

2015 IEEE International Symposium on Information Theory (ISIT 2015)

**Hong Kong
14-19 June 2015**

Pages 1-754



IEEE Catalog Number: CFP15SIF-POD
ISBN: 978-1-4673-7705-8

TABLE OF CONTENTS

Mo-AM1-1: LIST DECODING 1

Mo-AM1-1.1: THE LIST DECODING ERROR PROBABILITY OF LINEAR CODES	1
OVER THE ERASURE CHANNEL	
<i>Lin-Zhi Shen, Fang-Wei Fu, Nankai University, China</i>	
Mo-AM1-1.2: SOME GABIDULIN CODES CANNOT BE LIST DECODED EFFICIENTLY	6
AT ANY RADIUS	
<i>Netanel Raviv, Antonia Wachter-Zeh, Technion - Israel Institute of Technology, Israel</i>	
Mo-AM1-1.3: LIST AND PROBABILISTIC UNIQUE DECODING OF FOLDED SUBSPACE CODES	11
<i>Hannes Bartz, Vladimir Sidorenko, Technische Universität München, Germany</i>	
Mo-AM1-1.4: IMPROVED BURST ERROR CORRECTION VIA LIST DECODING QUASI-CYCLIC CODES	16
<i>Alexander Zeh, Ron M. Roth, Technion - Israel Institute of Technology, Israel</i>	

Mo-AM1-2: COOPERATIVE MACS

Mo-AM1-2.1: STATE-DEPENDENT MULTIPLE-ACCESS CHANNELS WITH PARTIALLY CRIBBING ENCODERS	21
<i>Ritesh Kolte, Ayfer Özgür, Stanford University, United States; Haim Permuter, Ben-Gurion University of the Negev, United States</i>	
Mo-AM1-2.2: COOPERATIVE MULTIPLE ACCESS CHANNELS WITH OBLIVIOUS ENCODERS	26
<i>Tal Kopetz, Haim Permuter, Ben-Gurion University of the Negev, Israel; Shlomo Shamai, Technion - Israel Institute of Technology, Israel</i>	
Mo-AM1-2.3: A COMMON INFORMATION-BASED MULTIPLE ACCESS PROTOCOL ACHIEVING FULL THROUGHPUT	31
<i>Yi Ouyang, Demosthenis Teneketzis, University of Michigan, United States</i>	
Mo-AM1-2.4: ON THE COST AND BENEFIT OF COOPERATION	36
<i>Parham Noorzarad, Michelle Effros, California Institute of Technology, United States; Michael Langberg, State University of New York at Buffalo, United States</i>	

Mo-AM1-3: LPDC AND SPATIALLY COUPLED LDPC CODES

Mo-AM1-3.1: RATE-COMPATIBLE SPATIALLY-COUPLED LDPC CODE ENSEMBLES WITH NEARLY-REGULAR DEGREE DISTRIBUTIONS	41
<i>Walter Nitzold, Gerhard P. Fettweis, Dresden University of Technology, Germany; Michael Lentmaier, Lund University, Germany</i>	
Mo-AM1-3.2: THE MULTI-STEP PEG AND ACE CONSTRAINED PEG ALGORITHMS CAN DESIGN THE LDPC CODES WITH BETTER CYCLE-CONNECTIVITY	46
<i>Xuan He, Liang Zhou, Junyi Du, Zhiping Shi, University of Electronic Science and Technology of China, China</i>	
Mo-AM1-3.3: OPTIMIZED ARRAY-BASED SPATIALLY-COUPLED LDPC CODES: AN ABSORBING SET APPROACH	51
<i>Behzad Amiri, Amirhossein Reisizadeh, University of California, Los Angeles, United States; Jörg Kliewer, New Jersey Institute of Technology, United States; Lara Dolecek, University of California, Los Angeles, United States</i>	
Mo-AM1-3.4: SPATIALLY-COUPLED SPLIT-COMPONENT CODES WITH BOUNDED-DISTANCE COMPONENT DECODING	56
<i>Lei M. Zhang, University of Toronto, Canada; Dmitri Truhachev, Dalhousie University, Canada; Frank R. Kschischang, University of Toronto, Canada</i>	

Mo-AM1-4: TOPICS IN CODING AND INFORMATION THEORY

Mo-AM1-4.1: ANYTIME CAPACITY OF MARKOV CHANNELS	61
Paolo Minero, University of Notre Dame, United States; Massimo Franceschetti, University of California, San Diego, United States	
Mo-AM1-4.2: LEARNING IMMUNE-DEFECTIVES GRAPH THROUGH GROUP TESTS	66
Abhinav Ganesan, Sidharth Jaggi, The Chinese University of Hong Kong, Hong Kong SAR of China; Venkatesh Saligrama, Boston University, United States	
Mo-AM1-4.3: BLIND IDENTIFICATION OF AN UNKNOWN INTERLEAVED CONVOLUTIONAL CODE	71
Audrey Tixier, INRIA, France	
Mo-AM1-4.4: DELAY LIMITED TRANSMISSION OF A UNIFORM SOURCE OVER AN AWGN CHANNEL	76
Morteza Varasteh, Deniz Gündüz, Imperial College London, United Kingdom; Ertem Tuncel, University of California, United Kingdom	

Mo-AM1-5: ERROR EXPONENTS 1

Mo-AM1-5.1: FEASIBLE REGIONS OF SYMMETRIC CAPACITY AND GALLAGER'S \$E_{\{0\}}\$ FUNCTION FOR TERNARY-INPUT DISCRETE MEMORYLESS CHANNELS	81
Yuta Sakai, Ken-Ichi Iwata, University of Fukui, Japan	
Mo-AM1-5.2: THE LIKELIHOOD DECODER: ERROR EXPONENTS AND MISMATCH	86
Jonathan Scarlett, École Polytechnique Fédérale de Lausanne, Switzerland; Alfonso Martinez, Universitat Pompeu Fabra, Spain; Albert Guillén i Fàbregas, ICREA & Universitat Pompeu Fabra, Spain	
Mo-AM1-5.3: EXACT ASYMPTOTICS FOR THE RANDOM CODING ERROR PROBABILITY	91
Junya Honda, The University of Tokyo, Japan	
Mo-AM1-5.4: ACHIEVABLE RATES AND EXPONENTS FOR ASYNCHRONOUS COMMUNICATION WITH ML DECODING	96
Seçkin Anil Yıldırım, Alfonso Martinez, Albert Guillén i Fàbregas, Universitat Pompeu Fabra, Spain	

Mo-AM1-6: GAUSSIAN CHANNELS AND SECRECY

Mo-AM1-6.1: THE SECRECY CAPACITY OF MIMO GAUSSIAN CHANNELS WITH FINITE MEMORY	101
Nir Shlezinger, Daniel Zahavi, Yonathan Murin, Ron Dabora, Ben-Gurion University of the Negev, Israel	
Mo-AM1-6.2: THE DEGRADED GAUSSIAN DIAMOND-WIRETAP CHANNEL	106
Si-Hyeon Lee, Ashish Khisti, University of Toronto, Canada	
Mo-AM1-6.3: SECURE SIGNALING GAMES FOR GAUSSIAN MULTIPLE ACCESS WIRETAP CHANNELS	111
Hao Ge, Ruijie Xu, Randall Berry, Northwestern University, United States	
Mo-AM1-6.4: GAUSSIAN SECURE SOURCE CODING AND WYNER'S COMMON INFORMATION	116
Sanket Satpathy, Paul Cuff, Princeton University, United States	

Mo-AM1-7: CAPACITY IN ENERGY HARVESTING COMMUNICATIONS

Mo-AM1-7.1: A GEOMETRIC ANALYSIS OF THE AWGN CHANNEL WITH A (\$SIGMA, RHO)-POWER CONSTRAINT	121
Varun Jog, Venkat Anantharam, University of California, Berkeley, United States	
Mo-AM1-7.2: NEW CAPACITY UPPER BOUNDS AND CODING ASPECTS FOR SOME CHANNELS WITH CAUSAL CSIT	126
Wei Mao, Babak Hassibi, California Institute of Technology, United States	

Mo-AM1-7.3: CAPACITY OF THE ENERGY HARVESTING CHANNEL WITH A FINITE BATTERY	131
<i>Dor Shaviv, Phan-Minh Nguyen, Ayfer Özgür, Stanford University, United States</i>	
Mo-AM1-7.4: CAPACITY OF THE AWGN CHANNEL WITH RANDOM BATTERY RECHARGES	136
<i>Dor Shaviv, Ayfer Özgür, Stanford University, United States</i>	

Mo-AM1-8: CHANGETOPOINT DETECTION AND ESTIMATION

Mo-AM1-8.1: QUICKEST CHANGE DETECTION AND KULLBACK-LEIBLER DIVERGENCE FOR TWO-STATE HIDDEN MARKOV MODELS	141
<i>Cheng-Der Fuh, National Central University, Taiwan; Yajun Mei, Georgia Institute of Technology, United States</i>	
Mo-AM1-8.2: NON-PARAMETRIC QUICKEST CHANGE DETECTION FOR LARGE SCALE RANDOM MATRICES	146
<i>Taposh Banerjee, Hamed Firouzi, Alfred Hero III, University of Michigan, Ann Arbor, United States</i>	
Mo-AM1-8.3: HIGH-DIMENSIONAL CHANGE-POINT ESTIMATION: COMBINING FILTERING WITH CONVEX OPTIMIZATION	151
<i>Yong Sheng Soh, Venkat Chandrasekaran, California Institute of Technology, United States</i>	
Mo-AM1-8.4: SEQUENTIAL DETECTION OF TRANSIENT CHANGES IN STOCHASTIC SYSTEMS UNDER A SAMPLING CONSTRAINT	156
<i>Ehsan Ebrahimzadeh, University of California, Los Angeles, United States; Aslan Tchamkerten, Telecom ParisTech, France</i>	

Mo-AM1-9: AD HOC AND WIRELESS NETWORKS

Mo-AM1-9.1: ON THE IMPROVEMENT OF SCALING LAWS FOR WIRELESS AD HOC NETWORKS WITH PHYSICAL LAYER CACHING	161
<i>An Liu, Vincent Lau, Hong Kong University of Science and Technology, Hong Kong SAR of China</i>	
Mo-AM1-9.2: OPTIMIZED OUTAGE CAPACITY IN RANDOM WIRELESS NETWORKS IN UNIFORM AND FRACTAL MAPS	166
<i>Philippe Jacquet, Bell Labs, France</i>	
Mo-AM1-9.3: ON THE BROADCAST CAPACITY OF LARGE WIRELESS NETWORKS AT LOW SNR	171
<i>Serj Haddad, Olivier Leveque, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
Mo-AM1-9.4: CAPACITY SCALING OF RELAY NETWORKS WITH SUCCESSIVE RELAYING	176
<i>Yu Zhang, ZhaoYang Zhang, Zhejiang University, China; Li Ping, City University of Hong Kong, Hong Kong SAR of China; Xiaoming Chen, Nanjing University of Aeronautics and Astronautics, China; Caijun Zhong, Zhejiang University, China</i>	

Mo-AM2-1: ALGEBRA FOR CODING

Mo-AM2-1.1: A ROBUST CHINESE REMAINDER THEOREM WITH APPLICATIONS IN ERROR CORRECTION CODING	181
<i>Li Xiao, University of Delaware, United States; Xiang-Gen Xia, Xidian University; also University of Delaware, China</i>	
Mo-AM2-1.2: ON INVOLUTIONS OF FINITE FIELDS	186
<i>Charpin Pascale, INRIA, France; Sihem Mesnager, University of Paris 8, France; Sumanta Sarkar, Indian Statistical Institute, India</i>	
Mo-AM2-1.3: ON THE VOLUME OF A METRIC BALL IN UNITARY GROUP	191
<i>Lu Wei, University of Helsinki, Finland; Renaud-Alexandre Pitaval, Aalto University, Finland; Jukka Corander, University of Helsinki, Finland; Olav Tirkkonen, Aalto University, Finland</i>	
Mo-AM2-1.4: LINEAR INDEPENDENCE OF RANK 1 MATRICES AND THE DIMENSION OF *-PRODUCTS OF CODES	196
<i>Hugues Randriambololona, Telecom ParisTech, France</i>	

Mo-AM2-2: GAUSSIAN INTERFERENCE CHANNELS

Mo-AM2-2.1: ON THE CAPACITY OF SYMMETRIC GAUSSIAN INTERFERENCE CHANNELS WITH FEEDBACK	201
<i>Lan Truong, FPT University, Viet Nam; Hirosuke Yamamoto, The University of Tokyo, Japan</i>	
Mo-AM2-2.2: PARTIAL CAPACITY BOUNDARY OF PARALLEL GAUSSIAN Z INTERFERENCE CHANNELS	206
<i>Xiaohu Shang, Bell Labs, Alcatel-Lucent, United States</i>	
Mo-AM2-2.3: UPPER BOUNDS ON THE SUM CAPACITY OF THE K-USER GAUSSIAN INTERFERENCE CHANNEL	211
<i>Junyoung Nam, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea</i>	
Mo-AM2-2.4: STATE-DEPENDENT GAUSSIAN Z-INTERFERENCE CHANNEL: CAPACITY RESULTS	216
<i>Ruchen Duan, Yingbin Liang, Syracuse University, United States; Shlomo Shamai, Technion - Israel Institute of Technology, Israel</i>	

Mo-AM2-3: FINITE LENGTH ANALYSIS OF POLAR CODES

Mo-AM2-3.1: BINARY NONLINEAR KERNELS OF MAXIMUM EXPONENTS OF POLAR CODES OF DIMENSIONS UP TO SIXTEEN	221
<i>Hsien-Ping Lin, Shu Lin, Khaled Abdel-Ghaffar, University of California, Davis, United States</i>	
Mo-AM2-3.2: ON THE FINITE LENGTH SCALING OF TERNARY POLAR CODES	226
<i>Dina Goldin, David Burshtein, Tel-Aviv University, Israel</i>	
Mo-AM2-3.3: POLAR CODES USING DYNAMIC KERNELS	231
<i>Min Ye, Alexander Barg, University of Maryland, College Park, United States</i>	
Mo-AM2-3.4: EFFICIENT SPHERE DECODING OF POLAR CODES	236
<i>Jing Guo, University of Cambridge, United Kingdom; Albert Guillén i Fàbregas, Institut de Recerca i Estudis Avançats & Universitat Pompeu Fabra, Spain</i>	

Mo-AM2-4: APPLICATION SPECIFIC CODES

Mo-AM2-4.1: COMBINATORIAL SYSTEMATIC SWITCH CODES	241
<i>Yeow Meng Chee, Nanyang Technological University, Singapore; Fei Gao, Agency for Science, Technology and Research, Singapore; Samuel Tien Ho Teo, Hui Zhang, Nanyang Technological University, Singapore</i>	
Mo-AM2-4.2: SEMICONSTRAINED SYSTEMS	246
<i>Ohad Elishco, Tom Meyerovitch, Moshe Schwartz, Ben-Gurion University of the Negev, Israel</i>	
Mo-AM2-4.3: SYMMETRY-BASED SUBPRODUCT CODES	251
<i>Thomas Mittelholzer, Thomas Parnell, Nikolaos Papandreou, Haralampos Pozidis, IBM Research Zurich, Switzerland</i>	
Mo-AM2-4.4: HIGH-RATE CODES FOR HIGH-RELIABILITY DATA TRANSMISSION	256
<i>Igor Zhilin, Pavel Rybin, Victor Zyablov, Institute for Information Transmission Problems RAS, Russian Federation</i>	

Mo-AM2-5: SOURCE-CHANNEL CODING 1

Mo-AM2-5.1: CONVERSE AND DUALITY RESULTS FOR COMBINATORIAL SOURCE-CHANNEL CODING IN BINARY HAMMING SPACES	261
<i>Andrew Young, Yury Polyanskiy, Massachusetts Institute of Technology, United States</i>	
Mo-AM2-5.2: SLEPIAN-WOLF CODING FOR BROADCASTING WITH COOPERATIVE BASE-STATIONS	266
<i>Roy Timo, Technische Universität München, Germany; Michèle Wigger, Telecom ParisTech, France</i>	
Mo-AM2-5.3: ON ADVERSARIAL JOINT SOURCE CHANNEL CODING	271
<i>Arya Mazumdar, University of Minnesota-Twin Cities, United States; Ankit Singh Rawat, The University of Texas at Austin, United States</i>	

Mo-AM2-5.4: JOINT SOURCE-CHANNEL CODING WITH FEEDBACK	276
Victoria Kostina, California Institute of Technology, United States; Yury Polyanskiy, Massachusetts Institute of Technology, United States; Sergio Verdú, Princeton University, United States	

Mo-AM2-6: CAPACITY AND EQUIVOCATION ASPECTS OF SECRECY

Mo-AM2-6.1: EQUIVOCATIONS AND EXPONENTS UNDER VARIOUS RÉNYI INFORMATION MEASURES	281
Masahito Hayashi, Nagoya University, Japan; Vincent Y. F. Tan, National University of Singapore, Singapore	
Mo-AM2-6.2: THE PRIVATE KEY CAPACITY OF A COOPERATIVE PAIRWISE-INDEPENDENT NETWORK	286
Peng Xu, University of Science and Technology of China, China; Zhiguo Ding, Lancaster University, United Kingdom; Xuchu Dai, University of Science and Technology of China, China	
Mo-AM2-6.3: SECRET KEY CAPACITY: TALK OR KEEP SILENT?	291
Huishuai Zhang, Yingbin Liang, Syracuse University, United States; Lifeng Lai, Worcester Polytechnic Institute, United States	
Mo-AM2-6.4: THE COMMUNICATION COMPLEXITY OF ACHIEVING SK CAPACITY IN A CLASS OF PIN MODELS	296
Manuj Mukherjee, Navin Kashyap, Indian Institute of Science, India	

Mo-AM2-7: FINITE BLOCKLENGTH ANALYSIS 1

Mo-AM2-7.1: ONE-SHOT ACHIEVABILITY VIA FIDELITY	301
Mohammad Hossein Yassaee, Sharif university of technology, Iran	
Mo-AM2-7.2: INFORMATION SPECTRUM APPROACH TO FIXED-LENGTH LOSSY SOURCE CODING PROBLEM WITH SOME EXCESS DISTORTION PROBABILITY	306
Ryo Nomura, Senshu University, Japan; Hideki Yagi, The University of Electro-Communications, Japan	
Mo-AM2-7.3: ASYMPTOTIC EXPANSIONS FOR THE AWGN CHANNEL WITH FEEDBACK UNDER A PEAK POWER CONSTRAINT	311
Silas L. Fong, Vincent Y. F. Tan, National University of Singapore, Singapore	

Mo-AM2-8: ADVANCES IN SIGNAL PROCESSING

Mo-AM2-8.1: PERFORMANCE ANALYSIS AND OPTIMAL FILTER DESIGN FOR SIGMA-DELTA MODULATION VIA DUALITY WITH DPCM	321
Or Ordentlich, Uri Erez, Tel-Aviv University, Israel	
Mo-AM2-8.2: DECONVOLUTION OF WEAKLY-SPARSE SIGNALS AND DYNAMICAL-SYSTEM IDENTIFICATION BY GAUSSIAN MESSAGE PASSING	326
Lukas Bruderer, Hampus Malmberg, Hans-Andrea Loeliger, ETH Zurich, Switzerland	
Mo-AM2-8.3: THE METRICATION OF LPI RADAR WAVEFORMS BASED ON THE ASYMPTOTIC SPECTRAL DISTRIBUTION OF WIGNER MATRICES	331
Jun Chen, Fei Wang, Jianjiang Zhou, Nanjing University of Aeronautics and Astronautics, China	
Mo-AM2-8.4: BEYOND SEMIDEFINITE RELAXATION: BASIS BANKS AND COMPUTATIONALLY ENHANCED GUARANTEES	336
Mojtaba Soltanalian, Babak Hassibi, California Institute of Technology, United States	

Mo-AM2-9: FADING CHANNELS 1

Mo-AM2-9.1: ON THE DISTRIBUTION OF THE SQUARED NORM OF NON-CIRCULAR COMPLEX GAUSSIAN RANDOM VARIABLES WITH APPLICATIONS	341
Juan M. Romero-Jerez, F. Javier Lopez-Martinez, Universidad de Malaga, Spain	

Mo-AM2-9.2: A UNIFIED SIMULATION APPROACH FOR THE FAST OUTAGE CAPACITY	346
EVALUATION OVER GENERALIZED FADING CHANNELS	
Nadhir Benrached, Abla Kammoun, Mohamed-Slim Alouini, Raul Tempone, King Abdullah University of Science and Technology, Saudi Arabia	
Mo-AM2-9.3: CAUSAL-CSIT RATE ADAPTATION FOR BLOCK-FADING CHANNELS	351
Khoa Nguyen, University of South Australia, Australia; Roy Timo, Technische Universität München, Germany; Lars Rasmussen, KTH Royal Institute of Technology, Sweden	
Mo-AM2-9.4: A UNIFIED VIEW ON NEAREST-NEIGHBOR DECODING RATES FOR NONCOHERENT AND SEMICOHERENT FADING CHANNELS	356
Adriano Pastore, Michael Gastpar, École Polytechnique Fédérale de Lausanne, Switzerland	

Mo-PM1-1: NETWORK CODING FOR MULTIPLE UNICASTS

Mo-PM1-1.1: CONNECTING MULTIPLE-UNICAST AND NETWORK ERROR CORRECTION: REDUCTION AND UNACHIEVABILITY	361
Wentao Huang, California Institute of Technology, United States; Michael Langberg, University at Buffalo, United States; Jörg Kliewer, New Jersey Institute of Technology, United States	
Mo-PM1-1.2: ON NETWORK CODING ADVANTAGE FOR MULTIPLE UNICAST NETWORKS	366
Kai Cai, Guangyue Han, The University of Hong Kong, Hong Kong SAR of China	
Mo-PM1-1.3: ON AN EQUIVALENCE OF THE REDUCTION OF K-UNICAST TO 2-UNICAST CAPACITY AND THE EDGE REMOVAL PROPERTY	371
Ming Fai Wong, Michelle Effros, California Institute of Technology, United States; Michael Langberg, State University of New York at Buffalo, United States	
Mo-PM1-1.4: SYMMETRY IN NETWORK CODING	376
Jayant Apte, John Walsh, Drexel University, United States	
Mo-PM1-1.5: ON APPROXIMATING THE SUM-RATE FOR MULTIPLE-UNICASTS	381
Karthikeyan Shanmugam, Megasthenis Asteris, Alexandros G. Dimakis, University of Texas at Austin, United States	

