

**FORTY-FIFTH  
ASILOMAR CONFERENCE ON  
SIGNALS, SYSTEMS AND  
COMPUTERS**

**SS&C Conf. Corp.  
P.O. Box 8236  
Monterey, CA 93943**



**November 6–9, 2011**  
Asilomar Hotel and  
Conference Grounds

**Technical Co-sponsor**

*IEEE*  
*Signal Processing Society*  ®

**FORTY-FIFTH  
ASILOMAR CONFERENCE ON  
SIGNALS, SYSTEMS & COMPUTERS**

**Organized in cooperation with**

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**Welcome from the General Chairman**

Dr. Jim Schroeder, Harris Corporation, Melbourne, Florida

I am very pleased to welcome you to the 45<sup>th</sup> Asilomar Conference on Signals, Systems and Computers. I personally attended my first Asilomar Conference in 1988, October 31<sup>st</sup> to November 2<sup>nd</sup>; the Asilomar State Park's beautiful and relaxing venue, complemented by the intellectual stimulation provided by the conference attendees, has kept me returning year after year.

A continuing strength of Asilomar is the wide cross section of researchers who come from traditional academic institutions, including esteemed faculty and their graduate students, Federal R&D Laboratories and Corporate Research centers, enables an unmatched synergy unique to Asilomar.

This year's Sydney Parker Memorial Lecture will be presented by Prof. Jose Principe, University of Florida, Gainesville, titled, "Machine Learning in Signal Processing." Jose Principe is a Distinguished Professor of Electrical and Computer Engineering and Biomedical Engineering at the University of Florida where he teaches advanced signal processing, machine learning and artificial neural networks (ANNs) modeling. He is the BellSouth Professor and the Founder and Director of the University of Florida Computational NeuroEngineering Laboratory (CNEL) [www.cnel.ufl.edu](http://www.cnel.ufl.edu). His primary area of interest is the processing of time varying signals with adaptive neural models. The CNEL Lab has been studying signal and pattern recognition principles based on information theoretic criteria (entropy and mutual information).

The popular and successful student paper contest will be chaired this year by Dr. Oscar Gustafsson, Linkoping University, Sweden. The student finalists have been selected to present their papers to the panel judges Sunday afternoon. The top three paper winners will receive their awards at the beginning of the conference plenary session.

It is a privilege and honor to serve as this year's General Chair. I personally invite you to enjoy Asilomar to its fullest from the Plenary Talk, Student Poster Sessions, oral and poster sessions and colorful sunsets on the beach.

Jim Schroeder, Harris Corporation, May 2011

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## 2011 Asilomar Conference Session Schedule

### Sunday Afternoon, November 6, 2011

2:00 - 7:00 PM Registration — Main Lodge  
4:00 - 6:30 PM Student Paper Contest — Merrill Hall  
7:00 - 9:00 PM Welcoming Dessert Reception — Merrill Hall

### Monday Morning, November 7, 2011

7:30 - 9:00 AM Breakfast – Crocker Dining Hall  
8:00 AM - 6:00 PM Registration  
8:15 - 9:45 AM MA 1a — Conference Welcome and Plenary Session  
9:45 - 10:15 AM Coffee Social

#### 10:15 AM - 12:00 PM MORNING SESSIONS

MA1b Energy Efficient MIMO Communication  
MA2b Delay Sensitive Communication  
MA3b Graphical Models in Signal Processing I  
MA4b In-network Computation  
MA5b Medical Imaging  
MA6b Collaborative Beamforming  
MA7b Multivariate and Multimodal Analysis of Brain Signals  
MA8b1 Computer Arithmetic I (Poster)  
MA8b2 Physical Layer Security I (Poster)  
MA8b3 Physical Layer Security II (Poster)  
MA8b4 Image, Video Coding and Analysis (Poster)  
MA8b5 Adaptive Systems and Spectral Estimation (Poster)

12:00 - 1:00 PM Lunch – Crocker Dining Hall

### Monday Afternoon, November 7, 2011

#### 1:30 - 5:10 PM AFTERNOON SESSIONS

MP1a Interference-Alignment Techniques for Multi-Antenna Systems  
MP1b Interference Alignment for the MIMO Interference Channel  
MP2a Energy-Harvesting Wireless Networks  
MP2b Coding and Decoding  
MP3a Graphical Models in Signal Processing II  
MP3b Signal Processing and Learning in Complex Systems  
MP4a Compressive Sensing Applications in Networking  
MP4b Resource Allocation in Wireless Networks  
MP5a Advances in Bioimaging and Analysis  
MP5b Image/Video Restoration, Enhancement and Evaluation  
MP6a Tensor-based Array Signal Processing  
MP6b Compressive Sensing for Array Processing  
MP7a Processing of Physiological Signals  
MP7b Model-based Design Optimization  
MP8a1 Adaptive Filtering (Poster)  
MP8a2 Speech Processing, Recognition and Coding (Poster)  
MP8a3 Parameter Estimation (Poster)  
MP8a4 DSP Algorithms and Architectures (Poster)  
MP8a5 Novel DSP Architectures (Poster)

### Monday Evening, November 7, 2011

6:00 - 9:30 PM Conference Cocktail/Social — Merrill Hall  
The Cocktail/Social takes the place of Monday's dinner. No charge for conference attendees or their guests.

## 2011 Asilomar Conference Session Schedule

(continued)

### Tuesday Morning, November 8, 2011

7:30 - 9:00 AM Breakfast — Crocker Dining Hall  
8:00 AM - 5:00 PM Registration

#### 8:15 - 12:00 PM MORNING SESSIONS

TA1a Random Matrices in Signal Processing and MIMO Communications  
TA1b Biosignal Estimation and Classification  
TA2a Network Coding  
TA2b Relaying through Frequency Selective Channels  
TA3a Advances in Compressive Sensing  
TA3b Sparse Reconstruction  
TA4a Next Generation Network Science  
TA4b Bio-inspired Models and Algorithms for Information Processing in Complex Networks  
TA5a Image and Video Retrieval  
TA5b Sparse Representations with Applications to Images and Video  
TA6a Waveform Design and MIMO Radar  
TA6b Network Beamforming and Relaying via Multiple Antennas  
TA7 Architectures for Wireless Communications  
TA8a1 Signal Processing Methods for Representation, Analysis, and Control of Biological Systems (Poster)  
TA8a2 Receiver Design and Optimization (Poster)  
TA8a3 Communications System Design (Poster)  
TA8a4 Applications of Array Processing (Poster)  
TA8b1 Multiple Antennas in Multi-User Systems and Networks (Poster)  
TA8b2 Cooperative and Cognitive Transmission in Multi-Antenna Systems (Poster)  
TA8b3 Adaptive Sensing (Poster)

12:00 - 1:00 PM Lunch – Crocker Dining Hall

### Tuesday Afternoon, November 8, 2011

#### 1:30 - 5:10 PM AFTERNOON SESSIONS

TP1a Resource Allocation in Multi-Antenna Systems  
TP1b Interference Management  
TP2a Cognitive Radio I  
TP2b Cognitive Radio II  
TP3a Multi-dimensional Compressive Inference  
TP3b Advances in Adaptive and Distributed Filtering  
TP4a Communication Management in Robot Networks  
TP4b Distributed Storage Systems  
TP5 Compressive Sensing for Radar  
TP6a Source Localization  
TP6b Array Processing for Satellite Communications  
TP7a Adaptive and Evolvable Architectures  
TP7b Computer Arithmetic II  
TP8a1 Techniques for Space-Time Signal Processing (Poster)  
TP8a2 Statistical and Array Signal Processing for Biomedical Applications (Poster)  
TP8a3 Sensor Networks (Poster)  
TP8a4 Wireless Networks (Poster)  
TP8b1 Machine-Learning-Based Statistical Signal Processing (Poster)  
TP8b2 Network Information Theory (Poster)

**Tuesday Evening Open Evening — Enjoy the Monterey Peninsula**

## 2011 Asilomar Conference Session Schedule (continued)

### Wednesday Morning, November 9, 2011

- 7:30 - 9:00 AM Breakfast — Crocker Dining Hall
- 8:00 AM - 12:00 PM Registration — Copyright forms must be turned in before the registration closes at 12:00 noon.
- 8:15 AM - 12:00 PM MORNING SESSIONS
- WA1a Channel Estimation for Multi-Antenna Systems
- WA1b MIMO Radar and SAR
- WA2a OFDM
- WA2b Beamforming
- WA3a Information Theoretic Signal Processing
- WA3b Compressive Imaging and Detection
- WA4a Cooperation & Relays
- WA4b Multiuser Information Theory
- WA5a Signal Theory and Image Representation
- WA5b Biometrics
- WA6a Computational Aspects in Array Processing
- WA6b Source Separation
- WA7a Multi-core/GPU Implementation
- WA7b Reconfigurable Architectures, Algorithms and Applications
- 12:00 - 1:00 PM Lunch — Meal tickets may be purchased at registration desk. This meal is not included in the registration.

