Program of the
2011 Asilomar Conference on
Signals, Systems, and Computers

Technical Program Chairman
Prof. Robert W. Heath, Jr.
The University of Texas at Austin
Session MA1b  Energy Efficient MIMO Communication
Chair: Chan-Byoung Chae, Yonsei University, S. Korea

MA1b-1  Optimal Transmission Policies over Vector Gaussian Channels with Energy Harvesting Transmitters
Omur Ozel, University of Maryland; Jing Yang, Sennur Ulukus, University of Wisconsin-Madison
10:15 AM

MA1b-2  Throughput and Energy Consumption of a Random Network with Energy Harvesters
Kaibin Huang, Yonsei University
10:40 AM

MA1b-3  Large-Scale Antenna Systems for Wireless Energy Efficiency
Thomas Marzetta, Bell Laboratories, Alcatel-Lucent
11:05 AM

MA1b-4  Energy-Efficient Training for Antenna Selection in Time-Varying Channels
Vinod Krishnamurthy, Broadcom Corporation; Neelesh B. Mehta, Indian Institute of Science; Andreas Molisch, University of Southern California
11:30 AM

Session MA2b  Delay Sensitive Communication
Chair: Ashish Khisti, University of Toronto

MA2b-1  Speeding Multicast by Acknowledgment Reduction Technique (SMART)
Arman Rezaee, Linda Zeger, Muriel Medard, Massachusetts Institute of Technology
10:15 AM

MA2b-2  Controlling End-to-End Application Latency for Real-Time Data
Sanjeev Mehta, Cheng Huang, Jin Li, Microsoft Research
10:40 AM

MA2b-3  Correcting Erasure Bursts with Minimum Decoding Delay
Zhi Li, Stanford University; Ashish Khisti, University of Toronto; Bernd Girod, Stanford University
11:05 AM

MA2b-4  Code Length and Rate Selection for Delay Sensitive Bursty Traffic
Tara Javidi, University of California, San Diego
11:30 AM

Session MA3b  Graphical Models in Signal Processing I
Chair: Andrea Montanari, Stanford University

MA3b-1  Stochastic Belief Propagation: A Low-Complexity Message-Passing Algorithm with Guarantees
Nima Noorshams, Martin Wainwright, University of California, Berkeley
10:15 AM

MA3b-2  Reweighted Linear Programming for Inference and Decoding
Amin Khajehnejad, Alexandros Dimakis, Babak Hassibi, University of Southern California
10:40 AM

MA3b-3  Message-Passing on Dense Graphs and Applications in Statistical Learning
Mohsen Bayati, Andrea Montanari, Stanford University
11:05 AM

MA3b-4  Robust Belief Propagation
Morteza Ibrahimi, Adel Javanmard, Yashodhan Kanoria, Andrea Montanari, Stanford University
11:30 AM

Session MA4b  In-network Computation
Chair: Osvaldo Simeone, New Jersey Institute of Technology

MA4b-1  Network Optimization with Heuristic Rational Agents
Ceyhun Eksin, Alejandro Ribeiro, University of Pennsylvania
10:15 AM

MA4b-2  A Coordination-Free Distributed Algorithm for Simple Assignment Problems Using Randomized Actions
Usman A. Khan, Tufts University; Soumya Kar, Carnegie Mellon University
10:40 AM

MA4b-3  Distributed Estimation of the Maximum Value over a Wireless Sensor Network
Franck Iutzeler, Jérémie Jakubowicz, Institut Telecom, Telecom ParisTech, CNRS LTCI; Walid Hachem, CNRS Telecom ParisTech; Philippe Ciblat, Institut Telecom, Telecom ParisTech, CNRS LTCI
11:05 AM

MA4b-4  Collaborative Sequential-Based Detection in Wireless Sensor Networks
Sabina Zejnilovic, Carnegie Mellon University; Joao Pedro Gomes, Instituto Superior Tecnico; Bruno Sinopoli, Carnegie Mellon University
11:30 AM

Session MA5b  Medical Imaging
Chair: Ge Yang, Carnegie Mellon University

MA5b-1  Calibrationless Parallel MRI Using ORACLE (Overlapping Low-Rank Approximations for Coil Image Estimation)
Joshua Trzasko, Armando Manduca, Mayo Clinic
10:15 AM

MA5b-2  Signal Modeling and the Cramér-Rao Bound for Absolute Magnetic Resonance Thermometry: Feasibility in Fat Tissue
Marcus Björk, Johan Berglund, Joel Kullberg, Petre Stoica, Uppsala University
10:40 AM

MA5b-3  Level Estimation for Sparse Reconstruction in Discrete Tomography
Yenting Lin, Antonio Ortega, Alexandros G. Dimakis, University of Southern California
11:05 AM

MA5b-4  Multimodal Image Registration by Consistency of Saliency Map
Hiroyuki Takeda, University of Michigan
11:30 AM
Session MA6b  Collaborative Beamforming
Chair: Sofiène Affes, INRS-EMT, Université du Québec

MA6b-1  DSP-Centric Algorithms for Distributed Transmit Beamforming
Upamanyu Madhow, University of California, Santa Barbara; Raghu Mudumbai, University of Iowa; D. R. Brown, Worcester Polytechnic Institute; Patrick Bidigare, Raytheon BBN Technologies

MA6b-2  Power Control for Collaborative Beamforming in Wireless Sensor Networks
Mohammed Ahmed, Sergiy Vorobyov, University of Alberta

MA6b-3  Testing Zero-Feedback Distributed Beamforming with a Low-Cost SDR Testbed
George Sklivanitis, Aggelos Bletsas, Technical University of Crete

MA6b-4  Distributed Cooperative Jamming for Improving Physical Layer Security
Yupeng Liu, Athina Petropulu, Rutgers University; H. Vincent Poor, Princeton University

Session MA7b  Multivariate and Multimodal Analysis of Brain Signals
Co-Chairs: Justin Dauwels, Nanyang Technological University and Deniz Erdogmus, Northeastern University

MA7b-1  Sparse Common Spatial Patterns with Recursive Weight Elimination
Fikri Goksu, Nuri F. Ince, University of Minnesota

MA7b-2  Synchronization Networks through Multiple Subject Community Detection
Marcos Bolanos, Ali Yener Mutlu, Michigan State University; Edward Bernat, Florida State University; Selin Aviyente, Michigan State University

MA7b-3  Frequency Constrained ShifCP Modeling of Neuroimaging Data
Morten Mørup, Technical University of Denmark

MA7b-4  Context Information Significantly Improves Brain Computer Interface Performance - A Case Study on Text Entry Using a Language Model Assisted BCI
Umut Orhan, Northeastern University; Kenneth E. Hild II, Oregon Health and Science University; Deniz Erdogmus, Northeastern University; Brian Roark, Barry Oken, Melanie Fried-Oken, Oregon Health and Science University

Session MA8b1  Computer Arithmetic I

MA8b1-1  Efficient Decimal Leading Zero Anticipator Designs
Mohamed H. Amin, Ahmed M. ElTantawy, Hossam A. H. Fahmy, Cairo University

MA8b1-2  Hybrid Residue Generators for Increased Efficiency
Michael Sullivan, Earl Swartzlander, University of Texas at Austin

MA8b1-3  Nested Quadratic Arithmetic for Efficient Convolution of Complex Sequences with Quadratic Modified Fermat Number Transforms
Chandrashekar Radhakrishnan, University of Illinois; Kenneth Jenkins, Pennsylvania State University

MA8b1-4  On Building General Modular Adders from Standard Binary Arithmetic Components
Ghassem Jaberipur, Shahid Beheshti University; Behrooz Parhami, University of California, Santa Barbara; Saeed Nejati, Shahid Beheshti University

MA8b1-5  A Novel Adaptive Filter Implementation Scheme Using Distributed Arithmetic
Rui Guo, Linda S. DeBrunner, Florida State University

MA8b1-6  A Mixed-Precision Fused Multiply and Add
Nicolas Brunie, Kalray; Florent de Dinechin, École Normale Supérieure de Lyon; Benoit de Dinechin, Kalray

MA8b1-7  Implementation of 32-bit Ling and Jackson Adders
Matthew Keeter, David Harris, Andrew Macrae, Rebecca Glick, Madeleine Ong, Harvey Mudd College; Justin Schauer, Oracle

MA8b1-8  Truncated-Matrix Multipliers with Coefficient Shifting
E. George Walters III, Penn State Erie, The Behrend College; Michael J. Schulte, Advanced Micro Devices

Session MA8b2  Physical Layer Security I
Chair: Wing-Kin (Ken) Ma, Chinese University of Hong Kong

MA8b2-1  Faster than Nyquist Interference Assisted Secret Communication for OFDM Systems
Arsenia Chorti, H. Vincent Poor, Princeton University

MA8b2-2  QoS-Constrained Robust Beamforming in MISO Wiretap Channels with a Helper
Jing Huang, A. Lee Swindlehurst, University of California, Irvine

MA8b2-3  Secrecy Outage in MISO Systems with Partial Channel Information
Sabrina Gerbracht, Eduard Jorswieck, Dresden University of Technology

MA8b2-4  Secrecy Rate for Gaussian MISO Wiretap Channels with Spherical Uncertainty
Jiangyuan Li, Athina Petropulu, Rutgers University
MA8b2-5 Two-Way Discriminatory Channel Estimation for Non-Reciprocal Wireless MIMO Channels  
Chao-Wei Huang, Tsung-Hui Chang, National Tsing Hua University; Xiangyun Zhou, University of Oslo; Y.-W. Peter Hong, National Tsing Hua University

MA8b2-6 Safe Convex Approximation to Outage-Based MISO Secrecy Rate Optimization under Imperfect CSI and with Artificial Noise  
Qiang Li, Wing-Kin Ma, Anthony Man-Cho So, Chinese University of Hong Kong

MA8b2-7 Benefits of Multiple Transmit Antennas in Secure Communication: A Secrecy Outage Viewpoint  
Xi Zhang, Hong Kong University of Science and Technology; Xiangyun Zhou, University of Oslo; Matthew McKay, Hong Kong University of Science and Technology

MA8b2-8 Confidential Messages in Bi-Directional Relay Networks under Channel Uncertainty  
Rafael F. Wyrmbelski, Holger Boche, Technische Universität München

Session MA8b3 Physical Layer Security II  
Chair: Wing-Kin (Ken) Ma, Chinese University of Hong Kong  
10:15 AM - 12:00 PM

MA8b3-1 A Full-Duplex Active Eavesdropper in MIMO Wiretap Channels: Construction and Countermeasures  
Amitav Mukherjee, Lee Swindlehurst, University of California, Irvine

MA8b3-2 RF Fingerprinting of Users Who Actively Mask Their Identities with Artificial Distortion  
Adam Polak, Dennis Goeckel, University of Massachusetts Amherst

MA8b3-3 Power Allocation to Noise-Generating Nodes for Cooperative Secrecy in the Wireless Environment  
Kyle Morrison, Dennis Goeckel, University Massachusetts Amherst

MA8b3-4 Comparing Random Signals with Application to Wireless User Authentication  
Jitendra Tugnait, Auburn University

MA8b3-5 Transmit Beamforming and Cooperative Jamming for MIMOME Wiretap Channels  
Wei Shi, James Ritcey, University of Washington

MA8b3-6 Secrecy in Broadcast Channels with Receiver Side Information  
Rafael Wyrmbelski, Universität Munchen; Aydin Sezgin, Ulm University; Holger Boche, Universität Munchen

MA8b3-7 On the Ergodic Secrecy Capacity of the Wiretap Channel under Imperfect Main Channel Estimation  
Zouheir Rezki, King Abdullah University of Science and Technology; Ashish Khisti, University of Toronto; Mohamed-Slim Alouini, King Abdullah University of Science and Technology

MA8b3-8 Secure Wireless Multicasting Through Nakagami-m Fading MISO Channel  
Md. Zahurul I. Sarkar, Tharmalingam Ratnarajah, Queen’s University Belfast

Session MA8b4 Image, Video Coding and Analysis  
Chair: Vishal Monga, Pennsylvania State University  
10:15 AM - 12:00 PM