Mo-PM1-2: BROADCAST CHANNELS

Mo-PM1-2.1: A UNIFIED SCHEME FOR TWO-RECEIVER BROADCAST CHANNELS WITH RECEIVER MESSAGE SIDE INFORMATION	386
Behzad Asadi, Lawrence Ong, Sarah J. Johnson, The University of Newcastle, Australia	
Mo-PM1-2.2: ON MMSE PROPERTIES OF "GOOD" AND "BAD" CODES FOR THE GAUSSIAN BROADCAST CHANNEL	391
Ronit Bustin, Rafael F. Schaefer, H. Vincent Poor, Princeton University, United States; Shlomo Shamai, Technion - Israel Institute of Technology, Israel	
Mo-PM1-2.3: MULTICASTING MESSAGES OVER GAUSSIAN BROADCAST CHANNELS WITH RECEIVER MESSAGE SIDE INFORMATION	396
Jin Sima, Wei Chen, Tsinghua University, China	
Mo-PM1-2.4: A GENERAL OUTER BOUND FOR MISO BROADCAST CHANNEL WITH HETEROGENEOUS CSIT	401
Sina Lashgari, Cornell University, United States; Ravi Tandon, Virginia Tech, United States; Amir Salman Avestimehr, University of Southern California, United States	
Mo-PM1-2.5: CAPACITY REGIONS OF TWO-USER BROADCAST ERASURE CHANNELS WITH FEEDBACK AND HIDDEN MEMORY	406
Michael Heindlmaier, Shirin Saeedi Bidokhti, Technische Universität München, Germany	

Mo-PM1-3: LDPC CODE ANALYSIS

Mo-PM1-3.1: IMPACT OF REDUNDANT CHECKS ON THE LP DECODING THRESHOLDS OF LDPC CODES	411
<i>Louay Bazzi, Hani Audah, American University of Beirut, Lebanon</i>	
Mo-PM1-3.2: IMPROVED MESSAGE-PASSING ALGORITHM FOR COUNTING SHORT CYCLES IN BIPARTITE GRAPHS	416
<i>Juane Li, Shu Lin, Khaled Abdel-Ghaffar, University of California, Davis, United States</i>	
Mo-PM1-3.3: APPROXIMATING DECODING THRESHOLDS OF PUNCTURED LDPC CODE ENSEMBLES ON THE AWGN CHANNEL	421
<i>David G. M. Mitchell, University of Notre Dame, United States; Michael Lentmaier, Lund University, Sweden; Ali Pusane, Bogazici University, Turkey; Daniel J. Costello, Jr., University of Notre Dame, United States</i>	
Mo-PM1-3.4: DECODING LDPC CODES WITH MUTUAL INFORMATION-MAXIMIZING LOOKUP TABLES	426
<i>Francisco Cuadros, Brian Kurkoski, JAIST, Japan</i>	
Mo-PM1-3.5: ON THE GIRTH OF (3,L) QUASI-CYCLIC LDPC CODES BASED ON COMPLETE PROTOGRAPHS	431
<i>Sudarsan V. S. Ranganathan, University of California, Los Angeles, United States; Dariush Divsalar, Jet Propulsion Laboratory, California Institute of Technology, United States; Richard D. Wesel, University of California, Los Angeles, United States</i>	

Mo-PM1-4: LATTICE CODES 1

Mo-PM1-4.1: NUMBER FIELD LATTICES ACHIEVE GAUSSIAN AND RAYLEIGH CHANNEL CAPACITY WITHIN A CONSTANT GAP	436
<i>Roope Vehkalahti, University of Turku, Finland; Laura Luzzi, Laboratoire ETIS, France</i>	
Mo-PM1-4.2: ACHIEVING THE ERGODIC CAPACITY WITH LATTICE CODES	441
<i>Ahmed Hindy, Aria Nosratinia, The University of Texas at Dallas, United States</i>	
Mo-PM1-4.3: DIVISION ALGEBRA CODES ACHIEVE MIMO BLOCK FADING CHANNEL CAPACITY WITHIN A CONSTANT GAP	446
<i>Laura Luzzi, Laboratoire ETIS, France; Roope Vehkalahti, University of Turku, Finland</i>	
Mo-PM1-4.4: A MODIFIED KZ REDUCTION ALGORITHM.....	451
<i>Jinming Wen, Xiao-Wen Chang, McGill University, Canada</i>	
Mo-PM1-4.5: A POLTYREV OUTAGE LIMIT FOR LATTICES.....	456
<i>Mayur Punekar, Joseph Boutros, Texas A&M University at Qatar, Qatar; Ezio Biglieri, Universitat Pompeu Fabra, Spain</i>	

Mo-PM1-5: SOURCE-CHANNEL CODING 2

Mo-PM1-5.1: NECESSARY CONDITION FOR SENDING A BIVARIATE GAUSSIAN SOURCE OVER THE "ASYMMETRIC" GAUSSIAN MAC	461
<i>Shraga Bross, Yaron Laufer, Bar-Ilan University, Israel</i>	
Mo-PM1-5.2: EMPIRICAL COORDINATION WITH TWO-SIDED STATE INFORMATION AND CORRELATED SOURCE AND STATE	466
<i>Maël Le Treust, ETIS, UMR 8051 / ENSEA, Université Cergy-Pontoise, CNRS, France</i>	
Mo-PM1-5.3: EMPIRICAL COORDINATION WITH CHANNEL FEEDBACK AND STRICTLY CAUSAL OR CAUSAL ENCODING	471
<i>Maël Le Treust, ETIS, UMR 8051 / ENSEA, Université Cergy-Pontoise, CNRS, France</i>	
Mo-PM1-5.4: MATCHED MULTIUSER GAUSSIAN SOURCE-CHANNEL COMMUNICATIONS VIA UNCODED SCHEMES	476
<i>Chao Tian, The University of Tennessee Knoxville, United States; Jun Chen, McMaster University, Canada; Suhas Diggavi, University of California, Los Angeles, United States; Shlomo Shamai, Technion - Israel Institute of Technology, Israel</i>	

Mo-PM1-5.5: ON THE ASYMPTOTIC DISTORTION-ENERGY TRADEOFF FOR ZERO-DELAY TRANSMISSION OF A GAUSSIAN SOURCE OVER THE AWGN CHANNEL	481
<i>Erman Koken, Ertem Tuncel, University of California, Riverside, United States; Deniz Gündüz, Imperial College London, United Kingdom</i>	

Mo-PM1-6: BOOLEAN FUNCTIONS AND CRYPTOGRAPHY

Mo-PM1-6.1: CONSTRUCTION OF CUBIC ROTATION SYMMETRIC BENT FUNCTIONS IN POWER-OF-TWO VARIABLES	486
<i>Tianze Wang, Meicheng Liu, State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences, China; Shangwei Zhao, Minzu University of China, China; Dongdai Lin, State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences, China</i>	
Mo-PM1-6.2: CONSTRUCTING BOOLEAN FUNCTIONS WITH (POTENTIALLY) OPTIMAL ALGEBRAIC IMMUNITY BASED ON MULTIPLICATIVE DECOMPOSITIONS OF FINITE FIELDS	491
<i>Baofeng Wu, State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences, China; Jia Zheng, College of Science, Minzu University of China, China; Dongdai Lin, State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences, China</i>	
Mo-PM1-6.3: SEARCHING CUBES FOR TESTING BOOLEAN FUNCTIONS AND ITS APPLICATION TO TRIVIUM	496
<i>Meicheng Liu, Dongdai Lin, Institute of Information Engineering of Chinese Academy of Sciences, China; Wenhao Wang, Institute of Information Engineering, Chinese Academy of Sciences, China</i>	
Mo-PM1-6.4: RESTRICTIONS OF NONDEGENERATE BOOLEAN FUNCTIONS AND DEGREE LOWER BOUNDS OVER DIFFERENT RINGS	501
<i>Chia-Jung Lee, National Chiao Tung University, Taiwan; Satyanarayana V. Lokam, Microsoft Research, India; Shi-Chun Tsai, Ming-Chuan Yang, National Chiao Tung University, Taiwan</i>	
Mo-PM1-6.5: ON THE DUAL OF GENERALIZED BOOLEAN BENT FUNCTIONS OVER Z4	506
<i>Baofeng Wu, Dongdai Lin, State Key Laboratory of Information Security, Institute of Information Engineering, Chinese Academy of Sciences, China</i>	

Mo-PM1-7: TOPICS IN SHANNON THEORY 1

Mo-PM1-7.1: ASYNCHRONOUS CAPACITY PER UNIT COST UNDER A RECEIVER SAMPLING CONSTRAINT	511
<i>Venkat Chandar, DE Shaw and Co, United States; Aslan Tchamkerten, Telecom ParisTech, France</i>	
Mo-PM1-7.2: A GENERAL FORMULA FOR COMPOUND CHANNEL CAPACITY.....	516
<i>Sergey Loyka, University of Ottawa, Canada; Charalambos Charalambous, University of Cyprus, Cyprus</i>	
Mo-PM1-7.3: NONANTICIPATIVE TRANSMISSION FOR SOURCES AND CHANNELS WITH MEMORY	521
<i>Christos Kourtellaris, Texas A&M University at Qatar, Qatar; Charalambos Charalambous, University of Cyprus, Cyprus; Joseph Boutros, Texas A&M University at Qatar, Qatar</i>	
Mo-PM1-7.4: ON MISMATCHED LIST DECODING	526
<i>Anelia Somekh-Baruch, Bar-Ilan University, Israel</i>	
Mo-PM1-7.5: MULTI-Letter CONVERSE BOUNDS FOR THE MISMATCHED DISCRETE MEMORYLESS CHANNEL WITH AN ADDITIVE METRIC	531
<i>Anelia Somekh-Baruch, Bar-Ilan University, Israel</i>	

Mo-PM1-8: ALGORITHMS FOR COMPRESSED SENSING

Mo-PM1-8.1: SUBSPACE THRESHOLDING PURSUIT: A RECONSTRUCTION ALGORITHM FOR COMPRESSED SENSING	536
<i>ChaoBing Song, Shu-Tao Xia, Xin-Ji Liu, Tsinghua University, China</i>	

Mo-PM1-8.2: ON JOINT RECOVERY OF SPARSE SIGNALS WITH COMMON SUPPORTS	541
Xiaochen Zhao, Wei Dai, Imperial College London, United Kingdom	
Mo-PM1-8.3: ON RECOVERY OF SPARSE SIGNALS WITH BLOCK STRUCTURES	546
Pan Li, Tsinghua University, China; Wei Dai, Imperial College London, United Kingdom; Huadong Meng, Xiqin Wang, Tsinghua University, China	
Mo-PM1-8.4: SPARSE GROUP COVERS AND GREEDY TREE APPROXIMATIONS	551
Siddhartha Satpathi, Indian Institute of Technology, Kharagpur, India; Luca Baldassarre, Volkan Cevher, École Polytechnique Fédérale de Lausanne, Switzerland	
Mo-PM1-8.5: ISOTROPICALLY RANDOM ORTHOGONAL MATRICES: PERFORMANCE OF LASSO AND MINIMUM CONIC SINGULAR VALUES	556
Christos Thrampoulidis, Babak Hassibi, California Institute of Technology, United States	

Mo-PM1-9: PHYSICAL-LAYER NETWORK CODING

Mo-PM1-9.1: COMPUTE-COMPRESS-AND-FORWARD.....	561
Yihua Tan, The Chinese University of Hong Kong, Hong Kong SAR of China; Xiaojun Yuan, ShanghaiTech University, China	
Mo-PM1-9.2: ADAPTIVE COMPUTE-AND-FORWARD WITH LATTICE CODES OVER ALGEBRAIC INTEGERS	566
Yu-Chih Huang, National Taipei University, Taiwan; Krishna Narayanan, Ping-Chung Wang, Texas A&M University, United States	
Mo-PM1-9.3: SLOTTED ALOHA WITH COMPUTE-AND-FORWARD.....	571
Shwan Ashrafi, University of Washington, United States; Chen Feng, University of Toronto, Canada; Sumit Roy, University of Washington, United States; Frank R. Kschischang, University of Toronto, Canada	
Mo-PM1-9.4: THE IMPACT OF CHANNEL VARIATION ON INTEGER-FORCING RECEIVERS	576
Islam El Bakoury, Bobak Nazer, Boston University, United States	
Mo-PM1-9.5: INTEGER-FORCING INTERFERENCE ALIGNMENT: ITERITIVE OPTIMIZATION VIA ALIGNED LATTICE REDUCTION	581
Islam El Bakoury, Wenbo He, Bobak Nazer, Boston University, United States	

Mo-PM2-1: TOPICS IN NETWORK CODING 1

Mo-PM2-1.1: SUBSPACE POLYNOMIALS AND CYCLIC SUBSPACE CODES.....	586
Eli Ben-Sasson, Tuvi Etzion, Ariel Gabizon, Netanel Raviv, Technion - Israel Institute of Technology, Israel	
Mo-PM2-1.2: ON THE BOUNDS OF CERTAIN MAXIMAL LINEAR CODES IN A PROJECTIVE SPACE	591
Srikanth Pai, B. Sundar Rajan, Indian Institute of Science, India	
Mo-PM2-1.3: CAPACITY OF CODED INDEX MODULATION	596
Lakshmi Natarajan, Yi Hong, Emanuele Viterbo, Monash University, Australia	
Mo-PM2-1.4: HERMITIAN CODES IN DISTRIBUTED STORAGE SYSTEMS WITH OPTIMAL ERROR-CORRECTING CAPACITY	601
Bin Wang, Haibin Kan, Fudan University, China; Kenneth W. Shum, The Chinese University of Hong Kong, Hong Kong SAR of China	
Mo-PM2-1.5: CAPACITY OF SUM-NETWORKS FOR DIFFERENT MESSAGE ALPHABETS	606
Ardhendu Tripathy, Aditya Ramamoorthy, Iowa State University, United States	

Mo-PM2-2: THE X-CHANNEL

Mo-PM2-2.1: ON THE SUM CAPACITY OF THE GAUSSIAN X CHANNEL IN THE MIXED INTERFERENCE REGIME	611
Praneeth Kumar V, Indian Space Research Organization Satellite Center, India; Srikrishna Bhashyam, Indian Institute of Technology, Madras, India	

Mo-PM2-2.2: SECRECY DEGREES OF FREEDOM OF WIRELESS X NETWORKS	616
USING ARTIFICIAL NOISE ALIGNMENT	
<i>Zhao Wang, Ming Xiao, Mikael Skoglund, KTH Royal Institute of Technology, Sweden; H. Vincent Poor, Princeton University, United States</i>	
Mo-PM2-2.3: INTERFERENCE ALIGNED SPACE-TIME TRANSMISSION WITH	621
DIVERSITY FOR THE 2 X 2 X-NETWORK	
<i>Abhinav Ganesan, The Chinese University of Hong Kong, Hong Kong SAR of China; Pavan Koteswar Srinath, University of Cambridge, United Kingdom</i>	
Mo-PM2-2.4: ACHIEVING THE DOF LIMITS OF THE SISO X CHANNEL WITH	626
IMPERFECT-QUALITY CSIT	
<i>Jingjing Zhang, Dirk Slock, Petros Elia, EURECOM, France</i>	
Mo-PM2-2.5: ROVER-TO-ORBITER COMMUNICATION IN MARS: TAKING	631
ADVANTAGE OF THE VARYING TOPOLOGY	
<i>Songze Li, David T.H. Kao, Amir Salman Avestimehr, University of Southern California, United States</i>	

Mo-PM2-3: CODING FOR MEMORY

Mo-PM2-3.1: OPTIMAL BINARY SWITCH CODES WITH SMALL QUERY SIZE	636
<i>Zhiying Wang, Stanford University, United States; Han Mao Kiah, Nanyang Technological University, Singapore; Yuval Cassuto, Technion - Israel Institute of Technology, Israel</i>	
Mo-PM2-3.2: EXPLICIT CAPACITY ACHIEVING CODES FOR DEFECTIVE MEMORIES.....	641
<i>Hessam Mahdavifar, Alexander Vardy, University of California, San Diego, United States</i>	
Mo-PM2-3.3: REWRITING FLASH MEMORIES BY MESSAGE PASSING	646
<i>Eyal En Gad, Wentao Huang, Yue Li, Jehoshua Bruck, California Institute of Technology, United States</i>	
Mo-PM2-3.4: WRITE PROCESS MODELING IN MLC FLASH MEMORIES USING	651
RENEWAL THEORY	
<i>Meysam Asadi, University of Hawaii at Manoa, United States; Erich Haratsch, Seagate Technology, United States; Aleksander Kavcic, Narayana Santhanam, University of Hawaii at Manoa, United States</i>	
Mo-PM2-3.5: ALGORITHMS AND THROUGHPUT ANALYSIS FOR MDS-CODED	656
SWITCHES	
<i>Rami Cohen, Yuval Cassuto, Technion - Israel Institute of Technology, Israel</i>	

Mo-PM2-4: BIG DATA ANALYTICS

Mo-PM2-4.1: A SPECTRUM DECOMPOSITION TO THE FEATURE SPACES AND THE	661
APPLICATION TO BIG DATA ANALYTICS	
<i>Shao-Lun Huang, Lizhong Zheng, Massachusetts Institute of Technology, United States</i>	
Mo-PM2-4.2: ATYPICAL INFORMATION THEORY FOR REAL-VALUED DATA.....	666
<i>Anders Host-Madsen, Elyas Sabeti, University of Hawaii, United States</i>	
Mo-PM2-4.3: ONLINE DENOISING OF DISCRETE NOISY DATA	671
<i>Pejman Khadivi, Ravi Tandon, Naren Ramakrishnan, Virginia Tech, United States</i>	
Mo-PM2-4.4: A SCALABLE FRAMEWORK TO TRANSFORM SAMPLES FROM ONE	676
CONTINUOUS DISTRIBUTION TO ANOTHER	
<i>Diego Mesa, Sanggyun Kim, Todd Coleman, University of California: San Diego, United States</i>	
Mo-PM2-4.5: EFFICIENT TOTAL PROBABILITY PREDICTION VIA CONVEX	681
OPTIMIZATION AND OPTIMAL TRANSPORT	
<i>Sanggyun Kim, Diego Mesa, Todd Coleman, University of California, San Diego, United States</i>	

Mo-PM2-5: DISTRIBUTED QUANTUM PROTOCOLS

Mo-PM2-5.1: SECURITY PROOF OF A SEMI-QUANTUM KEY DISTRIBUTION	686
PROTOCOL	
<i>Walter Krawec, Stevens Institute of Technology, United States</i>	

Mo-PM2-5.2: TIGHT ASYMPTOTIC BOUNDS ON LOCAL HYPOTHESIS TESTING	691
BETWEEN A PURE BIPARTITE STATE AND THE WHITE NOISE STATE	
<i>Masahito Hayashi, Nagoya University, Japan; Masaki Owari, NTT Corporation, Japan</i>	
Mo-PM2-5.3: KEY RATE OF THE B92 QUANTUM KEY DISTRIBUTION PROTOCOL	696
WITH FINITE QUBITS	
<i>Hiroaki Sasaki, Ryutaroh Matsumoto, Tomohiko Uyematsu, Tokyo Institute of Technology, Japan</i>	
Mo-PM2-5.4: MARKOVIANIZING COST OF TRIPARTITE QUANTUM STATES	700
Eyuri Wakakuwa, Akihito Soeda, Mio Murao, The University of Tokyo, Japan	
Mo-PM2-5.5: A CODING THEOREM FOR BIPARTITE UNITARIES IN DISTRIBUTED	705
QUANTUM COMPUTATION	
<i>Eyuri Wakakuwa, Akihito Soeda, Mio Murao, The University of Tokyo, Japan</i>	

Mo-PM2-6: KEY GENERATION AND DISTRIBUTION

Mo-PM2-6.1: SECRET KEY GENERATION WITH ONE COMMUNICATOR AND A	710
ONE-SHOT CONVERSE VIA HYPERCONTRACTIVITY	
<i>Jingbo Liu, Paul Cuff, Sergio Verdú, Princeton University, United States</i>	
Mo-PM2-6.2: TWO-KEY GENERATION FOR A CELLULAR MODEL WITH A HELPER	715
<i>Huishuai Zhang, Yingbin Liang, Syracuse University, United States; Lifeng Lai, Worcester Polytechnic Institute, United States; Shlomo Shamai, Technion - Israel Institute of Technology, Israel</i>	
Mo-PM2-6.3: ON THE SIMULABILITY CONDITION IN KEY GENERATION OVER A	720
NON-AUTHENTICATED PUBLIC CHANNEL	
<i>Wenwen Tu, Lifeng Lai, Worcester Polytechnic Institute, United States</i>	
Mo-PM2-6.4: CONSTRUCTIONS OF SYMMETRIC-KEY ENCRYPTION WITH	725
GUESSING SECRECY	
<i>Mitsugu Iwamoto, The University of Electro-Communications, Japan; Junji Shikata, Yokohama National University, Japan</i>	
Mo-PM2-6.5: AN INFORMATION RECONCILIATION PROTOCOL FOR SECRET-KEY	730
AGREEMENT WITH SMALL LEAKAGE	
<i>Christoph Pacher, Philipp Grabenweger, AIT Austrian Institute of Technology, Austria; Jesus Martinez-Mateo, Vicente Martin, Universidad Politecnica de Madrid, Spain</i>	

Mo-PM2-7: INFORMATION MEASURES

Mo-PM2-7.1: INFORMATION-THEORETIC APPLICATIONS OF THE LOGARITHMIC	735
PROBABILITY COMPARISON BOUND	
<i>Rami Atar, Neri Merhav, Technion - Israel Institute of Technology, Israel</i>	
Mo-PM2-7.2: LATTICES WITH NON-SHANNON INEQUALITIES	740
<i>Peter Harremoës, Niels Brock, Copenhagen Business College, Denmark</i>	
Mo-PM2-7.3: CONVEXITY/CONCAVITY OF RENYI ENTROPY AND	745
\$\backslash ALPHA\$-MUTUAL INFORMATION	
<i>Siu-Wai Ho, University of South Australia, Australia; Sergio Verdú, Princeton University, United States</i>	
Mo-PM2-7.4: THE NORM OF THE FOURIER SERIES OPERATOR.....	750
<i>Peng Xu, Mokshay Madiman, University of Delaware, United States</i>	
Mo-PM2-7.5: RESOLVABILITY IN \$E_{\backslash GAMMA}\$ WITH APPLICATIONS TO LOSSY	755
COMPRESSION AND WIRETAP CHANNELS	
<i>Jingbo Liu, Paul Cuff, Sergio Verdú, Princeton University, United States</i>	

Mo-PM2-8: TOPICS IN DETECTION AND ESTIMATION 1

Mo-PM2-8.1: MISMATCHED ESTIMATION IN LARGE LINEAR SYSTEMS.....	760
<i>Yanting Ma, Dror Baron, North Carolina State University, United States; Ahmad Beirami, Duke University, United States</i>	

Mo-PM2-8.2: QUICKEST LINEAR SEARCH OVER CORRELATED SEQUENCES	765
<i>Javad Heydari, Ali Tajer, Rensselaer Polytechnic Institute, United States</i>	
Mo-PM2-8.3: UNIVERSAL QUICKEST OUTLIER DETECTION AND ISOLATION.....	770
<i>Sirin Nitinawarat, Qualcomm Technologies, Inc., United States; Venugopal V. Veeravalli, University of Illinois at Urbana-Champaign, United States</i>	
Mo-PM2-8.4: NON-ADAPTIVE POLICIES FOR 20 QUESTIONS TARGET LOCALIZATION.....	775
<i>Ehsan Variani, Kamel Lahouel, Johns Hopkins University, United States; Avner Bar-Hen, Université Paris Descartes, United States; Bruno Jedynak, Johns Hopkins University, United States</i>	
Mo-PM2-8.5: STRONG LARGE DEVIATIONS FOR RAO TEST SCORE AND GLRT IN EXPONENTIAL FAMILIES	779
<i>Pierre Moulin, Patrick Johnstone, University of Illinois, United States</i>	

