

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



**November 4–7, 2012**  
Asilomar Hotel and  
Conference Grounds

**Technical Co-sponsor**



# **FORTY-SIXTH ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS & COMPUTERS**

**Organized in cooperation with**

**ATK SPACE SYSTEMS  
Monterey, California**

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**IEEE SIGNAL PROCESSING SOCIETY**

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# Welcome from the General Chairman

Prof. Miloš Doroslovački  
The George Washington University

Welcome to this unique conference. Many of us come here from year to year to be exposed to new ideas and to do brainstorming about them in an informal and relaxed way, surrounded by magnificent nature. To cite John Steinbeck, Nobel Prize laureate in literature and local to this part of California: "Ideas are like rabbits. You get a couple and learn how to handle them, and pretty soon you have a dozen." I am sure that the conference will be stimulating for your future professional endeavors.

The biggest credit for the intellectual value of the conference goes to the Technical Program Chair Erik G. Larsson and his team, made of Technical Area Chairs and Session Chairs, as well as to all of you who contributed with papers. Erik and his team prepared an excellent program of 435 papers, including 171 invited, and a tutorial session. For their outstanding work in shaping the technical program I would like to thank Erik and the Technical Area Chairs: Henk Wymeersch, Gerald Matz, Vincent Poor, Erchin Serpedin, Marius Pesavento, Arye Nehorai, Joseph Cavallaro, Ghassan AlRegib and Phil Schniter.

The student paper contest this year attracted 87 submissions out of which 9 were chosen for the final competition. The Student Paper Contest Chair Geert Leus and a panel of judges will select the best three papers after the finalists present their posters on Sunday afternoon. I invite you to attend these presentations and in that way to give support to our young colleagues who will one day build the future of science and technology.

I am looking forward to listening to the plenary talk by Prof. Richard Baraniuk from the Rice University. Rich is an extraordinary researcher, teacher and person. He has been for long time on the frontline of research in compressive sensing, one of the most popular and challenging topics at this conference for several years. I am thrilled, and I guess so are you, to hear from him the report on what has been happening, what is going on now and where to go further.

I wish you three exciting days full of nice talks and walks. I hope that the weather will serve us well and that we will have three beautiful sunsets over the Pacific Ocean.

Miloš Doroslovački, The George Washington University, June 2012

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# 2012 Asilomar Conference Session Schedule

## Sunday Afternoon, November 4, 2012

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 5, 2012

7:30 - 9:00 AM	Breakfast – Crocker Dining Hall
8:00 AM - 6:00 PM	Registration
8:15 - 9:45 AM	MA1a — Conference Welcome and Plenary Session
9:45 - 10:15 AM	Coffee Social

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

MA1b	Graphical Models in Signal Processing (invited)
MA2b	Threshold Limits in Array Processing: Performance Analysis and Methods (invited)
MA3b	Full-Duplex MIMO Communications (special session)
MA4b	Green Radio (invited)
MA5b	Voice Coding (invited)
MA6b	DSP Architecture for Wireless Communications (invited)
MA7b	Brain Dynamics: Improving Spatial and Temporal Resolution
MA8b1	Communication Systems I (Poster)
MA8b2	Array Signal Processing I (Poster)

12:00 - 1:00 PM	Lunch – Crocker Dining Hall
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## Monday Afternoon, November 5, 2012

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

MP1a	Compressive Sensing (invited)
MP1b	Signal Processing and Learning in Complex Systems (invited)
MP2a	Source Localization in Distributed Sensor Arrays (invited)
MP2b	Network Beamforming (invited)
MP3a	Large-Scale MIMO Systems (special session)
MP3b	Coordinated Multipoint (invited)
MP4a	Cognitive Radio Networks (invited)
MP4b	Machine-to-Machine Communications and Networks (invited)
MP5a	Image and Video Coding (invited)
MP5b	Convex Optimization in Image and Video Analysis (invited)
MP6a	Computer Arithmetic (invited)
MP6b	Reconfigurable Architectures, Many-Core, Multi-Core, and SoC (invited)
MP7a	Medical Image Analysis
MP7b	Biological Modeling and Signal Analysis (partly invited)
MP8a1	MIMO Communications and Signal Processing I (Poster)
MP8a2	Signal Processing and Adaptive Systems I (Poster)

## Monday Evening, November 5, 2012

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.
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# 2012 Asilomar Conference Session Schedule

## (continued)

### Tuesday Morning, November 6, 2012

7:30 - 9:00 AM Breakfast — Crocker Dining Hall

8:00 AM - 5:00 PM Registration

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

- TA1a MIMO in Optical Communications (invited)
- TA1b Wireless Video Transmission Systems (invited)
- TA2a Game Theory in Communications (invited)
- TA2b Coding Theory for the Next-Generation Storage Systems (invited)
- TA3a Multiuser and Massive MIMO (invited)
- TA3b Compressive Estimation
- TA4a Social Networks (invited)
- TA4b Signal Processing for Cyber-Security and Privacy in Networks (invited)
- TA5a 3D Video Processing (invited)
- TA5b Computer Arithmetic Accelerators for Signal Processing
- TA6a Low Power I (invited)
- TA6b Low Power II (invited)
- TA7a Biological Networks and Machine Learning (partly invited)
- TA7b Sequence and Genome Analysis (partly invited)
- TA8a1 Array Signal Processing II (Poster)
- TA8a2 Signal Processing and Adaptive Systems II (Poster)
- TA8b1 Communication Systems II (Poster)
- TA8b2 MIMO Communications and Signal Processing II (Poster)
- TA8b3 Architecture and Implementation of Signal Processing Systems (Poster)

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

### Tuesday Afternoon, November 6, 2012

#### 1:30 - 5:35 PM AFTERNOON SESSIONS

- TP1a Network Optimization (invited)
- TP1b Distributed Signal Processing (invited)
- TP2a Consensus Based Algorithms
- TP2b Cooperative Adaptation and Learning (invited)
- TP3a Information Theoretic Signal Processing
- TP3b Underwater Communications (invited)
- TP4a Decoding and Detection
- TP4b Smart Grid Communications and Networks (invited)
- TP5a Design Methodologies and Architectures for Communications
- TP5b Interference Alignment (invited)
- TP6a Wireless Full Duplex
- TP6b Biological Image Analysis
- TP7a MIMO Radar and Waveform Design
- TP7b Speech Processing and Speech Recognition (invited)
- TP8a1 Relay Networks (Poster)
- TP8a2 Sensor and Interference Networks (Poster)
- TP8a3 Design Methodology and Computer Arithmetic (Poster)
- TP8b1 Speech, Image, and Video Processing (Poster)
- TP8b2 Biomedical Signal and Image Processing (Poster)

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

# 2012 Asilomar Conference Session Schedule

## (continued)

### Wednesday Morning, November 7, 2012

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 Feedback and Cooperation (invited)

WA1b Security

WA2a Distributed Algorithms for Wireless Networks

WA2b Topics in Wireless Networking

WA3a Adaptive Signal Processing

WA3b Compressive Signal Processing

WA4a Interference and Cognition

WA4b OFDM(A)

WA5a Applications of Video Processing

WA5b Image and Video Classification

WA6a CSI Feedback

WA6b Beamforming and Relaying (invited)

WA7a Applications of Sensor Array Processing

WA7b DOA Estimation

WA8 Tutorial – Coding Methods for Emerging Storage Systems

12:00 - 1:00 PM Lunch — Meal tickets may be purchased at registration desk. This meal is not included in the registration.