MA8b4-1 JPEG Image Compression Using Quantization Table Optimization Based on Perceptual Image Quality Assessment  
Yuebing Jiang, Marios Pattichis, University of New Mexico

MA8b4-2 Efficient Coders for Large Tree-Structured Dictionaries of Tilings  
Kai-Lung Hua, National Taiwan University of Science and Technology; Rong Zhang, Qualcomm Incorporated; Mary Comer, Ilya Pollak, Purdue University

MA8b4-3 Variable Block Size-Based MCFI with Fixed Block Size Motion Estimation  
Masaru Hoshi, Akihiro Yoshinari, Yuichi Tanaka, Madoka Hasegawa, Shigeo Kato, Utsunomiya University

MA8b4-4 A Structural Similarity Assessment for Generating Hybrid Images  
Keita Takahashi, Madoka Hasegawa, Yuichi Tanaka, Shigeo Kato, Utsunomiya University

MA8b4-5 A Compact Saliency Model for Video-Rate Implementation  
Tien Ho-Phuoc, Laurent Alacoque, Antoine Dupret, CEA; Anne Guérin-Dugué, GIPSA-Lab; Arnaud Verdant, CEA

MA8b4-6 Dithered Soft Decision Quantization for Baseline JPEG Encoding and its Joint Optimization with Huffman Coding and Quantization Table Selection  
En-hui Yang, Chang Sun, University of Waterloo

MA8b4-7 Compressive Sensing Based Imaging via Beleif Propagation  
Preethi Ramchandara, Mina Sartipi, University of Tennessee Chattanooga

Session MA8b5 Adaptive Systems and Spectral Estimation  
Chair: Vitor Nascimento, University of Sao Paulo  
10:15 AM - 12:00 PM

MA8b5-1 A Modified System-Based Adaptive Algorithm for a Sparse Reconfigurable Photonic Filter  
Suk-seung Hwang, Hong Chang, Chosun University; John J. Shynk, University of California, Santa Barbara

MA8b5-2 A New Variable Step-Size Strategy For Adaptive Networks  
Muhammad Bin Saeed, Azzedine Zerguine, King Fahd University of Petroleum & Minerals
### Session MP1a  Interference-Alignment Techniques for Multi-Antenna Systems

Chair: Vincent Lau, Hong Kong University of Science and Technology

- **MP1a-1**  
  Interference Alignment for Peer-to-Peer  
  1:30 PM  
  Huiqin Du, Tharm Ratnarajah, Haichuan Zhou, Queen’s University Belfast; Ying Chang Liang, Institute for Infocomm Research

- **MP1a-2**  
  Sum Rate Enhancement by Maximizing SGINR in an Opportunistic Interference Alignment Scheme  
  1:55 PM  
  Seong-Ho (Paul) Hur, University of California, San Diego; Bang-Chul Jung, Gyeongsang National University; Bhaskar D. Rao, University of California, San Diego

- **MP1a-3**  
  Interference Alignment for Partially Connected Quasi-static MIMO Interference Channel  
  2:20 PM  
  Liangzhong Ruan, Vincent K.N. Lau, Hong Kong University of Science and Technology

- **MP1a-4**  
  Opportunistic MU-MIMO based on Semi-Blind Interference Alignment  
  2:45 PM  
  Haralabos Papadopoulos, Sayan Mukherjee, Sean Ramprashad, DoCoMo USA Labs

### Session MP1b  Interference Alignment for the MIMO Interference Channel

Chair: Geert Leus, Technical University of Delft

- **MP1b-1**  
  Linear Interference Alignment and its Maximum Achievable Degrees of Freedom  
  3:30 PM  
  Meisam Razaviyayn, Gennady Lyubeznik, Zhi-Quan Luo, University of Minnesota

- **MP1b-2**  
  MIMO Interference Alignment in Random Access Networks  
  3:55 PM  
  Behrang Nosrat-Makouei, Radha Krishna Ganti, Jeffrey G. Andrews, Robert W. Heath, Jr., University of Texas at Austin

- **MP1b-3**  
  The Noisy MIMO Interference Channel with Distributed CSI Acquisition and Filter Computation  
  4:20 PM  
  Francesco Negro, Eurecom; Umer Salim, Irfan Ghauri, Intel Corporation; Dirk Slock, Eurecom

- **MP1b-4**  
  Secure Space-Time Block Coding via Artificial Noise Alignment  
  4:45 PM  
  S. Ali A. Fakoorian, A. Lee Swindlehurst, University of California, Irvine

### Session MP2a  Energy-Harvesting Wireless Networks

Chair: Osvaldo Simeone, NJIT

- **MP2a-1**  
  AWGN Channel under Time-Varying Amplitude Constraints with Causal Information at the Transmitter  
  1:30 PM  
  Omur Ozel, Sennur Ulukus, University of Maryland

- **MP2a-2**  
  Optimal Power Control for Energy Harvesting Transmitters in an Interference Channel  
  1:55 PM  
  Kaya Tutuncuoglu, Aylin Yener, Penn State University

- **MP2a-3**  
  Queuing Theoretic and Information Theoretic Capacity of Energy Harvesting Sensor Nodes  
  2:20 PM  
  Vinod Sharma, Indian Institute of Science; Ramachandran Rajesh, Centre for Airborne Systems

- **MP2a-4**  
  Queue and Power Control for Rechargeable Sensor Networks under the SINR Interference Model  
  2:45 PM  
  Zhoujia Mao, Can Emre Koksal, Ness B. Shroff, Ohio State University

### Session MP2b  Coding and Decoding

Chair: Aydin Sezgin, University of Ulm

- **MP2b-1**  
  Complexity Analysis of Interior Point Methods for LP Decoding  
  3:30 PM  
  Yifan Sun, Lara Dolecek, University of California, Los Angeles

- **MP2b-2**  
  Rate Adaptive Non-Binary LDPC Codes with Low Encoding Complexity  
  3:55 PM  
  Nicholas Chang, MIT Lincoln Laboratory
Session MP2b  Achieving Flexibility in LDPC Code Design  4:20 PM
by Absorbing Set Elimination
Jiajun Zhang, Jiadong Wang, University of California, Los Angeles; Shayan Garani Srinivasa, Western Digital Corporation; Lara Dolecek, University of California, Los Angeles

Session MP2b  Decoding by Detection:  4:45 PM
Soft-Input/Soft-Output Error Correction Decoders for Arbitrary Binary Linear Codes
Todd Moon, Jacob (Jake) Gunther, Utah State University

Session MP3a  Graphical Models in Signal Processing II
Chair: Alex Ihler, University of California, Irvine

MP3a-1  Concept Graphs for a Personalized Learning System  1:30 PM
Andrew Waters, Richard Baraniuk, Rice University

MP3a-2  Inference and Learning for Continuous-Time Stochastic Systems  1:55 PM
Christian Shelton, E. Busra Celikkaya, University of California, Riverside

MP3a-3  Approximate Bayesian Inference for Robust Speech Processing  2:20 PM
Ciira Maina, John Walsh, Drexel University

MP3a-4  Out-of-Sequence Measurements and Incremental Inference in Graphical Models  2:45 PM
Ozgur Sumer, University of Chicago; Ramgopal Mettu, University of California, Riverside; Alexander Ihler, University of California, Irvine

Session MP3b  Signal Processing and Learning in Complex Systems
Chair: Andrew Singer, University of Illinois at Urbana-Champaign

MP3b-1  Diffusion Adaptation over Networks of Particles Subject to Brownian Fluctuations  3:30 PM
Ali Sayed, Faten Sayed, University of California, Los Angeles

MP3b-2  Trust, Opinion Diffusion and Radicalization in Social Networks  3:55 PM
Lin Li, Anna Scaglione, University of California, Davis; Ananthram Swami, Army Research Laboratory; Qing Zhao, University of California, Davis

MP3b-3  Disentangling Mixed Preference Systems and Hidden Variables  4:20 PM
Constantine Caramanis, University of Texas at Austin

MP3b-4  Unity Versus Diversity in a Population of Interacting Adaptive Agents: the Value of Extrinsic Gossip  4:45 PM
Andrew Bean, Andrew Singer, University of Illinois at Urbana Champaign

Session MP4a  Compressive Sensing Applications in Networking
Co-Chairs: Jarvis Haupt, University of Minnesota and Michael Rabbat, McGill University

MP4a-1  Sparse Recovery of Temporally Changing Networks: Longitudinal Modeling of Brain Networks in Children  1:30 PM
Moo Chung, Jamie Hanson, Seth Pollak, University of Wisconsin

MP4a-2  Unveiling Anomalies in Large-Scale Networks via Sparsity and Low Rank Morteza Mardani, Gonzalo Mateos, Georgios B. Giannakis, University of Minnesota

MP4a-3  Random Access Compressed Sensing: An Integrated Architecture for Energy-Efficient Networking Fatemeh Fazel, Northeastern University; Maryam Fazel, University of Washington; Milica Stojanovic, Northeastern University

MP4a-4  Recent Results on Sparse Recovery over Graphs Weiyu Xu, Meng Wang, Enrique Mallada, Ao Kevin Tang, Cornell University

Session MP4b  Resource Allocation in Wireless Networks
Chair: Rahul Urgaonkar, University of Southern California

MP4b-1  MSE-Optimal Power Allocation in Wireless Sensor Networks for Field Reconstruction Based on Shift-Invariant Spaces Günter Reise, Vienna University of Technology; Javier Matamoros, Carles Antón-Haro, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC); Gerald Matz, Vienna University of Technology

MP4b-2  Spatial Interference Mitigation for Multiple-Input Multiple-Output Ad Hoc Networks Salam Akoum, University of Texas at Austin; Marios Kountouris, Merouane Debbah, Supélec; Robert W. Heath, Jr., University of Texas at Austin

MP4b-3  A Greedy Link Scheduler for Wireless Networks with Fading Channels A. Sridharan, Emre Koksal, Ohio State University

MP4b-4  Radio Resource Management in Heterogeneous Deployments: a System Level Perspective Thomas Wirth, Fraunhofer Heinrich Hertz Institute
Session MP5a  Advances in Bioimaging and Analysis
Chair: Jean-Christophe Olivo-Marin, Institut Pasteur

MP5a-1  Quantitative Synaptic Vesicle Imaging for Evaluating Neuron Activities in Neurodegenerative Diseases
Jing Fan, Xiaofeng Xia, Stephen Wong, Methodist Hospital Research Institute

MP5a-2  Flexible and Efficient Multi-Region Segmentation Using Active Contours
Grégory Paul, Janick Cardinale, Ivo F. Sbalzarini, ETH Zurich

MP5a-3  Nanometer Resolution Imaging and Tracking of Axonal Cargo Transport in Normal and Degenerative Neurons
Ge Yang, Carnegie Mellon University

MP5a-4  Statistical Colocalization of Molecular Species in Biological Imaging
Vannary Meas-Yedid, Cyril Basquin, Nathalie Sauvonnet, Jean-Christophe Olivo-Marin, Institut Pasteur

Session MP5b  Image/Video Restoration, Enhancement and Evaluation
Chair: Mary Comer, Purdue University

MP5b-1  Tikhonov's Regularization Functional for Image Restoration by Means of q-Discrepancy
Vania V. Estrela, Universidade Federal Fluminense; Aggelos K. Katsaggelos, Northwestern University

MP5b-2  Equivalence of Plenoptic Cameras
Todor Georgiev, Adobe; Sergio Goma, Qualcomm Incorporated; Andrew Lumsdaleine, Adobe

MP5b-3  Referenceless Image Spatial Quality Evaluator
Anish Mittal, Anush Moorthy, Alan Bovik, Wireless Networking and Communications Group

MP5b-4  Noise Model Discrimination for Digital Images based on Variance-Stabilizing Transforms and on Local Statistics: Preliminary Results
Paul Rodriguez, Pontificia Universidad Catolica del Peru

Session MP6a  Tensor-based Array Signal Processing
Chair: Martin Haardt, Ilmenau University of Technology