## Student Paper Contest

Merrill Hall - Sunday, November 6, 2011, 4:30 - 6:30 PM

*“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

*“Correcting Erasure Bursts with Minimum Decoding Delay”*

**Zhi Li**, Stanford University; Ashish Khisti, University of Toronto; Bernd Girod, Stanford University

*“Asymptotic Analysis of Double-Scattering Channels”*

**Jakob Hoydis**, Romain Couillet, and Merouane Debbah, SUPELEC

*“Mutual Information Distribution of Interference-Limited MIMO: A Joint Coulomb Fluid and Painleve 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

*“MSE-Optimal Power Allocation in Wireless Sensor Networks for Field Reconstruction Based on Shift-Invariant Spaces”*

**Günter Reise**, Vienna University of Technology; Javier Matamoros and Carles Antón-Haro, CTTC; Gerald Matz, Vienna University of Technology

*“On the Limits of Sequential Testing in High Dimensions”*

**Matthew Malloy** and Robert Nowak, University of Wisconsin

*“Non-Uniform Linear Arrays for Improved Identifiability in Cumulant Based DOA Estimation”*

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

*“Maximum Likelihood Time Delay Estimation for CDMA Direct Spread Multipath Transmissions Using Importance Sampling”*

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

*“Haplotype Inference Based on Sparse Dictionary Selection”*

**G.H. Jajamovich** and X. Wang, Columbia University

*“A High-Performance Area-Efficient AES Encipher on a Many-core Platform”*

**Bin Liu** and Bevan Baas, University of California, Davis

*“Learning Dictionaries for Local Sparse Coding in Image Classification”*

**Jayaraman J. Thiagarajan** and Andreas Spanias, Arizona State University

## 2011 Asilomar Conference Session Schedule

Coffee breaks will be at 9:55 AM and 3:10 PM. (Except Monday morning when refreshments will be served outside Merrill Hall from 9:45–10:15 AM)

**Monday, November 7, 2011**

### CONFERENCE WELCOME AND PLENARY SESSION 8:15 – 9:45 AM

1. Welcome from the General Chairperson

**Dr. James Schroeder**

Harris Government Communication Systems

2. Session MA1a Distinguished Lecture for the 2011  
Asilomar Conference

#### **Machine Learning in Signal Processing**

**Prof. Jose C. Principe**

Distinguished Professor of Electrical Engineering  
University of Florida

#### **Abstract**

This talk describes our efforts to go beyond the second order moment assumption still prevalent in optimal signal processing. We show how the second norm of the PDF can be estimated directly from data avoiding an explicit PDF estimation step. The link between PDF moments, information theory and Reproducing Kernel Hilbert spaces will be established. Applications to adaptive systems with entropic cost functions will be demonstrated. A generalized correlation function called correntropy will be defined and its applications in signal processing will be outlined. Correntropy leads to new measures of similarity, to a new definition of dependence subspaces and to new tests for causality.

#### **Biography**

**Jose C. Principe** (M'83-SM'90-F'00) is a Distinguished Professor of Electrical and Computer Engineering and Biomedical Engineering at the University of Florida where he teaches advanced signal processing, machine learning and

artificial neural networks (ANNs) modeling. He is BellSouth Professor and the Founder and Director of the University of Florida Computational NeuroEngineering Laboratory (CNEL) [www.cnel.ufl.edu](http://www.cnel.ufl.edu). His primary area of interest is processing of time varying signals with adaptive neural models. The CNEL Lab has been studying signal and pattern recognition principles based on information theoretic criteria (entropy and mutual information).

Dr. Principe is an IEEE Fellow. He was the past Chair of the Technical Committee on Neural Networks of the IEEE Signal Processing Society, Past-President of the International Neural Network Society, and Past-Editor in Chief of the IEEE Transactions on Biomedical Engineering. He is a member of the Advisory Board of the University of Florida Brain Institute. Dr. Principe has more than 500 publications. He directed 62 Ph.D. dissertations and 65 Master theses. He wrote in 2000 an interactive electronic book entitled “Neural and Adaptive Systems” published by John Wiley and Sons and more recently co-authored several books on “Brain Machine Interface Engineering” Morgan and Claypool, “Information Theoretic Learning”, Springer, and “Kernel Adaptive Filtering”, Wiley.

**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 10:15 AM  
*Omur Ozel, University of Maryland; Jing Yang, Sennur Ulukus, University of Wisconsin-Madison*
- MA1b-2 Throughput and Energy Consumption of a Random Network with Energy Harvesters 10:40 AM  
*Kaibin Huang, Yonsei University*
- MA1b-3 Large-Scale Antenna Systems for Wireless Energy Efficiency 11:05 AM  
*Thomas Marzetta, Bell Laboratories, Alcatel-Lucent*
- MA1b-4 Energy-Efficient Training for Antenna Selection in Time-Varying Channels 11:30 AM  
*Vinod Kristem, Broadcom Corporation; Neelesh B. Mehta, Indian Institute of Science; Andreas Molisch, University of Southern California*

## Session MA2b Delay Sensitive Communication

Chair: *Ashish Khisti, University of Toronto*

- MA2b-1 Speeding Multicast by Acknowledgment Reduction Technique (SMART) 10:15 AM  
*Arman Rezaee, Linda Zeger, Muriel Medard, Massachusetts Institute of Technology*
- MA2b-2 Controlling End-to-End Application Latency for Real-Time Data 10:40 AM  
*Sanjeev Mehrotra, Cheng Huang, Jin Li, Microsoft Research*
- MA2b-3 Correcting Erasure Bursts with Minimum Decoding Delay 11:05 AM  
*Zhi Li, Stanford University; Ashish Khisti, University of Toronto; Bernd Girod, Stanford University*
- MA2b-4 Code Length and Rate Selection for Delay Sensitive Bursty Traffic 11:30 AM  
*Tara Javidi, University of California, San Diego*

## 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 10:15 AM  
*Nima Noorshams, Martin Wainwright, University of California, Berkeley*
- MA3b-2 Reweighted Linear Programming for Inference and Decoding 10:40 AM  
*Amin Khajehnejad, Alexandros Dimakis, Babak Hassibi, University of Southern California*

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

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

## Session MA4b In-network Computation

Chair: *Oswaldo Simeone, New Jersey Institute of Technology*

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

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

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

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

## 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) 10:15 AM  
*Joshua Trzasko, Armando Manduca, Mayo Clinic*

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

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

- MA5b-4 Multimodal Image Registration by Consistency of Saliency Map 11:30 AM  
*Hiroyuki Takeda, University of Michigan*



## Session MA6b Collaborative Beamforming

Chair: *Sofiene Affes, INRS-EMT, Université du Québec*

- MA6b-1 DSP-Centric Algorithms for Distributed Transmit Beamforming 10:15 AM  
*Upamanyu Madhoo, 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 10:40 AM  
*Mohammed Ahmed, Sergiy Vorobyov, University of Alberta*
- MA6b-3 Testing Zero-Feedback Distributed Beamforming with a Low-Cost SDR Testbed 11:05 AM  
*George Sklivanitis, Aggelos Bletsas, Technical University of Crete*
- MA6b-4 Distributed Cooperative Jamming for Improving Physical Layer Security 11:30 AM  
*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 10:15 AM  
*Fikri Goksu, Nuri F. Ince, University of Minnesota*
- MA7b-2 Identifying Multivariate EEG Synchronization Networks through Multiple Subject Community Detection 10:40 AM  
*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 11:05 AM  
*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 11:30 AM  
*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