### WA8 - TUTORIAL

#### **Coding Methods for Emerging Storage Systems – Prof. Lara Dolecek and Prof. Anxiao (Andrew) Jiang**

Abstract - Recent surge in large-scale data storage systems has created an immediate need to develop new coding methodologies attuned to the physical properties of the emerging non-volatile memory technologies. In this tutorial, we will first discuss new channel models for these technologies and demonstrate why the existing coding methods are increasingly inadequate. We will then survey recently proposed error correcting codes, modulation schemes and rewriting codes, all designed to meet the physical characteristics of the non-volatile memories while ensuring maximum lifetime and reliability. The tutorial will conclude with a discussion of several open problems in this area.

Bio: Prof. Lara Dolecek is an assistant professor in the Electrical Engineering Department at UCLA where she heads the Laboratory for Robust Information Systems. She received NSF CAREER Award in 2012, Hellman Fellow award in 2011, and David J. Sakrison Award from the EECS Department at UC Berkeley in 2007. Prof. Anxiao (Andrew) Jiang is an associate professor in Computer Science and Engineering Department of TAMU. He received NSF CAREER Award in 2008 and the 2009 IEEE Communications Society Best Paper Award in Signal Processing and Coding for Data Storage.



# Student Paper Contest

Merrill Hall - Sunday, November 4, 2012, 4:00 - 6:30 PM  
(Listed in category/track order)

## Track A

*"Unicasting on the S-Graph"*

**Satyanaranaya Vuppala** and Giuseppe Abreu

## Track B

*"Volume of Ball and Hamming-type Bounds for Stiefel Manifold with Euclidean Distance"*

**Renaud-Alexandre Pitaval** and Olav Tirkkonen

## Track C

*"Distributed Gram-Schmidt Orthogonalization Based on Dynamic Consensus"*

**Ondrej Slučiak**, Hana Straková, Markus Rupp, and Wilfried N. Gansterer

## Track D

*"Identifying Multiple Infection Sources in a Network"*

**Wuqiong Luo** and Wee Peng Tay

*"The Gaussian CEO Problem for a Scalar Source with Memory: A Necessary Condition"*

**Jie Chen**, Feng Jiang and A. Lee Swindlehurst

## Track E

*"Transmit Beam-space Design for Direction Finding in Colocated MIMO Radar with Arbitrary Receive Array and Even Number of Waveforms"*

**Arash Khabbazi-basmenj**, Sergiy A. Vorobyov, Aboulnasr Hassanien, and Matthew W. Morency

## Track F

*"Screening Fundus Images for Diabetic Retinopathy"*

**Sohini Roychowdhury**, Dara Koozekanani, and Keshab K. Parhi

## Track G

*"A Low-Power Dual-Path Floating-Point Fused Add-Subtract Unit"*

**Jae Hong Min**, Jongwook Sohn, and Earl E. Swartzlander, Jr.

## Track H

*"Joint Tracking of Clean Speech and Noise Using HMMs and Particle Filters for Robust Speech Recognition"*

**Aleem Mushtaq** and Chin-Hui Lee

# 2012 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 5, 2012**

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

1. Welcome from the General Chairperson

**Prof. Miloš Doroslovački**  
The George Washington University

2. Session MA1a      Distinguished Lecture for the 2012  
Asilomar Conference

### **Compressive Sensing: 8 Years After**

**Prof. Richard G. Baraniuk**  
Victor E. Cameron Professor  
Rice University

#### **Abstract**

Sensing and imaging systems are under increasing pressure to accommodate ever larger and higher-dimensional data sets; ever faster capture, sampling, and processing rates; ever lower power consumption; communication over ever more difficult channels; and radically new sensing modalities. Since its discovery in 2004, compressive sensing (CS) has stimulated a re-thinking of sensor and signal processing system design. In CS, analog signals are digitized and processed not via uniform sampling but via measurements using more general, even random, test functions. In contrast with conventional wisdom, the new theory asserts that one can combine “sub-Nyquist-rate sampling” with large-scale optimization for efficient and accurate signal acquisition when the signal has a sparse structure. In this talk, we will review the progress in field over the last eight years, with a special emphasis on the pros and cons of the technique.

## **Biography**

**Richard G. Baraniuk** is the Victor E. Cameron Professor of Electrical and Computer Engineering at Rice University. His research interests lie in new theory, algorithms, and hardware for sensing, signal processing, and machine learning. He is a Fellow of the IEEE and AAAS and has received national young investigator awards from the US NSF and ONR, the Rosenbaum Fellowship from the Isaac Newton Institute of Cambridge University, the ECE Young Alumni Achievement Award from the University of Illinois, and the Wavelet Pioneer and Compressive Sampling Pioneer Awards from SPIE. His work on the Rice single-pixel compressive camera has been widely reported in the popular press and was selected by MIT Technology Review as a TR10 Top 10 Emerging Technology for 2007. For his teaching and education projects, including Connexions ([cnx.org](http://cnx.org)), he has received the C. Holmes MacDonald National Outstanding Teaching Award from Eta Kappa Nu, Tech Museum of Innovation Laureate Award, the Internet Pioneer Award from the Berkman Center for Internet Society at Harvard Law School, the World Technology Award for Education, the IEEE-SPS Education Award, and the WISE Education Award.



**Program of the  
2012 Asilomar Conference on  
Signals, Systems, and Computers**

**Technical Program Chairman  
Prof. Erik G. Larsson  
Linköping University**

## **Session MA1b Graphical Models in Signal Processing (invited)**

Chair: *Lorenzo Vangelista, University of Padova*

- MA1b-1    Approximate Message Passing for Spectral Estimation: A Solution to the Gridding Problem?    10:15 AM  
*Philip Schniter, Ohio State University; Christian Austin, MIT Lincoln Laboratory; Jason Parker, Air Force Research Laboratory*
- MA1b-2    Local Consensus Estimators for Distributed Learning of Graphical Models    10:40 AM  
*Qiang Liu, Alexander Ihler, University of California, Irvine*
- MA1b-3    Sparse Covariance Selection with Edge Restrictions    11:05 AM  
*Anastasios Kyrillidis, Volkan Cevher, École Polytechnique Fédérale de Lausanne*
- MA1b-4    Learning Graphical Models for Dynamical Processes    11:30 AM  
*Andrea Montanari, Jose Bento, Morteza Ibrahimi, Stanford University*

## **Session MA2b Threshold Limits in Array Processing: Performance Analysis and Methods (invited)**

Chair: *Mohammed Nabil El Korso, TU Darmstadt*

- MA2b-1    Threshold Performance for Conditional and Unconditional Direction-of-Arrival Estimation    10:15 AM  
*Yuri I. Abramovich, Defence Science and Technology Organisation; Ben A. Johnson, Lockheed Martin Australia and ITR*
- MA2b-2    Aspects of Threshold Region Mean-Squared Error Prediction: Method of Interval Errors, Bounds, Taylor's, and Extensions    10:40 AM  
*Christ D. Richmond, Larry L. Horowitz, MIT Lincoln Laboratory*
- MA2b-3    Lower Bounds on the MSE for Mixed Far-Field and Near-Field Sources Direction-of-Arrivals    11:05 AM  
*Alexandre Renaux, Remy Boyer, Paris XI Univ.; Sylvie Marcos, CNRS*
- MA2b-4    On the Resolvability of Closely Spaced Targets Using a MIMO Radar    11:30 AM  
*Mohammed Nabil El Korso, Technische Universität Darmstadt; Frédéric Pascal, Supélec / SONDRRA; Marius Pesavento, Technische Universität Darmstadt*