MP6a-1  Modeling Latency and Shape Changes in Trial Based Neuroimaging Data
Morten Morup, Technical University of Denmark; Kristoffer Hougaard Madsen, Hvidovre Hospital; Lars Kai Hansen, Technical University of Denmark

MP6a-2  Canonical Decomposition of Non-Negative Arrays
Julie Coloigner, Laurent Albera, Lotfi Senhadji, Amar Kachenoura, University of RENNES 1, LTSI and INSERM, UMR 642

MP6a-3  Tensor-Based Semi-Blind Channel Estimation for MIMO OSTBC-Coded Systems
Florian Roemer, Ilmenau University of Technology; Nima Sarmadi, Technische Universität Darmstadt; Bin Song, Martin Haardt, Ilmenau University of Technology; Marius Pesavento, Alex Gershman, Technische Universität Darmstadt

MP6a-4  Tensor Decompositions with Block-Toeplitz Structure and Applications in Signal Processing
Mikael Sorensen, Lieven De Lathauwer, K.U. Leuven

Session MP6b  Compressive Sensing for Array Processing
Chair: Benjamin Friedlander, University of California, Santa Cruz

MP6b-1  The MUSIC Algorithm for Compressive Imaging: Noise Stability and Performance Guarantee
Albert Fannjiang, University of California, Davis

MP6b-2  Some Theoretical Results for Compressive Radar
Thomas Strohmer, University of California, Davis; Benjamin Friedlander, University of California, Santa Cruz

MP6b-3  Sensitivity Considerations in Compressed Sensing
Louis Scharf, Ali Pezeshki, Colorado State University; Yuejie Chi, Princeton University

MP6b-4  Coherence, Compressive Sensing and Random Sensor Arrays
Lawrence Carin, Duke University

Session MP7a  Processing of Physiological Signals
Co-Chairs: Nuri Firat Ince, University of Minnesota and Morten Morup, Technical University of Denmark

MP7a-1  Does the Morphology of High-Frequency (100-500 Hz) Brain Oscillations Change During Epileptic Seizures?
Allison Pearce, Drausin Wulsin, Brian Litt, Justin Blanco, University of Pennsylvania

MP7a-2  Early Investigations into Subjective Audio Quality Assessment Using Brainwave Responses
Charles Creusere, Srikant Siddenki, New Mexico State University; Joe Hardin, Colorado State University; Jim Kroger, New Mexico State University
**Session MP7b  Model-based Design Optimization**

Chair: Sankalita Saha, NASA, USA

**MP7b-1**  Distributed Energy and Environment Sensing for Smart Building Management
Chen Xia, Hao Liu, Xiangrong Zhou, University of Hawaii

**MP7b-2**  FPGA-Accelerator System for Computing Biologically-Inspired Feature Extraction Models
Michael DeBole, Pennsylvania State University; Chi-li Yu, Arizona State University; Ahmed Al Maashri, Matthew Cotter, Pennsylvania State University; Chaitali Chakrabarti, Arizona State University; Vijaykrishnan Narayanan, Pennsylvania State University

**MP7b-3**  A Machine Model for Dataflow Actors and its Applications
Jorn W. Janneck, Lund University

**MP7b-4**  Operation Set Customization in Retargetable Compilers
Heikki Kultala, Pekka Jääskeläinen, Mikael Lepistö, Jarmo Takala, Tampere University of Technology

**Session MP8a1  Adaptive Filtering**

Chair: Ricardo Merched, Universidade Federal do Rio de Janeiro

1:30 PM - 3:10 PM

**MP8a1-1**  Simplified Complex LMS Algorithm for the Cancellation of Second-Order TX Intermodulation Distortions in Homodyne Receivers
Christian Lederer, Mario Huemer, Alpen-Adria-Universitaet Klagenfurt

**MP8a1-2**  A Steady-State Analysis of the E-Normalized Sign-Error Least Mean Square (NSLMS) Adaptive Algorithm
Mohammed Faiz, Azzedine Zerguine, King Fahd University of Petroleum & Minerals

**MP8a1-3**  A Modified Non-Negative LMS Algorithm and its Stochastic Behavior Analysis
Jie Chen, Cédric Richard, Université de Nice Sophia-Antipolis; Jose Bermudez, Federal University of Santa Catarina; Paul Honeine, Université de Technologie de Troyes

**MP8a1-4**  A Robust LMS Adaptive Algorithm over Distributed Networks
Muhammad Bin Saeed, Azzedine Zerguine, Salam Zummo, King Fahd University of Petroleum & Minerals

**Session MP8a2  Speech Processing, Recognition and Coding**

Chair: Jerry Gibson, University of California, Santa Barbara

1:30 PM - 3:10 PM

**MP8a2-1**  Automatic Phoneme Recognition with Segmental Hidden Markov Models
Areg Baghdasaryan, A. A. (Louis) Beex, Virginia Polytechnic Institute and State University

**MP8a2-2**  A Perceptually Re-Weighted Mixed-Norm Method for Sparse Approximation of Audio Signals
Mads Christensen, Bob Sturm, Aalborg University

**MP8a2-3**  Scalable Multimode Tree Coder with Perceptual Pre-Weighting and Post-Weighting for Wideband Speech Coding
Ying-Yi Li, Jerry Gibson, University of California, Santa Barbara

**MP8a2-4**  Isolated Word Endpoint Detection Using Time-Frequency Variance Kernels
Alexandros Kyriakides, Costas Pitis, University of Cyprus; Andreas Spanias, Arizona State University

**MP8a2-5**  Performance Enhanced Multi-Rate iLBC
Koji Seto, Tokunbo Ogunfunmi, Santa Clara University

**MP8a2-6**  Enabling Improved Speaker Recognition by Voice Quality Estimation

**Session MP8a3  Parameter Estimation**

Chair: P.P. Vaidyanathan, California Institute of Technology

1:30 PM - 3:10 PM

**MP8a3-1**  On Spatial Smoothing of High Resolution Direction Finding of Real-Valued Sinusoidal Signals
H. Howard Fan, University of Cincinnati; Stewart DeVilbiss, Air Force Research Laboratory
**Session MP8a3**  Non-Uniform Linear Arrays for Improved Identifiability in Cumulant Based DOA Estimation

*Piya Pal, P. P. Vaidyanathan, California Institute of Technology*

**Session MP8a3**  Knowledge-Aided Direction Finding Based on Unitary ESPRIT

*Jens Steinwandt, Ilmenau University of Technology; Rodrigo C. de Lamare, University of York; Martin Haardt, Ilmenau University of Technology*

**Session MP8a3**  Maximum Likelihood Time Delay Estimation for CDMA Direct-Spread Multipath Transmissions Using Importance Sampling

*Ahmed Masmoudi, Faouzi Bellili, Sofiene Affes, INRS-EMT*

**Session MP8a3**  Particle Filter Based DOA Estimation for Multiple Source Tracking (MUST)

*Thomas Wiese, Technical University Munich; Heiko Claussen, Justinian Rosca, Siemens Corporation, Corporate Research*

**Session MP8a3**  Direction-of-Arrival Estimation Using Distributed Body Area Networks: Error & Refraction Analysis

*Kaveh Ghaboosi, Pranay Pratap Swar, Kaveh Pahlavan, Worcester Polytechnic Institute*

**Session MP8a3**  Bayesian Estimation of a Subspace

*Olivier Besson, University of Toulouse-ISAE; Nicolas Dobigeon, Jean-Yves Tourneret, University of Toulouse-IRIT/ENSEIHT*

**Session MP8a3**  Model Order Selection in Sensor Array Response Modeling

*Mário Costa, Andreas Richter, Visa Koivunen, Aalto University*

**Session MP8a4**  DSP Algorithms and Architectures

*Chair: Michael Schulte, AMD, USA*

1:30 PM - 3:10 PM

**Session MP8a4**  High Dynamic Range Adaptive Delta-Sigma Based Focal Plane Array Architecture

*Shun Yao, Marvel Semiconductors; Sam Kavusi, Khaled N Salama, King Abdullah University of Science and Technology*

**Session MP8a4**  Block Circular and Hyperbolic Transformations for the Block Fast Array RLS Algorithm

*Roger West, Todd Moon, Jacob (Jake) Gunther, Utah State University*

**Session MP8a4**  The Polyphase Random Demodulator for Wideband Compressive Sensing

*J.P. Slavinsky, Jason Laska, Richard Baraniuk, Rice University*

**Session MP8a4**  A Floating-Point Fused FFT Butterfly Arithmetic Unit with Merged Multiple-Constant Multipliers

*Jae Hong Min, Seong-Wan Kim, Earl Swartzlander, University of Texas at Austin*

**Session MP8a4**  Exploiting Cross-Channel Quantizer Error Correlation in Time-Interleaved Analog-to-Digital Converters

*Joseph G. McMichael, Shay Maymon, Alan V. Oppenheim, Massachusetts Institute of Technology*

**Session MP8a5**  Novel DSP Architectures

*Chair: David Thomas, Imperial College London, UK*

1:30 PM - 3:10 PM

**Session MP8a5**  In-Service Reconfiguration of Signal Processing Components

*Gordon Brebner, Christopher Neely, Shay Seng, Xilinx, Inc.*

**Session MP8a5**  Rethinking Computation Using FPGA Based Accelerators for Large Applications

*Dennis Allison, Michael J Flynn, Oskar Mencer, Maxeler Technologies*

**Session MP8a5**  Versatile FPGA DSP Blocks with Carry-Save Arithmetic Support

*Hadi Parandeh Afshar, Paolo Ienne, École Polytechnique Fédérale de Lausanne (EPFL)*

**Session MP8a5**  Scalable Acceleration of High-Performance, Fourier-Domain Optical Coherence Tomography

*Lesley Shannon, Simon Fraser University*

**Session MP8a5**  Fine-Grain Reconfigurable Functional Unit for Embedded Processors

*Gian Carlo Cardarilli, Luca Di Nunzio, Rocco Fazzolari, Marco Re, University of Rome Tor Vergata*

**Session MP8a5**  Increasing Productivity of Reconfigurable Computing for Signal Processing

*Wayne Luk, Imperial College London*

**Session MP8a5**  Synchronous and Asynchronous Computations with Molecular Reactions

*Hua Jiang, Marc D. Riedel, Keshab K. Parhi, University of Minnesota*

**Session MP8a5**  Design and Implementation of a Flexible Queue Manager for Next Generation Networks

*Qi Zhang, Roger Woods, Alan Marshall, Queen’s University Belfast*

**Session TA1a**  Random Matrices in Signal Processing and MIMO Communications

*Chair: Matthew McKay, Hong Kong University of Science and Technology*

8:15 AM

**Session TA1a**  Beyond Eckart-Young-Mirsky: Exploiting Random Matrix Theory to Improve Subspace Approximation

*Raj Rao Nadakuditi, University of Michigan*
Session TA1a  Compressed Sensing

TA1a-2 Beyond IID Gaussian Matrices in Compressed Sensing
Antonia Tulino, Bell Laboratories, Alcatel-Lucent; Giuseppe Caire, University of Southern California; Shlomo Shamai, Technion-Israel Institute of Technology; Sergio Verdú, Princeton University

TA1a-3 Mutual Information Distribution of Interference-Limited MIMO: A Joint Coulomb Fluid and Painlevel Based Approach
Shang Li, Hong Kong University of Science and Technology; Yang Chen, Imperial College London; Matthew McKay, Hong Kong University of Science and Technology

TA1a-4 Outage Capacity for MIMO-OFDM Systems in Block Fading Channels
Marco Chiani, University of Bologna; Andrea Conti, University of Ferrara; Matteo Mazzotti, Enrico Paolini, University of Bologna; Alberto Zanella, WiLab/IEIIT-BO CNR

Session TA1b  Biosignal Estimation and Classification

Co-Chairs: Ulisses Braga-Neto, Texas A&M University and Antonia Papandreou-Suppappola, Arizona State University

TA1b-1 A Real-Time Reconstruction Algorithm for the Integrate and Fire Sampler
Alexander Singh Alvarado, Jose Principe, University of Florida