Mo-PM2-9: QUEUEING

Mo-PM2-9.1: HARQ BUFFER MANAGEMENT: AN INFORMATION-THEORETIC VIEW	784
<i>Wonju Lee, Korea Advanced Institute of Science and Technology, Republic of Korea; Osvaldo Simeone, New Jersey Institute of Technology, United States; Joonhyuk Kang, Korea Advanced Institute of Science and Technology, Republic of Korea; Sundeep Rangan, Polytechnic Institute of New York University, United States; Petar Popovski, Aalborg University, Denmark</i>	
Mo-PM2-9.2: CAPACITY LIMIT OF QUEUEING TIMING CHANNEL IN SHARED FCFS SCHEDULERS	789
<i>AmirEmad Ghassami, University of Illinois at Urbana-Champaign, United States; Xun Gong, Google Incorporation, United States; Negar Kiyavash, University of Illinois at Urbana-Champaign, United States</i>	
Mo-PM2-9.3: QUEUEING STABILITY AND CSI PROBING OF A TDD WIRELESS NETWORK WITH INTERFERENCE ALIGNMENT	794
<i>Matha Deghel, Mohamad Assaad, Mérourane Debbah, CentraleSupélec, France</i>	
Mo-PM2-9.4: ENERGY EFFICIENCY IN MULTIPLE-ANTENNA CHANNELS WITH MARKOV ARRIVALS AND QUEUEING CONSTRAINTS	799
<i>Mustafa Ozmen, M. Cenk Gursoy, Syracuse University, United States</i>	

Tu-AM1-SP1: SEMI-PLENARY SESSION 1A

Tu-AM1-SP1.1: DELAY-CONSTRAINED UNICAST AND THE TRIANGLE-CAST PROBLEM.....	804
<i>Chandra Chekuri, University of Illinois at Urbana-Champaign, United States; Sudeep Kamath, Princeton University, United States; Sreeram Kannan, University of Washington, United States; Pramod Viswanath, University of Illinois at Urbana-Champaign, United States</i>	
Tu-AM1-SP1.2: CACHE-AIDED INTERFERENCE CHANNELS	809
<i>Mohammad Ali Maddah-Ali, Bell Labs, Alcatel-Lucent, United States; Urs Niesen, Qualcomm New Jersey Research Center, United States</i>	
Tu-AM1-SP1.3: CODES FOR DNA SEQUENCE PROFILES.....	814
<i>Han Mao Kiah, Nanyang Technological University, Singapore; Gregory J. Puleo, Olgica Milenkovic, University of Illinois at Urbana-Champaign, United States</i>	
Tu-AM1-SP1.4: IN-MEMORY HAMMING SIMILARITY COMPUTATION IN RESISTIVE ARRAYS	819
<i>Yuval Cassuto, Koby Crammer, Technion - Israel Institute of Technology, Israel</i>	

Tu-AM1-SP2: SEMI-PLENARY SESSION 1B

Tu-AM1-SP2.1: OPTIMAL ENTROPY ESTIMATION ON LARGE ALPHABETS VIA BEST POLYNOMIAL APPROXIMATION	824
<i>Yihong Wu, Pengkun Yang, University Of Illinois, United States</i>	
Tu-AM1-SP2.2: ON THE GEOMETRY OF CONVEX TYPICAL SETS	829
<i>Varun Jog, Venkat Anantharam, University of California, Berkeley, United States</i>	

Tu-AM1-SP2.3: SUPERPOSITION CODING IS ALMOST ALWAYS OPTIMAL FOR THE POISSON BROADCAST CHANNEL	834
<i>Hyeji Kim, Benjamin Nachman, Abbas El Gamal, Stanford University, United States</i>	
Tu-AM1-SP2.4: MAXIMUM LIKELIHOOD ESTIMATION OF INFORMATION MEASURES	839
<i>Jiantao Jiao, Kartik Venkat, Stanford University, United States; Yanjun Han, Tsinghua University, China; Tsachy Weissman, Stanford University, United States</i>	

Tu-AM2-1: REGENERATING CODES 1

Tu-AM2-1.1: MULTILEVEL DIVERSITY CODING WITH REGENERATION	844
<i>Chao Tian, The University of Tennessee Knoxville, United States; Tie Liu, Texas A&M University, United States</i>	
Tu-AM2-1.2: WHEN LOCALLY REPAIRABLE CODES MEET REGENERATING CODES – WHAT IF SOME HELPERS ARE UNAVAILABLE	849
<i>Imad Ahmad, Chih-Chun Wang, Purdue University, United States</i>	
Tu-AM2-1.3: OVERHEAD-FREE IN-PLACE RECOVERY AND REPAIR SCHEMES OF XOR-BASED REGENERATING CODES	854
<i>Ximing Fu, Zhiqing Xiao, Tsinghua University, China; Shenghao Yang, The Chinese University of Hong Kong, China</i>	
Tu-AM2-1.4: THE STORAGE-REPAIR-BANDWIDTH TRADE-OFF OF EXACT REPAIR LINEAR REGENERATING CODES FOR THE CASE D = K = N-1	859
<i>Prakash Narayana Moorthy, Nikhil Krishnan Muralee Krishnan, Indian Institute of Science, Bangalore, India</i>	

Tu-AM2-2: INTERFERENCE ALIGNMENT 1

Tu-AM2-2.1: ON DEGREES-OF-FREEDOM OF MULTI-USER MIMO FULL-DUPLEX NETWORK	864
<i>Jingwen Bai, Rice University, United States; Suhas Diggavi, University of California, Los Angeles, United States; Ashutosh Sabharwal, Rice University, United States</i>	
Tu-AM2-2.2: DEGREES OF FREEDOM OF FULL-DUPLEX MULTIANTELLNA CELLULAR NETWORKS	869
<i>Sang-Woon Jeon, Andong National University, Republic of Korea; Sung Ho Chae, Samsung Electronics, Republic of Korea; Sung Hoon Lim, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
Tu-AM2-2.3: COOPERATION ALIGNMENT FOR DISTRIBUTED INTERFERENCE MANAGEMENT	874
<i>Vasilis Ntranos, University of Southern California, United States; Mohammad Ali Maddah-Ali, Bell Labs, Alcatel-Lucent, United States; Giuseppe Caire, Technical University of Berlin, Germany</i>	
Tu-AM2-2.4: THE DEGREES OF FREEDOM REGION OF THE 3-USER MIMO CYCLIC Z-INTERFERENCE CHANNEL WITH PERFECT AND DELAYED CSIT	879
<i>Kaniska Mohanty, Mahesh Varanasi, University of Colorado, United States</i>	

Tu-AM2-3: SPATIALLY-COUPLED CODES

Tu-AM2-3.1: ON THE MINIMUM DISTANCE OF ARRAY-BASED SPATIALLY-COUPLED LOW-DENSITY PARITY-CHECK CODES	884
<i>Eirik Rosnes, University of Bergen, Norway</i>	
Tu-AM2-3.2: FINITE-LENGTH PERFORMANCE OF MULTI-EDGE PROTOGRAPH-BASED SPATIALLY COUPLED LDPC CODES	889
<i>Markus Stinner, Technische Universität München, Germany; Pablo M. Olmos, Universidad Carlos III de Madrid, Spain</i>	
Tu-AM2-3.3: EXIT CHART ANALYSIS OF BLOCK MARKOV SUPERPOSITION TRANSMISSION OF SHORT CODES	894
<i>Kechao Huang, Xiao Ma, Sun Yat-sen University, China; Daniel J. Costello, Jr., University of Notre Dame, United States</i>	
Tu-AM2-3.4: SPATIALLY-COUPLED MACKAY-NEAL CODES UNIVERSALLY ACHIEVE THE SYMMETRIC INFORMATION RATE OF ARBITRARY GENERALIZED ERASURE CHANNELS WITH MEMORY	899
<i>Masaru Fukushima, Takuya Okazaki, Kenta Kasai, Tokyo Institute of Technology, Japan</i>	

Tu-AM2-4: SEQUENCE ASSEMBLY AND DNA STORAGE

Tu-AM2-4.1: A STOCHASTIC MODEL FOR GENOMIC INTERSPersed DUPLICATION.....	904
Farzad Farnoud (Hassanzadeh), California Institute of Technology, United States; Moshe Schwartz, Ben-Gurion University of the Negev, Israel; Jehoshua Bruck, California Institute of Technology, United States	
Tu-AM2-4.2: ASYMMETRIC LEE DISTANCE CODES FOR DNA-BASED STORAGE.....	909
Ryan Gabrys, University of Illinois at Urbana-Champaign, United States; Han Mao Kiah, Nanyang Technological University, Singapore; Olgica Milenkovic, University of Illinois at Urbana-Champaign, United States	
Tu-AM2-4.3: OPTIMAL HAPLOTYPE ASSEMBLY FROM HIGH-THROUGHPUT MATE-PAIR READS	914
Govinda Kamath, Stanford University, United States; Eren Sasoglu, University of California, Berkeley, United States; David N C Tse, Stanford University, United States	
Tu-AM2-4.4: DO READ ERRORS MATTER FOR GENOME ASSEMBLY?.....	919
Ilan Shomorony, Thomas Courtade, University of California, Berkeley, United States; David N C Tse, Stanford University, United States	

Tu-AM2-5: ERROR EXPONENTS 2

Tu-AM2-5.1: A NEW ITERATIVE ALGORITHM FOR COMPUTING THE OPTIMAL EXPONENT OF CORRECT DECODING FOR DISCRETE MEMORYLESS CHANNEL	924
Yasutada Oohama, University of Electro-Communications, Japan; Yutaka Jitsumatsu, Kyushu University, Japan	
Tu-AM2-5.2: A DERIVATION OF THE COST-CONSTRAINED SPHERE-PACKING EXPONENT	929
Gonzalo Vazquez-Vilar, Universidad Carlos III de Madrid, Spain; Alfonso Martinez, Albert Guillén i Fàbregas, Universitat Pompeu Fabra, Spain	
Tu-AM2-5.3: ON ERROR EXPONENTS FOR A DIMENSION-MATCHED VECTOR MAC WITH ADDITIVE NOISE	934
Venkat Anantharam, University of California, United States; Francois Baccelli, The University of Texas, United States	
Tu-AM2-5.4: STRONG CONVERSE EXPONENT FOR DEGRADED BROADCAST CHANNELS AT RATES OUTSIDE THE CAPACITY REGION	939
Yasutada Oohama, University of Electro-Communications, Japan	

Tu-AM2-6: INFORMATION THEORETIC SECURITY

Tu-AM2-6.1: CAPACITY OF THE DETERMINISTIC Z-INTERFERENCE CHANNEL WITH UNIDIRECTIONAL TRANSMITTER COOPERATION AND SECRECY CONSTRAINTS	944
Parthajit Mohapatra, Singapore University of Technology and Design, India; Chandra R. Murthy, Indian Institute of Science, India	
Tu-AM2-6.2: COMMON RANDOMNESS FOR SECURE COMPUTING	949
Prakash Narayan, University of Maryland, College Park, United States; Himanshu Tyagi, Indian Institute of Science, India; Shun Watanabe, Tokyo University of Agriculture and Technology, Japan	
Tu-AM2-6.3: LP FORMULATIONS FOR SECRECY OVER ERASURE NETWORKS WITH FEEDBACK	954
Athanasis Papadopoulos, University of California, Los Angeles, United States; Laszlo Czap, École Polytechnique Fédérale de Lausanne, Switzerland; Christina Fragouli, University of California, Los Angeles / EPFL, United States	
Tu-AM2-6.4: PARITY CHECK BASED REDISTRIBUTION OF SECRET SHARES.....	959
Yvo Desmedt, The University of Texas at Dallas, United States; Kirill Morozov, Kyushu University, Japan	

Tu-AM2-7: TOPICS IN SHANNON THEORY 2

Tu-AM2-7.1: BITS OF KOLMOGOROV AND SHANNON IN A DETERMINISTIC SETTING	964
Tae hyung J. Lim, Massimo Franceschetti, University of California, San Diego, United States	

Tu-AM2-7.2: SEARCHING FOR MULTIPLE TARGETS WITH MEASUREMENT DEPENDENT NOISE	969
Yonatan Kaspi, University of California, San Diego, United States; Ofer Shayevitz, Tel-Aviv University, Israel; Tara Javidi, University of California, San Diego, United States	
Tu-AM2-7.3: A MARGINAL CHARACTERIZATION OF ENTROPY FUNCTIONS FOR CONDITIONAL MUTUALLY INDEPENDENT RANDOM VARIABLES (WITH APPLICATION TO WYNER'S COMMON INFORMATION)	974
Qi Chen, The Chinese University of Hong Kong, Hong Kong SAR of China; Fan Cheng, National University of Singapore, Singapore; Tie Liu, Texas A&M University, United States; Raymond W. Yeung, The Chinese University of Hong Kong, Hong Kong SAR of China	
Tu-AM2-7.4: COORDINATION IN STATE-DEPENDENT DISTRIBUTED NETWORKS: THE TWO-AGENT CASE	979
Benjamin Larrousse, Samson Lasaulce, Laboratoire des Signaux et Systèmes, France; Michèle Wigger, Telecom ParisTech, France	

Tu-AM2-8: APPLICATIONS OF COMPRESSED SENSING 1

Tu-AM2-8.1: SUPER-RESOLUTION OF MUTUALLY INTERFERING SIGNALS	984
Yuanxin Li, Yuejie Chi, The Ohio State University, United States	
Tu-AM2-8.2: CAPACITY-APPROACHING PHASECODE FOR LOW-COMPLEXITY COMPRESSIVE PHASE RETRIEVAL	989
Ramtin Pedarsani, Kangwook Lee, Kannan Ramchandran, University of California, Berkeley, United States	
Tu-AM2-8.3: CLASSIFICATION AND RECONSTRUCTION OF COMPRESSED GMM SIGNALS WITH SIDE INFORMATION	994
Francesco Renna, University College London, United Kingdom; Liming Wang, Xin Yuan, Jianbo Yang, Galen Reeves, Robert Calderbank, Lawrence Carin, Duke University, United States; Miguel Rodrigues, University College London, United Kingdom	
Tu-AM2-8.4: ALMOST LOSSLESS ANALOG COMPRESSION WITHOUT PHASE INFORMATION	999
Erwin Riegler, Swiss Federal Institute of Technology Zurich, Switzerland; Georg Tauböck, Austrian Academy of Sciences, Austria	

Tu-AM2-9: CELLULAR NETWORKS

Tu-AM2-9.1: JOINT TRANSMISSION AND CACHING POLICY DESIGN FOR ENERGY MINIMIZATION IN THE WIRELESS BACKHAUL LINK	1004
Maria Gregori, Jesús Gómez-Vilardebò, Javier Matamoros, Centre Tecnològic de Telecommunications de Catalunya, Spain; Deniz Gündüz, Imperial College London, United Kingdom	
Tu-AM2-9.2: SIR ASYMPTOTICS IN GENERAL CELLULAR NETWORK MODELS	1009
Radha Krishna Ganti, Indian Institute of Technology, Madras, India; Martin Haenggi, University of Notre Dame, United States	
Tu-AM2-9.3: ON THE COOPERATION GAIN IN 5G HETEROGENEOUS NETWORKING SYSTEMS	1014
Zhengchuan Chen, Pingyi Fan, Tao Li, Tsinghua University, China; Khaled Ben Letaief, The Hong Kong University of Science and Technology, Hong Kong SAR of China	
Tu-AM2-9.4: OPPORTUNISTIC SCHEDULING FOR FULL-DUPLEX UPLINK-DOWNLINK NETWORKS	1019
Can Karakus, Suhas Diggavi, University of California, Los Angeles, United States	

Tu-PM1-1: INDEX CODING

Tu-PM1-1.1: A NEW INDEX CODING SCHEME EXPLOITING INTERLINKED CYCLES	1024
Chandra Thapa, Lawrence Ong, Sarah J. Johnson, The University of Newcastle, Australia	
Tu-PM1-1.2: ERROR CORRECTING INDEX CODES AND MATROIDS	1029
Anoop Thomas, B. Sundar Rajan, Indian Institute of Science, Bangalore, India	

Tu-PM1-1.3: STRUCTURAL PROPERTIES OF INDEX CODING CAPACITY USING FRACTIONAL GRAPH THEORY	1034
<i>Fatemeh Arbabjolfaei, Young-Han Kim, University of California, San Diego, United States</i>	
Tu-PM1-1.4: VECTOR LINEAR ERROR CORRECTING INDEX CODES AND DISCRETE POLYMATROIDS	1039
<i>Anoop Thomas, B. Sundar Rajan, Indian Institute of Science, Bangalore, India</i>	
Tu-PM1-1.5: ON THE NUMBER OF OPTIMAL INDEX CODES	1044
<i>Kavitha Radhakumar, B. Sundar Rajan, Indian Institute of Science, Bangalore, India</i>	

Tu-PM1-2: DEGREES OF FREEDOM IN NETWORKS

Tu-PM1-2.1: ON THE DOF OF TWO-USER INTERFERENCE CHANNEL WITH AN INSTANTANEOUS RELAY	1049
<i>Tang Liu, Daniela Tuninetti, University of Illinois at Chicago, United States; Sae-Young Chung, Korea Advanced Institute of Science and Technology, Republic of Korea</i>	
Tu-PM1-2.2: ON THE SEPARABILITY OF GDOF REGION FOR PARALLEL GAUSSIAN TIN OPTIMAL INTERFERENCE NETWORKS	1054
<i>Hua Sun, Syed Jafar, University of California, Irvine, United States</i>	
Tu-PM1-2.3: A RELAY CAN INCREASE DEGREES OF FREEDOM IN BURSTY MIMO INTERFERENCE NETWORKS	1059
<i>Sunghyun Kim, Korea Advanced Institute of Science and Technology, Republic of Korea; I-Hsiang Wang, National Taiwan University, Taiwan; Changho Suh, Korea Advanced Institute of Science and Technology, Republic of Korea</i>	
Tu-PM1-2.4: DEGREES OF FREEDOM REGION OF THE MIMO TWO-TRANSMIT, TWO-RECEIVE NETWORK WITH GENERAL MESSAGE SETS	1064
<i>Yao Wang, Mahesh Varanasi, University of Colorado, United States</i>	
Tu-PM1-2.5: DEGREES OF FREEDOM OF THE MIMO INTERFERENCE CHANNEL WITH PARALLEL MULTICASTING	1069
<i>Jinyuan Chen, Andrea Goldsmith, Ayfer Özgür, Stanford University, United States; Sheng Yang, CentraleSupélec, France</i>	

Tu-PM1-3: DESIGN OF LDPC CODES

Tu-PM1-3.1: LDPC CODE ENSEMBLES THAT UNIVERSALLY ACHIEVE CAPACITY UNDER BP DECODING: A SIMPLE DERIVATION	1074
<i>Anatoly Khina, Tel-Aviv University, Israel; Yair Yona, University of California, Los Angeles, United States; Uri Erez, Tel-Aviv University, Israel</i>	
Tu-PM1-3.2: A PEG-LIKE LDPC CODE DESIGN AVOIDING SHORT TRAPPING SETS	1079
<i>Madiagne Diouf, David Declercq, Université Cergy Pontoise, France; Samuel Ouya, Université Cheikh Anta DIOP, Senegal; Bane Vasic, University of Arizona, United States</i>	
Tu-PM1-3.3: LDPC CODE DESIGN FOR BINARY-INPUT BINARY-OUTPUT Z INTERFERENCE CHANNELS	1084
<i>Shahrouz Sharifi, Arizona State University, United States; A. Korhan Tanc, Kirkkareli University, Turkey; Tolga Mete Duman, Arizona State University, Bilkent University, United States</i>	
Tu-PM1-3.4: PROTOGRAPH-BASED LDPC CODE DESIGN FOR BIT-METRIC DECODING	1089
<i>Fabian Steiner, Georg Böcherer, Technische Universität München, Germany; Gianluigi Liva, German Aerospace Center (DLR), Germany</i>	
Tu-PM1-3.5: NONBINARY KITE CODES: A FAMILY OF NONBINARY RATE-COMPATIBLE LDPC CODES	1094
<i>Min Zhu, Yun Wei, Baoming Bai, Xidian University, China; Xiao Ma, Sun Yat-sen University, China</i>	

Tu-PM1-4: QUANTUM CODES

Tu-PM1-4.1: HOLOGRAPHIC TRANSFORMATION, BELIEF PROPAGATION AND LOOP	1099
CALCULUS FOR GENERALIZED PROBABILISTIC THEORIES	
Ryuhei Mori, Tokyo Institute of Technology, Japan	
Tu-PM1-4.2: QUANTUM MDS CODES OVER SMALL FIELDS	1104
Markus Grassl, Universitaet Erlangen-Nuernberg, Germany; Martin Roetteler, Microsoft Research, United States	
Tu-PM1-4.3: EQUIVALENCE OF 2D COLOR CODES (WITHOUT TRANSLATIONAL SYMMETRY) TO SURFACE CODES	1109
Arjun Bhagoji, Pradeep Sarvepalli, Indian Institute of Technology, Madras, India	
Tu-PM1-4.4: GLOBAL STABILIZER QUANTUM ERROR CORRECTION WITH COMBINATORIAL ARRAYS	1114
Yuichiro Fujiwara, California Institute of Technology, United States	
Tu-PM1-4.5: LEAKAGE SUPPRESSION IN THE TORIC CODE	1119
Martin Suchara, Andrew Cross, Jay Gambetta, IBM, United States	

Tu-PM1-5: ENERGY HARVESTING COMMUNICATIONS

Tu-PM1-5.1: REAL-TIME SIMULTANEOUS ENERGY AND INFORMATION TRANSFER	1124
Anshoo Tandon, Mehul Motani, National University of Singapore, Singapore; Lav Varshney, University of Illinois at Urbana-Champaign, United States	
Tu-PM1-5.2: OPTIMAL SCHEDULING FOR ENERGY HARVESTING TRANSMITTERS UNDER TEMPERATURE CONSTRAINTS	1129
Omur Ozel, Sennur Ulukus, University of Maryland, United States; Pulkit Grover, Carnegie Mellon University, United States	
Tu-PM1-5.3: OPTIMUM SENSING OF A TIME-VARYING RANDOM EVENT WITH ENERGY HARVESTING POWER SOURCES	1134
Jingxian Wu, Israel Akingeneye, Jing Yang, University of Arkansas, United States	
Tu-PM1-5.4: DISTRIBUTED COMPRESSION AND TRANSMISSION WITH ENERGY HARVESTING SENSORS	1139
Rajeev Gangula, EURECOM, France; Deniz Gündüz, Imperial College London, United Kingdom; David Gesbert, EURECOM, France	
Tu-PM1-5.5: HYBRID ARQ IN BLOCK-FADING CHANNELS WITH AN ENERGY HARVESTING RECEIVER	1144
Hajar Mahdavi-Doost, Roy Yates, Rutgers University, The State University of New Jersey, United States	