## **Session MA3b Full-Duplex MIMO Communications (special session)**

Chair: *Dan Bliss, MIT Lincoln Laboratory*

- |        |   |          |
|--------|---|----------|
| MA3b-1 | Phase Noise: Understanding the Bottleneck in Full-duplex Designs<br><i>Achaleshwar Sahai, Gaurav Patel, Ashutosh Sabharwal, Rice University</i>   | 10:15 AM |
| MA3b-2 | Hardware and Environmental Phenomenological Limits on Full-Duplex MIMO Relay Performance<br><i>Daniel Bliss, Timothy Hancock, Massachusetts Institute of Technology; Phil Schniter, Ohio State University</i> | 10:40 AM |
| MA3b-3 | Open Problems in Full Duplex Wireless<br><i>Phil Levis, Stanford University</i>   | 11:05 AM |
| MA3b-4 | Analog and Digital Self-Interference Cancellation in Full-Duplex MIMO-OFDM Transceivers with Limited Resolution in A/D Conversion<br><i>Taneli Riihonen, Aalto University</i>                                 | 11:30 AM |

## **Session MA4b Green Radio (invited)**

Co-Chairs: *Cristina Comaniciu, Stevens Institute of Technology and Aylin Yener, Penn State University*

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|--------|---|----------|
| MA4b-1 | On Energy Harvesting Multi-User Networks with Energy Storage Imperfections<br><i>Kaya Tutuncuoglu, Aylin Yener, Penn State</i>                  | 10:15 AM |
| MA4b-2 | Information-Theoretically Achievable Rates in an Energy Harvesting Broadcast Channel<br><i>Omur Ozel, Sennur Ulukus, University of Maryland</i> | 10:40 AM |
| MA4b-3 | Throughput and Energy Efficiency under Queueing and Secrecy Constraints<br><i>Mustafa Cenk Gursoy, Mustafa Ozmen, Syracuse University</i>       | 11:05 AM |
| MA4b-4 | Non-Invasive Green Small Cell Network<br><i>Baher Mawlawi, Ejder Bastug, Chahé Nerguizian, Sylvain Azarian, Mérouane Debbah, Supelec</i>        | 11:30 AM |

## **Session MA5b Voice Coding (invited)**

Chair: *Jerry D. Gibson, University of California, Santa Barbara*

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|--------|---|----------|
| MA5b-1 | Scalable Wideband Speech Coding for IP Networks<br><i>Koji Seto, Tokunbo Ogunfunmi, Santa Clara University</i>  | 10:15 AM |
| MA5b-2 | Multimode Tree Coding of Speech with Backward Pitch Prediction and Perceptual Pre- and Post-weighting<br><i>Ying-Yi Li, Jerry Gibson, University of California, Santa Barbara</i> | 10:40 AM |
| MA5b-3 | Source Models and Rate Distortion Bounds for Speech<br><i>Jerry Gibson, University of California, Santa Barbara</i>   | 11:05 AM |

MA5b-4 Compressed Sensing Based Scalable Speech Coders 11:30 AM  
*Bhaskar Rao, Michelle Daniels, University of California, San Diego*

## **Session MA6b DSP Architecture for Wireless Communications (invited)**

Chair: *Ahmed Eltawil, University of California, Irvine*

MA6b-1 Verifying Equivalence of Digital Signal Processing Circuits 10:15 AM  
*Keshab Parhi, University of Minnesota*

MA6b-2 Implementation of a Real-Time Wireless Interference Alignment Network 10:40 AM  
*Jackson Massey, Jonathan Starr, Andreas Gerslauer, Robert Heath, University of Texas at Austin*

MA6b-3  $\Sigma\Delta$  Modulators for Low-power Digitally Intensive Radio Transmitters. 11:05 AM  
*Rashmi Nanda, Dejan Markovic, University of California, Los Angeles*

MA6b-4 A Sphere Decoding Approach for The Vector Viterbi Algorithm 11:30 AM  
*Peter Kairouz, Aolin Xu, Naresh Shanbhag, Andrew Singer, University of Illinois, Urbana-Champaign*

## **Session MA7b Brain Dynamics: Improving Spatial and Temporal Resolution**

Chair: *Hubert Preissl, University of Tübingen*

MA7b-1 Signal Artefacts in Functional MRI Studies of the Unsedated Human Fetal Brain In-Utero 10:15 AM  
*Colin Studholm, University of Washington*

MA7b-2 New Perspectives in MEG Functional Connectivity 10:40 AM  
*Paolo Belardinelli, University of Tübingen*

MA7b-3 Inferring Biological Network Connectivity Using a Novel Phase Synchronization Technique 11:05 AM  
*Rathinaswamy Govindan, Children's National Medical Center; Jan Raethjen, University of Kiel; Adre du Plessis, Children's National Medical Center*

MA7b-4 Spatio-temporal Dynamics in Movement Control: New Vistas for Closed-loop Decoding Using MEG 11:30 AM  
*Matthias Witte, University of Graz*

## **Session MA8b1 Communication Systems I**

Chair: *David Browne, MIT Lincoln Laboratory*

10:15 AM - 12:00 PM

MA8b1-1 Optimum Training for CSI Acquisition in Cognitive Radio Channels  
*Alberto Rico-Alvariño, Carlos Mosquera, Universidade de Vigo*



- MA8b1-2 Spectrum Opportunity Detection with Weak and Correlated Signals  
*Yao Xie, Duke University; David Siegmund, Stanford University*
- MA8b1-3 A Blind Linear Smoothing Method for OFDM Systems without Cyclic Prefix  
*Xiaodong Yue, Songlin Tian, Xuefu Zhou, University of Central Missouri*
- MA8b1-4 Soft-Output Sphere Detection for Coded Unique Word OFDM  
*Alexander Onic, Alpen-Adria-Universität Klagenfurt; Andreas Schenk, Friedrich-Alexander-Universität Erlangen-Nürnberg; Mario Huemer, Alpen-Adria-Universität Klagenfurt; Johannes B. Huber, Friedrich-Alexander-Universität Erlangen-Nürnberg*
- MA8b1-5 A Cross-Layer HARQ Scheme Robust to Imperfect Feedback  
*Sébastien Marcille, Thales Communications and Security; Philippe Ciblat, Télécom ParisTech; Christophe Le Martret, Thales Communications and Security*
- MA8b1-6 A Representation for the Symbol Error Rate of Arbitrary Constellations under AWGN  
*Adithya Rajan, Cihan Tepedelenlioglu, Arizona State University*
- MA8b1-7 Systematic Pruning of Blind Decoding Results  
*Dongwoon Bai, Jungwon Lee, Sungsoo Kim, Hanju Kim, Inyup Kang, Samsung US R&D Center*
- MA8b1-8 Underlay Cognitive Radios with Finite Transmission Modes and Capacity Guarantees for Primary Users  
*Antonio G. Marques, Javier Ramos, Carlos Figuera, Eduardo Morgado, King Juan Carlos University*
- MA8b1-9 Stochastic Soft-Input Soft-Output Detection for Intersymbol Interference Channels  
*Werner Haselmayr, Bernhard Etzlinger, Andreas Springer, Johannes Kepler University*
- MA8b1-10 Generic Low Complex Filter Bank Based Spectrum Sensing Approach for LTE Cognitive Radio  
*Thomas Schlechter, Mario Huemer, Alpen-Adria Universität Klagenfurt*
- MA8b1-11 A Study of Data Rate Equivalent UW-OFDM and CP-OFDM Concepts  
*Christian Hofbauer, Mario Huemer, Klagenfurt University*
- MA8b1-12 Constrained Least-Squares Estimation and Compensation of Phase Noise in OFDM Radio Link  
*Pramod Mathecken, Taneli Riihonen, Stefan Werner, Risto Wichman, Aalto University School of Electrical Engineering*
- MA8b1-13 Stopping Criteria for Iterative Decoding Based on Mutual Information  
*Jinhong Wu, Samsung Information Systems America; Branimir Vojcic, Jia Sheng, George Washington University*