10:15 AM - 12:00 PM

- 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*

10:15 AM - 12:00 PM

- 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. Wyrembelski, 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 Wyrembelski, Universitat Munchen; Aydin Sezgin, Ulm University; Holger Boche, Universitat 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 Beleaf 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*

- MA8b5-3 A Comparison of Methods for Estimating Broadband Noise in the Frequency Domain  
*Don Hush, Norma Pawley, Kary Myers, Robert Nemzek, Los Alamos National Laboratory*
- MA8b5-4 An Information Filter for Voice Prompt Suppression  
*John McDonough, Carnegie Mellon University; Kenichi Kumatani, Disney Research; Bhiksha Raj, Carnegie Mellon University; Jill Lehman, Disney Research*
- MA8b5-5 Embedded Track Validation for Tree Search-Based Tracking of Maneuvering Targets  
*Hossein Roufarshbaf, Jill Nelson, George Mason University*
- MA8b5-6 Urban Terrain Multiple Target Tracking Using Probability Hypothesis Density Particle Filtering  
*Meng Zhou, Bhavana Chakraborty, Jun Jason Zhang, Arizona State University*
- MA8b5-7 High-Resolution Non-Parametric Spectral Estimation Using the Hirschman Optimal Transform  
*Guifeng Liu, Victor DeBrunner, Florida State University*
- MA8b5-8 Co-Prime Sampling for System Stabilization with FIR Multi-Rate Controllers  
*P. P. Vaidyanathan, Piya Pal, California Institute of Technology*

### 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 Underlay MIMO Cognitive Radio Network  
*Huiqin Du, Tharm Ratnarajah, Haichuan Zhou, Queen's University Belfast; Ying Chang Liang, Institute for Infocomm Research* 1:30 PM
- MP1a-2 Sum Rate Enhancement by Maximizing SGINR in an Opportunistic Interference Alignment Scheme  
*Seong-Ho (Paul) Hur, University of California, San Diego; Bang-Chul Jung, Gyeongsang National University; Bhaskar D. Rao, University of California, San Diego* 1:55 PM
- MP1a-3 Interference Alignment for Partially Connected Quasi-static MIMO Interference Channel  
*Liangzhong Ruan, Vincent K.N. Lau, Hong Kong University of Science and Technology* 2:20 PM
- MP1a-4 Opportunistic MU-MIMO based on Semi-Blind Interference Alignment  
*Haralabos Papadopoulos, Sayan Mukherjee, Sean Ramprasad, DoCoMo USA Labs* 2:45 PM

### 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  
*Meisam Razaviyayn, Gennady Lyubeznik, Zhi-Quan Luo, University of Minnesota* 3:30 PM
- MP1b-2 MIMO Interference Alignment in Random Access Networks  
*Behrang Nosrat-Makouei, Radha Krishna Ganti, Jeffrey G. Andrews, Robert W. Heath, Jr., University of Texas at Austin* 3:55 PM
- MP1b-3 The Noisy MIMO Interference Channel with Distributed CSI Acquisition and Filter Computation  
*Francesco Negro, Eurecom; Umer Salim, Irfan Ghauri, Intel Corporation; Dirk Slock, Eurecom* 4:20 PM
- MP1b-4 Secure Space-Time Block Coding via Artificial Noise Alignment  
*S. Ali A. Fakoorian, A. Lee Swindlehurst, University of California, Irvine* 4:45 PM

### Session MP2a Energy-Harvesting Wireless Networks

Chair: *Oswaldo Simeone, NJIT*

- MP2a-1 AWGN Channel under Time-Varying Amplitude Constraints with Causal Information at the Transmitter  
*Omur Ozel, Sennur Ulukus, University of Maryland* 1:30 PM
- MP2a-2 Optimal Power Control for Energy Harvesting Transmitters in an Interference Channel  
*Kaya Tutuncuoglu, Aylin Yener, Penn State University* 1:55 PM
- MP2a-3 Queuing Theoretic and Information Theoretic Capacity of Energy Harvesting Sensor Nodes  
*Vinod Sharma, Indian Institute of Science; Ramachandran Rajesh, Centre for Airborne Systems* 2:20 PM
- MP2a-4 Queue and Power Control for Rechargeable Sensor Networks under the SINR Interference Model  
*Zhoujia Mao, Can Emre Koksal, Ness B. Shroff, Ohio State University* 2:45 PM

### Session MP2b Coding and Decoding

Chair: *Aydin Sezgin, University of Ulm*

- MP2b-1 Complexity Analysis of Interior Point Methods for LP Decoding  
*Yifan Sun, Lara Dolecek, University of California, Los Angeles* 3:30 PM
- MP2b-2 Rate Adaptive Non-Binary LDPC Codes with Low Encoding Complexity  
*Nicholas Chang, MIT Lincoln Laboratory* 3:55 PM

MP2b-3 Achieving Flexibility in LDPC Code Design by Absorbing Set Elimination 4:20 PM  
*Jiajun Zhang, Jiadong Wang, University of California, Los Angeles; Shayan Garani Srinivasa, Western Digital Corporation; Lara Dolecek, University of California, Los Angeles*

MP2b-4 Decoding by Detection: Soft-Input/Soft-Output Error Correction Decoders for Arbitrary Binary Linear Codes 4:45 PM  
*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 Massachusetts Amherst; Umut Acar, MPI-SWS; 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 1:55 PM  
*Morteza Mardani, Gonzalo Mateos, Georgios B. Giannakis, University of Minnesota*

MP4a-3 Random Access Compressed Sensing: An Integrated Architecture for Energy-Efficient Networking 2:20 PM  
*Fatemeh Fazel, Northeastern University; Maryam Fazel, University of Washington; Milica Stojanovic, Northeastern University*

MP4a-4 Recent Results on Sparse Recovery over Graphs 2:45 PM  
*Weiyu Xu, Meng Wang, Enrique Mallada, Ao Kevin Tang, Cornell University*

### Session MP4b Resource Allocation in Wireless Networks

Chair: *Rahul Uргаonkar, University of Southern California*

MP4b-1 MSE-Optimal Power Allocation in Wireless Sensor Networks for Field Reconstruction Based on Shift-Invariant Spaces 3:30 PM  
*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 3:55 PM  
*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 4:20 PM  
*A. Sridharan, Emre Koksal, Ohio State University*

MP4b-4 Radio Resource Management in Heterogeneous Deployments: a System Level Perspective 4:45 PM  
*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 1:30 PM  
*Jing Fan, Xiaofeng Xia, Stephen Wong, Methodist Hospital Research Institute*
- MP5a-2 Flexible and Efficient Multi-Region Segmentation Using Active Contours 1:55 PM  
*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 2:20 PM  
*Ge Yang, Carnegie Mellon University*
- MP5a-4 Statistical Colocalization of Molecular Species in Biological Imaging 2:45 PM  
*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 3:30 PM  
*Vania V. Estrela, Universidade Federal Fluminense; Aggelos K. Katsaggelos, Northwestern University*
- MP5b-2 Equivalence of Plenoptic Cameras 3:55 PM  
*Todor Georgiev, Adobe; Sergio Goma, Qualcomm Incorporated; Andrew Lumsdaine, Adobe*
- MP5b-3 Referenceless Image Spatial Quality Evaluator 4:20 PM  
*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 4:45 PM  
*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 1:30 PM  
*Morten Mørup, Technical University of Denmark; Kristoffer Hougaard Madsen, Hvidovre Hospital; Lars Kai Hansen, Technical University of Denmark*

- MP6a-2 Canonical Decomposition of Non-Negative arrays 1:55 PM  
*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 2:20 PM  
*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 2:45 PM  
*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 3:30 PM  
*Albert Fannjiang, University of California, Davis*
- MP6b-2 Some Theoretical Results for Compressive Radar 3:55 PM  
*Thomas Strohmer, University of California, Davis; Benjamin Friedlander, University of California, Santa Cruz*
- MP6b-3 Sensitivity Considerations in Compressed Sensing 4:20 PM  
*Louis Scharf, Ali Pezeshki, Colorado State University; Yuejie Chi, Princeton University*
- MP6b-4 Coherence, Compressive Sensing and Random Sensor Arrays 4:45 PM  
*Lawrence Carin, Duke University*