TA1b-2 Using Physiological Signals to Predict Apnea in Preterm Infants
James Williamson, Daniel Bliss, David Browne, MIT Lincoln Laboratory; Elisabeth Salisbury, Premananda Indic, David Paydarfar, University of Massachusetts Medical School

TA1b-3 Assessing Dysarthria Severity Using Global Statistics and Boosting
Alicia DeMino, General Dynamics; Robert Kubichek, University of Wyoming; Kevin Caves, Duke University

TA1b-4 Characterization of Human Use of Ethanol Based on Video Games with Ethanol Rewards: Model, System Identification and Statistical Performance
Ipek Ozil, Cornell University; Martin H. Plawecki, Indiana University School of Medicine; Peter C. Doerschuk, Cornell University; Sean J. O’Connor, Indiana University School of Medicine

Session TA2a  Network Coding

Chair: Athina Markopoulou, University of California, Irvine

TA2a-1 Network Alignment
Syed Jafar, University of California, Irvine

TA2a-2 Network Coding for Data Replication over Wireless Networks
Lorenzo Keller, Christina Fragouli, École Polytechnique Fédérale de Lausanne (EPFL)

TA2a-3 A Fundamental Approach to Securing Data in the Cloud from Adversarial Attacks
Salim El Rouayheb, Sameer Pawar, Kannan Ramchandran, University of California, Berkeley

TA2a-4 Network Coding for Security and Privacy
Tracey Ho, California Institute of Technology

Session TA2b  Relaying through Frequency Selective Channels

Chair: Andy Klein, Worcester Polytechnic Institute

TA2b-1 Distributed Single Carrier Frequency-Domain Equalization for Multi-Relay Cooperative Networks over Frequency Selective Rician Channels
Homa Eghbali, Sami Muhaidat, Simon Fraser University; Ibrahim Abualhaol, Khalifa University of Science, Technology and Research

TA2b-2 Cooperative BICM-OFDM Systems for Frequency-Selective Relay Channels
Reza Heidarpour, Murat Uysal, University of Waterloo

TA2b-3 On Relay Selection in Frequency Selective Channels
Qingxiong Deng, Andrew Klein, Worcester Polytechnic Institute

TA2b-4 Superposition Coding for Cooperative BICM-OFDM Systems
Toufiqul Islam, Robert Schober, University of British Columbia; Ranjan K Mallik, Indian Institute of Technology, Delhi; Vijay K Bhargava, University of British Columbia

Session TA3a  Advances in Compressive Sensing

Chair: Christoph Studer, Rice University

TA3a-1 An Empirical-Bayes Approach to Compressive Sensing via Approximate Message Passing
Jeremy Vila, Philip Schniter, Ohio State University

TA3a-2 Compressive Sensing under Multiplicative Uncertainties: An Approximate Message Passing Approach
Jason Purker, Air Force Research Laboratory; Volkan Cevher, École Polytechnique Fédérale de Lausanne (EPFL); Philip Schniter, Ohio State University

TA3a-3 Compressive Sensing: to Compress or not to Compress
Davis Kirachaiwanich, Qilian Liang, University of Texas at Arlington

TA3a-4 Spread Representations
Jean Jacques Fuchs, Université de Rennes 1
Session TA3b  Sparse Reconstruction
Chair: Geert Leus, Technical University of Delft

TA3b-1  New Bounds for Restricted Isometry Constants in Orthogonal Multi Matching Pursuit
Jian Wang, Byonghyo Shim, Korea University

10:15 AM

TA3b-2  Cyclic Greedy Algorithms for Recovering Compressively Sampled Sparse Signals
Bob Sturm, Mads Christensen, Aalborg University; Rémi Gribonval, INRIA

10:40 AM

TA3b-3  Greedy Sparsity-Constrained Optimization
Sohail Bahmani, Carnegie Mellon University; Petros Boufounos, Mitsubishi Electric Research Labs; Bhiksha Raj, Carnegie Mellon University

11:05 AM

TA3b-4  Power-Iterative Strategy for lp-l2 Optimization for Compressive Sensing: Towards Global Solution
Jie Yan, Wu-Sheng Lu, University of Victoria

11:30 AM

Session TA4a  Next Generation Network Science
Co-Chairs: Victor Preciado, University of Pennsylvania and Ali Jadbabaie, University of Pennsylvania

TA4a-1  Network Synthesis for Dynamical System Stabilization
Miroslav Pajic, University of Pennsylvania; Shreyas Sundaram, University of Waterloo; George Pappas, Rahul Mangharam, University of Pennsylvania

8:15 AM

TA4a-2  A Contrasting Look at Network Formation Models and Their Application to the Minimum Spanning Tree
David Alderson, Gerald Brown, Naval Postgraduate School; D.B. McPherson, U.S. Navy

8:40 AM

TA4a-3  The Role of Local Structural Information in Viral Information Spreading
Victor Preciado, Ali Jadbabaie, University of Pennsylvania

9:05 AM

TA4a-4  Learning, Memory and the Role of Neural Network Architecture
Ann Hermundstad, Kevin Brown, Danielle Bassett, Jean Carlson, University of California, Santa Barbara

9:30 AM

Session TA4b  Bio-inspired Models and Algorithms for Information Processing in Complex Networks
Chair: Usman Khan, Tufts University

TA4b-1  On Scheduling Without a Master Clock: Coupled Oscillator Time Division Multiplexing
Andrea Rueetschi, Anna Scaglione, University of California, Davis

10:15 AM

Session TA5a  Image and Video Retrieval
Chair: Ramakrishna Vedantham, Nokia Research

TA5a-1  Mobile Visual Search Using Image and Text Features
Sam Tsai, Huizhong Chen, David Chen, Stanford University; Ramakrishna Vedantham, Radek Grzeszczuk, Nokia; Bernd Girod, Stanford University

8:15 AM

TA5a-2  A Compact Index for Large-Scale Mobile Visual Search
David Chen, Sam Tsai, Vijay Chandrasekhar, Gabriel Takacs, Huizhong Chen, Stanford University; Ramakrishna Vedantham, Radek Grzeszczuk, Nokia Research Center; Bernd Girod, Stanford University

8:40 AM

TA5a-3  Multiple-Channel Compact Visual Descriptor with Adaptive Channel Learning
Rongrong Ji, Harbin Institute of Technology; Ling-Yu Duan, Jie Chen, Peking University; Hongxun Yao, Harbin Institute of Technology; Tiejun Huang, Wen Gao, Peking University

9:05 AM

TA5a-4  Efficient Re-Ranking in Vocabulary Tree-Based Image Retrieval
Xiaoyu Wang, University of Missouri; Ming Yang, Kai Yu, NEC Laboratories America, Inc.

9:30 AM

Session TA5b  Sparse Representations with Applications to Images and Video
Chair: Trac Tran Tran, Johns Hopkins University

TA5b-1  Robust Multi-Dimensional Scaling via Outlier Sparsity Control
Pedro Forero, Georgios Giannakis, University of Minnesota

10:15 AM

TA5b-2  Architectures for Compressive Sampling of Correlated Signals
Ali Ahmed, Justin Romberg, Georgia Institute of Technology

10:40 AM

TA5b-3  Compressed-Sensing Recovery of Images and Video Using Multi-Hypothesis Predictions
Chen Chen, Eric Tramel, James Fowler, Mississippi State University

11:05 AM
Session TA5b  Sparsity-Based Human Activity Recognition
for Mobile Computing Devices
Victor Shia, Allen Yang, Ruzena Bajcsy, University of California, Berkeley

Session TA5b  Sparsity-Based Face Recognition Using Discriminative Graphical Models
Umamahesh Srinivas, Vishal Monga, Pennsylvania State University; Yi Chen, Trac D. Tran, The Johns Hopkins University

Session TA6a  Waveform Design and MIMO Radar
Chair: Visa Koivunen, Aalto University

Session TA6b  Network Beamforming and Relaying via Multiple Antennas
Chair: Sergiy Vorobyov, University of Alberta

Session TA7  Architectures for Wireless Communications
Chair: Joe Cavallero, Rice University

Session TA8a  Signal Processing Methods for Representation, Analysis, and Control of Biological Systems
Co-Chairs: Byung-Jun Yoon, Texas A&M and Xiaoning Qian, University of South Florida

TA5b-4  Sparsity-Based Human Activity Recognition
for Mobile Computing Devices
Victor Shia, Allen Yang, Ruzena Bajcsy, University of California, Berkeley

TA5b-5  Sparsity-Based Face Recognition Using Discriminative Graphical Models
Umamahesh Srinivas, Vishal Monga, Pennsylvania State University; Yi Chen, Trac D. Tran, The Johns Hopkins University

TA6a-1  Cluster Allocation Schemes for Target Tracking in Multiple Radar Architectures
Hana Godrich, Princeton University; Athina Petropulu, Rutgers University; H. Vince Poor, Princeton University

TA6a-2  Synergistic MIMO SAR and GMTI
Duc Vu, Luzhou Xu, Jian Li, University of Florida

TA6a-3  Resource Allocation in Widely Distributed MIMO Radars in Non-Ideal Conditions
Tuomas Aittomaki, Aalto University; Hana Godrich, Rutgers University; Visa Koivunen, Aalto University; H. Vincent Poor, Princeton University

TA6a-4  Centralized and Distributed Tests for Moving Target Detection with MIMO Radars in Clutter of Non-Homogeneous Power
Pu Wang, Hongbin Li, Stevens Institute of Technology; Braham Himed, Air Force Research Laboratory

TA7-1  An Efficient Architecture for Iterative Soft Reliability-Based Majority-Logic Non-Binary LDPC Decoding
Xinmiao Zhang, Fang Cai, Case Western Reserve University

TA7-2  Architecture Exploration, Development and Teaching Platform for Orthogonal Frequency Division Multiplexing (OFDM) Systems
Antonio Mondragon-Torres, Mahesh Kommi, Tamoghna Bhattacharya, Rochester Institute of Technology

TA7-3  Improved Iterative Soft-Reliability-Based Majority-Logic Decoding Algorithm for Non-Binary Low-Density Parity-Check Codes
Chenrong Xiong, Zhiyuan Yan, Lehigh University

TA7-5  Efficient FPGA Implementation of a High Throughput Systolic Array QR-Decomposition Algorithm
Matthias Abels, Till Wiegand, Steffen Paul, University of Bremen

TA7-6  Comparison of Performance and Implementation Complexity of Soft-Output Sphere Detectors for MIMO-OFDM Systems
Markus Myllyla, Renesas Mobile Europe Ltd

TA7-7  Time and Power Optimization in FPGA Based Architectures for Polyphase Channelizers
Mehmood Awan, Peter Koch, Aalborg University; fred harris, San Diego State University

TA7-8  Hardware Implementation of Kuiper-Based Modulation Level Classification
Paulo Urriza, Eric Rebeiz, Danijela Cabric, University of California, Los Angeles

TA8a1-1  Exact MSE Performance of the Bayesian MMSE Estimator for Classification Error
Lori A. Dalton, Edward R. Dougherty, Texas A&M University
**Session TA8a1**  
**Misaligned Principal Component Analysis (Mis-PCA) for Gene Expression Time Series Analysis**  
Arnau Tibau-Puig, Alfred Hero, University of Michigan  

**Optimal Intervention Strategies for Cyclic Therapeutic Methods with Fixed-Length Duration of Effect**  
Mohammadmahdi R. Yousefi, Aniruddha Datta, Edward R. Dougherty, Texas A&M University  

**Maximum Likelihood Estimation of the Binary Coefficient of Determination**  
Ting Chen, Ulisses Braga-Neto, Texas A&M University  

**An MCMC Algorithm for Base Calling in Sequencing-by-Synthesis**  
Ting Wu, Haris Vikalo, University of Texas at Austin  

**Relationships Between Genetic Regulatory Network Models**  
Mehmet Umut Caglar, Ranadip Pal, Texas Tech University  

**Bayesian Networks Modeling of Cellular Regulatory Pathways**  
Chen Zhao, Ivan Ivanov, Texas A&M University; Michael Bittner, Translational Genomics Research Institute; Edward Dougherty, Texas A&M University  