- MA8b1-14 Frequency-Selective I/Q Imbalance Compensation for OFDM Receivers Using Decision-Feedback Adaptive Filtering  
*R. Keith McPherson, Jim Schroeder, Harris Corporation*
- MA8b1-15 Non-data Aided Symbol and Carrier Synchronization via Band-Edge Filters  
*Xiaofei Chen, Elettra Venosa, fredric harris, San Diego State University; Chris Dick, Xilinx Corp.*
- MA8b1-16 Coded QPSK Using Balanced Incomplete Block Design  
*Mohammad Noshad, Maite Brandt-Pearce, University of Virginia*

## **Session MA8b2                      Array Signal Processing I**

Chair: *Marius Pesavento, TU Darmstadt*

10:15 AM - 12:00 PM

- MA8b2-1 Passive Radar Signal Processing in Single Frequency Networks  
*Konstanty Bialkowski, I. Vaughan Clarkson, University of Queensland*
- MA8b2-2 Direct Passive Geolocation under Propagation Speed Uncertainty  
*Guy Liron, RAFAEL Advanced Defense Systems; Anthony J. Weiss, Tel Aviv University; Alon Amar, RAFAEL Advanced Defense Systems*
- MA8b2-3 How to Design a Delay-and-Sum Beamformer for Rigid Rotationally Symmetric Arrays?  
*Karim Helwani, Sascha Spors, Telekom Innovation Laboratories, Technische Universität Berlin; Herbert Buchner, Technische Universität Berlin*
- MA8b2-4 Optimal Diagonal Loading for Spatial Spectrum Estimation in the Snapshot Deficient Regime  
*Milutin Pajovic, Massachusetts Institute of Technology/ Woods Hole Oceanographic Institution; James Preisig, Woods Hole Oceanographic Institution; Arthur Baggeroer, Massachusetts Institute of Technology*
- MA8b2-5 2D DOA Estimation of Multiple Coherent Sources Using a New Antenna Array Configuration  
*Nizar Tayem, Prince Mohammad Bin Fahd University*
- MA8b2-6 Performance Analysis on Synthetic Aperture Radar-based Vibration Estimation in Clutter  
*Qi Wang, Balu Santhanam, Matthew Pepin, Majeed Hayat, University of New Mexico*
- MA8b2-7 Search Methods for Determining Direction of Arrival Acoustically  
*David Grasing, Sean Schumer, Anthony Rotolo, US Army*
- MA8b2-8 Implementation and Demonstration of Receiver-Coordinated Distributed Transmit Beamforming across an Ad-Hoc Radio Network.  
*Pat Bidigare, Miguel Oyarzun, David Raeman, Dave Cousins, Dan Chang, Rich O'Donnell, Raytheon BBN Technologies; Rick Brown, Worcester Polytechnic Institute*

- MA8b2-9 Algebraic Confidence for Sensor Localization  
*Jani Saloranta, University of Oulu; Stefano Severi, Jacobs University Bremen; Davide Macagnano, University of Oulu; Giuseppe Abreu, Jacobs University Bremen*
- MA8b2-10 Breaking the Isotropic Scattering Assumption in Wide-beam Stripmap SAR Imaging  
*Jacob Gunther, Utah State University; Chad Knight, Space Dynamics Laboratory; Todd Moon, Utah State University*
- MA8b2-11 A Distributed Adaptive GSC Beamformer over Coordinated Antenna Arrays Network for Interference Mitigation  
*Songtao Lu, Jinping Sun, Beihang University*
- MA8b2-12 Spatial Coherence Modeling for Passive Ranging Using Distributed Arrays  
*Hongya Ge, New Jersey Institute of Technology; Ivars Kirsteins, Naval Undersea Warfare Center*
- MA8b2-13 Waveform Diversity and Optimal Change Detection  
*Carl Rossler, Emre Ertin, Randolph Moses, Ohio State University*
- MA8b2-14 Subband Gradient Flow Acoustic Source Separation for Moderate Reverberation Environment  
*Shuo Li, Milutin Stanacevic, Stony Brook University*
- MA8b2-15 Gradient Flow Source Localization in Noisy and Reverberant Environment  
*Shuo Li, Milutin Stanacevic, Stony Brook University*
- MA8b2-16 Analysis of Data Fusion Techniques for Small Arms Fire Localization  
*David Grasing, George Cakiades, Sachi Desai, U.S. Army RDECOM-ARDEC*

## **Session MP1a Compressive Sensing (invited)**

Chair: *Christoph Studer, Rice University*

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|--------|--|---------|
| MP1a-1 | Effect of Spatial Coupling and Bayesian Priors on Compressive Sensing Performance<br><i>Arian Maleki, Christoph Studer, Jianing Shi, Richard Baraniuk, Rice University</i> | 1:30 PM |
| MP1a-2 | Structured Signal Recovery from Single-Bit Measurements<br><i>Yaniv Plan, University of Michigan</i>   | 1:55 PM |
| MP1a-3 | CoSaMP with Redundant Dictionaries<br><i>Mark Davenport, Stanford University; Deanna Needell, Claremont McKenna College; Michael Wakin, Colorado School of Mines</i>       | 2:20 PM |
| MP1a-4 | Compressed Sensing with Radar Applications<br><i>Max Hugel, Holger Rauhut, University of Bonn; Thomas Strohmer, University of California, Davis</i>                        | 2:45 PM |

## **Session MP1b Signal Processing and Learning in Complex Systems (invited)**

Chair: *Michael Rabbat, McGill University*

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|--------|--|---------|
| MP1b-1 | Dynamics of Social Connections<br><i>Lin Li, Anna Scaglione, University of California, Davis</i> | 3:30 PM |
|--------|--|---------|