## Session MP7a Processing of Physiological Signals

Co-Chairs: *Nuri Firat Ince, University of Minnesota and Morten Mørup, Technical University of Denmark*

- MP7a-1 Does the Morphology of High-Frequency (100-500 Hz) Brain Oscillations Change During Epileptic Seizures? 1:30 PM  
*Allison Pearce, Drausin Wulsin, Brian Litt, Justin Blanco, University of Pennsylvania*
- MP7a-2 Early Investigations into Subjective Audio Quality Assessment Using Brainwave Responses 1:55 PM  
*Charles Creusere, Srikant Siddenki, New Mexico State University; Joe Hardin, Colorado State University; Jim Kroger, New Mexico State University*

- MP7a-3    Electrocardiogram Signal Modeling and            2:20 PM  
 Estimation Using the Interacting Multiple Model  
 Particle Filtering  
*Shwetha Edla, Narayan Kovvali, Antonia Papandreou-  
 Suppappola, Arizona State University*
- MP7a-4    A Novel Approach for Simulation,                    2:45 PM  
 Measurement and Representation of Surface EMG  
 (sEMG) Signals  
*Anvith Mahabalagiri, Khadeer Ahmed, Fred Schlereth,  
 Syracuse University*

### Session MP7b    Model-based Design Optimization

Chair: *Sankalita Saha, NASA, USA*

- MP7b-1    Distributed Energy and Environment Sensing    3:30 PM  
 for Smart Building Management  
*Chen Xia, Hao Liu, Xiangrong Zhou, University of Hawaii*
- MP7b-2    FPGA-Accelerator System for Computing        3:55 PM  
 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    4:20 PM  
 Applications  
*Jorn W. Janneck, Lund University*
- MP7b-4    Operation Set Customization in Retargetable    4:45 PM  
 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*

- MP8a1-5    Error-Based “Gear-Shifting” for a Generalized LMS  
 Algorithm  
*John J. Shynk, University of California, Santa Barbara*
- MP8a1-6    A Variable Step-Size GMDF and its Performance  
 Analysis  
*Hsu-Chang Huang, Junghsi Lee, Yuan-Ze University*
- MP8a1-7    Acoustic Feedback and Echo Cancellation Strategies for  
 Multiple-Microphone and Single-Loudspeaker Systems  
*Meng Guo, Thomas Bo Elmedyby, Oticon A/S; Søren Holdt  
 Jensen, Aalborg University; Jesper Jensen, Oticon A/S*
- MP8a1-8    Comparison of Two Techniques for Linear-Phase  
 Adaptive Band-Stop Filters  
*Michael Soderstrand, University of California (Retired)*

### 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 Pitris, 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  
*Anthony Bartos, Welkin Associates, Ltd.; Douglas Nelson,  
 U.S. Department of Defense*

### 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*

MP8a3-2 Non-Uniform Linear Arrays for Improved Identifiability in Cumulant Based DOA Estimation  
*Piya Pal, P. P. Vaidyanathan, California Institute of Technology*

MP8a3-3 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*

MP8a3-4 Maximum Likelihood Time Delay Estimation for CDMA Direct-Spread Multipath Transmissions Using Importance Sampling  
*Ahmed Masmoudi, Faouzi Bellili, Sofiene Affes, INRS-EMT*

MP8a3-5 Particle Filter Based DOA Estimation for Multiple Source Tracking (MUST)  
*Thomas Wiese, Technical University Munich; Heiko Claussen, Justinian Rosca, Siemens Corporation, Corporate Research*

MP8a3-6 Direction-of-Arrival Estimation Using Distributed Body Area Networks: Error & Refraction Analysis  
*Kaveh Ghaboosi, Pranay Pratap Swar, Kaveh Pahlavan, Worcester Polytechnic Institute*

MP8a3-7 Bayesian Estimation of a Subspace  
*Olivier Besson, University of Toulouse-ISAIE; Nicolas Dobigeon, Jean-Yves Tournet, University of Toulouse-IRIT/ENSEIHT*

MP8a3-8 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

MP8a4-1 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*

MP8a4-2 Block Circular and Hyperbolic Transformations for the Block Fast Array RLS Algorithm  
*Roger West, Todd Moon, Jacob (Jake) Gunther, Utah State University*

MP8a4-3 The Polyphase Random Demodulator for Wideband Compressive Sensing  
*J.P. Slavinsky, Jason Laska, Richard Baraniuk, Rice University*

MP8a4-4 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*

MP8a4-5 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

MP8a5-1 In-Service Reconfiguration of Signal Processing Components  
*Gordon Brebner, Christopher Neely, Shay Seng, Xilinx, Inc.*

MP8a5-2 Rethinking Computation Using FPGA Based Accelerators for Large Applications  
*Dennis Allison, Michael J Flynn, Oskar Mencer, Maxeler Technologies*

MP8a5-3 Versatile FPGA DSP Blocks with Carry-Save Arithmetic Support  
*Hadi Parandeh Afshar, Paolo Ienne, École Polytechnique Fédérale de Lausanne (EPFL)*

MP8a5-4 Scalable Acceleration of High-Performance, Fourier-Domain Optical Coherence Tomography  
*Lesley Shannon, Simon Fraser University*

MP8a5-5 Fine-Grain Reconfigurable Functional Unit for Embedded Processors  
*Gian Carlo Cardarilli, Luca Di Nunzio, Rocco Fazzolari, Marco Re, University of Rome Tor Vergata*

MP8a5-6 Increasing Productivity of Reconfigurable Computing for Signal Processing  
*Wayne Luk, Imperial College London*

MP8a5-7 Synchronous and Asynchronous Computations with Molecular Reactions  
*Hua Jiang, Marc D. Riedel, Keshab K. Parh Parhi, University of Minnesota*

MP8a5-8 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*

TA1a-1 Beyond Eckart-Young-Mirsky: Exploiting Random Matrix Theory to Improve Subspace Approximation  
*Raj Rao Nadakuditi, University of Michigan* 8:15 AM

TA1a-2 Beyond IID Gaussian Matrices in Compressed Sensing 8:40 AM  
*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 Coupled Fluid and Painlevel Based Approach 9:05 AM  
*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 9:30 AM  
*Marco Chiani, University of Bologna; Andrea Conti, University of Ferrara; Matteo Mazzotti, Enrico Paolini, University of Bologna; Alberto Zanella, WiLab/IEIT-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 10:15 AM  
*Alexander Singh Alvarado, Jose Principe, University of Florida*

TA1b-2 Using Physiological Signals to Predict Apnea in Preterm Infants 10:40 AM  
*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 11:05 AM  
*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 11:30 AM  
*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 8:15 AM  
*Syed Jafar, University of California, Irvine*

TA2a-2 Network Coding for Data Replication over Wireless Networks 8:40 AM  
*Lorenzo Keller, Christina Fragouli, École Polytechnique Fédérale de Lausanne (EPFL)*

TA2a-3 A Fundamental Approach to Securing Data in the Cloud from Adversarial Attacks 9:05 AM  
*Salim El Rouayheb, Sameer Pawar, Kannan Ramchandran, University of California, Berkeley*

TA2a-4 Network Coding for Security and Privacy 9:30 AM  
*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 10:15 AM  
*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 10:40 AM  
*Reza Heidarpour, Murat Uysal, University of Waterloo*

TA2b-3 On Relay Selection in Frequency Selective Channels 11:05 AM  
*Qingxiang Deng, Andrew Klein, Worcester Polytechnic Institute*

TA2b-4 Superposition Coding for Cooperative BICM-OFDM Systems 11:30 AM  
*Toufique 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 8:15 AM  
*Jeremy Vila, Philip Schniter, Ohio State University*

TA3a-2 Compressive Sensing under Multiplicative Uncertainties: An Approximate Message Passing Approach 8:40 AM  
*Jason Parker, 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 9:05 AM  
*Davis Kirachaiwanich, Qilian Liang, University of Texas at Arlington*

TA3a-4 Spread Representations 9:30 AM  
*Jean Jacques Fuchs, Université de Rennes I*