**Haplotype Inference Based on Sparse Dictionary Selection**  
Guido Hugo Jajamovich, Xiaodong Wang, Columbia University  

**Surface-Constrained 3D Reconstruction in Cryo-EM**  
Andrew C. Barthel, Hemant Tagare, Fred J. Sigworth, Yale University  

**Phenotypically Constrained Stationary Control Policies for Gene Regulatory Network Intervention**  
Xiaoning Qian, University of South Florida; Edward Dougherty, Texas A&M University  

**Prediction of Cancer Subtypes Using Bayesian Factor Network Model**  
Jia Meng, University of Texas at San Antonio; Manuel Sánchez Castillo, University of Granada; Jianqiu Zhang, University of Texas at San Antonio; Isabel Maria Tienda Luna, University of Granada; Yufei Huang, University of Texas at San Antonio  

**Dynamical Processes on Networks: A Unified View**  
Garrett Jenkinson, John Goutsias, The Johns Hopkins University  

**A Brief Review of Signal Processing Issues in Mass Spectrometry-Based Proteomics Studies**  
Chao Yang, Weichuan Yu, Hong Kong University of Science and Technology  

**Fault Detection and Intervention in Biological Feedback Networks**  
Ritwik Layek, Aniruddha Datta, Texas A&M University  

**Fast Global Sequence Alignment Algorithm**  
Talal Bonny, Khaled Nabil Salama, King Abdullah University of Science and Technology  

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**Session TA8a2**  
Receiver Design and Optimization  
Chair: Lara Dolecek, UCLA  

**Incorporating Prior Information into Semi-Definite Relaxation of Quadratic Optimization Problems**  
Jacob (Jake) Gunther, Todd Moon, Utah State University  

**Diversity of the MMSE Receiver in Flat Fading and Frequency Selective MIMO Channels at Fixed Rate**  
Florian Dupuy, Thales Communication / Université Paris Est; Philippe Loubaton, Université Paris Est  

**Predicting the Pruning Potential on the Sphere Decoding for Multiple-Input Multiple-Output Detection**  
Hwanchol Jang, Gwangju Institute of Science and Technology; Saeid Nooshabadi, Michigan Technological University; Heung-No Lee, Gwangju Institute of Science and Technology  

**Computationally Efficient Design of the MAE Equalizer for Binary Signaling**  
Weiwei Zhou, Jill Nelson, George Mason University; Ananya Sen Gupta, Woods Hole Oceanographic Institution  

**Broadband Doppler Compensation: Principles and New Results**  
Thomas Riedl, Andrew Singer, University of Illinois at Urbana-Champaign  

**Optimal Pilot Symbol Power Allocation in Multi-Cell Scenario in LTE**  
Michal Simko, Markus Rupp, Vienna University of Technology  

**Coherent Demodulation of AIS-GMSK Signals in Co-Channel Interference**  

**On the Stability of DSP Based PI Phase-Locked Loops Containing Matched Filter Delays**  
Fredric Harris, San Diego State University; Behrouz Farhang-Boroujeny, University of Utah  

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**Session TA8a3**  
Communications System Design  
Chair: Marco Chiani, University Bologna  

**Spatially-Aware Adaptive Error Correcting Codes for Flash Memory**  
Ryan Gabrys, Lara Dolecek, University of California, Los Angeles  

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Session TA8a3  Applications of OFDM Transmission and SDR Architecture
Chair: Gilberto Berardinelli, Aalborg University; Per Zetterberg, KTH Royal Institute of Technology; Oscar Tonelli, Andrea Cattoni, Troels B. Sørensen, Preben Mogensen, Aalborg University

10:15 AM - 11:45 AM

TA8a3-1 An SDR Architecture for OFDM Transmission over USRP2 Boards
Gilberto Berardinelli, Aalborg University; Per Zetterberg, KTH Royal Institute of Technology; Oscar Tonelli, Andrea Cattoni, Troels B. Sørensen, Preben Mogensen, Aalborg University

TA8a3-2 Environmental-Aware Heterogeneous Partial Feedback Design in a Multi-User OFDMA System
Yichao Huang, Bhaskar D. Rao, University of California, San Diego

TA8a3-3 Adaptive OFDM for Underwater Acoustic Channels with Limited Feedback
Andreja Radosevic, University of California, San Diego; Tolga Duman, Arizona State University; John Proakis, University of California, San Diego; Milica Stojanovic, Northeastern University

TA8a3-4 A 512-Point 8-Parallel Pipelined Feedforward FFT for WPAN
Tanvir Ahmed, Mario Garrido, Oscar Gustafsson, Linköping University

TA8a3-5 On the Convergence of Joint Channel and Mismatch Estimation for Time-Interleaved Data Converters
Sandip Ponnuru, Upamanyu Madhow, University of California, Santa Barbara

TA8a3-6 Comparison of Energy- and Spectral-Efficient Design for LTE Downlink Systems
Liying Li, University of Electronic Science and Technology of China; Jiancun Fan, Xi’an Jiaotong University; Gang Wu, Hongbing Xu, University of Electronic Science and Technology of China; Geoffrey Ye Li, Georgia Institute of Technology

TA8a3-7 An Efficient Cascade of Half-Band Filters for Software Defined Radio Transmitters
Fred Harris, Xiaofei Chen, Elettra Venosa, San Diego State University

Session TA8a4  Applications of Array Processing
Chair: Giuseppe Abreu, Oulu University, Finland

8:15 AM - 9:55 AM

TA8a4-1 An SVD Approach for Data Compression in Emitter Location Systems
Mohammad Pourhomayoun, Mark Fowler, Binghamton University

TA8a4-2 Detection Properties of Some Sparse Representation Approaches
Jean Jacques Fuchs, Université de Rennes 1

TA8a4-3 Estimating Bridge Displacement from Acceleration Using Modal Analysis and the Minimum Description Length Principle
Viswanadh Kandula, Linda DeBrunner, Victor DeBrunner, Michelle Rambo-Rodenberry, Florida State University

TA8a4-4 Non-Uniform Sparse Array Design for Active Sensing
Ching-Chih Weng, P. P. Vaidyanathan, California Institute of Technology

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Viswanadh Kandula, Linda DeBrunner, Victor DeBrunner, Michelle Rambo-Rodenberry, Florida State University

TA8a4-4 Non-Uniform Sparse Array Design for Active Sensing
Ching-Chih Weng, P. P. Vaidyanathan, California Institute of Technology

Session TA8b1  Multiple Antennas in Multi-User Systems and Networks
Chair: Shuguang Cui, Texas A&M University

10:15 AM - 12:00 PM

TA8b1-1 Low Complexity Spatial Multiuser Pairing in SC-FDMA Uplink
Jiancun Fan, Xi’an Jiaotong University; Geoffrey Ye Li, Georgia Institute of Technology; Qinye Yin, Xi’an Jiaotong University; Bingguang Peng, Xiaolong Zhu, Huawei Shanghai Research Institute

TA8b1-2 Maximum-Likelihood Decoding in Decode-and-Forward Based MIMO Cooperative Communication Systems
Manav Bhatnagar, Ankur Bansal, Indian Institute of Technology, Delhi; Are Hjørungnes, UNIK, University of Oslo; Zhu Han, University of Houston

TA8b1-3 Complex Interference Optimization for Power Loss Reduction in MIMO-THP Transmission
Christos Masouros, Mathini Sellathurai, Tharm Ratnarajah, Queen’s University Belfast; Ying-Chang Liang, Institute for Infocomm Research

TA8b1-4 Channel Tracking for D-BLAST for Airborne Platforms
Kapil Borle, Biao Chen, Syracuse University; Michael Gans, Air Force Research Laboratory

TA8b1-5 Interference Alignment for Multiple-Antenna Amplify-and-Forward Relay Interference Channel
Kien T. Truong, Robert W. Heath, Jr., University of Texas at Austin

TA8b1-6 Null Space Interference Alignment in MIMO Cellular Networks
Taejoon Kim, David Love, Purdue University; Bruno Clerckx, Samsung Electronics
Session TA8b1  Grouped Multi-Cell OFDM-IDMA

Jian Dang, Southeast University; Liuqing Yang, Colorado State University; Zaichen Zhang, Southeast University

Session TA8b1  Coordinated Multi-Cell Beamforming for LTE-Advanced Systems

Qixing Wang, Guangyi Liu, China Mobile Research Institute; Shuguang Cui, Texas A&M University

Session TA8b1  Linear Transceiver Design for Interfering Broadcast Channel with QoS Constraints

Meisam Razaviyayn, Zhi-Quan Luo, University of Minnesota

Session TA8b1  Cooperative Feedback for MIMO Interference Channels

Kaibin Huang, Yonsei University; Rui Zhang, National University of Singapore

Session TA8b1  Eigen-Mode Transmission for Jointly Correlated MIMO Broadcast Channels

Xiao Li, Shi Jin, Xiqi Gao, Southeast University

Session TA8b1  How Many Degrees of Freedom Can Be Achieved for Mutually Interfering MIMO Broadcast Channels?

Hyukjin Chae, Sungyoon Cho, Kaibin Huang, Donghku Kim, Yonsei University

Session TA8b1  Distributed Beamforming Based Directional Spectrum Sharing

Juan Liu, Wei Chen, Zhigang Cao, Tsinghua University; Ying Jun Zhang, Chinese University of Hong Kong

Session TA8b1  Spatially Efficient Distributed Relay Selection for Random Relay Networks

Sungrae Cho, Wan Choi, Korea Advanced Institute of Science and Technology; Kaibin Huang, Yonsei University

Session TA8b1  Channel State Information Feedback Control for Interference Alignment

Lingyang Song, Peking University; Zhu Han, University of Houston; Shaohui Sun, Datang Mobile; Bingli Jiao, Peking University

Session TA8b1  Self-Optimized MIMO-OFDMA: A Nash-Stackelberg Game-Theoretic Approach

Jie Ren, Jianjun Hou, Beijing Jiaotong University; Kai-Kit Wong, University College London

Session TA8b2  Cooperative and Cognitive Transmission in Multi-Antenna Systems

Chair: Daniel Bliss, MIT Lincoln Laboratory

10:15 AM - 12:00 PM

TA8b2-1  Cooperative Rate Maximization Based on Base Station Exchange of Powers

Samer Bazzi, Guido Dietl, DoCoMo Communications Laboratories Europe GmbH

Session TA8b2  Half-Duplex Gaussian Diamond Relay Channel with Interference Known at One Relay

Kagan Bakanoglu, Elza Erkip, Polytechnic Institute of New York University; Osvaldo Simeone, New Jersey Institute of Technology

Session TA8b2  Interference Management in Femtocell Networks with Hybrid-ARQ and Interference Cancellation

Tania Villa, Eurecom; Ruben Merz, Deutsche Telekom Laboratories; Raymond Knopp, Eurecom

Session TA8b2  Achievable Degrees of Freedom of the K-User Interference Channel with Partial Cooperation

Ahmed Naguib, Khaled Elsayed, Cairo University; Mohammed Nafie, Nile University

Session TA8b2  Multicell Downlink Weighted Sum-Rate Maximization: A Distributed Approach

Pradeep Chathuranga Weeraddana, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications

Session TA8b2  Decentralized Multi-Cell Beamforming Coordination for Multiuser MISO Systems

Harri Pennanen, Antti Tölli, Matti Latva-aho, University of Oulu

Session TA8b2  Feedback Reduction by Thresholding in Multi-User Broadcast Channels: Design and Limits

Matthew Pugh, Bhaskar D. Rao, University of California, San Diego

Session TA8b2  Full-Duplex Bidirectional MIMO: Achievable Rates under Limited Dynamic Range

Brian Day, Ohio State University; Daniel Bliss, Adam Margetts, MIT Lincoln Laboratory; Philip Schniter, Ohio State University

Session TA8b3  Adaptive Sensing

Chair: Jarvis Haupt, University of Minnesota

10:15 AM - 12:00 PM

TA8b3-1  Adaptive Search for Sparse Moving Targets under Resource Constraints

Gregory Newstadt, Eran Bashan, Alfred O. Hero, University of Michigan

TA8b3-2  Adaptive Signal Recovery in Noisy Environments

Mark Iwen, Duke University; Ahmed Tewfik, University of Texas at Austin

TA8b3-3  On the Limits of Sequential Testing in High Dimensions

Matthew Malloy, Robert Nowak, University of Wisconsin

TA8b3-4  Active Learning for Adaptive Life-Long Learning

Lawrence Carin, Duke University; Hui Li, Signal Innovations Group

TA8b3-5  Efficient Adaptive Compressive Sensing Using Sparse Hierarchical Learned Dictionaries

Akshay Soni, Jarvis Haupt, University of Minnesota

TA8b3-6  Information-Optimal Adaptive Compressive Imaging

Amit Ashok, Mark Neifeld, University of Arizona
Session TP1a  Resource Allocation in Multi-Antenna Systems

Chair: Neelesh Mehta, Indian Institute of Science

TP1a-1  Optimal Power Allocation for Multi-User Transmit Beamforming via Regularized Channel Inversion
Rusdha Muharar, Jamie Evans, University of Melbourne

TP1a-2  Capacity Density Optimization by Fractional Frequency Partitioning
Martin Taranetz, Josep Colom Ikuno, Markus Rupp, Vienna University of Technology

TP1a-3  Resource Allocation in MIMO Multi-Cellular Networks via Submodular Optimization
Narayan Prasad, Honghai Zhang, NEC Laboratories America, Inc.; Luca Venturino, University of Cassino; Jubin Jose, University of Texas at Austin; Sampath Rangarajan, NEC Laboratories America, Inc.