MP1b-2	Dynamic Games with Side Information in Economic Networks <i>Ceyhun Eksin, Pooya Molavi, Alejandro Ribeiro, University of Pennsylvania</i>	3:55 PM
MP1b-3	Adaptive Decision-Making over Complex Networks <i>Sheng-Yuan Tu, Ali Sayed, University of California, Los Angeles</i>	4:20 PM
MP1b-4	A Factor Graph Approach to Diffusion Adaptive Filtering Methods <i>Andrew Bean, Thomas Riedl, Andrew Singer, University of Illinois, Urbana-Champaign</i>	4:45 PM

## **Session MP2a Source Localization in Distributed Sensor Arrays (invited)**

Chair: *Christoph Mecklenbräuker, TU Vienna*

MP2a-1	Convergence Analysis of Distributed PAST Based on Consensus Propagation <i>Carolina del Socorro Reyes Membreno, Markus Rupp, Vienna University of Technology</i>	1:30 PM
MP2a-2	Localization of Acoustic Sources Utilizing a Decentralized Particle Filter <i>Florian Xaver, Gerald Matz, Vienna University of Technology; Peter Gerstoft, University of California, San Diego; Norbert Götz, Vienna University of Technology</i>	1:55 PM
MP2a-3	Bayesian Sparse Sensing of the Japanese 2011 Earthquake <i>Peter Gerstoft, University of California, San Diego; Christoph Mecklenbräuker, Vienna University of Technology</i>	2:20 PM
MP2a-4	Distributed Source Localization in Subarray Sensor Networks. <i>Christian Steffens, Michael Rübsamen, Marius Pesavento, Technische Universität Darmstadt</i>	2:45 PM

## **Session MP2b Network Beamforming (invited)**

Chair: *Shahram Shahbazpanahi, University of Ontario Institute of Technology*

MP2b-1	Distributed Beamforming in Coarsely Synchronized Relay Networks <i>Adrian Schad, Technische Universität Darmstadt; Babak Khalaj, Sharif University of Technology; Marius Pesavento, Technische Universität Darmstadt</i>	3:30 PM
MP2b-2	Distributed Beamforming for Two-Way Relaying Networks with Individual Power Constraints <i>Jianshu Zhang, Florian Römer, Martin Haardt, Technische Universität Ilmenau</i>	3:55 PM
MP2b-3	Beamforming Design for Two-Way Relay Networks Under Per-Node Power Constraint <i>Shahram ShahbazPanahi, University of Ontario; Yindi Jing, University of Alberta</i>	4:20 PM

- MP2b-4 Improving Achievable Rate for the Two-User SISO Interference Channel with Improper Gaussian Signaling 4:45 PM  
*Yong Zeng, Mustafa Cenk Yetis, Erry Gunawan, Yong Liang Guan, Nanyang Technological University; Rui Zhang, National University of Singapore*

### **Session MP3a Large-Scale MIMO Systems (special session)**

Co-Chairs: *Tom Marzetta, Alcatel-Lucent/Bell-Labs and Saif K. Mohammed, Linköping University*

- MP3a-1 Spectral Efficiency in Large-Scale MIMO-OFDM Systems with Per Antenna Power Cost 1:30 PM  
*Derrick Wing Kwan Ng, Robert Schober, University of British Columbia*
- MP3a-2 On Coherent Combining of Distributed Observations 1:55 PM  
*Jakob Hoydis, Supelec; Thorsten Wild, Stephan ten Brink, Bell Laboratories, Alcatel-Lucent; Mérouane Debbah, Supelec*
- MP3a-3 Measured Propagation Characteristics for Very Large MIMO at 2.6 GHz 2:20 PM  
*Xiang Gao, Fredrik Tufvesson, Ove Edfors, Fredrik Rusek, Lund University*
- MP3a-4 Decentralized (Cell-Free) Large-Scale Antenna System 2:45 PM  
*Alexei Ashikhmin, Thomas L Marzetta, Bell Laboratories, Alcatel-Lucent; Hong Yang, Alcatel-Lucent*

### **Session MP3b Coordinated Multipoint (invited)**

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

- MP3b-1 A Decentralized Method for Joint Admission Control and Beamforming in Coordinated Multicell Downlink 3:30 PM  
*Hoi-To Wai, Wing-Kin Ma, Chinese University of Hong Kong*
- MP3b-2 Analyzing the IA Feasibility Problem via New Tools from Algebraic Geometry 3:55 PM  
*Liangzhong (Steven) Ruan, Vincent Lau, Hong Kong University of Science and Technology*
- MP3b-3 Design of Coordinated Multi-Point (CoMP) Transmission and Reception Schemes for the 4G Cellular Downlink 4:20 PM  
*Narayan Prasad, NEC Laboratories America, Inc.; Ali Tajer, Princeton University; Xiaodong Wang, Columbia University*
- MP3b-4 Joint Transceiver Design and Base Station Clustering for Heterogeneous Networks 4:45 PM  
*Mingyi Hong, Meisam Razaviyayn, Ruoyu Sun, Zhi-Quan Luo, University of Minnesota*

## Session MP4a Cognitive Radio Networks (invited)

Chair: Visa Koivunen, Aalto University

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|--------|--|---------|
| MP4a-1 | Cooperative Compressive Wideband Power Spectrum Sensing<br><i>Dyonisius Dony Ariananda, Geert Leus, Delft University of Technology</i>   | 1:30 PM |
| MP4a-2 | On Hybrid Cooperation in Underlay Cognitive Radio Networks<br><i>Nurul Huda Mahmood, Norwegian University of Science and Technology; Ferkan Yilmaz, King Abdullah University of Science and Technology; Geir Egil Øien, Norwegian University of Science and Technology; Mohamed-Slim Alouini, King Abdullah University of Science and Technology</i> | 1:55 PM |
| MP4a-3 | Sequential Good Channel Search for Multi-channel Cognitive Radio<br><i>Raied Caromi, Seshadri Mohan, University of Arkansas, Little Rock; Lifeng Lai, Worcester Polytechnic Institute</i>  | 2:20 PM |
| MP4a-4 | A Sensing Policy Based on Confidence Bounds and a Restless Multi-armed Bandit Model<br><i>Jan Oksanen, Visa Koivunen, Aalto University; H. Vincent Poor, Princeton University</i>  | 2:45 PM |

## Session MP4b Machine-to-Machine Communications and Networks (invited)

Chair: KC Chen, National Taiwan University

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|--------|--|---------|
| MP4b-1 | Not Every Bit Counts: Shifting the Focus from Machine to Data for Machine-to-Machine Communications<br><i>Chih-Hua Chang, Hung-Yun Hsieh, Hsuan-Jung Su, National Taiwan University</i>  | 3:30 PM |
| MP4b-2 | Exploring Utility-based Optimization and Management for Wireless Sensor Networks and Machine-to-Machine Communications<br><i>Petri Mähönen, Janne Riihijarvi, RWTH Aachen University</i>   | 3:55 PM |
| MP4b-3 | Controlling Access Overload and Signaling Congestion in M2M Networks<br><i>Rath Vannithamby, Intel Corporation</i>   | 4:20 PM |
| MP4b-4 | Dynamic Spectrum Allocation under Cognitive Cellular Network for M2M Applications<br><i>Qing Wang, IBM Research China; Bongjun Ko, IBM T. J. Watson Research Laboratory; Kwang-Cheng Chen, National Taiwan University; Junsong Wang, IBM Research China; Ting He, IBM T. J. Watson Research Laboratory; Yonghua Lin, IBM Research China; Kangwon Lee, IBM T. J. Watson Research Laboratory</i> | 4:45 PM |