Tu-PM1-6: WIRETAP CHANNEL 1

Tu-PM1-6.1: GAUSSIAN WIRETAP CHANNEL WITH SHARED KEYS BETWEEN TRANSMITTER AND HELPERS	1149
Wanyao Zhao, Ashish Khisti, University of Toronto, Canada	
Tu-PM1-6.2: ON THE CAPACITY OF THE WIRETAP CHANNEL WITH GENERALIZED FEEDBACK	1154
German Bassi, Pablo Piantanida, CentraleSupélec, France; Shlomo Shamai, Technion - Israel Institute of Technology, Israel	
Tu-PM1-6.3: WIRETAP CHANNEL II WITH A NOISY MAIN CHANNEL.....	1159
Mohamed Nafea, Aylin Yener, The Pennsylvania State University, United States	
Tu-PM1-6.4: SUFFICIENTLY MYOPIC ADVERSARIES ARE BLIND.....	1164
Bikash Kumar Dey, Indian Institute of Technology, Bombay, India; Sidharth Jaggi, The Chinese University of Hong Kong, Hong Kong SAR of China; Michael Langberg, SUNY at Buffalo, United States	
Tu-PM1-6.5: ON THE OBLIVIOUS TRANSFER CAPACITY OF THE DEGRADED WIRETAPPED BINARY ERASURE CHANNEL	1169
Manoj Mishra, Bikash Kumar Dey, Indian Institute of Technology, Bombay, India; Vinod M. Prabhakaran, Tata Institute of Fundamental Research, India; Suhas Diggavi, University of California, Los Angeles, United States	

Tu-PM1-7: INFORMATION THEORY AND STATISTICS

Tu-PM1-7.1: ON MODEL MISSPECIFICATION AND KL SEPARATION FOR GAUSSIAN GRAPHICAL MODELS	1174
Varun Jog, University of California, Berkeley, United States; Po-Ling Loh, University of Pennsylvania, United States	
Tu-PM1-7.2: AN IMPORTANCE SAMPLING SCHEME FOR MODELS IN A STRONG EXTERNAL FIELD	1179
Mehdi Molkaraie, Universitat Pompeu Fabra, Spain	
Tu-PM1-7.3: SPECTRAL DETECTION IN THE CENSORED BLOCK MODEL	1184
Alaa Saade, Florent Krzakala, Marc Lelarge, Ecole Normale Supérieure, France; Lenka Zdeborova, Institut de Physique Théorique, France	
Tu-PM1-7.4: CONTAMINATION ESTIMATION VIA CONVEX RELAXATIONS	1189
Matthew Malloy, comScore, Inc., United States; Scott Alfeld, University of Wisconsin, United States; Paul Barford, University of Wisconsin, comScore, United States	
Tu-PM1-7.5: THE REPLACEMENT BOOTSTRAP FOR DEPENDENT DATA	1194
Amir Sani, Alessandro Lazaric, Daniil Ryabko, INRIA Lille, France	

Tu-PM1-8: PATTERN RECOGNITION AND LEARNING

Tu-PM1-8.2: PREDICTING THE OUTCOMES OF EVERY PROCESS FOR WHICH AN ASYMPTOTICALLY ACCURATE STATIONARY PREDICTOR EXISTS IS IMPOSSIBLE	1204
Daniil Ryabko, INRIA, France; Boris Ryabko, Institute of Computational Technologies, Russian Federation	
Tu-PM1-8.3: NONPARAMETRIC NEAREST NEIGHBOR RANDOM PROCESS CLUSTERING	1207
Michael Tschannen, Helmut Bölcskei, Swiss Federal Institute of Technology Zurich, Switzerland	
Tu-PM1-8.4: DEEP CONVOLUTIONAL NEURAL NETWORKS BASED ON SEMI-DISCRETE FRAMES	1212
Thomas Wiatowski, Helmut Bölcskei, Swiss Federal Institute of Technology Zurich, Switzerland	
Tu-PM1-8.5: DETERMINING STEP SIZES IN GEOMETRIC OPTIMIZATION ALGORITHMS	1217
Zhizhong Li, Peking University, China; Deli Zhao, HTC, China; Zhouchen Lin, Peking University, China; Edward Y. Chang, HTC, Taiwan	

Tu-PM1-9: MASSIVE MIMO 1

Tu-PM1-9.1: EFFECT OF CHANNEL AGING ON THE SUM RATE OF UPLINK MASSIVE MIMO SYSTEMS	1222
Chuili Kong, Caijun Zhong, Zhejiang University, China; Anastasios Papazafeiropoulos, Imperial College London, United Kingdom; Michail Matthaiou, Queen's University Belfast, United Kingdom; Zhaoyang Zhang, Zhejiang University, China	
Tu-PM1-9.2: OPTIMALITY OF LARGE MIMO DETECTION VIA APPROXIMATE MESSAGE PASSING	1227
Charles Jeon, Ramina Ghods, Cornell University, United States; Arian Maleki, Columbia University, United States; Christoph Studer, Cornell University, United States	
Tu-PM1-9.3: DOES SUPERDIRECTIVITY INCREASE THE DEGREES OF FREEDOM IN WIRELESS CHANNELS?	1232
Ada S Y Poon, David N C Tse, Stanford University, United States	
Tu-PM1-9.4: JOINT CHANNEL-AND-DATA ESTIMATION FOR LARGE-MIMO SYSTEMS WITH LOW-PRECISION ADCS	1237
Chao-Kai Wen, National Sun Yat-sen University, Taiwan; Shi Jin, Southeast University, China; Kai-Kit Wong, University College London, United Kingdom; Chang-Jen Wang, National Sun Yat-sen University, Taiwan; Gang Wu, University of Electronic Science and Technology of China, China	

Tu-PM1-9.5: INTERLEAVING TRAINING AND LIMITED FEEDBACK FOR POINT-TO-POINT MASSIVE MULTIPLE-ANTENNA SYSTEMS	1242
<i>Erdem Koyuncu, Hamid Jafarkhani, University of California, Irvine, United States</i>	

Tu-PM2-1: LOCALLY REPAIRABLE CODES 1

Tu-PM2-1.1: OPTIMAL BINARY LOCALLY REPAIRABLE CODES VIA ANTICODES	1247
<i>Natalia Silberstein, Alexander Zeh, Technion - Israel Institute of Technology, Israel</i>	
Tu-PM2-1.2: LOCALLY RECOVERABLE CODES ON ALGEBRAIC CURVES	1252
<i>Alexander Barg, University of Maryland, United States; Itzhak Tamo, Tel-Aviv University, Israel; Serge Vladut, IITP, Russian Academy of Sciences, Russian Federation</i>	
Tu-PM2-1.3: CODES WITH HIERARCHICAL LOCALITY	1257
<i>Birenjith Sasidharan, Gaurav Kumar Agarwal, P Vijay Kumar, Indian Institute of Science, India</i>	
Tu-PM2-1.4: CYCLIC LRC CODES AND THEIR SUBFIELD SUBCODES	1262
<i>Itzhak Tamo, Tel-Aviv University, Israel; Alexander Barg, University of Maryland, College Park, United States; Sreechakra Goparaju, University of California, San Diego, United States; Robert Calderbank, Duke University, United States</i>	

Tu-PM2-2: RELAY NETWORKS 1

Tu-PM2-2.1: GAUSSIAN MIMO HALF-DUPLEX RELAY NETWORKS: APPROXIMATE OPTIMALITY OF SIMPLE SCHEDULES	1267
<i>Martina Cardone, EURECOM, France; Daniela Tuninetti, University of Illinois at Chicago, United States; Raymond Knopp, EURECOM, France</i>	
Tu-PM2-2.2: ON THE OPTIMALITY OF COLOUR-AND-FORWARD RELAYING FOR A CLASS OF ZERO-ERROR PRIMITIVE RELAY CHANNELS	1272
<i>Yanying Chen, Natasha Devroye, University of Illinois at Chicago, United States</i>	
Tu-PM2-2.3: A UNIFIED APPROACH FOR NETWORK INFORMATION THEORY	1277
<i>Si-Hyeon Lee, University of Toronto, Canada; Sae-Young Chung, Korea Advanced Institute of Science and Technology, Republic of Korea</i>	
Tu-PM2-2.4: UPPER BOUNDS ON THE CAPACITY OF SYMMETRIC PRIMITIVE RELAY CHANNELS	1282
<i>Xiugang Wu, Stanford University, United States; Liang-Liang Xie, University of Waterloo, Canada; Ayfer Özgür, Stanford University, United States</i>	

Tu-PM2-3: ON POLARIZATION AND POLAR CODE CONSTRUCTION

Tu-PM2-3.1: CYCLIC POLAR CODES	1287
<i>Narayanan Rengaswamy, Texas A&M University, United States; Henry D. Pfister, Duke University, United States</i>	
Tu-PM2-3.2: RCA ANALYSIS OF THE POLAR CODES AND THE USE OF FEEDBACK TO AID POLARIZATION AT SHORT BLOCKLENGTHS	1292
<i>Kasra Vakilinia, University of California, Los Angeles, United States; Dariush Divsalar, Jet Propulsion Laboratory, California Institute of Technology, United States; Richard D. Wesel, University of California, Los Angeles, United States</i>	
Tu-PM2-3.3: ON THE CONSTRUCTION OF POLAR CODES FOR CHANNELS WITH MODERATE INPUT ALPHABET SIZES	1297
<i>Ido Tal, Technion - Israel Institute of Technology, Israel</i>	

Tu-PM2-4: CODING FOR MEMORY AND DISTRIBUTED STORAGE

Tu-PM2-4.1: CODING WITH CONSTRAINTS: MINIMUM DISTANCE BOUNDS AND SYSTEMATIC CONSTRUCTIONS	1302
<i>Wael Halbawi, Matthew Thill, Babak Hassibi, California Institute of Technology, United States</i>	

Tu-PM2-4.2: SUBGRAPH DOMATIC PROBLEM AND WRITING CAPACITY OF MEMORY DEVICES WITH RESTRICTED STATE TRANSITIONS	1307
<i>Tadashi Wadayama, Taisuke Izumi, Nagoya Institute of Technology, Japan; Hirotaka Ono, Kyushu University, Japan</i>	
Tu-PM2-4.3: ON RATE TRADEOFFS FOR ERASABLE WRITE-ONCE MEMORY CODES	1312
<i>Tetsuya Kobayashi, Hiroyoshi Morita, Akiko Manada, The University of Electro-Communications, Japan</i>	
Tu-PM2-4.4: ZERO-ERROR CAPACITY OF BINARY CHANNELS WITH 1-MEMORY	1317
<i>Qi Cao, Ning Cai, Wangmei Guo, Xidian University, China</i>	

Tu-PM2-5: INFORMATION THEORY FOR BIOLOGY 1

Tu-PM2-5.1: PULSE-DOMAIN SIGNAL PARSING AND NEURAL COMPUTATION	1322
<i>Hans-Andrea Loeliger, Sarah Neff, ETH Zurich, Switzerland</i>	
Tu-PM2-5.2: CAPACITY OF BACTERIAL CABLES VIA ELECTRON-TRANSFER UNDER FULL-CSI	1327
<i>Nicolo Michelusi, Urbashi Mitra, University of Southern California, United States</i>	
Tu-PM2-5.3: RATE-DISTORTION IN MOLECULAR SIGNAL SENSING WITH LIGAND RECEPTORS	1332
<i>Arash Einolghozati, Faramarz Fekri, Georgia Institute of Technology, United States</i>	
Tu-PM2-5.4: MINIMUM SQUARED-ERROR, ENERGY-CONSTRAINED ENCODING BY ADAPTIVE THRESHOLD MODELS OF NEURONS	1337
<i>Erik Johnson, Douglas Jones, Rama Ratnam, University of Illinois at Urbana-Champaign, United States</i>	

Tu-PM2-6: SECRECY IN BROADCAST CHANNELS 1

Tu-PM2-6.1: COOPERATIVE BROADCAST CHANNELS WITH A SECRET MESSAGE	1342
<i>Ziv Goldfeld, Ben-Gurion University of the Negev, Israel; Gerhard Kramer, Technische Universität München, Germany; Haim Permuter, Ben-Gurion University of the Negev, Israel</i>	
Tu-PM2-6.2: ON THE INDIVIDUAL SECRECY RATE REGION FOR THE BROADCAST CHANNEL WITH AN EXTERNAL EAVESDROPPER	1347
<i>Yanling Chen, Ruhr University Bochum, Germany; O. Ozan Koyluoglu, The University of Arizona, United States; Aydin Sezgin, Ruhr University Bochum, Germany</i>	
Tu-PM2-6.3: PRIVATE DATA TRANSFER OVER A BROADCAST CHANNEL	1352
<i>Manoj Mishra, Tanmay Sharma, Bikash Kumar Dey, Indian Institute of Technology, Bombay, India; Vinod M. Prabhakaran, Tata Institute of Fundamental Research, India</i>	
Tu-PM2-6.4: RATE SPLITTING AND SHARING FOR DEGRADED BROADCAST CHANNEL WITH SECRECY OUTSIDE A BOUNDED RANGE	1357
<i>Shaofeng Zou, Yingbin Liang, Syracuse University, United States; Lifeng Lai, Worcester Poly Insititute, United States; Shlomo Shamai, Technion - Israel Institute of Technology, Israel</i>	

Tu-PM2-7: ESTIMATION OF DISTRIBUTIONS AND THEIR FUNCTIONALS

Tu-PM2-7.1: BOUNDS ON THE ENTROPY OF MULTINOMIAL DISTRIBUTION	1362
<i>Yuichi Kaji, Nara Institute of Science and Technology, Japan</i>	
Tu-PM2-7.2: DOES DIRICHLET PRIOR SMOOTHING SOLVE THE SHANNON ENTROPY ESTIMATION PROBLEM?	1367
<i>Yanjun Han, Tsinghua University, China; Jiantao Jiao, Tsachy Weissman, Stanford University, United States</i>	
Tu-PM2-7.3: ADAPTIVE ESTIMATION OF SHANNON ENTROPY	1372
<i>Yanjun Han, Tsinghua University, China; Jiantao Jiao, Tsachy Weissman, Stanford University, United States</i>	
Tu-PM2-7.4: MINIMUM HGR CORRELATION PRINCIPLE: FROM MARGINALS TO JOINT DISTRIBUTION	1377
<i>Farzan Farnia, Meisam Razaviyayn, Stanford University, United States; Sreeram Kannan, University of Washington, United States; David N C Tse, Stanford University, United States</i>	

Tu-PM2-8: STREAMING AND ZERO-DELAY SOURCE CODING

Tu-PM2-8.1: OPTIMALITY OF WALRAND-VARAIYA TYPE POLICIES AND APPROXIMATION RESULTS FOR ZERO DELAY CODING OF MARKOV SOURCES <i>Richard Wood, Tamas Linder, Serdar Yuksel, Queen's University, Canada</i>	1382
Tu-PM2-8.2: DISTORTION-TRANSMISSION TRADE-OFF IN REAL-TIME TRANSMISSION OF GAUSS-MARKOV SOURCES <i>Jhelum Chakravorty, Aditya Mahajan, McGill University, Canada</i>	1387
Tu-PM2-8.3: PRICE OF PERFECTION: LIMITED PREDICTION FOR STREAMING OVER ERASURE CHANNELS <i>Farrokh Etezadi, Ashish Khisti, University of Toronto, Canada; Jun Chen, McMaster University, Canada</i>	1392
Tu-PM2-8.4: DELAY-CONSTRAINED STREAMING OF GAUSS-MARKOV SOURCES OVER ERASURE CHANNELS <i>Farrokh Etezadi, Ashish Khisti, University of Toronto, Canada</i>	1397

Tu-PM2-9: SCHEDULING IN WIRELESS NETWORKS

Tu-PM2-9.1: SCHEDULING OVER TIME VARYING CHANNELS WITH HIDDEN STATE INFORMATION <i>Matthew Johnston, Eytan Modiano, Massachusetts Institute of Technology, United States</i>	1402
Tu-PM2-9.2: A NEW LOOK AT WIRELESS SCHEDULING WITH DELAYED INFORMATION <i>Matthew Johnston, Eytan Modiano, Massachusetts Institute of Technology, United States</i>	1407
Tu-PM2-9.3: OPTIMAL DYNAMIC MULTICAST SCHEDULING FOR CACHE-ENABLED CONTENT-CENTRIC WIRELESS NETWORKS <i>Bo Zhou, Ying Cui, Meixia Tao, Shanghai Jiao Tong University, China</i>	1412
Tu-PM2-9.4: COLLISION SCHEDULING FOR CELLULAR NETWORKS <i>Wenbo He, Boston University, United States; Chen Feng, Boston University and Ecole Polytechnique Federale de Lausanne, United States; Corina Ionita, Rice University, United States; Bobak Nazer, Boston University, United States</i>	1417

We-AM1-SP1: SEMI-PLENARY SESSION 2A

We-AM1-SP1.1: UNIFIED SCALING OF POLAR CODES: ERROR EXPONENT, SCALING EXPONENT, MODERATE DEVIATIONS, AND ERROR FLOORS <i>Marco Mondelli, École Polytechnique Fédérale de Lausanne, Switzerland; S. Hamed Hassani, ETH Zurich, Switzerland; Rüdiger Urbanke, École Polytechnique Fédérale de Lausanne, Switzerland</i>	1422
We-AM1-SP1.2: FOURIER ANALYSIS OF MAC POLARIZATION <i>Rajai Nasser, Emre Telatar, École Polytechnique Fédérale de Lausanne, Switzerland</i>	1427
We-AM1-SP1.3: PERFECTLY SECURE INDEX CODING <i>Mohammad Mahdi Mojahedian, Amin Gohari, Mohammad Reza Aref, Information Systems and Security Lab. (ISSL), Sharif University of Technology, Iran</i>	1432
We-AM1-SP1.4: SCALING RULES FOR THE ENERGY OF DECODER CIRCUITS <i>Christopher Blake, Frank R. Kschischang, University of Toronto, Canada</i>	1437

We-AM1-SP2: SEMI-PLENARY SESSION 2B

We-AM1-SP2.1: ACHIEVING EXACT CLUSTER RECOVERY THRESHOLD VIA SEMIDEFINITE PROGRAMMING <i>Bruce Hajek, Yihong Wu, Jiaming Xu, University of Illinois at Urbana-Champaign, United States</i>	1442
We-AM1-SP2.2: CORRELATION DETECTION AND AN OPERATIONAL INTERPRETATION OF THE RENYI MUTUAL INFORMATION <i>Masahito Hayashi, Nagoya University, Japan; Marco Tomamichel, University of Sydney, Australia</i>	1447

We-AM1-SP2.3: ON A PARTITION OF A FINITE SET AND ITS RELATIONSHIPS TO ENCODING TASKS AND THE RENYI ENTROPY	1452
<i>Hiroki Koga, University of Tsukuba, Japan</i>	
We-AM1-SP2.4: ONE-SHOT MUTUAL COVERING LEMMA AND MARTON'S INNER BOUND WITH A COMMON MESSAGE	1457
<i>Jingbo Liu, Paul Cuff, Sergio Verdú, Princeton University, United States</i>	

We-AM2-1: DISTRIBUTED STORAGE

We-AM2-1.1: DISTRIBUTED STORAGE SYSTEMS BASED ON INTERSECTING SUBSPACE CODES	1462
<i>Netanel Raviv, Tuvi Etzion, Technion - Israel Institute of Technology, Israel</i>	
We-AM2-1.2: ANALYZING THE DOWNLOAD TIME OF AVAILABILITY CODES	1467
<i>Swanand Kadhe, Texas A&M University, United States; Emina Soljanin, Bell Labs, United States; Alex Sprintson, Texas A&M University, United States</i>	
We-AM2-1.3: SYNCHRONIZING EDITS IN DISTRIBUTED STORAGE NETWORKS	1472
<i>Salim El Rouayheb, Illinois Institute of Technology, United States; Sreechakra Goparaju, University of California, San Diego, United States; Han Mao Kiah, Nanyang Technological University, Singapore; Olgica Milenkovic, University of Illinois at Urbana-Champaign, United States</i>	
We-AM2-1.4: BATCH CODES THROUGH DENSE GRAPHS WITHOUT SHORT CYCLES	1477
<i>Ankit Singh Rawat, Zhao Song, Alexandros G. Dimakis, Anna Gal, The University of Texas at Austin, United States</i>	
We-AM2-1.5: ON ADAPTIVE DISTRIBUTED STORAGE SYSTEMS	1482
<i>Brijesh Kumar Rai, Vommi Dhoorjati, Lokesh Saini, Amit Jha, IIT Guwahati, India</i>	

We-AM2-2: INTERFERENCE ALIGNMENT 2

We-AM2-2.1: ON THE SCALING OF INTERFERENCE ALIGNMENT UNDER DELAY AND POWER CONSTRAINTS	1487
<i>Subhashini Krishnasamy, The University of Texas at Austin, United States; Urs Niesen, Piyush Gupta, Qualcomm New Jersey Research Center, United States</i>	
We-AM2-2.2: RETROSPECTIVE INTERFERENCE ALIGNMENT FOR THE MIMO INTERFERENCE BROADCAST CHANNEL	1492
<i>Marc Torrellas, Adrian Agustin, Josep Vidal, Universitat Politècnica de Catalunya, Spain</i>	
We-AM2-2.3: A SUFFICIENT CONDITION FOR INTERFERENCE ALIGNMENT	1497
<i>Mohammad A. (Amir) Khojastepour, NEC Laboratories America, Inc., United States; Mohammad Farajzadeh-Tehrani, Simons Center for Geometry and Physics, Stony Brook University, United States</i>	
We-AM2-2.4: WHEN DOES AN ENSEMBLE OF MATRICES WITH RANDOMLY SCALED ROWS LOSE RANK?	1502
<i>Aly El Gamal, Navid Naderializadeh, Amir Salman Avestimehr, University of Southern California, United States</i>	
We-AM2-2.5: LAYERED LATTICE CODING FOR THE SYMMETRIC GAUSSIAN X CHANNEL	1507
<i>Muryong Kim, Sriram Vishwanath, University of Texas at Austin, United States</i>	

We-AM2-3: APPLICATIONS OF POLAR CODES

We-AM2-3.1: POLAR CODING FOR EMPIRICAL AND STRONG COORDINATION VIA DISTRIBUTION APPROXIMATION	1512
<i>Remi Chou, Matthieu Bloch, Georgia Institute of Technology, United States; Jörg Kliewer, New Jersey Institute of Technology, United States</i>	