TP1a-4  Transmit Power Optimization for Multi-Antenna Decode-and-Forward Relays with Loopback Self-Interference from Full-Duplex Operation
Taneti Riihonen, Stefan Werner, Risto Wichman, Aalto University

Session TP1b  Interference Management

Chair: Aydin Sezgin, University of Ulm

TP1b-1  Degrees of Freedom of Multiple Unicasts over Multihop Wireless Networks
Syed Jafar, University of California, Irvine

TP1b-2  Optimized Data Symbol Sharing in Multiple-Antenna Interference Channel
Maha Odeh, Paul De Kerret, David Gesbert, Eurecom

TP1b-3  On Interference Channels with more than Two Source-Destination Pairs
Daniela Tuninetti, University of Illinois, Chicago

TP1b-4  Training and Feedback Optimization For MIMO Interference Alignment in Continuous Fading Channels
Omar El Ayach, Angel Lozano, Universitat Pompeu Fabra; Robert W. Heath, Jr., University of Texas at Austin

TP1b-5  Making Optimal Use of the Asymmetric Interference Channel
Rachel Learned, MIT Lincoln Laboratory

Session TP2a  Cognitive Radio I

Chair: Gesualdo Scutari, University at Buffalo

TP2a-1  Joint Link Learning and Cognitive Radio Network Sensing
Seung-Jun Kim, Georgios Giannakis, University of Minnesota

TP2a-2  Spectrum Sensing via Event-Triggered Sampling
Yasin Yilmaz, Xiaodong Wang, Columbia University

TP2a-3  Proactive Resource Allocation in Cognitive Networks
John Tadrous, Atilla Eryilmaz, Hesham El-Gamal, Ohio State University

TP2a-4  Correlated Equilibrium Learning Algorithms for Dynamic Spectrum Access
Omid Namvar Gharehshiran, Vikram Krishnamurthy, University of British Columbia

Session TP2b  Cognitive Radio II

Chair: Gesualdo Scutari, University at Buffalo

TP2b-1  Extreme Eigenvalue Distributions of Finite Random Wishart Matrices with Application to Spectrum Sensing
Giuseppe Abreu, University of Oulu; Wensheng Zhang, Mamiko Inamori, Yukitoshi Sanada, Keio University

TP2b-2  Autocorrelation-Based Multi-Antenna Spectrum Sensing in Colored Noise
Jitendra Tugnait, Auburn University

TP2b-3  Decentralized Cognition via Randomized Masking
Kamyar Moshksar, Amir Khandani, University of Waterloo

TP2b-4  Spectrum Leasing via Cooperative Opportunistic Routing in Distributed Ad Hoc Networks: Optimal and Heuristic Policies
Cristiano Tapparello, Davide Chiarotto, Michele Rossi, University of Padova; Osvaldo Simeone, New Jersey Institute of Technology; Michele Zorzi, University of Padova

TP2b-5  A Message-Passing Algorithm for Spectrum Access in Cognitive Radio Relay Networks
Sang Hyun Lee, Manohar Shamaiah, Sriram Vishwanath, Haris Vikalo, University of Texas at Austin
Session TP3a Multi-dimensional Compressive Inference

Chair: Phil Schniter, The Ohio State University

TP3a-1 Real-Time Principal Component Pursuit 1:30 PM
Graeme Pope, Manuel Baumann, ETH Zurich; Christoph Studer, Rice University; Giuseppe Durisi, Chalmers University of Technology

TP3a-2 Low Rank Variational Tensor Recovery for 1:55 PM
Multi-Linear Inverse Problems
Hatim Alqadah, Howard Fan, University of Cincinnati

TP3a-3 Optimized Measurements for Kernel 2:20 PM
Compressive Sensing
Karthikeyan Natesan Ramamurthy, Andreas Spanias, Arizona State University

TP3a-4 Efficient Message Passing-Based Inference in 2:45 PM
the Multiple Measurement Vector Problem
Justin Ziniel, Philip Schniter, Ohio State University

Session TP3b Advances in Adaptive and Distributed Filtering

Chair: Vitor Nascimento, University of Sao Paulo

TP3b-1 Continuous-Time Distributed Estimation 3:30 PM
Vitor Nascimento, University of Sao Paulo; Ali Sayed, University of California, Los Angeles

TP3b-2 Sequential Likelihood Consensus and 3:55 PM
Application to Distributed Particle Filtering with Reduced Communications and Latency
Ondrej Sluciak, Ondrej Hlinka, Markus Rupp, Franz Hlawatsch, Vienna University of Technology; Petar Djuric, Stony Brook University

TP3b-3 A Unifying Framework for the Analysis of 4:20 PM
Quaternion-Valued Adaptive Filters
Clive Cheong Took, Cyrus Jahanchahi, Danilo Mandic, Imperial College London

TP3b-4 Joint Conditional and Steady-State 4:45 PM
Probability Densities of Weight Deviations for Proportionate-Type LMS Algorithms
Kevin Wagner, Naval Research Laboratory; Miloš Doroslovacki, George Washington University

TP3b-5 Fast and Superfast Computations in 5:10 PM
Structured Equalization Scenarios
Ricardo Merched, Universidade Federal do Rio de Janeiro

Session TP4a Communication Management in Robot Networks

Chair: Michael Zavlanos, Stevens Institute of Technology

TP4a-1 Co-Optimization of Communication and 1:30 PM
Motion Planning of a Robotic Operation in Fading Environments
Yuan Yan, Yasamin Mostofi, University of New Mexico

TP4a-2 A Framework for Integrating Mobility and Routing in Mobile Communication Networks 1:55 PM
Michael M. Zavlanos, Stevens Institute of Technology; Alejandro Ribeiro, George J. Pappas, University of Pennsylvania

TP4a-3 Multi-Robot Path Following with Visual 2:20 PM
Connectivity
Magnus Lindhå, Royal Institute of Technology; Tamas Keviczky, Delft University of Technology; Karl Henrik Johansson, Royal Institute of Technology

TP4a-4 Communication Network Challenges for 2:45 PM
Collaborative Vehicles
Pedram Hovareshti, Chen Hua, John Baras, University of Maryland

Session TP4b Distributed Storage Systems

Chair: Alex Dimakis, University of Southern California

TP4b-1 Codes for Robust Scalable Distributed 3:30 PM
Video-on-Demand Systems
Sameer Pawar, Salim El Rouayheb, Hao Zhang, University of California, Berkeley; Parimal Parag, Texas A&M University; Kannan Ramchandran, University of California, Berkeley

TP4b-2 Error Coding for Long-Term Archival 3:55 PM
Storage Systems
Ethan Miller, Ian Adams, Jingpei Yang, Daniel Rosenthal, Darrell Long, University of California, Santa Cruz

TP4b-3 Theoretical Problems in Fault-Tolerant 4:20 PM
Distributed Storage
Jay Wylie, Hewlett-Packard Labs

TP4b-4 Survey of Non-MDS Erasure Codes for 4:45 PM
Distributed Storage Systems
James Plank, University of Tennessee

Session TP5 Compressive Sensing for Radar

Chair: Rabinder Madan, U.S. Office of Naval Research

TP5-1 Compressive Sensing: Snake Oil or Good 1:30 PM
Idea?
Fred Daum, Raytheon

TP5-2 Compressive Sensing for Synthetic Aperture 1:55 PM
Radar in Fast-Time and Slow-Time Domains
Qilian Liang, University of Texas at Arlington

TP5-3 Comparison of MMOSPA and Compressed 2:20 PM
Sensing for Radar Array Processing
David Crouse, Peter Willett, University of Connecticut; Lennart Svensson, Chalmers University; Yaakov Bar-Shalom, University of Connecticut

TP5-4 Support Recovery in Compressive Sensing 2:45 PM
for Estimation of Direction-of-Arrival
Zhiyuan Weng, Xin Wang, Stony Brook University
Session TP5a  Source Localization
Chair: Muralidhar Rangaswamy, Purdue University

TP5a-1  Robust Time-Based Localization for Asynchronous Networks with Clock Offsets
Yiyin Wang, Delft University of Technology; Xiaoli Ma, Georgia Institute of Technology; Geert Leus, Delft University of Technology

TP5a-2  Conditioned MDS with Heterogeneous Information
Davide Macagnano, Giuseppe Abreu, University of Oulu

TP5a-3  Cooperative Multihop Localization with Privacy
Golaleh Rahmatollahi, Leibniz University Hannover; Giuseppe Abreu, University of Oulu; Stefano Severi, University of Bologna

TP5a-4  Design and Performance of an Integrated Waveform-agile Multi-Modal Track-before-Detect Sensing System
Jun Zhang, Arizona State University; Surendra Bhat, Pennsylvania State University; Quan Ding, University of Rhode Island; Antonia Papandreou-Suppappola, Arizona State University; Ram Narayan, Pennsylvania State University; Steven Kay, University of Rhode Island; Muralidhar Rangaswamy, Air Force Research Laboratory

Session TP5b  Array Processing for Satellite Communications
Chair: Michael Joham, Technical University Munich

TP5b-1  On the Capacity of Multi-Beam Joint Decoding over Composite Satellite Channels
Dimitrios Christopoulou, Symeon Chatzinotas, University of Luxembourg; Michail Matthaiou, Chalmers University of Technology; Björn Ottersten, University of Luxembourg

Session TP5c  MIMO Radar

TP5-5  Explore Group Sparsity for Compressive Sensing Based MIMO Radar
Yao Yu, Athina Petropulu, Junzhou Huang, Rutgers University

TP5-6  On the Role of Waveform Diversity in MIMO Radar
Benjamin Friedlander, University of California, Santa Cruz

TP5-7  Non-Coherent Compressive Sensing for MIMO Radar with Widely Separated Antennas
Christian Berger, Jose’ Moura, Carnegie Mellon University

TP5-8  Global Methods for Compressive Sensing in MIMO Radar with Distributed Sensors
Marco Rossi, Alexander M. Haimovich, New Jersey Institute of Technology; Yonina C. Eldar, Technion-Israel Institute of Technology

Session TP6a  Source Localization
Chair: Muralidhar Rangaswamy, Purdue University

TP6a-1  Robust Time-Based Localization for Asynchronous Networks with Clock Offsets
Yiyin Wang, Delft University of Technology; Xiaoli Ma, Georgia Institute of Technology; Geert Leus, Delft University of Technology

TP6a-2  Conditioned MDS with Heterogeneous Information
Davide Macagnano, Giuseppe Abreu, University of Oulu