## Session MP5a Image and Video Coding (invited)

Chair: *Marios Pattichis, University of New Mexico*

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|--------|--|---------|
| MP5a-1 | Dynamically Reconfigurable AVC<br>Deblocking Filter with Power and Performance<br>Constraints<br><i>Yuebing Jiang, Marios Pattichis, University of New Mexico</i>  | 1:30 PM |
| MP5a-2 | On the Use of Image Quality Estimators for<br>Improved JPEG2000 Coding<br><i>Thien Phan, Phong Vu, Damon Chandler, Oklahoma State University</i>   | 1:55 PM |
| MP5a-3 | Blind Quality Assessment of Videos Using a<br>Model of Natural Scene Statistics and Motion<br>Coherency<br><i>Michele Saad, Al Bovik, University of Texas at Austin</i>  | 2:20 PM |
| MP5a-4 | The Emerging High Efficiency Video Coding<br>Standard for Developing Wireless Ultrasound Video<br>Telemedicine Systems<br><i>Andreas Panayides, Zinon Antoniou, University of Cyprus;<br/>Marios Pattichis, University of New Mexico; Constantinos<br/>Pattichis, University of Cyprus</i> | 2:45 PM |

## Session MP5b Convex Optimization in Image and Video Analysis (invited)

Chair: *Vishal Monga, Penn State University*

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|--------|---|---------|
| MP5b-1 | Compressive Sensing and Sparse Array<br>Processing<br><i>P. P. Vaidyanathan, California Institute of Technology</i>   | 3:30 PM |
| MP5b-2 | Single-Image Super-Resolution Using<br>Multihypothesis Prediction<br><i>Chen Chen, James Fowler, Mississippi State University</i>   | 3:55 PM |
| MP5b-3 | L-infinity Regularized Models for<br>Segmentation, Cartoon-Texture Decomposition, and<br>Image Restoration<br><i>Hayden Schaeffer, Luminita Vese, University of California, Los Angeles</i> | 4:20 PM |
| MP5b-4 | Implicit Gibbs Prior Models for Tomographic<br>Reconstruction<br><i>Pengchong Jin, Eri Haneda, Charles Bouman, Purdue University</i>  | 4:45 PM |

## Session MP6a Computer Arithmetic (invited)

Chair: *Michael Schulte, AMD Research and University of Wisconsin*

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|--------|---|---------|
| MP6a-1 | Shared Implementation of Radix-10 and<br>Radix-16 Square Root Algorithm with Limited<br>Precision Primitives<br><i>Milos D. Ercegovac, University of California, Los Angeles; Robert McIlhenny, Californi State University Northridge</i> | 1:30 PM |
| MP6a-2 | Decimal On-line Multioperand Addition<br><i>Carlos Garcia-Vega, Sonia Gonzalez-Navarro, Julio Villalba, Emilio L. Zapata, University of Malaga</i>  | 1:55 PM |

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|--------|---|---------|
| MP6a-3 | Variable-Accuracy Multiplication Using Approximate Binary Logarithms and Parallel Error Correction<br><i>Michael Sullivan, Earl Swartzlander, University of Texas at Austin</i> | 2:20 PM |
| MP6a-4 | Experiments with Multiplier Reduction Trees<br><i>Neil Burgess, David Lutz, ARM</i>   | 2:45 PM |

## Session MP6b Reconfigurable Architectures, Many-Core, Multi-Core, and SoC (invited)

Chair: *Neil Burgess, ARM*

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|--------|---|---------|
| MP6b-1 | FPGA-based Processor Solution for Front-End Image Detection Applications<br><i>Colm Kelly, Thales Air Defence Limited; Roger Woods, Queen's University Belfast</i>                                    | 3:30 PM |
| MP6b-2 | Is There a Smarter Way to Use 100 Billion Transistors?<br><i>Muhammad Usman Khan, Francis Li, Ying Tiong, Michael Liebelt, Brian Ng, Braden Phillips, University of Adelaide</i>                      | 3:55 PM |
| MP6b-3 | Performance and Power Optimizations for Accelerated Processing Units<br><i>Michael Schulte, AMD</i>   | 4:20 PM |
| MP6b-4 | Reliable Low Power Distributed Arithmetic Filters via N-modular Redundancy<br><i>Muhammad S. Khairy, AmirHossein Gholamipour, Fadi J. Kurdahi, Ahmed M. Eltawil, University of California, Irvine</i> | 4:45 PM |

## Session MP7a Medical Image Analysis

Chair: *Alejandro F. Frangi, Alejandro F Frangi, University of Sheffield, Sheffield, UK; Universitat Pompeu Fabra, Barcelona, Spain*

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|--------|---|---------|
| MP7a-1 | 4D Signal Processing for Spatio-Temporal Analysis of Longitudinal 3D Imagery<br><i>Guido Gerig, University of Utah</i>  | 1:30 PM |
| MP7a-2 | Computational Diffusion MRI: On Some Recent Advances and Beyond<br><i>Rachid Deriche, INRIA Sophia Antipolis</i>  | 1:55 PM |
| MP7a-3 | Analytics for Time-Varying Catheterization Imaging Data: A Probabilistic Approach<br><i>Ioannis Kakadiaris, University of Houston</i>   | 2:20 PM |
| MP7a-4 | Estimating 3D Tongue Motion with MR Images<br><i>Fangxu Xing, Junghoon Lee, Johns Hopkins University; Emi Z. Murano, University of Maryland; Jonghye Woo, Johns Hopkins University; Maureen Stone, University of Maryland Dental School; Jerry Prince, Johns Hopkins University</i> | 2:45 PM |



## Session MP7b Biological Modeling and Signal Analysis (partly invited)

Chair: *Scott T. Acton, University of Virginia*

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|--------|---|---------|
| MP7b-1 | Cell Mechanics Analysis by<br>Physically-Constrained Optical Flow<br><i>Jean-Christophe Olivo-Marin, Timothee Lecomte,<br/>Alexandre Dufour, Nancy Guillen, Roman Thibaux,<br/>Institut Pasteur</i> | 3:30 PM |
| MP7b-2 | Exploitation of Radar Doppler Signatures for<br>Gait Analysis<br><i>Jennifer Palmer, Kristin Bing, Amy Sharma, Georgia Tech<br/>Research Institute</i>  | 3:55 PM |
| MP7b-3 | A Third-Order Approximate Solution of the<br>EEG Forward Problem in Four-Shell Ellipsoidal<br>Geometry<br><i>D. Gutiérrez, M. Alcocer-Sosa, Center of Research and<br/>Advanced Studies</i>         | 4:20 PM |
| MP7b-4 | Phase Congruency Singular Value<br>Decomposition for Multi-Scale Neuron<br>Enhancement<br><i>Emmanuel Denloye-Ito, Scott Acton, University of Virginia</i>  | 4:45 PM |