### Session TA3b Sparse Reconstruction

Chair: *Geert Leus, Technical University of Delft*

- TA3b-1 New Bounds for Restricted Isometry Constants in Orthogonal Multi Matching Pursuit 10:15 AM  
*Jian Wang, Byonghyo Shim, Korea University*
- TA3b-2 Cyclic Greedy Algorithms for Recovering Compressively Sampled Sparse Signals 10:40 AM  
*Bob Sturm, Mads Christensen, Aalborg University; Rémi Gribonval, INRIA*
- TA3b-3 Greedy Sparsity-Constrained Optimization 11:05 AM  
*Sohail Bahmani, Carnegie Mellon University; Petros Boufounos, Mitsubishi Electric Research Labs; Bhiksha Raj, Carnegie Mellon University*
- TA3b-4 Power-Iterative Strategy for lp-l2 Optimization for Compressive Sensing: Towards Global Solution 11:30 AM  
*Jie Yan, Wu-Sheng Lu, University of Victoria*

### 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 8:15 AM  
*Miroslav Pajic, University of Pennsylvania; Shreyas Sundaram, University of Waterloo; George Pappas, Rahul Mangharam, University of Pennsylvania*
- TA4a-2 A Contrasting Look at Network Formation Models and Their Application to the Minimum Spanning Tree 8:40 AM  
*David Alderson, Gerald Brown, Naval Postgraduate School; D.B. McPherson, U.S. Navy*
- TA4a-3 The Role of Local Structural Information in Viral Information Spreading 9:05 AM  
*Victor Preciado, Ali Jadbabaie, University of Pennsylvania*
- TA4a-4 Learning, Memory and the Role of Neural Network Architecture 9:30 AM  
*Ann Hermundstad, Kevin Brown, Danielle Bassett, Jean Carlson, University of California, Santa Barbara*

### 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 10:15 AM  
*Andrea Rueetschi, Anna Scaglione, University of California, Davis*

- TA4b-2 On the Effects of Topology and Node Distribution on Learning over Complex Adaptive Networks 10:40 AM  
*Sheng-Yuan Tu, Ali H. Sayed, University of California, Los Angeles*

- TA4b-3 Discrete-Time Opinion Dynamics 11:05 AM  
*Seyed Rasoul Etesami, Angelia Nedic, University of Illinois at Urbana-Champaign*

- TA4b-4 Gossiping Information Dissemination Through Distributed Femtocell Caching 11:30 AM  
*Alexandros Dimakis, University of Southern California*

### Session TA5a Image and Video Retrieval

Chair: *Ramakrishna Vedantham, Nokia Research*

- TA5a-1 Mobile Visual Search Using Image and Text Features 8:15 AM  
*Sam Tsai, Huizhong Chen, David Chen, Stanford University; Ramakrishna Vedantham, Radek Grzeszczuk, Nokia; Bernd Girod, Stanford University*

- TA5a-2 A Compact Index for Large-Scale Mobile Visual Search 8:40 AM  
*David Chen, Sam Tsai, Vijay Chandrasekhar, Gabriel Takacs, Huizhong Chen, Stanford University; Ramakrishna Vedantham, Radek Grzeszczuk, Nokia Research Center; Bernd Girod, Stanford University*

- TA5a-3 Multiple-Channel Compact Visual Descriptor with Adaptive Channel Learning 9:05 AM  
*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*

- TA5a-4 Efficient Re-Ranking in Vocabulary Tree-Based Image Retrieval 9:30 AM  
*Xiaoyu Wang, University of Missouri; Ming Yang, Kai Yu, NEC Laboratories America, Inc.*

### 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 10:15 AM  
*Pedro Forero, Georgios Giannakis, University of Minnesota*

- TA5b-2 Architectures for Compressive Sampling of Correlated Signals 10:40 AM  
*Ali Ahmed, Justin Romberg, Georgia Institute of Technology*

- TA5b-3 Compressed-Sensing Recovery of Images and Video Using Multi-Hypothesis Predictions 11:05 AM  
*Chen Chen, Eric Tramel, James Fowler, Mississippi State University*

TA5b-4 Sparsity-Based Human Activity Recognition 11:30 AM  
for Mobile Computing Devices  
*Victor Shia, Allen Yang, Ruzena Bajcsy, University of California, Berkeley*

TA5b-5 Sparsity-Based Face Recognition Using 11:55 AM  
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*

TA6a-1 Cluster Allocation Schemes for Target 8:15 AM  
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 8:40 AM  
*Duc Vu, Luzhou Xu, Jian Li, University of Florida*

TA6a-3 Resource Allocation in Widely Distributed 9:05 AM  
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 9:30 AM  
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*

### Session TA6b Network Beamforming and Relaying via Multiple Antennas

Chair: *Sergiy Vorobyov, University of Alberta*

TA6b-1 Collaborative Beamforming in Wireless 10:15 AM  
Sensor Networks  
*Serkan Sayilir, Yung-Hsiang Lu, Dimitrios Peroulis, Y. Charlie Hu, Byunghoo Jung, Purdue University*

TA6b-2 Joint Power Control and Relay Design in 10:40 AM  
Underlay Cognitive Networks with Multiple Transmitter-Receiver Pairs  
*Keyvan Zarifi, Sofiene Affes, INRS-EMT; Ali Ghrayeb, Concordia University*

TA6b-3 Beamforming in MIMO Broadcast Relay 11:05 AM  
Networks with Multiple Antenna Users  
*Godfrey Okeke, Yindi Jing, Witold Krzymien, University of Alberta*

TA6b-4 A Relay Selection Approach to Bi-Directional 11:30 AM  
Collaborative Communications with Imperfect CSI  
*Fadhel Al-Humaidi, Shahram ShahbazPanahi, University of Ontario Institute of Technology*

### Session TA7 Architectures for Wireless Communications

Chair: *Joe Cavallero, Rice University*

TA7-1 An Efficient Architecture for Iterative Soft 8:15 AM  
Reliability-Based Majority-Logic Non-Binary LDPC Decoding  
*Xinmiao Zhang, Fang Cai, Case Western Reserve University*

TA7-2 Architecture Exploration, Development and 8:40 AM  
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 9:05 AM  
Majority-Logic Decoding Algorithm for Non-Binary Low-Density Parity-Check Codes  
*Chenrong Xiong, Zhiyuan Yan, Lehigh University*

TA7-4 LTE Layer 1 Software Design on Multi-Core 9:30 AM  
DSP Architectures  
*Arokia Irudayaraj, Michael Brogioli, Nitin Jain, Umang Garg, Freescale Semiconductor, Inc.*

BREAK 9:55 AM

TA7-5 Efficient FPGA Implementation of a High 10:15 AM  
Throughput Systolic Array QR-Decomposition Algorithm  
*Matthias Abels, Till Wiegand, Steffen Paul, University of Bremen*

TA7-6 Comparison of Performance and 10:40 AM  
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 11:05 AM  
Based Architectures for Polyphase Channelizers  
*Mehmood Awan, Peter Koch, Aalborg University; fred harris, San Diego State University*

TA7-8 Hardware Implementation of Kuiper-Based 11:30 AM  
Modulation Level Classification  
*Paulo Urriza, Eric Rebeiz, Danijela Cabric, University of California, Los Angeles*

### Session TA8a1 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*

8:15 AM - 9:55 AM

TA8a1-1 Exact MSE Performance of the Bayesian MMSE 8:15 AM  
Estimator for Classification Error  
*Lori A. Dalton, Edward R. Dougherty, Texas A&M University*