We-AM2-3.2: FV POLAR CODING FOR LOSSY COMPRESSION WITH AN IMPROVED EXPONENT	1517
<i>Runxin Wang, Beihang University, China; Junya Honda, Hirosuke Yamamoto, The University of Tokyo, Japan; Rongke Liu, Beihang University, China</i>	
We-AM2-3.3: A SUCCESSIVE DESCRIPTION PROPERTY OF MONOTONE-CHAIN POLAR CODES FOR SLEPIAN-WOLF CODING	1522
<i>Salman Salamatian, École Polytechnique Fédérale de Lausanne, Switzerland; Muriel Médard, Massachusetts Institute of Technology, United States; Emre Telatar, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
We-AM2-3.4: CODING FOR ASYMMETRIC SIDE INFORMATION CHANNELS WITH APPLICATIONS TO POLAR CODES	1527
<i>David Burshtein, Tel-Aviv University, Israel</i>	
We-AM2-3.5: POLAR CODING FOR RELAY CHANNELS	1532
<i>Lele Wang, University of California, San Diego, United States</i>	

We-AM2-4: CONSTRUCTION OF SEQUENCES

We-AM2-4.1: FAMILIES OF PERFECT POLYPHASE SEQUENCES FROM THE ARRAY STRUCTURE OF FERMAT-QUOTIENT SEQUENCES AND FRANK-ZADOFF SEQUENCES	1537
<i>Ki-Hyeon Park, Hong-Yeop Song, Yonsei University, Republic of Korea; Dae San Kim, Sogang University, Republic of Korea</i>	
We-AM2-4.2: A GENERALIZED CONSTRUCTION FOR PERFECT AUTOCORRELATION SEQUENCES	1541
<i>Serdar Boztas, RMIT University, Australia; Seda Kahraman, TOBB University of Economics and Technology, Turkey; Ferruh Ozbudak, Eda Tekin, Middle East Technical University, Turkey</i>	
We-AM2-4.3: THREE NEW FAMILIES OF OPTIMAL VARIABLE-WEIGHT OPTICAL ORTHOGONAL CODES	1546
<i>Jin-Ho Chung, Ulsan National Institute of Science and Technology, Republic of Korea; Kyeongcheol Yang, Pohang University of Science and Technology, Republic of Korea</i>	
We-AM2-4.4: BINARY SEQUENCES WITH OPTIMAL ODD PERIODIC AUTOCORRELATION	1551
<i>Yang Yang, Xiaohu Tang, Zhengchun Zhou, Southwest Jiaotong University, China</i>	
We-AM2-4.5: BINARY SIGNATURE SET WITH OPTIMAL ODD PERIODIC TOTAL SQUARED CORRELATION	1555
<i>Yang Yang, Xiaohu Tang, Zhengchun Zhou, Southwest Jiaotong University, China</i>	

We-AM2-5: MULTI-TERMINAL SOURCE CODING 1

We-AM2-5.1: STATISTICAL PHYSICS OF RANDOM BINNING	1560
<i>Neri Merhav, Technion - Israel Institute of Technology, Israel</i>	
We-AM2-5.2: OPTIMUM TRADE-OFFS BETWEEN ERROR EXPONENT AND EXCESS-RATE EXPONENT OF SLEPIAN-WOLF CODING	1565
<i>Nir Weinberger, Neri Merhav, Technion - Israel Institute of Technology, Israel</i>	
We-AM2-5.3: SOURCE CODING WITH SIDE INFORMATION AT THE DECODER REVISITED	1570
<i>Tomohiko Uyematsu, Tetsunao Matsuta, Tokyo Institute of Technology, Japan</i>	
We-AM2-5.4: EXPONENT FUNCTION FOR ONE HELPER SOURCE CODING PROBLEM AT RATES OUTSIDE THE RATE REGION	1575
<i>Yasutada Oohama, University of Electro-Communications, Japan</i>	
We-AM2-5.5: NEW LATTICE CODES FOR MULTIPLE-DESCRIPTIONS	1580
<i>Farhad Shirani, Mohsen Heidari, Sandeep Pradhan, University of Michigan, United States</i>	

We-AM2-6: SECURITY IN VARIOUS SETTINGS

We-AM2-6.1: GUESSING ATTACKS ON DISTRIBUTED-STORAGE SYSTEMS	1585
Annina Bracher, Swiss Federal Institute of Technology Zurich, Switzerland; Eran Hof, R&D Center, Ramat-Gan, Israel; Amos Lapidoth, Swiss Federal Institute of Technology Zurich, Switzerland	
We-AM2-6.2: STEP-ARCHIVAL: STORAGE INTEGRITY AND ANTI-TAMPERING USING DATA ENTANGLEMENT	1590
Hugues Mercier, Université de Neuchâtel, Switzerland; Maxime Augier, Arjen K. Lenstra, École Polytechnique Fédérale de Lausanne, Switzerland	
We-AM2-6.3: ALMOST IPP-CODES OR PROVABLY SECURE DIGITAL FINGERPRINTING CODES	1595
Marcel Fernandez, Universitat Politècnica de Catalunya, Spain; Grigory Kabatiansky, Institute for Information Transmission Problems RAS, Russian Federation; Jose Moreira, SCYTL Secure Electronic Voting, Spain	
We-AM2-6.4: INFORMATION-DISPERSAL GAMES FOR SECURITY IN COGNITIVE-RADIO NETWORKS	1600
V. Sriram Siddhardh Nadendla, Syracuse University, United States; Yunghsiang Sam Han, National Taiwan University of Science and Technology, Taiwan; Pramod K. Varshney, Syracuse University, United States	
We-AM2-6.5: ON SECURE DISTRIBUTED HYPOTHESIS TESTING	1605
Maggie Mhanna, Pablo Piantanida, CentraleSupélec, France	

We-AM2-7: INFORMATION MEASURES AND STATISTICS

We-AM2-7.1: ON THE RENYI DIVERGENCE AND THE JOINT RANGE OF RELATIVE ENTROPIES	1610
Igal Sason, Technion - Israel Institute of Technology, Israel	
We-AM2-7.2: SPHERICITY MINIMUM DESCRIPTION LENGTH: ASYMPTOTIC PERFORMANCE UNDER UNKNOWN NOISE VARIANCE	1615
Josep Font-Segura, Universitat Pompeu Fabra, Spain; Jaume Riba, Gregori Vázquez, Universitat Politècnica de Catalunya, Spain	
We-AM2-7.3: SYMMETRIC INFORMATION RATE ESTIMATION AND BIT ASPECT RATIO OPTIMIZATION FOR TDMR USING GENERALIZED BELIEF PROPAGATION	1620
Mehrdad Khatami, Mohsen Bahrami, Bane Vasic, University of Arizona, United States	
We-AM2-7.4: A DISCRETE ENTROPY POWER INEQUALITY FOR UNIFORM DISTRIBUTIONS	1625
Jae Oh Woo, Yale University, United States; Mokshay Madiman, University of Delaware, United States	
We-AM2-7.5: NEAREST SYMMETRIC DISTRIBUTIONS	1630
Dmitri Pavlichin, Stanford University, United States	

We-AM2-8: COMPRESSED SENSING AND SPARSITY

We-AM2-8.1: PHASE TRANSITIONS IN SPARSE PCA.....	1635
Thibault Lesieur, CEA, France; Florent Krzakala, ENS, France; Lenka Zdeborova, CEA, France	
We-AM2-8.2: INFERENCE FOR GENERALIZED LINEAR MODELS VIA ALTERNATING DIRECTIONS AND BETHE FREE ENERGY MINIMIZATION	1640
Sundeep Rangan, NYU-Poly, United States; Alyson Fletcher, University of California, Santa Cruz, United States; Philip Schniter, The Ohio State University, United States; Ulugbek Kamilov, École Polytechnique Fédérale de Lausanne, United States	
We-AM2-8.3: SUB-LINEAR TIME COMPRESSED SENSING USING SPARSE-GRAF CODES	1645
Xiao Li, Sameer Pawar, Kannan Ramchandran, University of California, Berkeley, United States	
We-AM2-8.4: SEQUENTIAL SENSING WITH MODEL MISMATCH	1650
Ruiyang Song, Tsinghua University, China; Yao Xie, Sebastian Pokutta, Georgia Institute of Technology, United States	

We-AM2-8.5: PHASE RETRIEVAL WITH MASKS USING CONVEX OPTIMIZATION	1655
<i>Kishore Jaganathan, California Institute of Technology, United States; Yonina Eldar, Technion - Israel Institute of Technology, Israel; Babak Hassibi, California Institute of Technology, United States</i>	

We-AM2-9: OPTICAL COMMUNICATION AND NETWORKING

We-AM2-9.1: A SPECTRAL DOMAIN NOISE MODEL FOR OPTICAL FIBRE CHANNELS.....	1660
<i>Qun Zhang, Terence Chan, University of South Australia, Australia</i>	
We-AM2-9.2: FINITE CODELENGTH ANALYSIS OF THE SEQUENTIAL WAVEFORM	1665
<i>NULLING RECEIVER FOR M-ARY PSK</i>	
<i>Si-Hui Tan, Singapore University of Technology and Design, Singapore; Zachary Dutton, Raytheon BBN Technologies, United States; Ranjith Nair, National University of Singapore, Singapore; Saikat Guha, Raytheon BBN Technologies, United States</i>	
We-AM2-9.3: FULL LARGE-SCALE DIVERSITY SPACE CODES FOR MIMO OPTICAL	1671
<i>WIRELESS COMMUNICATIONS</i>	
<i>Yan-Yu Zhang, Hong-Yi Yu, Zhengzhou Information Science and Technology Institute, China; Jian-Kang Zhang, McMaster University, Canada; Yi-Jun Zhu, Zhengzhou Information Science and Technology Institute, China; Jin-Long Wang, University of Science and Technology, China; Tao Wang, Zhengzhou Information Science and Technology Institute, China</i>	
We-AM2-9.4: FAST INVERSE NONLINEAR FOURIER TRANSFORM FOR GENERATING	1676
<i>MULTI-SOLITONS IN OPTICAL FIBER</i>	
<i>Sander Wahls, Technische Universiteit Delft, Netherlands; H. Vincent Poor, Princeton University, United States</i>	
We-AM2-9.5: OPTIMIZING AGE-OF-INFO RMATION IN A MULTI-CLASS QUEUEING	1681
<i>SYSTEM</i>	
<i>Longbo Huang, Tsinghua University, China; Eytan Modiano, Massachusetts Institute of Technology, United States</i>	

Th-AM1-1: CODED CACHING

Th-AM1-1.1: CODED CACHING FOR FILES WITH DISTINCT FILE SIZES.....	1686
<i>Jinbei Zhang, Shanghai Jiao Tong University, China; Xiaojun Lin, Chih-Chun Wang, Purdue University, United States; Xinbing Wang, Shanghai Jiao Tong University, China</i>	
Th-AM1-1.2: IMPROVED APPROXIMATION OF STORAGE-RATE TRADEOFF FOR	1691
<i>CACHING VIA NEW OUTER BOUNDS</i>	
<i>Avik Sengupta, Ravi Tandon, T. Charles Clancy, Virginia Tech, United States</i>	
Th-AM1-1.3: IMPROVED LOWER BOUNDS FOR CODED CACHING.....	1696
<i>Hooshang Ghasemi, Aditya Ramamoorthy, Iowa State University of Science and Technology, United States</i>	
Th-AM1-1.4: EFFECT OF NUMBER OF USERS IN MULTI-LEVEL CODED CACHING.....	1701
<i>Jad Hachem, University of California, Los Angeles, United States; Nikhil Karamchandani, Indian Institute of Technology, Bombay, India; Suhas Diggavi, University of California, Los Angeles, United States</i>	

Th-AM1-2: TREATING INTERFERENCE AS NOISE

Th-AM1-2.1: ON THE OPTIMALITY OF TREATING INTERFERENCE AS NOISE FOR	1706
<i>K-USER COMPOUND INTERFERENCE CHANNELS</i>	
<i>Chunhua Geng, Syed Jafar, University of California, Irvine, United States</i>	
Th-AM1-2.2: ON THE LIMITS OF TREATING INTERFERENCE AS NOISE FOR	1711
<i>TWO-USER SYMMETRIC GAUSSIAN INTERFERENCE CHANNELS</i>	
<i>Shuo Li, Texas A&M University, United States; Yu-Chih Huang, National Taipei University, Taiwan; Tie Liu, Texas A&M University, United States; Henry D. Pfister, Duke University, United States</i>	
Th-AM1-2.3: I.I.D. MIXED INPUTS AND TREATING INTERFERENCE AS NOISE ARE	1716
<i>GDOF OPTIMAL FOR THE SYMMETRIC GAUSSIAN TWO-USER INTERFERENCE CHANNEL</i>	
<i>Alex Dytso, Daniela Tuninetti, Natasha Devroye, University of Illinois at Chicago, United States</i>	
Th-AM1-2.4: ON THE OPTIMALITY OF TREATING INTERFERENCE AS NOISE: A	1721
<i>COMBINATORIAL OPTIMIZATION PERSPECTIVE</i>	
<i>Xinping Yi, Giuseppe Caire, Technical University of Berlin, Germany</i>	

Th-AM1-3: CODING FOR FLASH MEMORY 1

Th-AM1-3.1: NEW BOUNDS FOR PERMUTATION CODES IN ULAM METRIC	1726
<i>Faruk Gologlu, Juri Lember, Ago-Erik Riet, Vitaly Skachek, University of Tartu, Estonia</i>	
Th-AM1-3.2: BOUNDS ON THE SIZE OF BALLS OVER PERMUTATIONS WITH THE INFINITY METRIC	1731
<i>Moshe Schwartz, Ben-Gurion University of the Negev, Israel; Pascal Vontobel, The Chinese University of Hong Kong, Hong Kong SAR of China</i>	
Th-AM1-3.3: CODING SCHEMES FOR INTER-CELL INTERFERENCE IN FLASH MEMORY	1736
<i>Sarit Buzaglo, Paul Siegel, University of California, San Diego, United States; Eitan Yaakobi, Technion - Israel Institute of Technology, Israel</i>	
Th-AM1-3.4: PERMUTATION CODES CORRECTING A SINGLE BURST DELETION I: UNSTABLE DELETIONS	1741
<i>Yeow Meng Chee, Van Khu Vu, Xiande Zhang, Nanyang Technological University, Singapore</i>	

Th-AM1-4: ANALYSIS OF CODING SYSTEMS

Th-AM1-4.1: PERFORMANCE ANALYSIS OF FANO CODING	1746
<i>Stanislav Krajci, Pavol Jozef Šafárik University, Slovakia; Chin-Fu Liu, National Chiao Tung University, Taiwan; Ladislav Mikeš, Pavol Jozef Šafárik University, Slovakia; Stefan M. Moser, ETH Zurich & National Chiao Tung University, Switzerland</i>	
Th-AM1-4.2: NONLINEAR CODES OUTPERFORM THE BEST LINEAR CODES ON THE BINARY ERASURE CHANNEL	1751
<i>Po-Ning Chen, Hsuan-Yin Lin, National Chiao Tung University, Taiwan; Stefan M. Moser, ETH Zurich, Switzerland</i>	
Th-AM1-4.3: IMPROVED HAMMING SPHERE BOUNDS ON THE MLD PERFORMANCE OF BINARY LINEAR CODES	1756
<i>Jia Liu, Zhongkai University of Agriculture and Engineering, China; Xiao Ma, Sun Yat-sen University, China</i>	
Th-AM1-4.4: ON BOUNDING THE UNION PROBABILITY	1761
<i>Jun Yang, University of Toronto, Canada; Fady Alajaji, Glen Takahara, Queen's University, Canada</i>	

Th-AM1-5: MULTI-TERMINAL SOURCE CODING 2

Th-AM1-5.1: A DICHOTOMY OF FUNCTIONS IN DISTRIBUTED CODING: AN INFORMATION SPECTRAL APPROACH	1766
<i>Shigeaki Kuzuoka, Wakayama University, Japan; Shun Watanabe, Tokyo University of Agriculture and Technology, Japan</i>	
Th-AM1-5.2: ON THE RATE-DISTORTION REGIONS FOR INTERACTIVE SOURCE CODING	1771
<i>Leonardo Rey Vega, University of Buenos Aires and CSC-CONICET, Argentina; Pablo Piantanida, Dept. of Telecommunications, SUPELEC, France; Alfred Hero III, University of Michigan, Ann Arbor, United States</i>	
Th-AM1-5.3: INFORMATION-THEORETIC CACHING	1776
<i>Chien-Yi Wang, Sung Hoon Lim, Michael Gastpar, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
Th-AM1-5.4: ON THE SUM RATE OF MULTIPLE DESCRIPTION CODING WITH TREE-STRUCTURED DISTORTION CONSTRAINTS	1781
<i>Yinfei Xu, Southeast University, China; Jun Chen, McMaster University, Canada; Qiao Wang, Southeast University, China</i>	

Th-AM1-6: PRIVACY

Th-AM1-6.1: MORE EFFICIENT PRIVACY AMPLIFICATION WITH LESS RANDOM SEEDS	1786
<i>Masahito Hayashi, Nagoya University, Japan; Toyohiro Tsurumaru, Mitsubishi Electric Corporation, Japan</i>	
Th-AM1-6.2: SECRET KEY-BASED AUTHENTICATION WITH A PRIVACY CONSTRAINT	1791
<i>Kittipong Kittichokechai, Giuseppe Caire, Technische Universität Berlin, Germany</i>	

Th-AM1-6.3: FUNDAMENTAL LIMITS OF PERFECT PRIVACY	1796
---	------

Flavio P. Calmon, Ali Makhdoomi, Muriel Médard, Massachusetts Institute of Technology, United States

Th-AM1-6.4: PRIVACY-UTILITY TRADE-OFF UNDER CONTINUAL OBSERVATION	1801
---	------

Murat Erdogdu, Stanford University, United States; Nadia Fawaz, Technicolor Research, United States

Th-AM1-7: FINITE BLOCKLENGTH ANALYSIS 2

Th-AM1-7.1: INTERACTIVE COMMUNICATION FOR DATA EXCHANGE	1806
---	------

Himanshu Tyagi, Indian Institute of Science, India; Pramod Viswanath, University of Illinois at Urbana-Champaign, United States; Shun Watanabe, University of Tokushima, Japan

Th-AM1-7.2: NON-ASYMPTOTIC BOUNDS FOR FIXED-LENGTH LOSSY	1811
--	------

COMPRESSION

Tetsunao Matsuta, Tomohiko Uyematsu, Tokyo Institute of Technology, Japan

Th-AM1-7.3: ON FIXED-LENGTH CHANNEL CODING WITH FEEDBACK IN THE	1816
---	------

MODERATE DEVIATIONS REGIME

Yucel Altug, H. Vincent Poor, Sergio Verdú, Princeton University, United States

Th-AM1-7.4: ERASURE AND UNDETECTED ERROR PROBABILITIES IN THE	1821
---	------

MODERATE DEVIATIONS REGIME

Masahito Hayashi, Nagoya University, Japan; Vincent Y. F. Tan, National University of Singapore, Singapore

Th-AM1-8: MATRIX COMPLETION

Th-AM1-8.1: ONLINE MATRIX COMPLETION AND ONLINE ROBUST PCA.....	1826
---	------

Brian Lois, Namrata Vaswani, Iowa State University, United States

Th-AM1-8.2: LOW-RANK MATRIX COMPLETION VIA RIEMANNIAN PURSUIT FOR	1831
---	------

TOPOLOGICAL INTERFERENCE MANAGEMENT

Yuanming Shi, Jun Zhang, Khaled Ben Letaief, The Hong Kong University of Science and Technology Hong Kong, Hong Kong SAR of China

Th-AM1-8.3: INFORMATION-THEORETIC LIMITS OF MATRIX COMPLETION	1836
---	------

Erwin Riegler, David Stotz, Helmut Bölcskei, Swiss Federal Institute of Technology Zurich, Switzerland

Th-AM1-8.4: POISSON MATRIX COMPLETION.....	1841
--	------

Yang Cao, Yao Xie, Georgia Institute of Technology, United States

Th-AM1-9: COGNITIVE COMMUNICATION AND SENSOR NETWORKS

Th-AM1-9.1: ON THE SUM-CAPACITY OF THE COGNITIVE INTERFERENCE CHANNEL WITH COGNITIVE-ONLY MESSAGE SHARING	1846
---	------

Diana Maamari, Daniela Tuninetti, Natasha Devroye, University of Illinois at Chicago, United States

Th-AM1-9.2: OUTAGE PERFORMANCE OF COGNITIVE RADIO SYSTEMS WITH IMPROPER GAUSSIAN SIGNALING	1851
--	------

Osama Amin, Walid Abediseid, Mohamed-Slim Alouini, King Abdullah University of Science and Technology, Saudi Arabia

Th-AM1-9.3: OPPORTUNISTIC IN-NETWORK COMPUTATION FOR WIRELESS SENSOR NETWORKS	1856
---	------

Sang-Woon Jeon, Andong National University, Republic of Korea; Bang Chul Jung, Gyeongsang National University, Republic of Korea

Th-AM1-9.4: DESIGN AND PERFORMANCE ANALYSIS OF NETWORK CODE DIVISION MULTIPLEXING FOR WIRELESS SENSOR NETWORKS	1861
--	------

Jing Yue, The University of Sydney, National ICT Australia, Australia; Zihuai Lin, The University of Sydney, Australia; Guoqiang Mao, University of Technology Sydney, National ICT Australia, Australia; Branka Vucetic, The University of Sydney, Australia

Th-AM2-1: LOCALLY REPAIRABLE CODES 2

Th-AM2-1.1: ACHIEVING ARBITRARY LOCALITY AND AVAILABILITY IN BINARY CODES	1866
Anyu Wang, Zhifang Zhang, Mulan Liu, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, China	
Th-AM2-1.2: LINEAR LOCALLY REPAIRABLE CODES WITH AVAILABILITY	1871
Pengfei Huang, University of California, San Diego, United States; Eitan Yaakobi, Technion - Israel Institute of Technology, Israel; Hironori Uchikawa, University of California, San Diego and Toshiba Corporation, United States; Paul Siegel, University of California, San Diego, United States	
Th-AM2-1.3: SECTOR-DISK CODES AND PARTIAL MDS CODES WITH UP TO THREE GLOBAL PARITIES	1876
Junyu Chen, Kenneth Shum, The Chinese University of Hong Kong, Hong Kong SAR of China; Quan Yu, Chi Wan Sung, City University of Hong Kong, Hong Kong SAR of China	
Th-AM2-1.4: ON PARTIAL MAXIMALLY-RECOVERABLE AND MAXIMALLY-RECOVERABLE CODES	1881
Balaji S B, P Vijay Kumar, Indian Institute of Science, India	