## Session MP8a1 MIMO Communications and Signal Processing I

Chair: *Andreas Burg, Ecole Polytechnique Federale de Lausanne (EPFL)*

1:30 PM - 3:10 PM

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|---------|--|
| MP8a1-1 | Low-Complexity Vector Precoding for Multi-user<br>Systems<br><i>Maitane Barrenechea, University of Mondragon; Andreas<br/>Burg, École Polytechnique Fédérale de Lausanne; Mikel<br/>Mendicute, University of Mondragon</i>   |
| MP8a1-2 | Non-Binary Coded Modulation and Iterative Detection<br>for High Spectral Efficiency in MIMO<br><i>Nicholas Chang, David Romero, MIT Lincoln Laboratory</i>   |
| MP8a1-3 | Low-Complexity Lattice Reduction-Aided Channel<br>Inversion Methods for Large Multi-User MIMO Systems<br><i>Keke Zu, Rodrigo C. de Lamare, University of York;<br/>Martin Haardt, Ilmenau University of Technology</i>   |
| MP8a1-4 | Multiuser Detection Performance in Multibeam Satellite<br>Links under Imperfect CSI<br><i>Jesús Arnau, Carlos Mosquera, University of Vigo</i>   |
| MP8a1-5 | On Convergence Constraint Precoder Design for Iterative<br>Frequency Domain Multiuser SISO Detector<br><i>Valtteri Tervo, Antti Tölli, University of Oulu; Juha<br/>Karjalainen, Renesas Mobile Europe Oy; Tad Matsumoto,<br/>Japan Advanced Institute of Science and Technology</i> |
| MP8a1-6 | Grassmannian Packings from Orbits of Projective Group<br>Representations<br><i>Renaud-Alexandre Pitaval, Olav Tirkkonen, Aalto<br/>University</i>  |

- MP8a1-7 Volume of Ball and Hamming-type Bounds for Stiefel Manifold with Euclidean Distance  
*Renaud-Alexandre Pitaval, Olav Tirkkonen, Aalto University*
- MP8a1-8 Distributed Resource Allocation for MISO Downlink Systems via the Alternating Direction Method of Multipliers  
*Satya Joshi, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications*
- MP8a1-9 Max-Rate MIMO Broadcast DFE Transceiver Design under Power and SER Constraints  
*Chih-Hao Liu, P. P. Vaidyanathan, California Institute of Technology*
- MP8a1-10 Performance of Asymmetric Antenna Configurations in Polarized Channels  
*Robert Severinghaus, Murali Tummala, John McEachen, Naval Postgraduate School*
- MP8a1-11 On Robust Training Sequence Design for Correlated MIMO Channel Estimation  
*Nafiseh Shariati, KTH Royal Institute of Technology; Jiaheng Wang, Southeast University; Mats Bengtsson, KTH Royal Institute of Technology*
- MP8a1-12 The Proportional Fair Sharing Algorithm under i.i.d. Models  
*Matthew Pugh, University of California, San Diego*

## **Session MP8a2 Signal Processing and Adaptive Systems I**

Chair: *Lu Chun-Shien, Institute of Information Science, Academia Sinica*

1:30 PM - 3:10 PM

- MP8a2-1 Fast Compressed Image Sensing Based on Sampling Matrix Design  
*Chun-Shien Lu, Hung-Wei Chen, Sung-Hsien Hsieh, Academia Sinica*
- MP8a2-2 Particle Filtering for Multivariate State-Space Models  
*Petar M Djuric, Monica F. Bugallo, Stony Brook University*
- MP8a2-3 Extracting Atmospheric Profiles from Hyperspectral Data with Particle Filters  
*Dustin Rawlings, Jacob Gunther, Todd Moon, Utah State University*
- MP8a2-4 Using Dictionary Learning for Improving Hyperspectral Pixel Classification  
*Andrew Pound, Jacob Gunther, Todd K. Moon, Utah State University; Gustavious P. Williams, Brigham Young University*
- MP8a2-5 Fault Localization in Smart Grid Using Wavelet Analysis and Unsupervised Learning  
*Huaiguang Jiang, Jun Zhang, Wenzhong Gao, University of Denver*

- MP8a2-6 Sensitivity of Polynomial Composition and Decomposition for Signal Processing Applications  
*Sefa Demirtas, Guolong Su, Alan V. Oppenheim, Massachusetts Institute of Technology*
- MP8a2-7 A Variable Regularization Control Method for NLMS Algorithm  
*Junghsi Lee, Hsu-Chang Huang, Yuan-Ze University*
- MP8a2-8 Electromagnetic Field Recognition for Proactive Robot Communication Connectivity Maintenance  
*Mustafa Ayad, Jun Jason Zhang, Richard Voyles, Mohammad Mahoor, University of Denver*
- MP8a2-9 A Data Reusage Algorithm Based on Incremental Combination of LMS Filters  
*Luiz Chamon, Humberto Ferro, Cássio Lopes, University of São Paulo*
- MP8a2-10 Superresolution by Compressive Sensing Algorithms  
*Albert Fannjiang, Wenjing Liao, University of California, Davis*
- MP8a2-11 Compressive Ladar Detector Noise Performance  
*Darryl Sale, Christopher J. Rozell, Justin Romberg, Aaron D. Lanterman, Georgia Institute of Technology*
- MP8a2-12 Rank Property of the MIMO Gaussian Wiretap Channel with an Average Power Constraint  
*Ali Fakoorian, A. Lee Swindlehurst, University of California, Irvine*
- MP8a2-13 Nonlinear System Identification Using Compressed Sensing  
*Manjish Naik, Douglas Cochran, Arizona State University*
- MP8a2-14 The Resolution of Derived Secondary Information from Filter Banks May Not Follow Directly from the Signal Models  
*Victor DeBrunner, Guifeng Liu, Florida State University*
- MP8a2-15 MIMO Radar Spatial Compressive Sensing with Unknown Parameters  
*Marco Rossi, Alexander M. Haimovich, New Jersey Institute of Technology; Yonina C. Eldar, Technion, Israel Institute of Technology*
- MP8a2-16 Classification of Multivariate Data Using Dirichlet Process Mixture Models  
*Petar M Djuric, Stony Brook University; Andre Ferrari, Universite de Nice-Sophia Antipolis*
- MP8a2-17 Compressed Sensing Radar Amid Noise and Clutter  
*Peter Tuuk, S. Lawrence Marple, Georgia Tech Research Institute*

## **Session TA1a MIMO in Optical Communications (invited)**

Chair: *Peter Winzer, Alcatel-Lucent*

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|--------|---|---------|
| TA1a-1 | Physical Layer Security in Space-Division Multiplexed Fiber Optic Communications<br><i>Kyle Guan, Emina Soljanin, Peter Winzer, Bell Laboratories, Alcatel-Lucent</i> | 8:15 AM |
|--------|---|---------|

TA1a-2	Modeling of Linear and Nonlinear Coupling in Multiple-Mode Fiber Optic Transmission with MIMO Signal Processing <i>Cristian Antonelli, Antonio Mecozzi, University of L'Aquila; Mark Shtaiif, Tel Aviv University</i>	8:40 AM
TA1a-3	Mode Coupling in Coherent Mode-Division-Multiplexed Systems: Impact on Capacity and Signal Processing Complexity <i>Joseph Kahn, Stanford University; Keang-Po Ho, Silicon Image</i>	9:05 AM
TA1a-4	Experimental Characterization of the Fiber-Optic MIMO Channel <i>Sebastian Randel, Roland Ryf, Peter Winzer, Bell Laboratories, Alcatel-Lucent</i>	9:30 AM