- TA8a1-2 Misaligned Principal Component Analysis (Mis-PCA) for Gene Expression Time Series Analysis  
*Arnau Tibau-Puig, Alfred Hero, University of Michigan*
- TA8a1-3 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*
- TA8a1-4 Maximum Likelihood Estimation of the Binary Coefficient of Determination  
*Ting Chen, Ulisses Braga-Neto, Texas A&M University*
- TA8a1-5 An MCMC Algorithm for Base Calling in Sequencing-by-Synthesis  
*Ting Wu, Haris Vikalo, University of Texas at Austin*
- TA8a1-6 Relationships Between Genetic Regulatory Network Models  
*Mehmet Umut Caglar, Ranadip Pal, Texas Tech University*
- TA8a1-7 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*
- TA8a1-8 Haplotype Inference Based on Sparse Dictionary Selection  
*Guido Hugo Jajamovich, Xiaodong Wang, Columbia University*
- TA8a1-9 Surface-Constrained 3D Reconstruction in Cryo-EM  
*Andrew C. Barthel, Hemant Tagare, Fred J. Sigworth, Yale University*
- TA8a1-10 Phenotypically Constrained Stationary Control Policies for Gene Regulatory Network Intervention  
*Xiaoning Qian, University of South Florida; Edward Dougherty, Texas A&M University*
- TA8a1-11 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 María Tienda Luna, University of Granada; Yufei Huang, University of Texas at San Antonio*
- TA8a1-12 Dynamical Processes on Networks: A Unified View  
*Garrett Jenkinson, John Goutsias, The Johns Hopkins University*
- TA8a1-13 A Brief Review of Signal Processing Issues in Mass Spectrometry-Based Proteomics Studies  
*Chao Yang, Weichuan Yu, Hong Kong University of Science and Technology*
- TA8a1-14 Fault Detection and Intervention in Biological Feedback Networks  
*Ritwik Layek, Aniruddha Datta, Texas A&M University*
- TA8a1-15 Fast Global Sequence Alignment Algorithm  
*Talal Bonny, Khaled Nabil Salama, King Abdullah University of Science and Technology*

- TA8a1-16 Optimal State Estimation for Boolean Dynamical Systems  
*Ulisses Braga-Neto, Texas A&M University*

## Session TA8a2 Receiver Design and Optimization

Chair: *Lara Dolecek, UCLA*

8:15 AM - 9:55 AM

- TA8a2-1 Incorporating Prior Information into Semi-Definite Relaxation of Quadratic Optimization Problems  
*Jacob (Jake) Gunther, Todd Moon, Utah State University*
- TA8a2-2 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*
- TA8a2-3 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*
- TA8a2-4 Computationally Efficient Design of the MAE Equalizer for Binary Signaling  
*Weiwei Zhou, Jill Nelson, George Mason University; Ananya Sen Gupta, Woods Hole Oceanographic Institution*
- TA8a2-5 Broadband Doppler Compensation: Principles and New Results  
*Thomas Riedl, Andrew Singer, University of Illinois at Urbana-Champaign*
- TA8a2-6 Optimal Pilot Symbol Power Allocation in Multi-Cell Scenario in LTE  
*Michal Simko, Markus Rupp, Vienna University of Technology*
- TA8a2-7 Coherent Demodulation of AIS-GMSK Signals in Co-Channel Interference  
*Douglas Nelson, Joseph Hopkins, U.S. Department of Defense; Anthony Bartos, Welkin Associates, Ltd.*
- TA8a2-8 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*

## Session TA8a3 Communications System Design

Chair: *Marco Chiani, University Bologna*

8:15 AM - 9:55 AM

- TA8a3-1 Spatially-Aware Adaptive Error Correcting Codes for Flash Memory  
*Ryan Gabrys, Lara Dolecek, University of California, Los Angeles*

- TA8a3-2 An SDR Architecture for OFDM Transmission over USRP2 Boards  
*Gilberto Berardinelli, Aalborg University; Per Zetterberg, KTH Royal Institute of Technology; Oscar Tonelli, Andrea F. Cattoni, Troels B. Sørensen, Preben Mogensen, Aalborg University*
- TA8a3-3 Environmental-Aware Heterogeneous Partial Feedback Design in a Multi-User OFDMA System  
*Yichao Huang, Bhaskar D. Rao, University of California, San Diego*
- TA8a3-4 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*
- TA8a3-5 A 512-Point 8-Parallel Pipelined Feedforward FFT for WPAN  
*Tanvir Ahmed, Mario Garrido, Oscar Gustafsson, Linköping University*
- TA8a3-6 On the Convergence of Joint Channel and Mismatch Estimation for Time-Interleaved Data Converters  
*Sandeep Ponnuru, Upamanyu Madhow, University of California, Santa Barbara*
- TA8a3-7 Comparison of Energy- and Spectral-Efficient Design for LTE Downlink Systems  
*Liyang 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*
- TA8a3-8 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*

- TA8a4-5 MIMO Radar Target Measurements  
*Kyle Stewart, Mark Frankford, Joel Johnson, Emre Ertin, Ohio State University*
- TA8a4-6 Efficient Removal of Noise and Interference in Multichannel Quadrupole Resonance  
*Naveed Razzaq Butt, Andreas Jakobsson, Lund University*
- TA8a4-7 Time Reversal Bayesian Ultrasonic Array Imaging for Non-Destructive Testing  
*Foroohar Foroozan, Nasim Moallemi, Shahram ShahbazPanahi, University of Ontario Institute of Technology*
- TA8a4-8 Energy-Efficient MMSE Beamforming and Power Optimization in Multibeam Satellite Systems  
*Gan Zheng, Symeon Chatzinotas, Bjorn Ottersten, SnT, University of Luxembourg*
- TA8a4-9 Equidistributed Sampling Sequences for Spectral Analysis  
*Mustafa Al-Ani, Andrzej Tarczynski, University of Westminster*

## 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*

- TA8b1-7 On Grouped OFDM-IDMA  
*Jian Dang, Southeast University; Liuqing Yang, Colorado State University; Zaichen Zhang, Southeast University*
- TA8b1-8 Coordinated Multi-Cell Beamforming for LTE-Advanced Systems  
*Qixing Wang, Guangyi Liu, China Mobile Research Institute; Shuguang Cui, Texas A&M University*
- TA8b1-9 Linear Transceiver Design for Interfering Broadcast Channel with QoS Constraints  
*Meisam Razaviyayn, Zhi-Quan Luo, University of Minnesota*
- TA8b1-10 Cooperative Feedback for MIMO Interference Channels  
*Kaibin Huang, Yonsei University; Rui Zhang, National University of Singapore*
- TA8b1-11 Eigen-Mode Transmission for Jointly Correlated MIMO Broadcast Channels  
*Xiao Li, Shi Jin, Xiqi Gao, Southeast University*
- TA8b1-12 How Many Degrees of Freedom Can Be Achieved for Mutually Interfering MIMO Broadcast Channels?  
*Hyukjin Chae, Sungyoon Cho, Kaibin Huang, Dongku Kim, Yonsei University*
- TA8b1-13 Distributed Beamforming Based Directional Spectrum Sharing  
*Juan Liu, Wei Chen, Zhigang Cao, Tsinghua University; Ying Jun Zhang, Chinese University of Hong Kong*
- TA8b1-14 Spatially Efficient Distributed Relay Selection for Random Relay Networks  
*Sungrae Cho, Wan Choi, Korea Advanced Institute of Science and Technology; Kaibin Huang, Yonsei University*
- TA8b1-15 Channel State Information Feedback Control for Interference Alignment  
*Linyang Song, Peking University; Zhu Han, University of Houston; Shaohui Sun, Datang Mobile; Bingli Jiao, Peking University*
- TA8b1-16 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 Diel, DoCoMo Communications Laboratories Europe GmbH*

- TA8b2-2 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*
- TA8b2-3 Interference Management in Femtocell Networks with Hybrid-ARQ and Interference Cancellation  
*Tania Villa, Eurecom; Ruben Merz, Deutsche Telekom Laboratories; Raymond Knopp, Eurecom*
- TA8b2-4 Achievable Degrees of Freedom of the K-User Interference Channel with Partial Cooperation  
*Ahmed Naguib, Khaled Elsayed, Cairo University; Mohammed Nafte, Nile University*
- TA8b2-5 Multicell Downlink Weighted Sum-Rate Maximization: A Distributed Approach  
*Pradeep Chaturanga Weeraddana, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications*
- TA8b2-6 Decentralized Multi-Cell Beamforming Coordination for Multiuser MISO Systems  
*Harri Pennanen, Antti Tölli, Matti Latva-aho, University of Oulu*
- TA8b2-7 Feedback Reduction by Thresholding in Multi-User Broadcast Channels: Design and Limits  
*Matthew Pugh, Bhaskar D. Rao, University of California, San Diego*
- TA8b2-8 Full-Duplex Bidirectional MIMO: Achievable Rates under Limited Dynamic Range  
*Brian Day, Ohio State University; Daniel Bliss, Adam Margetts, MIT Lincoln Laboratory; Philip Schnüer, 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*