Th-AM2-2: MULTIWAY RELAY CHANNELS

Th-AM2-2.1: CAPACITY RESULTS FOR THE MULTI-WAY RELAY CHANNEL WITH COMMON MESSAGES	1886
Lawrence Ong, The University of Newcastle, Australia	
Th-AM2-2.2: THE HALF-DUPLEX GAUSSIAN TWO-WAY RELAY CHANNEL WITH DIRECT LINKS	1891
Lawrence Ong, The University of Newcastle, Australia	
Th-AM2-2.3: CAPACITY OF TWO-WAY LINEAR DETERMINISTIC DIAMOND CHANNEL	1896
Mehdi Ashraphijuo, Columbia University, United States; Vaneet Aggarwal, Purdue University, United States; Xiaodong Wang, Columbia University, United States	
Th-AM2-2.4: ON TWO-PAIR TWO-WAY RELAY CHANNEL WITH AN INTERMITTENTLY AVAILABLE RELAY	1901
Shih-Chun Lin, National Taiwan University of Science and Technology, Taiwan; I-Hsiang Wang, National Taiwan University, Taiwan	

Th-AM2-3: LDPC CODE ENCODING AND ANALYSIS

Th-AM2-3.1: ADAPTIVE ERROR CORRECTION CODING SCHEME FOR COMPUTATIONS IN THE NOISY MIN-SUM DECODER	1906
Chu-Hsiang Huang, University of California, Los Angeles, United States; Yao Li, Akamai Technologies, United States; Lara Dolecek, University of California, Los Angeles, United States	
Th-AM2-3.2: PARALLEL ENCODING ALGORITHM FOR LDPC CODES BASED ON BLOCK-DIAGONALIZATION	1911
Takayuki Nozaki, Yamaguchi University, Japan	
Th-AM2-3.3: FAST SYSTEMATIC ENCODING OF QUASI-CYCLED CODES USING THE CHINESE REMAINDER THEOREM	1916
Pavel Panteleev, Lomonosov Moscow State University, Russian Federation	
Th-AM2-3.4: AN INVESTIGATION OF SUDOKU-INSPIRED NON-LINEAR CODES WITH LOCAL CONSTRAINTS	1921
Jossy Sayir, Joned Sarwar, University of Cambridge, United Kingdom	

Th-AM2-4: COMBINATORIAL CODING THEORY

Th-AM2-4.1: WEIGHT DISTRIBUTION OF COSETS OF SMALL CODES WITH GOOD DUAL PROPERTIES	1926
Louay Bazzi, American University of Beirut, Lebanon	

Th-AM2-4.2: SPECTRUM OF SIZES FOR PERFECT BURST DELETION-CORRECTING CODES	1931
<i>Yeow Meng Chee, Yang Li, Xiande Zhang, Nanyang Technological University, Singapore</i>	
Th-AM2-4.3: CODING FOR THE \$ELL_INFTY\$-LIMITED PERMUTATION CHANNEL	1936
<i>Michael Langberg, SUNY at Buffalo, United States; Moshe Schwartz, Ben-Gurion University of the Negev, Israel; Eitan Yaakobi, Technion - Israel Institute of Technology, Israel</i>	
Th-AM2-4.4: WEAKLY SECURE MDS CODES FOR SIMPLE MULTIPLE ACCESS NETWORKS	1941
<i>Hoang Dau, Wentu Song, Chau Yuen, Singapore University of Technology and Design, Singapore</i>	

Th-AM2-5: INFORMATION THEORY FOR BIOLOGY 2

Th-AM2-5.1: CAPACITY AND EXPRESSIVENESS OF GENOMIC TANDEM DUPLICATION	1946
<i>Siddharth Jain, Farzad Farnoud (Hassanzadeh), Jehoshua Bruck, California Institute of Technology, United States</i>	
Th-AM2-5.2: ON THE CAPACITY OF LEVEL AND TYPE MODULATIONS IN MOLECULAR COMMUNICATION WITH LIGAND RECEPTORS	1951
<i>Gholamali Aminian, Mahtab Mirmohseni, Masoumeh Nasiri Kenari, Sharif University of Technology, Iran; Faramarz Fekri, Georgia Institute of Technology, United States</i>	
Th-AM2-5.3: DIFFUSION CHANNEL WITH POISSON RECEPTION PROCESS: CAPACITY RESULTS AND APPLICATIONS	1956
<i>Hessam Mahdavifar, University of California, San Diego, United States; Ahmad Beirami, Duke University, United States</i>	
Th-AM2-5.4: DESIGN OF EFFICIENT CHANNELS WITH GIVEN INPUT STATISTICS	1961
<i>Toby Berger, Mustafa Sungkar, University of Virginia, United States</i>	

Th-AM2-6: SECRECY IN BROADCAST CHANNELS 2

Th-AM2-6.1: SECRECY FOR MISO BROADCAST CHANNELS WITH HETEROGENEOUS CSIT	1966
<i>Pritam Mukherjee, University of Maryland, United States; Ravi Tandon, Virginia Tech, United States; Sennur Ulukus, University of Maryland, United States</i>	
Th-AM2-6.2: HOW TO USE INDEPENDENT SECRET KEYS FOR SECURE BROADCASTING OF COMMON MESSAGES	1971
<i>Rafael F. Schaefer, Princeton University, United States; Ashish Khisti, University of Toronto, Canada; H. Vincent Poor, Princeton University, United States</i>	
Th-AM2-6.3: SECURE COMMUNICATION IN \$K\$-USER MULTI-ANTENNA BROADCAST CHANNEL WITH STATE FEEDBACK	1976
<i>Sheng Yang, Mari Kobayashi, CentraleSupélec, France</i>	
Th-AM2-6.4: THE CONFIDENTIAL MIMO BROADCAST CAPACITY: A SIMPLE DERIVATION	1981
<i>Anatoly Khina, Tel-Aviv University, Israel; Yuval Kochman, Hebrew University, Israel; Ashish Khisti, University of Toronto, Canada</i>	

Th-AM2-7: UNIVERSAL SOURCE CODING

Th-AM2-7.1: FUNDAMENTAL LIMIT AND POINTWISE ASYMPTOTICS OF THE BAYES CODE FOR MARKOV SOURCES	1986
<i>Shota Saito, Nozomi Miya, Toshiyasu Matsushima, Waseda University, Japan</i>	
Th-AM2-7.2: ON REDUNDANCY RATE OF FDLZ ALGORITHM AND ITS VARIANTS	1991
<i>Ayush Jain, Rakesh K. Bansal, Indian Institute of Technology, Kanpur, India</i>	
Th-AM2-7.3: THIRD-ORDER CODING RATE FOR UNIVERSAL COMPRESSION OF MARKOV SOURCES	1996
<i>Nematollah Iri, Oliver Kosut, Arizona State University, United States</i>	

Th-AM2-7.4: UNIVERSAL COMPRESSION OF POWER-LAW DISTRIBUTIONS	2001
<i>Moein Falahatgar, Ashkan Jafarpour, Alon Orlitsky, Venkatadheeraj Pichapati, Ananda Theertha Suresh, University of California, San Diego, United States</i>	

Th-AM2-8: TOPICS IN COMPRESSED SENSING

Th-AM2-8.1: REPLICA SYMMETRIC BOUND FOR RESTRICTED ISOMETRY	2006
CONSTANT	
<i>Ayaka Sakata, Institute of Statistical Mathematics, Japan; Yoshiyuki Kabashima, Tokyo Institute of Technology, Japan</i>	
Th-AM2-8.2: GENERALIZED VANDERMONDE DECOMPOSITION AND ITS USE FOR	2011
MULTI-DIMENSIONAL SUPER-RESOLUTION	
<i>Zai Yang, Lihua Xie, Nanyang Technological University, Singapore; Petre Stoica, Uppsala University, Sweden</i>	
Th-AM2-8.3: CAPACITY-ACHIEVING SPARSE REGRESSION CODES VIA APPROXIMATE	2016
MESSAGE PASSING DECODING	
<i>Cynthia Rush, Yale University, United States; Adam Greig, Ramji Venkataraman, University of Cambridge, United Kingdom</i>	
Th-AM2-8.4: ASYMPTOTICALLY EXACT ERROR ANALYSIS FOR THE GENERALIZED	2021
$\$ \backslash ELL_2^2 \$$ -LASSO	
<i>Christos Thrampoulidis, California Institute of Technology, United States; Ashkan Panahi, Chalmers University of Technology, Sweden; Babak Hassibi, California Institute of Technology, United States</i>	

Th-AM2-9: COOPERATIVE COMMUNICATION

Th-AM2-9.1: OPTIMAL DISTRIBUTED CODES WITH DELAY FOUR AND CONSTANT	2026
DECODING COMPLEXITY	
<i>Hsiao-Feng Lu, National Chiao Tung University, Taiwan</i>	
Th-AM2-9.2: A MARKOV ERROR MODELING APPROACH TO DISTRIBUTED TURBO	2031
CODING	
<i>Bin Qian, Wai Ho Mow, Hong Kong University of Science and Technology, Hong Kong SAR of China</i>	
Th-AM2-9.3: REGULARIZED ZF IN COOPERATIVE BROADCAST CHANNELS UNDER	2036
DISTRIBUTED CSIT: A LARGE SYSTEM ANALYSIS	
<i>Paul de Kerret, David Gesbert, EURECOM, France; Umer Salim, Intel, France</i>	
Th-AM2-9.4: DISTRIBUTED TRANSMIT BEAMFORMING WITH ONE BIT FEEDBACK	2041
REVISITED: HOW NOISE LIMITS SCALING	
<i>Muhammed Faruk Gencel, Maryam Eslami Rasekh, Upamanyu Madhow, University of California, Santa Barbara, United States</i>	

Th-PM1-1: REGENERATING CODES 2

Th-PM1-1.1: OPTIMAL FRACTIONAL REPETITION CODES AND FRACTIONAL	2046
REPETITION BATCH CODES	
<i>Natalia Silberstein, Tuvi Etzion, Technion - Israel Institute of Technology, Israel</i>	
Th-PM1-1.2: A HIGH-RATE MSR CODE WITH POLYNOMIAL SUB-PACKETIZATION	2051
LEVEL	
<i>Birenjith Sasidharan, Gaurav Kumar Agarwal, P Vijay Kumar, Indian Institute of Science, India</i>	
Th-PM1-1.3: NEW BOUNDS ON THE (N, K, D) STORAGE SYSTEMS WITH EXACT	2056
REPAIR	
<i>Soheil Mohajer, University of Minnesota, United States; Ravi Tandon, Virginia Tech, United States</i>	
Th-PM1-1.4: LINEAR EXACT REPAIR RATE REGION OF (K+1,K,K) DISTRIBUTED	2061
STORAGE SYSTEMS: A NEW APPROACH	
<i>Mehran Elyasi, Soheil Mohajer, University of Minnesota, United States; Ravi Tandon, Virginia Tech, United States</i>	

Th-PM1-2: STRUCTURED CODES

Th-PM1-2.1: ON LATTICE CODES FOR GAUSSIAN INTERFERENCE CHANNELS	2066
<i>Jingge Zhu, Michael Gastpar, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
Th-PM1-2.2: COSET CODES FOR COMMUNICATING OVER NON-ADDITIVE CHANNELS	2071
<i>Arun Padakandla, Ericsson, United States; Sandeep Pradhan, University of Michigan, United States</i>	
Th-PM1-2.3: LATTICE CODING FOR THE GAUSSIAN ONE- AND TWO-WAY RELAY CHANNELS WITH CORRELATED NOISES	2076
<i>Anne Savard, Claudio Weidmann, ETIS-ENSEA, France</i>	
Th-PM1-2.4: BEYOND GROUP CAPACITY IN MULTI-TERMINAL COMMUNICATIONS	2081
<i>Mohsen Heidari, Farhad Shirani, Sandeep Pradhan, University of Michigan, United States</i>	

Th-PM1-3: CODING FOR FLASH MEMORY 2

Th-PM1-3.1: A CONSTRAINT SCHEME FOR CORRECTING MASSIVE ASYMMETRIC MAGNITUDE-1 ERRORS IN MULTI-LEVEL NVMS	2086
<i>Evyatar Hemo, Yuval Cassuto, Technion - Israel Institute of Technology, Israel</i>	
Th-PM1-3.2: WHEN DO WOM CODES IMPROVE THE ERASURE FACTOR IN FLASH MEMORIES?	2091
<i>Eitan Yaakobi, Alexander Yucovich, Gal Maor, Gala Yadgar, Technion - Israel Institute of Technology, Israel</i>	
Th-PM1-3.3: ASYMMETRIC ERROR-CORRECTING CODES FOR FLASH MEMORIES IN HIGH-RADIATION ENVIRONMENTS	2096
<i>Frederic Sala, Clayton Schoeny, University of California, Los Angeles, United States; Dariush Divsalar, Jet Propulsion Laboratory, United States; Lara Dolecek, University of California, Los Angeles, United States</i>	
Th-PM1-3.4: ANALYSIS AND CODING SCHEMES FOR THE FLASH NORMAL-LAPLACE MIXTURE CHANNEL	2101
<i>Clayton Schoeny, Frederic Sala, Lara Dolecek, University of California, Los Angeles, United States</i>	

Th-PM1-4: APPLICATIONS OF CODING THEORY

Th-PM1-4.1: LOW-COMPLEXITY CODING SCHEME TO APPROACH MULTIPLE-ACCESS CHANNEL CAPACITY	2106
<i>Guanghui Song, Jun Cheng, Doshisha University, Japan</i>	
Th-PM1-4.2: CHANNEL RESOLVABILITY CODES BASED ON CONCATENATION AND SPARSE LINEAR ENCODING	2111
<i>Rana Ali Amjad, Gerhard Kramer, Technische Universität München, Germany</i>	
Th-PM1-4.3: ADAPTIVE ESTIMATION IN WEIGHTED GROUP TESTING	2116
<i>Jayadev Acharya, Massachusetts Institute of Technology, United States; Clement Canonne, Columbia University, United States; Gautam Kamath, Massachusetts Institute of Technology, United States</i>	
Th-PM1-4.4: COMMUNICATION STRATEGIES FOR LOW-LATENCY TRADING	2121
<i>Mina Karzand, Massachusetts Institute of Technology, United States; Lav Varshney, University of Illinois at Urbana-Champaign, United States</i>	

Th-PM1-5: TOPICS IN NETWORK INFORMATION THEORY

Th-PM1-5.1: ON MULTIPLE DESCRIPTION CODING FOR THE MULTICAST COGNITIVE INTERFERENCE CHANNEL	2126
<i>Meryem Benammar, Huawei Technologies France, France; Pablo Piantanida, CentraleSupélec, France; Shlomo Shamai, Technion - Israel Institute of Technology, Israel</i>	
Th-PM1-5.2: THE TWO-WAY COOPERATIVE INFORMATION BOTTLENECK	2131
<i>Matias Vera, Universidad de Buenos Aires, Argentina; Leonardo Rey Vega, Universidad de Buenos Aires - CSC-CONICET, Argentina; Pablo Piantanida, CentraleSupélec, France</i>	

Th-PM1-5.3: CODING FOR SOURCE-BROADCASTING OVER ERASURE CHANNELS	2136
WITH FEEDBACK	
<i>Louis Tan, Kaveh Mahdaviani, Ashish Khisti, University of Toronto, Canada; Emina Soljanin, Bell Labs, Alcatel-Lucent, United States</i>	
Th-PM1-5.4: RELIABLE UNCODED COMMUNICATION IN THE QUANTIZED SIMO	2141
MAC	
<i>Mainak Chowdhury, Alon Kipnis, Andrea Goldsmith, Stanford University, United States</i>	

Th-PM1-6: FADING AND ARBITRARILY VARYING WIRETAP CHANNEL

Th-PM1-6.1: THE ARBITRARILY VARYING WIRETAP CHANNEL – COMMUNICATION	2146
UNDER UNCOORDINATED ATTACKS	
<i>Moritz Wiese, KTH Royal Institute of Technology, Sweden; Janis Nötzel, Holger Boche, Technische Universität München, Germany</i>	
Th-PM1-6.2: THE ARBITRARILY VARYING WIRETAP CHANNEL - SECRET	2151
RANDOMNESS, STABILITY AND SUPER-ACTIVATION	
<i>Janis Nötzel, Technische Universität München, Germany; Moritz Wiese, KTH Royal Institute of Technology, Sweden; Holger Boche, Technische Universität München, Germany</i>	
Th-PM1-6.3: SECRET-KEY AGREEMENT OVER SPATIALLY CORRELATED	2156
FAST-FADING MULTIPLE-ANTENNA CHANNELS WITH PUBLIC DISCUSSION	
<i>Marwen Zorgui, Zouheir Rezki, King Abdullah University of Science and Technology, Saudi Arabia; Basel Alomair, King Abdulaziz City for Science and Technology, Saudi Arabia; Mohamed-Slim Alouini, King Abdullah University of Science and Technology, Saudi Arabia</i>	
Th-PM1-6.4: ACHIEVING SECRECY WITHOUT ANY INSTANTANEOUS CSI: POLAR	2161
CODING FOR FADING WIRETAP CHANNELS	
<i>Hongbo Si, The University of Texas at Austin, United States; O. Ozan Koyluoglu, The University of Arizona, United States; Sriram Vishwanath, The University of Texas at Austin, United States</i>	

Th-PM1-7: LOSSY SOURCE CODING

Th-PM1-7.1: UNIVERSALITY OF LOGARITHMIC LOSS IN LOSSY COMPRESSION.....	2166
<i>Albert No, Tsachy Weissman, Stanford University, United States</i>	
Th-PM1-7.2: LOSSLESS AND LOSSY SOURCE COMPRESSION WITH	2171
NEAR-UNIFORM OUTPUT: IS COMMON RANDOMNESS ALWAYS REQUIRED?	
<i>Badri Vellambi, New Jersey Institute of Technology, United States; Matthieu Bloch, Remi Chou, Georgia Institute of Technology, United States; Jörg Kliewer, New Jersey Institute of Technology, United States</i>	
Th-PM1-7.3: REMOTE SOURCE CODING WITH TWO-SIDED INFORMATION	2176
<i>Basak Guler, Ebrahim Molavianjazi, Aylin Yener, The Pennsylvania State University, United States</i>	
Th-PM1-7.4: VARIABLE-LENGTH CODING WITH EPSILON-FIDELITY CRITERIA FOR	2181
GENERAL SOURCES	
<i>Hideki Yagi, University of Electro-Communications, Japan; Ryo Nomura, Senshu University, Japan</i>	

Th-PM1-8: DICTIONARY LEARNING AND SUBSPACE CLASSIFICATION

Th-PM1-8.1: A CONVERGENCE ANALYSIS OF DISTRIBUTED DICTIONARY	2186
LEARNING BASED ON THE \$K\$-SVD ALGORITHM	
<i>Haroon Raja, Rutgers University, The State University of New Jersey, United States; Waheed Bajwa, Rutgers, The State University of New Jersey, United States</i>	
Th-PM1-8.2: DETERMINISTIC CONDITIONS FOR SUBSPACE IDENTIFIABILITY	2191
FROM INCOMPLETE SAMPLING	
<i>Daniel L. Pimentel-Alarcon, Nigel Boston, Robert D. Nowak, University of Wisconsin-Madison, United States</i>	
Th-PM1-8.3: A VOLUME CORRELATION SUBSPACE DETECTOR FOR SIGNALS	2196
BURIED IN UNKNOWN CLUTTER	
<i>Hailong Shi, Hao Zhang, Xiqin Wang, Intelligent Sensing Lab, Tsinghua University, China</i>	

Th-PM1-8.4: MISMATCH IN THE CLASSIFICATION OF LINEAR SUBSPACES: UPPER BOUND TO THE PROBABILITY OF ERROR	2201
<i>Jure Sokolic, Francesco Renna, University College London, United Kingdom; Robert Calderbank, Duke University, United States; Miguel Rodrigues, University College London, United Kingdom</i>	

Th-PM1-9: TOPICS IN GAME THEORY & CONTROL

Th-PM1-9.1: ENTROPY REDUCTION VIA COMMUNICATIONS IN CYBER PHYSICAL SYSTEMS: HOW TO FEED MAXWELL'S DEMON?	2206
<i>Husheng Li, The University of Tennessee, United States</i>	
Th-PM1-9.2: PRICING FOR PROFIT IN INTERNET OF THINGS	2211
<i>Arnab Ghosh, Saswati Sarkar, University of Pennsylvania, United States</i>	
Th-PM1-9.3: A GAME THEORETIC APPROACH TO CONTENT TRADING IN PROACTIVE WIRELESS NETWORKS	2216
<i>Faisal Alotaibi, Sameh Hosny, Hesham El Gamal, Atilla Eryilmaz, The Ohio State University, United States</i>	
Th-PM1-9.4: CONTROL CAPACITY	2221
<i>Gireeja Ranade, Anant Sahai, University of California, Berkeley, United States</i>	

Th-PM2-1: LIST DECODING 2

Th-PM2-1.1: SIMPLIFIED ERASURE/LIST DECODING	2226
<i>Nir Weinberger, Neri Merhav, Technion - Israel Institute of Technology, Israel</i>	
Th-PM2-1.2: UPPER BOUND ON LIST-DECODING RADIUS OF BINARY CODES	2231
<i>Yury Polyanskiy, Massachusetts Institute of Technology, United States</i>	
Th-PM2-1.3: SYMMETRIC DISJUNCTIVE LIST-DECODING CODES	2236
<i>Arkady D'yachkov, Ilya Vorobyev, Nikita Polyanskii, Vladislav Shchukin, Lomonosov Moscow State University, Russian Federation</i>	

Th-PM2-2: GAUSSIAN RELAY NETWORKS

Th-PM2-2.1: OPTIMALITY OF GAUSSIAN FRONTHAUL COMPRESSION FOR UPLINK MIMO CLOUD RADIO ACCESS NETWORKS	2241
<i>Yuhan Zhou, University of Toronto, Canada; Yinfai Xu, Southeast University, China; Jun Chen, McMaster University, Canada; Wei Yu, University of Toronto, Canada</i>	
Th-PM2-2.2: ON THE ACHIEVABLE RATES OF MULTIHOP VIRTUAL FULL-DUPLEX RELAY CHANNELS	2246
<i>Songnam Hong, Ivana Maric, Dennis Hui, Ericsson Research, United States; Giuseppe Caire, Technical University of Berlin, Germany</i>	
Th-PM2-2.3: APPROXIMATE CAPACITY OF GAUSSIAN RELAY NETWORKS: IS A SUBLINEAR GAP TO THE CUTSET BOUND PLAUSIBLE?	2251
<i>Thomas Courtade, University of California, Berkeley, United States; Ayfer Özgür, Stanford University, United States</i>	

Th-PM2-3: ON THE ISING MODEL

Th-PM2-3.1: ON THE CAPACITY OF GENERALIZED ISING CHANNELS	2256
<i>Artyom Sharov, Ron M. Roth, Technion - Israel Institute of Technology, Israel</i>	
Th-PM2-3.2: GENERALIZED BELIEF PROPAGATION FOR ESTIMATING THE PARTITION FUNCTION OF THE 2D ISING MODEL	2261
<i>Chun Lam Chan, The Chinese University of Hong Kong, Hong Kong SAR of China; Mahdi Jafari, Sharif University of Technology, Iran; Sidharth Jaggi, The Chinese University of Hong Kong, Hong Kong SAR of China; Navin Kashyap, Indian Institute of Science, India; Pascal Vontobel, The Chinese University of Hong Kong, Hong Kong SAR of China</i>	
Th-PM2-3.3: THE ISING MODEL: KRAMERS-WANNIER DUALITY AND NORMAL FACTOR GRAPHS	2266
<i>Ali Al-Bashabsheh, Pascal Vontobel, The Chinese University of Hong Kong, Hong Kong SAR of China</i>	

