>
<i>Xiaojun Tang, WINLAB, Rutgers University; Ruoheng Liu, Princeton University; Predrag Spasojević, WINLAB, Rutgers University; H. Vincent Poor, Princeton University</i>	
<b>Coop-5: SIGNAL SUPERPOSITION CODED COOPERATIVE DIVERSITY: ANALYSIS AND OPTIMIZATION .....</b>	<b>614</b>
<i>Lei Xiao, Thomas E. Fuja, Jörg Kliewer, Daniel J. Costello, Jr., Department of Electrical Engineering, University of Notre Dame</i>	
<b>Coop-6: ON THE OUTAGE EXPONENT OF FADING RELAY CHANNELS WITH PARTIAL CHANNEL STATE INFORMATION .....</b>	<b>620</b>
<i>Tùng T. Kim, School of Electrical Engineering, Royal Institute of Technology; Giuseppe Caire, Department of Electrical Engineering, University of Southern California; Mikael Skoglund, School of Electrical Engineering, Royal Institute of Technology</i>	
<b>Coop-7: CODING FOR THE NON-ORTHOGONAL AMPLIFY-AND-FORWARD COOPERATIVE CHANNEL .....</b>	<b>626</b>
<i>Ghassan M. Kraidy, ENST; Nicolas Gresset, Mitsubishi Electric ITE-TCL; Joseph J. Boutros, Texas A&amp;M University, Qatar</i>	

## SC: SOURCE CODING

### SC-1: ON THE CONTINUITY OF ACHIEVABLE RATE REGIONS FOR .....632 SOURCE CODING OVER NETWORKS

*WeiHsin Gu, Michelle Effros, Department of Electrical Engineering, California Institute of Technology*

### SC-2: NEW TRICKS FOR OLD DOGS: LARGE ALPHABET PROBABILITY .....638 ESTIMATION

*N. P. Santhanam, EECS Department, UC Berkeley; A. Orlitsky, ECE and CSE Departments, UC San Diego; K. Viswanathan, HP Labs*

### SC-3: ENTROPY ESTIMATORS WITH ALMOST SURE CONVERGENCE .....644 AND AN $O(1/N)$ VARIANCE

*Alexei Kaltchenko, Physics Department, Wilfrid Laurier University; En-hui Yang, ECE Department, University of Waterloo; Nina Timofeeva, CS Department, Yaroslavl State University*

### SC-4: LOWER BOUNDS ON THE RATE-DISTORTION FUNCTION OF .....650 LDGM CODES

*A. G. Dimakis, M. J. Wainwright, K. Ramchandran, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley*

### SC-5: RANDOM ACCESS REGION OF INTEREST IN BACKWARD CODING .....656 OF WAVELET TREES

*Enrique Corona, Department of Electrical and Computer Engineering, Texas Tech University; Jiangling Guo, School of Information Science and Technology, Beijing Institute of Technology; Sunanda Mitra, Brian Nutter, Tanja Karp, Department of Electrical and Computer Engineering, Texas Tech University*

### SC-6: ACHIEVING THE RATE-DISTORTION BOUND WITH LINEAR .....662 CODES

*Jun Chen, Da-ke He, Ashish Jagmohan, IBM T. J. Watson Research Center*