TP6a-3  Cooperative Multihop Localization with Privacy
Golaleh Rahmatollahi, Leibniz University Hannover; Giuseppe Abreu, University of Oulu; Stefano Severi, University of Bologna

TP6a-4  Design and Performance of an Integrated Waveform-agile Multi-Modal Track-before-Detect Sensing System
Jun Zhang, Arizona State University; Surendra Bhat, Pennsylvania State University; Quan Ding, University of Rhode Island; Antonia Papandreou-Suppappola, Arizona State University; Ram Narayan, Pennsylvania State University; Steven Kay, University of Rhode Island; Muralidhar Rangaswamy, Air Force Research Laboratory

Session TP6b  Array Processing for Satellite Communications
Chair: Michael Joham, Technical University Munich

TP6b-1  On the Capacity of Multi-Beam Joint Decoding over Composite Satellite Channels
Dimitrios Christopoulou, Symeon Chatzinotas, University of Luxembourg; Michail Matthaiou, Chalmers University of Technology; Björn Ottersten, University of Luxembourg
Session TP7b-3  Energy-Efficient Floating-Point Arithmetic for Low-Power Digital Signal Processors
Syed Z. Gilani, Nam Sung Kim, University of Wisconsin-Madison; Michael J. Schulte, Advanced Micro Devices

Session TP7b-4  Testing Fused Multiply Add Implementations
David Lutz, Neil Burgess, Sabrina Romero, ARM

Session TP7b-5  Shared Implementation of Radix-10 and Radix-16 Division Algorithm with Limited Precision Primitives
Milos D. Ercegovac, University of California, Los Angeles; Robert McIlhenny, California State University, Northridge

Session TP8a1  Techniques for Space-Time Signal Processing
Chair: Kaibin Huang, Yonsei University, S. Korea
1:30 PM - 3:10 PM

TP8a1-1  Equivalent Codes and Optimality of Orthogonal Space-Time Block Codes
Alex Geyer, Sergiy Vorobyov, Norman Beaulieu, University of Alberta

TP8a1-2  On Quasi-Orthogonal Space-Time Block Codes for Dual-Polarized MIMO Channels
Yabo Li, Zhike Huang, Zhejiang University; Xiang-Gen Xia, University of Delaware

TP8a1-3  Sparse Space-Time Equalization with L1 Norm
Laura Slivinski, Brown University; Adam Margetts, Daniel Bliss, Massachusetts Institute of Technology

TP8a1-4  Weighted Sum-Rate Maximization for MISO Downlink Cellular Networks via Branch and Bound
Satya Joshi, Pradeep Chathuranga Weeraddana, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications

TP8a1-5  Low Complexity Generalized Geometric Mean Decomposition and DFE Transceiver Design
Chih-Hao Liu, P. P. Vaidyanathan, California Institute of Technology

TP8a1-6  Worst-Case Robust Multiuser Transmit Beamforming Using Semidefinite Relaxation: Duality and Implications
Tsung-Hui Chang, National Tsing Hua University; Wing-Kin Ma, Chinese University of Hong Kong; Chong-Yung Chi, National Tsing Hua University

TP8a1-7  Transmitter Optimization for MIMO Systems with Mutual Coupling at High SNR
Peng Li, Hong Kong University of Science and Technology; Liang Sun, Alcatel-Lucent Shanghai Bell; Matthew McKay, Ross Murch, Hong Kong University of Science and Technology

TP8a1-8  Robust Joint Optimization of Non-Regenerative MIMO Relay Channels with Imperfect CSI
Ebrahim A. Gharavol, Erik G. Larsson, Linköping University

Session TP8a2  Statistical and Array Signal Processing for Biomedical Applications
Chair: Monica Bugallo, University of Stony Brook
1:30 PM - 3:10 PM

TP8a2-1  ECG De-Noising Using a Dynamical Model and a Marginalized Particle Filter
Chao Lin, TéSA Laboratory; Monica Bugallo, Stony Brook University; Corinne Mailhes, Jean-Yves Tourneret, University of Toulouse

TP8a2-2  Beta Dirichlet Process Mixture Model Based Clustering of DNA Methylation Array Data
Jia Meng, Yufei Huang, University of Texas at San Antonio; Lin Zhang, China University of Mining and Technology

TP8a2-3  Neonatal Seizure Detection Using Multi-Channel Blind Information Fusion
Huaying Li, Aleksandar Jeremic, McMaster University; Kenneth Tan, University of Melbourne

TP8a2-4  A Novel Approach to Automated Fetal Heart Rate Analysis
Shishir Dash, Petar Djuric, Stony Brook University

TP8a2-5  Joint Waveform and Firing Rate Spike-Sorting for Continuous Extracellular Traces
Brett Matthews, Mark Clements, Georgia Institute of Technology

TP8a2-6  Statistical Design of Position-Encoded Microsphere Arrays at Low Target Concentrations
Xiaoxiao Xu, Washington University in St. Louis; Pinaki Sarder, Washington University School of Medicine in St. Louis; Arve Nehorai, Washington University in St. Louis

TP8a2-7  Biosensor Arrays for Collaborative Detection of Analytes
Maryam Abolfath-Beygi, Vikram Krishnamurthy, University of British Columbia

TP8a2-8  Developing Movement Direction Decoders from Local Field Potentials
Vijay Aditya Tadipatri, Ahmed H. Tewfik, University of Texas at Austin; James Ashe, Guiseppe Pellizzer, VA Medical Center, Minneapolis

Session TP8a3  Sensor Networks
Chair: Soumya Kar, Carnegie Mellon University
1:30 PM - 3:10 PM

TP8a3-1  Dual Trust Secure Protocol for Cluster-Based Wireless Sensor Networks
Yang Li, Melody Moh, San Jose State University

TP8a3-2  User Clustering and Energy Efficient Cooperation in Cellular Networks
Jinhong Wu, George Washington University; Harry (Zhibing) Chen, Yong Liu, Liyu Cai, Alcatel-Lucent Shanghai Bell
Session TP8a3  Wireless Sensor Networks
Chair: John Gubner, University of Wisconsin-Madison; Louis Scharf, Edwin Chong, Colorado State University

TP8a3-3 Optimization of Exponential Error Rates for a Suboptimum Fusion Rule in Wireless Sensor Networks
John Gubner, University of Wisconsin-Madison; Louis Scharf, Edwin Chong, Colorado State University

TP8a3-4 Collaborative Estimation in Dispersive Environments: A Frequency Domain Approach
Sriram Venkateswaran, Upamanyu Madhow, University of California, Santa Barbara

TP8a3-5 Distributed Support Vector Machines in Sensor-Actuator Networks
Joseph Lee, University of California, Los Angeles

TP8a3-6 Step-Size Sequence Design for Finite-Time Distributed Average Consensus
Alain Kibangou, University Joseph Fourier/CNRS

TP8a3-7 Target Localization in Sensor Networks with Quantized Data in the Presence of Byzantine Attacks
Keshav Agrawal, Aditya Vempaty, Indian Institute of Technology, Kanpur; Hao Chen, Boise State University; Pramod Varshney, Syracuse University

TP8a3-8 Uniformly Most Powerful Distributed Detection and its Application in Cooperative Spectrum Sensing
Hao Chen, Uri Rogers, Boise State University

Session TP8a4  Wireless Networks
Chair: Vivek Cadambe, University of California, Irvine

1:30 PM - 3:10 PM

TP8a4-1 Dynamic Pricing under Binary Demand Uncertainty: A Multi-Armed Bandit with Correlated Arms
Yixuan Zhai, Qing Zhao, University of California, Davis

TP8a4-2 Optimal Routing with Mutual Information Accumulation in Wireless Networks
Rahul Urgaonkar, Michael Neely, University of Southern California

TP8a4-3 Optimal Scheduling of Real-Time Messages in Peer-to-Peer Wireless Networks
Juan Jose Jaramillo, Shihuan Liu, Lei Ying, Iowa State University

TP8a4-4 State-Based Single Channel Selection in Multi-Channel Wireless Networks
Brian Phillips, Murali Tummala, John McEachen, Naval Postgraduate School

TP8a4-5 Robust Joint Transceiver Beamforming for Cognitive Radio Network
Huiqin Du, Tharm Ratnarajah, Queen’s University Belfast; C. B. Papadias, Athens Information Technology

TP8a4-6 Probabilistic Power Control for Heterogeneous Cellular Networks with Closed-Access Femtocells
Ralf Bendlin, Yih-Fang Huang, University of Notre Dame; Josef A. Nossek, Munich University of Technology

TP8a4-7 Pricing and Bandwidth Allocation Problems in Wireless Multi-Tier Networks
Camila Maria Gabriel Gussen, Universidade Federal do Rio de Janeiro; Elena Veronica Belmaga, Mériouane Debballah, Supélec

TP8a4-8 Joint Power and Rate Control for Coded Wireless Packet Networks
Ketan Rajawat, Nikolaos Gatsis, Emiliano Dall’Anese, Georgios Giannakis, University of Minnesota

Session TP8b1  Machine-Learning-Based Statistical Signal Processing
Chair: Phil Schniter, The Ohio State University

3:30 PM - 5:10 PM

TP8b1-1 Shrinkage Fisher Information Embedding of High Dimensional Feature Distributions
Xu Chen, Yilun Chen, Alfred Hero, University of Michigan

TP8b1-2 Adaptive Learning of Immunosignaturing Peptide Array Features for Biothreat Detection and Classification
Jun Zhang, Bhavana Chakraborty, Anna Malin, Antonia Papandreou-Suppappola, Stephen Johnston, Phillip Stafford, Arizona State University

TP8b1-3 Sparse Classification of RF Transients Using Chirplets and Learned Dictionaries
Daniela Moody, Steven Brumby, Kary Myers, Norma Pawley, Los Alamos National Laboratory

TP8b1-4 Exploiting Random Matrix Theory to Improve Subspace-Based Classification
Nicholas Asendorf, Raj Rao Nadakuditi, University of Michigan

TP8b1-5 Non-Linear Unmixing of Hyperspectral Images with Kernels
Jie Chen, Université de Technologie de Troyes; Cédric Richard, Université de Nice Sophia-Antipolis; Paul Honeine, Université de Technologie de Troyes

TP8b1-6 Modulation Classification of MIMO-OFDM Signals by Independent Component Analysis and Support Vector Machines
Handan Agirman-Tosun, A.M. Haimovich, Osvaldo Simeone, New Jersey Institute of Technology; Wei Su, U.S. Army CERDEC Aberdeen Proving Ground; Jason Dabin, U.S. Navy SPAWAR SCP; Emmanuel Kanterakis, CACI International

TP8b1-7 A Measure of Difference between Discrete Sample Sets
Debejyo Chakraborty, General Motors Company; Narayan Kovvali, Arizona State University

TP8b1-8 On l1 Mean and Variance Filtering
Bo Wahlberg, Cristian R. Rojas, Mariette Annergren, KTH Royal Institute of Technology
Session TP8b2  Network Information Theory
Chair: Daniela Tuninetti, University of Illinois at Chicago
3:30 PM - 5:10 PM

TP8b2-1 Information-Theoretic Limits of Dense Underwater Networks
Won-Yong Shin, Harvard University; Daniel Lucani, Universidade do Porto; Muriel Medard, Massachusetts Institute of Technology; Milica Stojanovic, Northeastern University; Vahid Tarokh, Harvard University

TP8b2-2 A Two-Way Secrecy Scheme for the Scalar Broadcast Channel with Internal Eavesdroppers
Chee Yen Leow, Imperial College London; Dennis L. Goeckel, University of Massachusetts; Kin K. Leung, Imperial College London

TP8b2-3 Relaying for Multiple Sources in the Absence of Codebook Information
Ye Tian, Aylin Yener, Pennsylvania State University

TP8b2-4 Compound Codes for Optimal Repair in MDS Code Based Distributed Storage Systems
Viveck Cadambe, University of California, Irvine; Cheng Huang, Microsoft Research; Jin Li, Sanjeev Mehta, Microsoft Research Redmond