TA8b3-7 On Primary Side Information in Cognitive Radio Networks  
*May Moussa, Mohammed Nafie, Nile University; Hesham ElGamal, Ohio State; Ayman Naguib, Qualcomm Incorporated*

TA8b3-8 Further Results on Adaptive Sequential Detection with One-Sided Stopping and Deadline  
*Wenyi Zhang, University of Science and Technology of China; Ahmed Sadek, Stephen Shellhammer, Cong Shen, Qualcomm Incorporated*

### 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  
*Taneli 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 Tadrus, 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 Multi-Linear Inverse Problems 1:55 PM  
*Hatim Alqadah, Howard Fan, University of Cincinnati*
- TP3a-3 Optimized Measurements for Kernel Compressive Sensing 2:20 PM  
*Karthikeyan Natesan Ramamurthy, Andreas Spanias, Arizona State University*
- TP3a-4 Efficient Message Passing-Based Inference in the Multiple Measurement Vector Problem 2:45 PM  
*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 Application to Distributed Particle Filtering with Reduced Communications and Latency 3:55 PM  
*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 Quaternion-Valued Adaptive Filters 4:20 PM  
*Clive Cheong Took, Cyrus Jahanchahi, Danilo Mandic, Imperial College London*
- TP3b-4 Joint Conditional and Steady-State Probability Densities of Weight Deviations for Proportionate-Type LMS Algorithms 4:45 PM  
*Kevin Wagner, Naval Research Laboratory; Miloš Doroslovacki, George Washington University*
- TP3b-5 Fast and Superfast Computations in Structured Equalization Scenarios 5:10 PM  
*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 Motion Planning of a Robotic Operation in Fading Environments 1:30 PM  
*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 Connectivity 2:20 PM  
*Magnus Lindhé, Royal Institute of Technology; Tamas Keviczky, Delft University of Technology; Karl Henrik Johansson, Royal Institute of Technology*

- TP4a-4 Communication Network Challenges for Collaborative Vehicles 2:45 PM  
*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 Video-on-Demand Systems 3:30 PM  
*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 Storage Systems 3:55 PM  
*Ethan Miller, Ian Adams, Jingpei Yang, Daniel Rosenthal, Darrell Long, University of California, Santa Cruz*

- TP4b-3 Theoretical Problems in Fault-Tolerant Distributed Storage 4:20 PM  
*James Plank, University of Tennessee*

- TP4b-4 Survey of Non-MDS Erasure Codes for Distributed Storage Systems 4:45 PM  
*Jay Wylie, Hewlett-Packard Labs*

### Session TP5 Compressive Sensing for Radar

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

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

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

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

- TP5-4 Support Recovery in Compressive Sensing for Estimation of Direction-of-Arrival 2:45 PM  
*Zhiyuan Weng, Xin Wang, Stony Brook University*

	BREAK	3:10 PM
TP5-5	Explore Group Sparsity for Compressive Sensing Based MIMO Radar <i>Yao Yu, Athina Petropulu, Junzhou Huang, Rutgers University</i>	3:30 PM
TP5-6	On the Role of Waveform Diversity in MIMO Radar <i>Benjamin Friedlander, University of California, Santa Cruz</i>	3:55 PM
TP5-7	Non-Coherent Compressive Sensing for MIMO Radar with Widely Separated Antennas <i>Christian Berger, Jose' Moura, Carnegie Mellon University</i>	4:20 PM
TP5-8	Global Methods for Compressive Sensing in MIMO Radar with Distributed Sensors <i>Marco Rossi, Alexander M. Haimovich, New Jersey Institute of Technology; Yonina C. Eldar, Technion-Israel Institute of Technology</i>	4:45 PM

### Session TP6a Source Localization

Chair: *Muralidhar Rangaswamy, Purdue University*

TP6a-1	Robust Time-Based Localization for Asynchronous Networks with Clock Offsets <i>Yiyin Wang, Delft University of Technology; Xiaoli Ma, Georgia Institute of Technology; Geert Leus, Delft University of Technology</i>	1:30 PM
TP6a-2	Conditioned MDS with Heterogeneous Information <i>Davide Macagnano, Giuseppe Abreu, University of Oulu</i>	1:55 PM
TP6a-3	Cooperative Multihop Localization with Privacy <i>Golaleh Rahmatollahi, Leibniz University Hannover; Giuseppe Abreu, University of Oulu; Stefano Severi, University of Bologna</i>	2:20 PM
TP6a-4	Design and Performance of an Integrated Waveform-agile Multi-Modal Track-before-Detect Sensing System <i>Jun Zhang, Arizona State University; Surendra Bhat, Pennsylvania State University; Quan Ding, University of Rhode Island; Antonia Papandreou-Suppappola, Arizona State University; Ram Narayanan, Pennsylvania State University; Steven Kay, University of Rhode Island; Muralidhar Rangaswamy, Air Force Research Laboratory</i>	2:45 PM

### 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 <i>Dimitrios Christopoulos, Symeon Chatzinotas, University of Luxembourg; Michail Matthaiou, Chalmers University of Technology; Björn Ottersten, University of Luxembourg</i>	3:30 PM
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TP6b-2	User Scheduling for Large Multi-Beam Satellite MIMO Systems <i>Matteo Berio, Vincent Boussemart, Francesco Rossetto, German Aerospace Center (DLR)</i>	3:55 PM
TP6b-3	Multi-User Interference Mitigation Techniques for Broadband Multi-Beam Satellite Systems <i>Ilaria Thibault, Francesco Lombardo, Enzo A. Candreva, Alessandro Vanelli-Coralli, Giovanni E. Corazza, University of Bologna</i>	4:20 PM
TP6b-4	Advanced Interference Mitigation Techniques for the Forward Link of Multi-Beam Broadband Satellite Systems <i>Bertrand Devillers, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC); Ana Pérez-Neira, Universitat Politècnica de Catalunya</i>	4:45 PM
TP6b-5	Performance Evaluation of a Satellite Diversity System Employing Compact MIMO-Octahedron Antenna <i>Tommy Tommy, Lund University; Abbas Mohammed, Blekinge Institute of Technology</i>	5:10 PM

### Session TP7a Adaptive and Evolvable Architectures

Chair: *Andy Tyrrell, University of York, UK*

TP7a-1	A Programmable Analog and Digital Array for Bio-Inspired Electronic Design Optimization at Nano-Scale Silicon Technology Nodes <i>Martin Trefzer, James Walker, Andy Tyrrell, University of York</i>	1:30 PM
TP7a-2	Evolved Defect Tolerant Structures for FPGA Architectures <i>Pauline Haddow, Norwegian University of Science and Technology</i>	1:55 PM
TP7a-3	Improved Learning in an Evolvable Oscillator for In-Flight Controller Adaptation in a Flapping-Wing Micro Air Vehicle <i>Gallagher John, Wright State University; Michael Oppenheimer, Air Force Research Laboratory</i>	2:20 PM
TP7a-4	Using Discrete Fourier Transforms to Detect Operational Environments for Autonomous Non-Linear Systems <i>Garrison Greenwood, Portland State University</i>	2:45 PM

### Session TP7b Computer Arithmetic II

Chair: *Neil Burgess, ARM, Inc. USA*

TP7b-1	The Fully-Serial Pipelined Multiplier <i>Andrew Shafer, Advanced Micro Devices; Lyndsi Parker, IBM; Earl Swartzlander, University of Texas at Austin</i>	3:30 PM
TP7b-2	Special-Purpose Crypto Hardware Accelerators for 45nm High-Performance Microprocessors <i>Sanu Mathew, Ram Krishnamurthy, Intel Corporation</i>	3:55 PM