Th-PM2-4: STREAMING

Th-PM2-4.1: CONVOLUTIONAL CODES WITH MAXIMUM COLUMN SUM RANK	2271
FOR NETWORK STREAMING	
Rafid Mahmood, Ahmed Badr, Ashish Khisti, University of Toronto, Canada	
Th-PM2-4.2: EMBEDDED MDS CODES FOR MULTICAST STREAMING	2276
Ahmed Badr, Rafid Mahmood, Ashish Khisti, University of Toronto, Canada	
Th-PM2-4.3: PLAYBACK DELAY IN ON-DEMAND STREAMING COMMUNICATION	2281
WITH FEEDBACK	
Kaveh Mahdaviani, Ashish Khisti, University of Toronto, Canada; Gauri Joshi, Gregory W. Wornell, Massachusetts Institute of Technology, United States	

Th-PM2-5: ESTIMATION OF DISTRIBUTIONS AND DIRTY PAPER CODING

Th-PM2-5.1: ON THE DIRTY PAPER CHANNEL WITH FAST FADING DIRT	2286
Stefano Rini, National Chiao-Tung University,, Taiwan; Shlomo Shamai, Technion-Israel Institute of Technology, Israel	
Th-PM2-5.2: MINIMAX ESTIMATION OF DISCRETE DISTRIBUTIONS.....	2291
Yanjun Han, Tsinghua University, China; Jiantao Jiao, Tsachy Weissman, Stanford University, United States	
Th-PM2-5.3: MINIMAX ESTIMATION OF INFORMATION MEASURES	2296
Jiantao Jiao, Kartik Venkat, Stanford University, United States; Yanjun Han, Tsinghua University, China; Tsachy Weissman, Stanford University, United States	

Th-PM2-6: WIRETAP CHANNEL 2

Th-PM2-6.1: MESSAGE AUTHENTICATION CODE OVER A WIRETAP CHANNEL.....	2301
Daijiang Chen, University of Electronic Science and Technology of China, China; Shaoquan Jiang, Mianyang Normal University, China; Zhiguang Qin, University of Electronic Science and Technology of China, China	
Th-PM2-6.2: A PERMUTATION-BASED CODE FOR THE WIRETAP CHANNEL	2306
Wei Kang, Nan Liu, Southeast University, China	
Th-PM2-6.3: SECURE DEGREES OF FREEDOM OF THE MULTIPLE ACCESS	2311
WIRETAP CHANNEL WITH NO EAVESDROPPER CSI	
Pritam Mukherjee, Sennur Ulukus, University of Maryland, United States	

Th-PM2-7: CAPACITY BOUNDS

Th-PM2-7.1: APPROXIMATION OF CAPACITY FOR ISI CHANNELS WITH ONE-BIT	2316
OUTPUT QUANTIZATION	
Radha Krishna Ganti, Andrew Thangaraj, Arijit Mondal, Indian Institute of Technology, Madras, India	
Th-PM2-7.2: CAPACITY UPPER BOUNDS FOR DISCRETE-TIME	2321
AMPLITUDE-CONSTRAINED AWGN CHANNELS	
Andrew Thangaraj, Indian Institute of Technology, Madras, India; Gerhard Kramer, Georg Böcherer, Technische Universität München, Germany	
Th-PM2-7.3: LOWER BOUND ON THE CAPACITY OF CONTINUOUS-TIME WIENER	2326
PHASE NOISE CHANNELS	
Luca Barletta, Gerhard Kramer, Technische Universität München, Germany	

Th-PM2-8: INFORMATION-THEORETIC APPROACHES TO COMPRESSED SENSING

Th-PM2-8.1: LIMITS ON SUPPORT RECOVERY WITH PROBABILISTIC MODELS: AN	2331
INFORMATION-THEORETIC FRAMEWORK	
Jonathan Scarlett, Volkan Cevher, École Polytechnique Fédérale de Lausanne, Switzerland	

Th-PM2-8.2: INFORMATION RECOVERY FROM PAIRWISE MEASUREMENTS: A SHANNON-THEORETIC APPROACH	2336
<i>Yuxin Chen, Stanford University, United States; Changho Suh, Korea Advanced Institute of Science and Technology, Republic of Korea; Andrea Goldsmith, Stanford University, United States</i>	
Th-PM2-8.3: A CONCENTRATION-OF-MEASURE INEQUALITY FOR MULTIPLE-MEASUREMENT MODELS	2341
<i>Liming Wang, Jiaji Huang, Xin Yuan, Duke University, United States; Volkan Cevher, École Polytechnique Fédérale de Lausanne, Switzerland; Miguel Rodrigues, University College London, United Kingdom; Robert Calderbank, Lawrence Carin, Duke University, United States</i>	

Th-PM2-9: FADING CHANNELS 2

Th-PM2-9.1: ERGODIC CAPACITY OF SPATIALLY CORRELATED MULTI-CLUSTER SCATTERING MIMO CHANNELS	2346
<i>Lu Wei, University of Helsinki, Finland</i>	
Th-PM2-9.2: BANDWIDTH OCCUPANCY OF NON-COHERENT WIDEBAND FADING CHANNELS	2351
<i>Felipe Gomez-Cuba, University of Vigo, Spain; Jinfeng Du, Muriel Médard, Massachusetts Institute of Technology, United States; Elza Erkip, Polytechnic Institute of New York University, United States</i>	
Th-PM2-9.3: ON THE AGE OF CHANNEL STATE INFORMATION FOR NON-RECIPROCAL WIRELESS LINKS	2356
<i>Maice Costa, University of Maryland, United States; Stefan Valentin, Huawei Technologies, France; Anthony Ephremides, University of Maryland, United States</i>	

Fr-AM1-SP1: SEMI-PLENARY SESSION 3A

Fr-AM1-SP1.1: OPTIMAL PATH ENCODING FOR SOFTWARE-DEFINED NETWORKS	2361
<i>Adiseshu Hari, Urs Niesen, Gordon Wilfong, Bell Labs, Alcatel-Lucent, United States</i>	
Fr-AM1-SP1.2: A VC-DIMENSION-BASED OUTER BOUND ON THE ZERO-ERROR CAPACITY OF THE BINARY ADDER CHANNEL	2366
<i>Or Ordentlich, Ofer Shayevitz, Tel-Aviv University, Israel</i>	
Fr-AM1-SP1.3: BLIND INDEX CODING	2371
<i>David T.H. Kao, University of Southern California, United States; Mohammad Ali Maddah-Ali, Bell Labs, Alcatel-Lucent, United States; Amir Salman Avestimehr, University of Southern California, United States</i>	

Fr-AM1-SP2: SEMI-PLENARY SESSION 3B

Fr-AM1-SP2.1: CONVERSES FOR DISTRIBUTED ESTIMATION VIA STRONG DATA PROCESSING INEQUALITIES	2376
<i>Aolin Xu, Maxim Raginsky, University of Illinois at Urbana-Champaign, United States</i>	
Fr-AM1-SP2.2: ON THE DUALITY OF ADDITIVITY AND TENSORIZATION	2381
<i>Salman Beigi, Institute for Research in Fundamental Sciences (IPM), Iran; Amin Gohari, Sharif University of Technology, Iran</i>	
Fr-AM1-SP2.3: STRONG CONVERSE RATES FOR QUANTUM COMMUNICATION	2386
<i>Marco Tomamichel, University of Sydney, Australia; Mark Wilde, Louisiana State University, United States; Andreas Winter, Universitat Autònoma de Barcelona, Spain</i>	

Fr-AM2-1: ALGEBRAIC CODES

Fr-AM2-1.1: ON THE MINIMUM DISTANCE OF ELLIPTIC CURVE CODES	2391
<i>Jiyou Li, Shanghai Jiao Tong University, China; Daqing Wan, University of California, Irvine, China; Jun Zhang, Capital Normal University, China</i>	
Fr-AM2-1.2: DECODING OF INTERLEAVED REED-SOLOMON CODES VIA SIMULTANEOUS PARTIAL INVERSES	2396
<i>Jiun-Hung Yu, Hans-Andrea Loeliger, Swiss Federal Institute of Technology Zurich, Switzerland</i>	

Fr-AM2-1.3: INFORMATION SETS OF MULTIPLICITY CODES	2401
<i>Daniel Augot, INRIA and LIX, France; Françoise Levy-dit-Vehel, ENSTA and INRIA, France; Cuong Ngô, INRIA and LIX, France</i>	
Fr-AM2-1.4: ON THE SEPARATING REDUNDANCY OF EXTENDED HAMMING CODES	2406
<i>Haiyang Liu, Institute of Microelectronics, Chinese Academy of Sciences, China; Daeyeoul Kim, National Institute for Mathematical Sciences, Republic of Korea; Yan Li, China Agricultural University, China; Aaron Z. Jia, University of Electronic Science and Technology of China, China</i>	
Fr-AM2-1.5: ON THE MAXIMUM TRUE BURST CORRECTING CAPABILITY OF PRIMITIVE FIRE CODES	2411
<i>Wei Zhou, Shu Lin, Khaled Abdel-Ghaffar, University of California, Davis, United States</i>	

Fr-AM2-2: INTERFERENCE CHANNELS AND NETWORKS

Fr-AM2-2.1: SUB-OPTIMALITY OF THE HAN-KOBAYASHI ACHIEVABLE REGION FOR THE INTERFERENCE CHANNELS	2416
<i>Chandra Nair, Lingxiao Xia, Mehdi Yazdanpanah, The Chinese University of Hong Kong, Hong Kong SAR of China</i>	
Fr-AM2-2.2: IMPACT OF LOCAL DELAYED CSIT ON THE CAPACITY REGION OF THE TWO-USER INTERFERENCE CHANNEL	2421
<i>Alireza Vahid, Robert Calderbank, Duke University, United States</i>	
Fr-AM2-2.3: TOPOLOGICAL INTERFERENCE MANAGEMENT FOR INTERFERENCE BROADCAST CHANNELS WITH ALTERNATING CONNECTIVITY	2426
<i>Paula Aquilina, Tharmalingam Ratnarajah, The University of Edinburgh, United Kingdom</i>	
Fr-AM2-2.4: FLEXIBLE BACKHAUL DESIGN WITH COOPERATIVE TRANSMISSION IN CELLULAR INTERFERENCE NETWORKS	2431
<i>Meghana Bande, University of Illinois at Urbana-Champaign, United States; Aly Elgamal, University of Southern California, United States; Venugopal V. Veeravalli, University of Illinois at Urbana-Champaign, United States</i>	
Fr-AM2-2.5: OUTAGE ANALYSIS FOR TWO-USER PARALLEL GAUSSIAN INTERFERENCE CHANNELS	2436
<i>Ehsan Ebrahimzadeh, University of California, Los Angeles, United States; Kamyar Moshksar, Amir Khandani, University of Waterloo, Canada</i>	

Fr-AM2-3: POLARIZATION THEORY

Fr-AM2-3.1: A PACKING LEMMA FOR POLAR CODES.....	2441
<i>Erdal Arikan, Bilkent University, Turkey</i>	
Fr-AM2-3.2: ALIGNMENT OF POLARIZED SETS	2446
<i>Joseph M. Renes, David Sutter, S. Hamed Hassani, ETH Zurich, Switzerland</i>	
Fr-AM2-3.3: ERGODIC THEORY MEETS POLARIZATION I: A FOUNDATION OF POLARIZATION THEORY	2451
<i>Rajai Nasser, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
Fr-AM2-3.4: ERGODIC THEORY MEETS POLARIZATION II: A FOUNDATION OF POLARIZATION THEORY FOR MACS	2456
<i>Rajai Nasser, École Polytechnique Fédérale de Lausanne, Switzerland</i>	
Fr-AM2-3.5: HIGH-GIRTH MATRICES AND POLARIZATION	2461
<i>Emmanuel Abbe, Yuval Wigderson, Princeton University, United States</i>	

Fr-AM2-4: LATTICE CODES 2

Fr-AM2-4.1: COUNTEREXAMPLE TO THE GENERALIZED BELFIORE-SOLE SECRECY FUNCTION CONJECTURE FOR L-MODULAR LATTICES	2466
<i>Anne-Maria Ernvall-Hytönen, University of Helsinki, Finland; B.A. Sethuraman, California State University Northridge, United States</i>	
Fr-AM2-4.2: INDEPENDENT METROPOLIS-HASTINGS-KLEIN ALGORITHM FOR LATTICE GAUSSIAN SAMPLING	2470
<i>Zheng Wang, Cong Ling, Imperial College London, United Kingdom</i>	

Fr-AM2-4.3: COMPUTE-AND-FORWARD CAN BUY SECRECY CHEAP	2475
<i>Parisa Babaheidarian, Boston University, United States; Somayeh Salimi, KTH Royal Institute of Technology, Sweden</i>	
Fr-AM2-4.4: NEAREST-NEIGHBOR ERROR CORRECTING CODES ON A HEXAGONAL SIGNAL CONSTELLATION	2480
<i>Hiroyoshi Morita, University of Electro-Communications, Japan</i>	
Fr-AM2-4.5: LATTICE INDEX CODES FROM ALGEBRAIC NUMBER FIELDS.....	2485
<i>Yu-Chih Huang, National Taipei University, Taiwan</i>	

Fr-AM2-5: FEEDBACK

Fr-AM2-5.1: SIGNALING OVER THE GAUSSIAN CHANNEL WITH INTERMITTENT FEEDBACK	2490
<i>Lars Palzer, Technische Universität München, Germany</i>	
Fr-AM2-5.2: FEEDBACK AND PARTIAL MESSAGE SIDE- INFORMATION ON THE SEMIDETERMINISTIC BROADCAST CHANNEL	2495
<i>Annina Bracher, ETH Zurich, Switzerland; Michèle Wigger, Telecom ParisTech, France</i>	
Fr-AM2-5.3: THE GAUSSIAN CHANNEL WITH NOISY FEEDBACK: IMPROVING RELIABILITY VIA INTERACTION	2500
<i>Assaf Ben-Yishai, Ofer Shayevitz, Tel-Aviv University, Israel</i>	
Fr-AM2-5.4: BROADCASTING A COMMON MESSAGE WITH VARIABLE-LENGTH STOP-FEEDBACK CODES	2505
<i>Kasper Fløe Trillingsgaard, Aalborg University, Denmark; Wei Yang, Giuseppe Durisi, Chalmers University of Technology, Sweden; Petar Popovski, Aalborg University, Denmark</i>	
Fr-AM2-5.5: STRONG CONVERSE THEOREMS FOR DEGRADED BROADCAST CHANNELS WITH FEEDBACK	2510
<i>Yasutada Oohama, University of Electro-Communications, Japan</i>	

Fr-AM2-6: SECURITY AND CHANNELS

Fr-AM2-6.1: OPTIMAL STRATEGIES FOR SIDE-CHANNEL LEAKAGE IN FCFS PACKET SCHEDULERS	2515
<i>Saurabh Shintre, Virgil Gligor, Carnegie Mellon University, United States; João Barros, University of Porto, Portugal</i>	
Fr-AM2-6.2: JOINT SOURCE-CHANNEL SECRECY USING HYBRID CODING.....	2520
<i>Eva Song, Paul Cuff, H. Vincent Poor, Princeton University, United States</i>	
Fr-AM2-6.3: LIMITS OF LOW-PROBABILITY-OF-DETECTION COMMUNICATION OVER A DISCRETE MEMORYLESS CHANNEL	2525
<i>Ligong Wang, CNRS, France; Gregory W. Wornell, Lizhong Zheng, Massachusetts Institute of Technology, United States</i>	
Fr-AM2-6.4: CODING AGAINST A LIMITED-VIEW ADVERSARY: THE EFFECT OF CAUSALITY AND FEEDBACK	2530
<i>Qiaosheng Zhang, The Chinese University of Hong Kong, Hong Kong SAR of China; Swanand Kadhe, Texas A&M University, United States; Mayank Bakshi, Sidharth Jaggi, The Chinese University of Hong Kong, Hong Kong SAR of China; Alex Sprintson, Texas A&M University, United States</i>	
Fr-AM2-6.5: A CHANNEL RESOLVABILITY PERSPECTIVE ON STEALTH COMMUNICATIONS	2535
<i>Matthieu Bloch, Georgia Institute of Technology, United States</i>	

Fr-AM2-7: TOPICS IN SHANNON THEORY 3

Fr-AM2-7.1: A METHOD FOR THE CONSTRUCTION OF OPTIMAL TASK ENCODERS	2540
<i>Amos Lapidoth, Christoph Pfister, ETH Zurich, Switzerland</i>	
Fr-AM2-7.2: STRONG CONVERSE THEOREMS FOR CLASSES OF MULTIMESSAGE MULTICAST NETWORKS: A RENYI DIVERGENCE APPROACH	2545
<i>Silas L. Fong, Vincent Y. F. Tan, National University of Singapore, Singapore</i>	

Fr-AM2-7.3: THE STRONG DATA PROCESSING CONSTANT FOR SUMS OF I.I.D. RANDOM VARIABLES	2550
<i>Sudeep Kamath, Princeton University, United States; Chandra Nair, The Chinese University of Hong Kong, Hong Kong SAR of China</i>	
Fr-AM2-7.4: DETECTION OF GRAPH STRUCTURES VIA COMMUNICATIONS OVER A MULTIAccess BOOLEAN CHANNEL	2553
<i>Shuhang Wu, Tsinghua University, China; Shuangqing Wei, Louisiana State University, United States; Yue Wang, Tsinghua University, China; Ramachandran Vaidyanathan, Louisiana State University, United States; Jian Yuan, Xiqin Wang, Tsinghua University, China</i>	
Fr-AM2-7.5: STRONG DATA PROCESSING INEQUALITIES IN POWER-CONSTRAINED GAUSSIAN CHANNELS	2558
<i>Flavio P. Calmon, Yury Polyanskiy, Massachusetts Institute of Technology, United States; Yihong Wu, University of Illinois at Urbana-Champaign, United States</i>	
Fr-AM2-8: APPLICATIONS OF COMPRESSED SENSING 2	
Fr-AM2-8.1: GREEDY TREE SEARCH FOR INTERNET OF THINGS SIGNAL DETECTION	2563
<i>Jaeseok Lee, Byonghyo Shim, Seoul National University, Republic of Korea</i>	
Fr-AM2-8.2: DENSITY CRITERIA FOR THE IDENTIFICATION OF LINEAR TIME-VARYING SYSTEMS	2568
<i>Céline Aubel, Helmut Bölcskei, Swiss Federal Institute of Technology Zurich, Switzerland</i>	
Fr-AM2-8.3: ROBUST SUBLINEAR COMPLEXITY WALSH-HADAMARD TRANSFORM WITH ARBITRARY SPARSE SUPPORT	2573
<i>Xu Chen, Dongning Guo, Northwestern University, United States</i>	
Fr-AM2-8.4: LOW-COMPLEXITY DETECTION OF ZERO BLOCKS IN WIDEBAND SPECTRUM SENSING	2578
<i>Zeinab Zeinalkhani, Amir. H. Banihashemi, Carleton University, Canada</i>	
Fr-AM2-8.5: FAST AND ROBUST COMPRESSIVE PHASE RETRIEVAL WITH SPARSE-GRAph CODES	2583
<i>Dong Yin, Kangwook Lee, Ramtin Pedarsani, Kannan Ramchandran, University of California, Berkeley, United States</i>	
Fr-AM2-9: MASSIVE MIMO 2	
Fr-AM2-9.1: ON THE MUTUAL INFORMATION OF 3D MASSIVE MIMO SYSTEMS: AN ASYMPTOTIC APPROACH	2588
<i>Qurrat-Ul-Ain Nadeem, Abla Kammoun, King Abdullah University of Science and Technology, Saudi Arabia; Mérouane Debbah, Huawei France R&D, France; Mohamed-Slim Alouini, King Abdullah University of Science and Technology, Saudi Arabia</i>	
Fr-AM2-9.2: ON THE FINITE-SNR DIVERSITY-MULTIPLEXING TRADEOFF IN LARGE RAYLEIGH PRODUCT CHANNELS	2593
<i>Zhong Zheng, Aalto University, Finland; Lu Wei, University of Helsinki, Finland; Roland Speicher, Saarland University, Germany; Ralf Müller, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; Jyri Hämäläinen, Aalto University, Finland; Jukka Corander, University of Helsinki, Finland</i>	
Fr-AM2-9.3: ACHIEVABLE RATE ANALYSIS FOR MULTI-PAIR TWO-WAY MASSIVE MIMO FULL-DUPLEX RELAY SYSTEMS	2598
<i>Zhanzhan Zhang, Zhiyong Chen, Manyuan Shen, Bin Xia, Shanghai Jiao Tong University, China; Ling Luo, Electric Power Research Institute, SMEPC, State Grid Corp. of China, China</i>	
Fr-AM2-9.4: ON THE CAPACITY OF CORRELATED MASSIVE MIMO SYSTEMS USING STOCHASTIC GEOMETRY	2603
<i>Sudip Biswas, Jiang Xue, Faheem Khan, Tharmalingam Ratnarajah, University of Edinburgh, United Kingdom</i>	
Fr-AM2-9.5: ON EXISTENCE OF POWER CONTROLS FOR MASSIVE MIMO	2608
<i>Hong Yang, Thomas Marzetta, Bell Labs, United States</i>	

Fr-PM1-1: TOPICS IN NETWORK CODING 2

Fr-PM1-1.1: LOW-DELAY ERASURE-CORRECTING CODES WITH OPTIMAL AVERAGE	2613
DELAY	
Nitzan Adler, Yuval Cassuto, Technion - Israel Institute of Technology, Israel	
Fr-PM1-1.2: ESTIMATING MINIMUM SUM-RATE FOR COOPERATIVE DATA	2618
EXCHANGE	
Ni Ding, Rodney A. Kennedy, Parastoo Sadeghi, The Australian National University, Australia	
Fr-PM1-1.3: RATELESS AND POLLUTION-ATTACK-RESILIENT NETWORK CODING	2623
Wentao Huang, California Institute of Technology, United States; Ting Wang, Xin Hu, Jiyong Jang, Theodoros Salonidis, IBM T.J. Watson Research Center, United States	
Fr-PM1-1.4: CODED RETRANSMISSION IN WIRELESS NETWORKS VIA ABSTRACT	2628
MDPS: THEORY AND ALGORITHMS	
Mark Shifrin, Asaf Cohen, Olga Weisman, Omer Gurewitz, Ben-Gurion University of the Negev, Israel	
Fr-PM1-1.5: CONSTRUCTING MULTICAST NETWORKS WHERE VECTOR LINEAR	2633
CODING OUTPERFORMS SCALAR LINEAR CODING	
Qifu Sun, Xiaolong Yang, Keping Long, University of Science and Technology Beijing, China; Zongpeng Li, University of Calgary, Canada	