TP8b2-5 Effects of Range Expansion and Interference Coordination on Capacity and Fairness in Heterogeneous Networks
Sayandev Mukherjee, Ismail Guvenc, DoCoMo USA Labs

TP8b2-6 An Extended Etkin-Type Outer Bound on the Capacity of the Gaussian Interference Channel
Anas Chaaban, Aydin Sezgin, University of Ulm

TP8b2-7 Communication Strategies to Ensure Generic Networked Observability in Multi-Agent Systems
Mohammadreza Doostmohammadian, Usman Khan, Tufts University

TP8b2-8 Error Probability Bounds for Binary Relay Trees with Unreliable Communications
Zhenliang Zhang, Ali Pezeshki, Colorado State University; William Moran, University of Melbourne; Stephen Howard, Defence Science and Technology Organization; Edwin Chong, Colorado State University

Session WA1a  Channel Estimation for Multi-Antenna Systems
Chair: Mérouane Debbah, SUPELEC, France

WA1a-1 Close-Range Outdoor Wireless Channel Sounding
Scott E. Johnston, Paul D. Fiore, MIT Lincoln Laboratory
8:15 AM

WA1a-2 Channel Aging Effects in CoMP Transmission: Gains from Linear Channel Prediction
Lars Thiele, Bho Matthiesen, Michael Olbrich, Konstantinos Manolakis, Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute
8:40 AM

Session WA1b  MIMO Radar and SAR
Chair: Benjamin Friedlander, University of California, Santa Cruz

WA1b-1 On Spatial Processing in MIMO Radar
Benjamin Friedlander, University of California, Santa Cruz
10:15 AM

WA1b-2 Subspace Fitting Based Autofocus for Stripmap SAR
Roger West, Jacob (Jake) Gunther, Todd Moon, Utah State University
10:40 AM

WA1b-3 Doppler Estimation and Compensation in MIMO Radar with Unitary Waveform Scheduling
Tariq Qureshi, Michael Zoltowski, Purdue University; Robert Calderbank, Duke University
11:05 AM

WA1b-4 On the Use of Fractional Autocorrelation to Correct Mismatches for Chirp Scale Focusing for Real SAR Image Formation
Judith Northrop, Antonia Papandreou-Suppappola, Arizona State University
11:30 AM

Session WA2a  OFDM
Chair: Antonia Maria Tulino, Bell-Labs

WA2a-1 Low Complexity EM-Based Decoding for OFDM Systems with Impulsive Noise
Marcel Nassar, Brian Evans, University of Texas at Austin
8:15 AM

WA2a-2 Accurate Characterization and Compensation of Phase Noise in OFDM Receiver
Pramod Matheekan, Taneli Riihonen, Stefan Werner, Risto Wichman, Aalto University
8:40 AM

WA2a-3 Linear Programming for Tone Reservation based IM/DD Optical OFDM Communications
Liang Chen, NICTA Victoria Research Laboratory; Yusheng Ji, National Institute of Informatics; Brian Krongold, Jamie Evans, NICTA Victoria Research Laboratory
9:05 AM

WA2a-4 Analytical Link Performance Evaluation of LTE Downlink with Carrier Frequency Offset
Qi Wang, Markus Rupp, Vienna University of Technology
9:30 AM
Session WA2b  Beamforming
Chair: Michael Joham, Technical University Munich
WA2b-1 Design of Beamforming in the Satellite Downlink with Static and Mobile Users 10:15 AM
Andreas Gründinger, Michael Joham, Wolfgang Utschick, Technische Universität München
WA2b-2 Array and Beamformer Design for Optimal Directivity 10:40 AM
Jean Jacques Fuchs, Université de Rennes 1
WA2b-3 Coordinating Complementary Waveforms for Sidelobe Suppression 11:05 AM
Wenbing Dang, Ali Pezeshki, Colorado State University; Stephen Howard, Defence Science and Technology Organisation; William Moran, University of Melbourne; Robert Calderbank, Duke University
WA2b-4 Robust Transmit Nulling in Phased Array Antennas 11:30 AM
Peter Vouras, Jean DeGraaf, Naval Research Laboratory

Session WA3a  Information Theoretic Signal Processing
Chair: John Walsh, Drexel University
WA3a-1 Modeling Noisy Feedback in Decentralized Self-Configuring Networks 8:15 AM
Samir Medina Perlaza, Merouane Debbah, Supélec
WA3a-2 Local Failure Localization in Large Sensor Networks 8:40 AM
Romain Couillet, Supélec; Walid Hachem, CNRS-Telecom ParisTech
WA3a-3 Cooperative Radar Techniques: The Two-Step Detector 9:05 AM
Max Scharrenbroich, Michael Zatman, QinetiQ North America
WA3a-4 Studying on Performance Behavior of the Compressive Sensing Measurements for Multiple Sensor System 9:30 AM
Sangjun Park, Hwanchol Jang, Heung-No Lee, Gwangju Institute of Science and Technology

Session WA3b  Compressive Imaging and Detection
Chair: Aleksandar Dogandzic, Iowa State University
WA3b-1 Multi-Static Radar Imaging via Bayesian Shrinkage 10:15 AM
Raghu Raj, U.S. Naval Research Laboratory; Zachary Chance, David Love, Purdue University
WA3b-2 A Mask Iterative Hard Thresholding Algorithm for Sparse Image Reconstruction with Known Object Contour 10:40 AM
Aleksandar Dogandzic, Kun Qiu, Iowa State University
WA3b-3 Sensor Calibration Errors in Compressive Distributed-Aperture Radar Sensing 11:05 AM
Peter Tuuk, Amy Sharma, Georgia Tech Research Institute
WA3b-4 Application of Compressive Sampling and Detection to Spectral Target Signatures 11:30 AM
Lawrence E. Hoff, Hoff Engineering; David Buck, Brian T. Williams, SPAWAR System Center; Edward M. Winter, Technical Research Associates; Miaoli Yu, SAIC

Session WA4a  Cooperation & Relays
Chair: Emiliano Dall’Anese, University of Minnesota
WA4a-1 The Gaussian Two-Way Relay Channel with Wiretapper 8:15 AM
Sungsoo Kim, Samsung Electronics; Won-Yong Shin, Harvard University
WA4a-2 On-Demand Cooperation with Power Control: Protocol and Experimental Results 8:40 AM
Christopher Hunter, Myuran Kanga, Lin Zhong, Ashutosh Sabharwal, Rice University
WA4a-3 A Practical Physical-Layer Network Coding Scheme for the Uplink of the Two-Way Relay Channel 9:05 AM
Stephan Pfletschinger, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)
WA4a-4 Empowering Full-Duplex Communication by Exploiting Directional Diversity 9:30 AM
Evan Everett, Melissa Duarte, Rice University; Chris Dick, Xilinx, Inc.; Ashutosh Sabharwal, Rice University

Session WA4b  Multiuser Information Theory
Chair: Aylin Yener, Pennsylvania State University
WA4b-1 Intrinsic Multicast Region of Broadcast Channel 10:15 AM
Mohammad (Amir) Khojastepour, NEC Laboratories America, Inc; Alireza Keshavarz-haddad, Shiraz University
WA4b-2 On the Gaussian Z-Interference Channel with Processing Energy Cost 10:40 AM
Xi Liu, Elza Erkip, Polytechnic Institute of New York University
WA4b-3 On the Sum Capacity of the Y-Channel 11:05 AM
Anas Chaaban, Aydin Sezgin, University of Ulm; Amir Salman Avestimehr, Cornell University
WA4b-4 Interference Channels with Source Cooperation in the Strong Cooperation Regime: Symmetric Capacity to within 2 bits/s/Hz with Dirty Paper Coding 11:30 AM
Shuang (Echo) Yang, Daniela Tuninetti, University of Illinois, Chicago
Session WA5a  Signal Theory and Image Representation
Chair: P. P. Vaidyanathan, California Institute of Technology

WA5a-1  Theory and Design of Unequal Order Analysis and Synthesis Filterbanks
Asha Vijayakumar, Anamitra Makur, Nanyang Technological University

WA5a-2  Learning Dictionaries for Local Sparse Coding in Image Classification
Jayaraman J. Thiagarajan, Andreas Spanias, Arizona State University

WA5a-3  Designing Thin Wavelet Filters
Youngmi Hur, Fang Zheng, The Johns Hopkins University

WA5a-4  Estimation of Signal Subspace-Constrained Inputs to Linear Systems
Alex Fink, Andreas Spanias, Arizona State University

Session WA5b  Biometrics
Chair: Marios Savvides Savvides, Carnegie Mellon University

WA5b-1  High Resolution Face Log from Surveillance Video
Thang Ba Dinh, Jongmoo Choi, Gérard Medioni, University of Southern California

WA5b-2  Quality Driven Face Recognition System for Surveillance Cameras
Saad Bedros, Yadhunandan U.S., Gurumurthy Swaminathan, Honeywell

WA5b-3  Improved Iris Segmentation Based on Local Texture Statistics
Vishnu Naresh Boddeti, B.V.K. Vijaya Kumar, Krishnan Ramkumar, Carnegie Mellon University

WA5b-4  Radio Frequency Cardiopulmonary Waveform for Subject Identification
Marc O Griofa, Noninvasive Medical Technologies, Incorporated; Rebecca Blue, Orlando Health; Aaron Jaech, Siying Hu, Marios Savvides, Carnegie Mellon University

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Chair: Christ Richmond, MIT

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Qilin Zhang, Habti Abeida, Ming Xue, William Rowe, Jian Li, University of Florida

WA6a-2  Performance of Sample Covariance Based Capon Bearing Only Tracker
Christ Richmond, Robert Geddes, MIT Lincoln Laboratory; Ramis Movassagh, Alan Edelman, Massachusetts Institute of Technology

Session WA6b  Source Separation
Chair: Wing-Kin Ma, Chinese University of Hong Kong

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Siouar Bensaid, Dirk Slock, Eurecom

WA6b-2  Insights into the Frequency Domain ICA/IVA Approach
Wenyi Zhang, UBS; Alireza Masnadi-Shirazi, Bhaskar D. Rao, University of California, San Diego

WA6b-3  Blind Identification of Mixtures of Quasi-Stationary Sources Using a Khatri-Rao Subspace Approach
Ka-Kit Lee, Wing-Kin Ma, Chinese University of Hong Kong; Yi-Lin Chiou, Tsung-Han Chan, Chong-Yung Chi, National Tsing Hua University

WA6b-4  Improved Subspace Intersection Based on Signed URV Decomposition
Mu Zhou, Alle-Jan van der Veen, Delft University of Technology

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Chair: Jorn Jannick, Lund University, Sweden

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Guohui Wang, Michael Wu, Yang Sun, Joseph R. Cavallaro, Rice University

WA7a-2  A High-Performance Area-Efficient AES Encipher on a Many-Core Platform
Bin Liu, Bevan Baas, University of California, Davis

WA7a-3  Parallel Implementation of the Wideband Coherent Signal-Subspace (CSS) Based DOA Algorithm on Single core, Multicore and GPU
Mohammad Wadood Majid, Mohsin Jamali, University of Toledo

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Zhibin Xiao, University of California, Davis; Stephen Le, Intel Corporation; Bevan Baas, University of California, Davis
Session WA7b  Reconfigurable Architectures, Algorithms and Applications

Chair: Kenneth Jenkins, Pennsylvania State University

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Shen-Fu Hsiao, Cheng-Han Lee, Yen-Chun Cheng, National Sun Yat-sen University; Andrew Lee, University of California, Berkeley

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Scott Miller, Dian Ross, Mihai Sima, Michael McGuire, University of Victoria

WA7b-3  A Reduced Routing Network Architecture for Partial Parallel LDPC Decoders
Houshmand Shirani-Mehr, University of California, Davis; Tinoosh Mohsenin, University of Maryland, Baltimore County; Bevan Baas, University of California, Davis

WA7b-4  Automatic FFT Code Generation for FPGA with High Flexibility and Human Readability
John O’Sullivan, Institute for System Level Integration / Steepest Ascent Ltd.; Stephan Weiss, University of Strathclyde; Garrey Rice, Steepest Ascent Ltd.
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