- TP7b-3 Energy-Efficient Floating-Point Arithmetic for Low-Power Digital Signal Processors 4:20 PM  
*Syed Z. Gilani, Nam Sung Kim, University of Wisconsin-Madison; Michael J. Schulte, Advanced Micro Devices*
- TP7b-4 Testing Fused Multiply Add Implementations 4:45 PM  
*David Lutz, Neil Burgess, Sabrina Romero, ARM*
- TP7b-5 Shared Implementation of Radix-10 and Radix-16 Division Algorithm with Limited Precision Primitives 5:10 PM  
*Milos D. Ercegovic, 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, TèSA 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; Arye 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*

- 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 Uргаonkar, 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 Verónica Belmega, M rouane Debbah, Sup elec*
- 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, Universit  de Technologie de Troyes; C dric Richard, Universit  de Nice Sophia-Antipolis; Paul Honeine, Universit  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 Mehrotra, 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 8:15 AM  
*Scott E. Johnston, Paul D. Fiore, MIT Lincoln Laboratory*
- WA1a-2 Channel Aging Effects in CoMP Transmission: Gains from Linear Channel Prediction 8:40 AM  
*Lars Thiele, Bho Matthiesen, Michael Olbrich, Konstantinos Manolakis, Slawomir Stanczak, Fraunhofer Heinrich Hertz Institute*

- WA1a-3 A Modified Compressed Sampling Matching Pursuit Algorithm on Redundant Dictionary and Its Application to Sparse Channel Estimation on OFDM 9:05 AM  
*Chulong Chen, Michael Zoltowski, Purdue University*
- WA1a-4 Asymptotic Analysis of Double-Scattering Channels 9:30 AM  
*Jakob Hoydis, Romain Couillet, Merouane Debbah, Supélec*

## Session WA1b MIMO Radar and SAR

Chair: Benjamin Friedlander, University of California, Santa Cruz

- WA1b-1 On Spatial Processing in MIMO Radar 10:15 AM  
*Benjamin Friedlander, University of California, Santa Cruz*
- WA1b-2 Subspace Fitting Based Autofocus for Stripmap SAR 10:40 AM  
*Roger West, Jacob (Jake) Gunther, Todd Moon, Utah State University*
- WA1b-3 Doppler Estimation and Compensation in MIMO Radar with Unitary Waveform Scheduling 11:05 AM  
*Tariq Qureshi, Michael Zoltowski, Purdue University; Robert Calderbank, Duke University*
- WA1b-4 On the Use of Fractional Autocorrelation to Correct Mismatches for Chirp Scale Focusing for Real SAR Image Formation 11:30 AM  
*Judith Northrop, Antonia Papandreou-Suppappola, Arizona State University*

## Session WA2a OFDM

Chair: Antonia Maria Tulino, Bell-Labs

- WA2a-1 Low Complexity EM-Based Decoding for OFDM Systems with Impulsive Noise 8:15 AM  
*Marcel Nassar, Brian Evans, University of Texas at Austin*
- WA2a-2 Accurate Characterization and Compensation of Phase Noise in OFDM Receiver 8:40 AM  
*Pramod Mathecken, Taneli Riihonen, Stefan Werner, Risto Wichman, Aalto University*
- WA2a-3 Linear Programming for Tone Reservation based IM/DD Optical OFDM Communications 9:05 AM  
*Liang Chen, NICTA Victoria Research Laboratory; Yusheng Ji, National Institute of Informatics; Brian Krongold, Jamie Evans, NICTA Victoria Research Laboratory*
- WA2a-4 Analytical Link Performance Evaluation of LTE Downlink with Carrier Frequency Offset 9:30 AM  
*Qi Wang, Markus Rupp, Vienna University of Technology*

## 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 8:15 AM  
*Asha Vijayakumar, Anamitra Makur, Nanyang Technological University*
- WA5a-2 Learning Dictionaries for Local Sparse Coding in Image Classification 8:40 AM  
*Jayaraman J. Thiagarajan, Andreas Spanias, Arizona State University*
- WA5a-3 Designing Thin Wavelet Filters 9:05 AM  
*Youngmi Hur, Fang Zheng, The Johns Hopkins University*
- WA5a-4 Estimation of Signal Subspace-Constrained Inputs to Linear Systems 9:30 AM  
*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 10:15 AM  
*Thang Ba Dinh, Jongmoo Choi, Gérard Medioni, University of Southern California*
- WA5b-2 Quality Driven Face Recognition System for Surveillance Cameras 10:40 AM  
*Saad Bedros, Yadhunandan U.S., Gurumurthy Swaminathan, Honeywell*
- WA5b-3 Improved Iris Segmentation Based on Local Texture Statistics 11:05 AM  
*Vishnu Naresh Boddeti, B.V.K. Vijaya Kumar, Krishnan Ramkumar, Carnegie Mellon University*
- WA5b-4 Radio Frequency Cardiopulmonary Waveform for Subject Identification 11:30 AM  
*Marc O Griofa, Noninvasive Medical Technologies, Incorporated; Rebecca Blue, Orlando Health; Aaron Jaech, Siying Hu, Marios Savvides, Carnegie Mellon University*

## Session WA6a Computational Aspects in Array Processing

Chair: *Christ Richmond, MIT*

- WA6a-1 Fast Implementation of Sparse Iterative Covariance-Based Estimation for Array Processing 8:15 AM  
*Qilin Zhang, Habti Abeida, Ming Xue, William Rowe, Jian Li, University of Florida*
- WA6a-2 Performance of Sample Covariance Based Capon Bearing Only Tracker 8:40 AM  
*Christ Richmond, Robert Geddes, MIT Lincoln Laboratory; Ramis Movassagh, Alan Edelman, Massachusetts Institute of Technology*

- WA6a-3 Some Problems in the Analysis of Possibly Cyclostationary Data 9:05 AM  
*David J. Thomson, Queen's University*
- WA6a-4 Extended Summary for Sidelobe Level Distribution for Linear and Planar Random Arrays with Arbitrary Element Distributions 9:30 AM  
*Siddhartha Krishnamurthy, MIT Lincoln Laboratory / Harvard University; Daniel Bliss, MIT Lincoln Laboratory; Vahid Tarokh, Harvard University*

## Session WA6b Source Separation

Chair: *Wing-Kin Ma, Chinese University of Hong Kong*

- WA6b-1 Comparison of Varieties of Kalman Filtering Algorithms Applied to Single Microphone Blind Audio Source Separation 10:15 AM  
*Siouar Bensaid, Dirk Slock, Eurecom*
- WA6b-2 Insights into the Frequency Domain ICA/IVA Approach 10:40 AM  
*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 11:05 AM  
*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 11:30 AM  
*Mu Zhou, Alle-Jan van der Veen, Delft University of Technology*

## Session WA7a Multi-core/GPU Implementation

Chair: *Jorn Jannick, Lund University, Sweden*

- WA7a-1 GPGPU Accelerated Scalable Parallel Decoding of LDPC Codes 8:15 AM  
*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 8:40 AM  
*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 9:05 AM  
*Mohammad Wadood Majid, Mohsin Jamali, University of Toledo*
- WA7a-4 A Fine-Grained Parallel Implementation of a H.264/AVC Encoder on a 167-Processor Computational Platform 9:30 AM  
*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*

WA7b-1	Designs of Angle-Rotation in Digital Frequency Synthesizer/Mixer Using Multi-Stage Architectures <i>Shen-Fu Hsiao, Cheng-Han Lee, Yen-Chun Cheng, National Sun Yat-sen University; Andrew Lee, University of California, Berkeley</i>	10:15 AM
WA7b-2	Exploration of Sign Precomputation-Based CORDIC in Reconfigurable Systems <i>Scott Miller, Dian Ross, Mihai Sima, Michael McGuire, University of Victoria</i>	10:40 AM
WA7b-3	A Reduced Routing Network Architecture for Partial Parallel LDPC Decoders <i>Houshmand Shirani-Mehr, University of California, Davis; Tinoosh Mohsenin, University of Maryland, Baltimore County; Bevan Baas, University of California, Davis</i>	11:05 AM
WA7b-4	Automatic FFT Code Generation for FPGA with High Flexibility and Human Readability <i>John O'Sullivan, Institute for System Level Integration / Steepest Ascent Ltd.; Stephan Weiss, University of Strathclyde; Garrey Rice, Steepest Ascent Ltd.</i>	11:30 AM

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