Fr-PM1-2: BROADCAST AND MULTIPLE ACCESS

Fr-PM1-2.1: CONTROLLED ASYNCHRONISM IMPROVES ERROR EXPONENT	2638
Lóránt Farkas, Tamás Kói, Budapest University of Technology and Economics, Hungary	
Fr-PM1-2.2: CONSTANT-GAP SUM-CAPACITY APPROXIMATION OF THE	2643
DETERMINISTIC INTERFERING MULTIPLE ACCESS CHANNEL	
Rick Fritschek, Technische Universität Berlin, Germany; Gerhard Wunder, Fraunhofer Heinrich-Hertz-Institut, Germany	
Fr-PM1-2.3: GENERAL CAPACITY REGION FOR THE FULLY-CONNECTED 3-NODE	2648
PACKET ERASURE NETWORK	
Jaemin Han, Chih-Chun Wang, Purdue University, United States	
Fr-PM1-2.4: INSTANCES OF THE RELAY-BROADCAST CHANNEL AND COOPERATION	2653
STRATEGIES	
Yossef Steinberg, Technion - Israel Institute of Technology, Israel	
Fr-PM1-2.5: POLYMATROIDAL STRUCTURE IN THE MULTIPLE ACCESS CHANNEL	2658
WITH GENERAL MESSAGE SETS	
Henry Romero, Mahesh Varanasi, University of Colorado, United States	

Fr-PM1-3: DECODING OF LDPC CODES

Fr-PM1-3.1: ADMM DECODING ON TRAPPING SETS	2663
Xishuo Liu, University of Wisconsin-Madison, United States; Stark Draper, University of Toronto, Canada	
Fr-PM1-3.2: OPTIMIZED QUANTIZATION AND SCALING OF LAYERED LDPC SCALED	2668
MIN-SUM DECODER	
Ahmed Emran, Maha Elsabrouty, Egypt-Japan University of Science and Technology, Egypt; Osamu Muta, Center for Japan-Egypt Cooperation in Science and Technology, Kyushu University, Japan; Hiroshi Furukawa, Graduate School of Information Science and Electrical Engineering, Kyushu University, Japan	
Fr-PM1-3.3: ON THE MULTIPLE THRESHOLD DECODING OF LDPC CODES OVER	2673
GF(Q)	
Alexey Frolov, Victor Zyablov, Institute for Information Transmission Problems RAS, Russian Federation	
Fr-PM1-3.4: ASYNCHRONOUS DECODING OF LDPC CODES OVER BEC	2678
Saeid Haghigatshoar, Technische Universität Berlin, Germany; Amin Karbasi, Yale University, United States; Amir Hesam Salavati, École Polytechnique Fédérale de Lausanne, Switzerland	

Fr-PM1-3.5: ANALYZING THE FINITE-LENGTH PERFORMANCE OF GENERALIZED LDPC CODES	2683
<i>Pablo M. Olmos, University Carlos III in Madrid, Spain; David G. M. Mitchell, Daniel J. Costello, Jr., University of Notre Dame, United States</i>	

Fr-PM1-4: SEQUENCES

Fr-PM1-4.1: NEW BOUNDS ON THE IMBALANCE OF A HALF-L-SEQUENCE	2688
<i>Qichun Wang, Chik How Tan, National University of Singapore, Singapore</i>	
Fr-PM1-4.2: OPTIMAL SPECTRALLY-CONSTRAINED SEQUENCES	2692
<i>Zilong Liu, Yong Liang Guan, Nanyang Technological University, Singapore; Su Hu, University of Electronic Science and Technology of China, China; Udaya Parampalli, University of Melbourne, Australia</i>	
Fr-PM1-4.3: LINEAR COMPLEXITY FOR MULTIDIMENSIONAL ARRAYS - A NUMERICAL INVARIANT	2697
<i>Domingo Gomez, Universidad de Cantabria, Spain; Tom Hoholdt, Technical University of Denmark, Denmark; Oscar Moreno, Gauss Research Foundation, Puerto Rico; Ivelisse Rubio, University of Puerto Rico, Puerto Rico</i>	
Fr-PM1-4.4: THREE NOVEL COMBINATORIAL THEOREMS FOR THE INSERTION/DELETION CHANNEL	2702
<i>Frederic Sala, University of California, Los Angeles, United States; Ryan Gabrys, Spawar Systems Center San Diego, United States; Clayton Schoeny, Lara Dolecek, University of California, Los Angeles, United States</i>	
Fr-PM1-4.5: CORRELATION DISTRIBUTION OF A NEW SEQUENCE FAMILY	2707
<i>Serdar Boztas, RMIT University, Australia; Ferruh Ozbudak, Eda Tekin, Middle East Technical University, Turkey</i>	

Fr-PM1-5: ENERGY HARVESTING IN FADING AND MULTIUSER CHANNELS

Fr-PM1-5.1: ENERGY-SUBCHANNEL ALLOCATION FOR ENERGY HARVESTING NODES IN FREQUENCY-SELECTIVE CHANNELS	2712
<i>Zhe Wang, Xiaodong Wang, Vaneet Aggarwal, Columbia University, United States</i>	
Fr-PM1-5.2: ENERGY-BANDWIDTH ALLOCATION IN MULTIPLE ORTHOGONAL BROADCAST CHANNELS WITH ENERGY HARVESTING	2717
<i>Zhe Wang, Columbia University, United States; Vaneet Aggarwal, Purdue University, United States; Xiaodong Wang, Columbia University, United States</i>	
Fr-PM1-5.3: THE BINARY ENERGY HARVESTING CHANNEL WITH ON-OFF FADING	2722
<i>Omur Ozel, University of Maryland, United States; Kaya Tutuncuoglu, Pennsylvania State University, United States; Sennur Ulukus, University of Maryland, United States; Aylin Yener, Pennsylvania State University, United States</i>	
Fr-PM1-5.4: ONLINE THROUGHPUT MAXIMIZATION IN AN ENERGY HARVESTING MULTIPLE ACCESS CHANNEL WITH FADING	2727
<i>Jing Yang, Jingxian Wu, University of Arkansas, United States</i>	
Fr-PM1-5.5: ENERGY HARVESTING COOPERATIVE DIAMOND CHANNEL	2732
<i>Berk Gurakan, Sennur Ulukus, University of Maryland, United States</i>	

Fr-PM1-6: CRYPTOGRAPHY AND SECURE COMPUTING

Fr-PM1-6.1: ON CODING FOR SECURE COMPUTING	2737
<i>Deepesh Data, Vinod M. Prabhakaran, Tata Institute of Fundamental Research, India</i>	
Fr-PM1-6.2: IMPOSSIBILITY BOUNDS FOR SECURE COMPUTING	2742
<i>Himanshu Tyagi, Indian Institute of Science, India; Shun Watanabe, Tokyo University of Agriculture and Technology, Japan</i>	
Fr-PM1-6.3: NEW ALGORITHMS FOR DECODING IN THE RANK METRIC AND AN ATTACK ON THE LRPC CRYPTOSYSTEM	2747
<i>Adrien Hauteville, Université de Limoges/Inria, France; Jean-Pierre Tillich, INRIA, France</i>	
Fr-PM1-6.4: APPROACHING MAXIMUM EMBEDDING EFFICIENCY ON SMALL COVERS USING STAIRCASE-GENERATOR CODES	2752
<i>Simona Samardjiska, Danilo Gligoroski, Norwegian University of Science and Technology, Norway</i>	

Fr-PM1-6.5: QUANTIFYING COMPUTATIONAL SECURITY SUBJECT TO SOURCE CONSTRAINTS, GUESSWORK AND INSCRUTABILITY	2757
Ahmad Beirami, Robert Calderbank, Duke University, United States; Ken Duffy, National University of Ireland Maynooth, Ireland; Muriel Médard, Massachusetts Institute of Technology, United States	

Fr-PM1-7: QUANTUM SHANNON THEORY

Fr-PM1-7.1: SOURCE COMPRESSION WITH A QUANTUM HELPER	2762
Min-Hsiu Hsieh, University of Technology, Sydney, Australia; Shun Watanabe, Tokyo University of Agriculture and Technology, Japan	
Fr-PM1-7.2: APPROXIMATE DEGRADABLE QUANTUM CHANNELS	2767
David Sutter, Volkher B. Scholz, Renato Renner, ETH Zurich, Switzerland	
Fr-PM1-7.3: SECOND-ORDER CODING RATES FOR ENTANGLEMENT-ASSISTED COMMUNICATION	2772
Nilanjana Datta, University of Cambridge, United Kingdom; Marco Tomamichel, University of Sydney, Australia; Mark Wilde, Louisiana State University, United States	
Fr-PM1-7.4: COMPRESSIBILITY OF POSITIVE SEMIDEFINITE FACTORIZATIONS AND QUANTUM MODELS	2777
Cyril Stark, Aram Harrow, Massachusetts Institute of Technology, United States	
Fr-PM1-7.5: AN IMPROVED RATE REGION FOR THE CLASSICAL-QUANTUM BROADCAST CHANNEL	2782
Christoph Hirche, Ciara Morgan, Leibniz Universität Hannover, Germany	

Fr-PM1-8: MESSAGE PASSING AND HYPOTHESIS TESTING

Fr-PM1-8.1: BITWISE MAP ESTIMATION FOR GROUP TESTING BASED ON HOLOGRAPHIC TRANSFORMATION	2787
Tadashi Wadayama, Taisuke Izumi, Nagoya Institute of Technology, Japan; Kazushi Mimura, Hiroshima City University, Japan	
Fr-PM1-8.2: DISTRIBUTED TESTING WITH ZERO-RATE COMPRESSION	2792
Wenwen Zhao, Lifeng Lai, Worcester Polytechnic Institute, United States	
Fr-PM1-8.3: ON THE NECESSITY OF BINNING FOR THE DISTRIBUTED HYPOTHESIS TESTING PROBLEM	2797
Gil Katz, Pablo Piantanida, Romain Couillet, Mérouane Debbah, Supelec, France	
Fr-PM1-8.4: PERFORMANCE DEGRADATION OF AMP FOR SMALL-SIZED PROBLEMS	2802
Arise Kuriya, Toshiyuki Tanaka, Kyoto University, Japan	
Fr-PM1-8.5: S-AMP FOR NON-LINEAR OBSERVATION MODELS	2807
Burak Çakmak, Aalborg University, Denmark; Ole Winther, Technical University of Denmark, Denmark; Bernard Fleury, Aalborg University, Denmark	

Fr-PM1-9: TOPICS IN WIRELESS NETWORKS

Fr-PM1-9.1: STABILITY ANALYSIS OF STATIC POISSON NETWORKS	2812
Yi Zhong, Wenyi Zhang, University of Science and Technology of China, China; Martin Haenggi, University of Notre Dame, United States	
Fr-PM1-9.2: USER-CENTRIC INTERFERENCE NULLING IN DOWNLINK MULTI-ANTENNA HETEROGENEOUS NETWORKS	2817
Yueping Wu, Imperial College London, United Kingdom; Ying Cui, Shanghai Jiao Tong University, China; Bruno Clerckx, Imperial College London and Korea University, United Kingdom	
Fr-PM1-9.3: DISTRIBUTED RATE AND POWER CONTROL IN DSRC	2822
Jubin Jose, Chong Li, Xinzhou Wu, Qualcomm, United States; Lei Ying, Kai Zhu, Arizona State University, United States	
Fr-PM1-9.4: GROUPING BASED BLIND INTERFERENCE ALIGNMENT FOR K-USER MISO INTERFERENCE CHANNELS	2827
Heecheol Yang, Wonjae Shin, Jungwoo Lee, Seoul National University, Republic of Korea	

Fr-PM1.9.5: MATCHING ALIGNMENT	2832
<i>Michael Farag, Bobak Nazer, Boston University, United States</i>	

Fr-PM2-1: TOPICS IN DISTRIBUTED STORAGE

Fr-PM2-1.1: RECONCILING SIMILAR SETS OF DATA.....	2837
<i>Ryan Gabrys, SSC Pacific, United States; Farzad Farnoud (Hassanzadeh), California Institute of Technology, United States</i>	
Fr-PM2-1.2: PRIVATE INFORMATION RETRIEVAL FOR CODED STORAGE.....	2842
<i>Terence Chan, Siu-Wai Ho, University of South Australia, Australia; Hirosuke Yamamoto, University of Tokyo, Japan</i>	
Fr-PM2-1.3: SECURING DATA AGAINST LIMITED-KNOWLEDGE ADVERSARIES IN DISTRIBUTED STORAGE SYSTEMS	2847
<i>Rawad Bitar, Salim El Rouayheb, Illinois Institute of Technology, United States</i>	
Fr-PM2-1.4: CODES FOR DISTRIBUTED PIR WITH LOW STORAGE OVERHEAD.....	2852
<i>Arman Fazeli, Alexander Vardy, University of California, San Diego, United States; Eitan Yaakobi, Technion - Israel Institute of Technology, Israel</i>	

Fr-PM2-2: RELAY NETWORKS 2

Fr-PM2-2.1: CUT-SET BOUND FOR MULTIMESSAGE MULTICAST NETWORKS	2857
WITH INDEPENDENT CHANNELS AND ZERO-DELAY EDGES	
<i>Silas L. Fong, National University of Singapore, Singapore</i>	
Fr-PM2-2.2: THE MULTIPLE ACCESS DIAMOND CHANNEL WITH CACHING RELAYS	2862
<i>Nan Liu, Wei Kang, Southeast University, China</i>	
Fr-PM2-2.3: QUASI-CONCAVITY FOR GAUSSIAN MULTICAST RELAY CHANNELS	2867
<i>Mohit Thakur, German Aerospace Center (DLR), Germany; Gerhard Kramer, Technische Universität München, Germany</i>	
Fr-PM2-2.4: NOISY NETWORK CODING WITH PARTIAL DF	2870
<i>Si-Hyeon Lee, University of Toronto, Canada; Sae-Young Chung, Korea Advanced Institute of Science and Technology, Republic of Korea</i>	

Fr-PM2-3: WEIGHT DISTRIBUTION AND MINIMUM DISTANCE OF LDPC CODES

Fr-PM2-3.1: WEIGHT DISTRIBUTIONS OF NON-BINARY MULTI-EDGE TYPE LDPC	2875
CODE ENSEMBLES	
<i>Giuliano Garramone, German Aerospace Center (DLR), Germany; David Declercq, Marc P. C. Fossorier, ETIS Lab, ENSEA/Université de Cergy-Pontoise/CNRS UMR 8051, France</i>	
Fr-PM2-3.2: ON THE WEIGHT DISTRIBUTION OF FIXED-RATE RAPTOR CODES	2880
<i>Francisco Lazaro, German Aerospace Center (DLR), Germany; Enrico Paolini, University of Bologna, Italy; Gianluigi Liva, German Aerospace Center (DLR), Germany; Gerhard Bauch, Hamburg University of Technology, Germany</i>	
Fr-PM2-3.3: AN UPPER BOUND ON THE MINIMUM DISTANCE OF LDPC CODES	2885
OVER GF(Q)	
<i>Alexey Frolov, Institute for Information Transmission Problems RAS, Russian Federation</i>	
Fr-PM2-3.4: ENSEMBLE WEIGHT ENUMERATORS FOR PROTOGRAPHS: A PROOF	2889
OF ABU SURRA'S CONJECTURE AND A CONTINUOUS RELAXATION FOR A FASTER ENUMERATION	
<i>Tarik Benaddi, French space agency (CNES), University of Toulouse, TéSA, France; Charly Poulliat, Marie-Laure Boucheret, University of Toulouse, France; Benjamin Gadat, Thales Alenia space, France; Guy Lesthievent, French space agency (CNES), France</i>	

Fr-PM2-4: TOPICS IN CODING THEORY

Fr-PM2-4.1: COVER-FREE CODES AND SEPARATING SYSTEM CODES	2894
<i>Arkady D'yachkov, Ilya Vorobyev, Nikita Polyanskii, Vladislav Shchukin, Lomonosov Moscow State University, Russian Federation</i>	
Fr-PM2-4.2: ALMOST COVER-FREE CODES AND DESIGNS.....	2899
<i>Arkady D'yachkov, Ilya Vorobyev, Nikita Polyanskii, Vladislav Shchukin, Lomonosov Moscow State University, Russian Federation</i>	

Fr-PM2-4.3: ON THE NP-HARDNESS OF BOUNDED DISTANCE DECODING OF REED-SOLOMON CODES	2904
Venkata Gandikota, Purdue University, United States; Badih Ghazi, Massachusetts Institute of Technology, United States; Elena Grigorescu, Purdue University, United States	
Fr-PM2-4.4: ITERATIVE SOFT-DECISION DECODING OF REED-SOLOMON CODES USING INFORMED DYNAMIC SCHEDULING	2909
Huang-Chang Lee, Guan-Xuan Huang, National Tsing Hua University, Taiwan; Chung-Hsuan Wang, National Chiao Tung University, Taiwan; Yeong-Luh Ueng, National Tsing Hua University, Taiwan	

Fr-PM2-5: TOPICS IN DETECTION AND ESTIMATION 2

Fr-PM2-5.1: SELECTING OBSERVERS FOR SOURCE LOCALIZATION VIA ERROR EXPONENTS	2914
Sabina Zejnilovic, Carnegie Mellon University, United States; Joao Xavier, Joao Gomes, Instituto Superior Tecnico, Portugal; Bruno Sinopoli, Carnegie Mellon University, United States	
Fr-PM2-5.2: UNIVERSAL DECODING FOR GAUSSIAN INTERSYMBOL INTERFERENCE CHANNELS	2919
Wasim Huleihel, Neri Merhav, Technion - Israel Institute of Technology, Israel	
Fr-PM2-5.3: ON MMSE ESTIMATION FROM QUANTIZED OBSERVATIONS IN THE NONASYMPTOTIC REGIME	2924
Jaeho Lee, Maxim Raginsky, Pierre Moulin, University of Illinois at Urbana-Champaign, United States	
Fr-PM2-5.4: SECURE STATE ESTIMATION: OPTIMAL GUARANTEES AGAINST SENSOR ATTACKS IN THE PRESENCE OF NOISE	2929
Shaunak Mishra, Yasser Shoukry, Nikhil Karamchandani, Suhas Diggavi, Paulo Tabuada, University of California, Los Angeles, United States	

Fr-PM2-6: SECURITY AND CORRELATION

Fr-PM2-6.1: MESSAGE AUTHENTICATION WITH CORRELATED SOURCES	2934
Daming Cao, Wei Kang, Southeast University, China	
Fr-PM2-6.2: MAXIMAL CORRELATION SECRECY	2939
Cheuk Ting Li, Abbas El Gamal, Stanford University, United States	
Fr-PM2-6.3: FORGOT YOUR PASSWORD: CORRELATION DILUTION	2944
Ali Makhdoumi, Flavio P. Calmon, Muriel Médard, Massachusetts Institute of Technology, United States	
Fr-PM2-6.4: INFORMATION LEAKAGE OF HETEROGENEOUS ENCODED CORRELATED SEQUENCES OVER AN EAVESDROPPED CHANNEL	2949
Reevana Balmahoon, Ling Cheng, University of the Witwatersrand, South Africa	

Fr-PM2-7: FINITE BLOCKLENGTH ANALYSIS 3

Fr-PM2-7.1: REFINEMENTS OF THE THIRD-ORDER TERM IN THE FIXED ERROR ASYMPTOTICS OF CONSTANT-COMPOSITION CODES	2954
Jonathan Scarlett, École Polytechnique Fédérale de Lausanne, Switzerland; Alfonso Martinez, Universitat Pompeu Fabra, Spain; Albert Guillén i Fàbregas, ICREA & Universitat Pompeu Fabra, Spain	
Fr-PM2-7.2: MINIMUM ENERGY TO SEND K BITS OVER RAYLEIGH-FADING CHANNELS	2959
Wei Yang, Giuseppe Durisi, Chalmers University of Technology, Sweden; Yury Polyanskiy, Massachusetts Institute of Technology, United States	
Fr-PM2-7.3: SECOND-ORDER ASYMPTOTICS FOR THE DISCRETE MEMORYLESS MAC WITH DEGRADED MESSAGE SETS	2964
Jonathan Scarlett, École Polytechnique Fédérale de Lausanne, Switzerland; Vincent Y. F. Tan, National University of Singapore, Singapore	

Fr-PM2-7.4: FIRST- AND SECOND-ORDER CODING THEOREMS FOR MIXED MEMORYLESS CHANNELS WITH GENERAL MIXTURE	2969
<i>Hideki Yagi, University of Electro-Communications, Japan; Te Sun Han, National Institute of Information and Communications Technology, Japan; Ryo Nomura, Senshu University, Japan</i>	

Fr-PM2-8: DATA COMPRESSION

Fr-PM2-8.1: ON A TWO-DIMENSIONAL ANTIDICTIONARY CONSTRUCTION USING SUFFIX TRIES	2974
<i>Takahiro Ota, Nagano Prefectural Institute of Technology, Japan; Hiroyoshi Morita, The University of Electro-Communications, Japan</i>	
Fr-PM2-8.2: COMPRESSING SPARSE SEQUENCES UNDER LOCAL DECODABILITY CONSTRAINTS	2979
<i>Ashwin Pananjady, Thomas Courtade, University of California, Berkeley, United States</i>	
Fr-PM2-8.3: LOCAL RECOVERY IN DATA COMPRESSION FOR GENERAL SOURCES	2984
<i>Arya Mazumdar, University of Minnesota-Twin Cities, United States; Venkat Chandar, DE Shaw and Co, United States; Gregory W. Wornell, Massachusetts Institute of Technology, United States</i>	
Fr-PM2-8.4: AUTOMATA AND GRAPH COMPRESSION	2989
<i>Mehryar Mohri, The Courant Institute and Google Research, United States; Michael Riley, Google Research, United States; Ananda Theertha Suresh, University of California, San Diego, United States</i>	

Fr-PM2-9: TOPICS IN WIRELESS COMMUNICATION

Fr-PM2-9.1: ON UNEQUAL MISSING PROTECTION OF THE GROUPING OF RFID TAGS	2994
<i>Yi-Sheng Su, Chang Jung Christian Univ., Taiwan; Chung-Hsuan Wang, Huei-Yun Siao, National Chiao Tung University, Taiwan</i>	
Fr-PM2-9.2: IMPROVING DEGREES OF FREEDOM OF WIRELESS CHANNELS USING SUPERDIRECTIVITY	2999
<i>Wonseok Jeon, Sae-Young Chung, Korea Advanced Institute of Science and Technology, Republic of Korea</i>	
Fr-PM2-9.3: IMPROVED INFORMATION RATES FOR BIT-INTERLEAVED CODED MODULATION	3004
<i>Alfonso Martínez, Universitat Pompeu Fabra, Spain; Li Peng, University of Cambridge, United Kingdom; Alex Alvarado, University College London, United Kingdom; Albert Guillén i Fàbregas, Universitat Pompeu Fabra, Spain</i>	
Fr-PM2-9.4: LAZY IS TIMELY: STATUS UPDATES BY AN ENERGY HARVESTING SOURCE	3008
<i>Roy Yates, Rutgers University, The State University of New Jersey, United States</i>	