## **Session TA1b Wireless Video Transmission Systems (invited)**

Chair: *Andreas Molish, University of Southern California*

TA1b-1	Enhanced Adaptive Streaming over LTE-Advanced Wireless Networks <i>Jeff Foerster, Intel</i>	10:15 AM
TA1b-2	Subcarrier Mapping Based on Slice Visibility for Video Transmission over OFDM Channels <i>Laura Toni, Pamela C. Cosman, Laurence B. Milstein, University of California, San Diego</i>	10:40 AM
TA1b-3	An Online Learning Framework for Perceptually Optimized Adaptive Video Transmission <i>Amin Abdel Khalek, University of Texas at Austin; Constantine Caramanis, Robert W. Heath, Jr., The University of Texas at Austin</i>	11:05 AM
TA1b-4	Device-to-Device Communications for Wireless Video Delivery <i>Negin Golrezaei, Alexandros Dimakis, Andreas F. Molisch, University of Southern California</i>	11:30 AM

## **Session TA2a Game Theory in Communications (invited)**

Co-Chairs: *Marco Luise, University of Pisa and Giacomo Bacci, University of Pisa*

TA2a-1	Distributed Spectrum Sharing Policies for Selfish Users with Imperfect Monitoring Ability <i>Yuanzhang Xiao, Mihaela van der Schaar, University of California, Los Angeles</i>	8:15 AM
TA2a-2	Energy Efficiency Games in Cloud Computing for Wireless Networks <i>Tao Lin, Tansu Alpcan, Arun Vishwanath, University of Melbourne</i>	8:40 AM
TA2a-3	Mean Field Energy Games in Wireless Networks <i>François Mériiaux, Laboratoire des Signaux et Systèmes (L2S); Vineeth S Varma, Orange Labs; Samson Lasaulce, Laboratoire des Signaux et Systèmes (L2S)</i>	9:05 AM

TA2a-4	Learning Efficient Satisfaction Equilibrium via Trial and Error in Decentralized Wireless Networks <i>Samir Perlaza, Princeton University; Zhu Han, University of Houston; H. Vincent Poor, Princeton University</i>	9:30 AM
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## **Session TA2b Coding Theory for the Next-Generation Storage Systems (invited)**

Chair: *Lara Dolecek, University of California, Los Angeles*

TA2b-1	Content-assisted File Decoding for Nonvolatile Memories <i>Anxiao Jiang, Yue Li, Yue Wang, Texas A&amp;M University; Jehoshua Bruck, California Institute of Technology</i>	10:15 AM
TA2b-2	LDPC Codes on Euclidean Geometries: Trapping Set Structure <i>Qiuju Diao, Ying Tai, Shu Lin, Khaled Abdel-Ghaffar, University of California, Davis</i>	10:40 AM
TA2b-3	Covering Codes for Multilevel Flash Memories <i>Kathryn Haymaker, Christine Kelley, University of Nebraska-Lincoln</i>	11:05 AM
TA2b-4	Comparison of ECC Performance on MLC and TLC Flash Memories <i>Paul H. Siegel, Brian K. Butler, Scott Kayser, Eitan Yaakobi, Xiaojie (Eric) Zhang, University of California, San Diego</i>	11:30 AM

## **Session TA3a Multiuser and Massive MIMO (invited)**

Chair: *Nihar Jindal, Broadcom*

TA3a-1	Downlink Outage Probability in MIMO HetNets <i>Harpreet S. Dhillon, University of Texas at Austin; Marios Kountouris, École supérieure d'électricité; Jeff Andrews, University of Texas at Austin</i>	8:15 AM
TA3a-2	Coverage and Capacity in mmWave MIMO Systems <i>Salam Akoum, Omar El Ayach, Robert W. Heath, University of Texas at Austin</i>	8:40 AM
TA3a-3	A Millimeter-Wave Massive MIMO System for Next Generation Mobile Broadband <i>Zhouyue Pi, Jianzhong Zhang, Farooq Khan, Samsung Corp.</i>	9:05 AM
TA3a-4	Towards Improving LTE SU/MU-MIMO Performance: Issues in Channel Estimation, Interpolation and Feedback <i>Ozgun Y. Bursalioglu, Sean A. Ramprasad, Haralabos C. Papadopoulos, NTT DoCoMo Labs</i>	9:30 AM

## Session TA3b Compressive Estimation

Chair: *Wee Peng Tay, Nanyang Technological University, Singapore*

- TA3b-1      Compressive Estimation in AWGN: General      10:15 AM  
Observations and a Case Study  
*Dinesh Ramasamy, Sriram Venkateswaran, Upamanyu Madhow, University of California, Santa Barbara*
- TA3b-2      On Application of LASSO for Sparse Support      10:40 AM  
Recovery with Imperfect Correlation Awareness  
*Piya Pal, P. P. Vaidyanathan, California Institute of Technology*
- TA3b-3      Compressive Multiplexers for Correlated      11:05 AM  
Signals  
*Ali Ahmed, Justin Romberg, Georgia Institute of Technology*
- TA3b-4      Optimal Acquisition Policy for Compressed      11:30 AM  
Measurements with Limited Observations  
*Sourabh Bhattacharya, Ashutosh Nayyar, Tamer Basar, University of Illinois, Urbana-Champaign*

## Session TA4a Social Networks (invited)

Chair: *Patrick Wolfe, Harvard University*

- TA4a-1      Hub Discovery in Partial Correlation      8:15 AM  
Graphical Models  
*Al Hero, University of Michigan*
- TA4a-2      Geometric Network Analysis Tools      8:40 AM  
*Michael Mahoney, Stanford University*
- TA4a-3      Learning over Social Networks via Diffusion      9:05 AM  
Adaptation  
*Xiaochuan Zhao, Ali Sayed, University of California, Los Angeles*
- TA4a-4      Large Networks of Dynamic Agents:      9:30 AM  
Consensus under Adversarial Disturbances  
*Dario Bauso, Tamer Basar, University of Illinois, Urbana-Champaign*

## Session TA4b Signal Processing for Cyber-Security and Privacy in Networks (invited)

Chair: *Lalitha Sankar, Arizona State University*

- TA4b-1      Secure Estimation in Cyber-Physical Systems      10:15 AM  
*Yilin Mo, Bruno Sinopoli, Carnegie Mellon University*
- TA4b-2      Analyzing Privacy and Utility Using Axioms      10:40 AM  
*Daniel Kifer, Bing-Rong Lin, Penn State University*
- TA4b-3      Quantifying the Delay-Privacy Trade-off in      11:05 AM  
the Design of a Scheduling Policy  
*Sachin Kadloor, Negar Kiyavash, University of Illinois, Urbana-Champaign; Parv Venkitasubramaniam, Lehigh University*
- TA4b-4      A Formal Framework for Joint Privacy and      11:30 AM  
Security Modeling and Analysis in Data and  
Communication Networks  
*John Baras, University of Maryland*

## **Session TA5a 3D Video Processing (invited)**

Chair: *Patrick Le Callet, Polytech'Nantes Université de Nantes*

- |        |   |         |
|--------|---|---------|
| TA5a-1 | Full-Reference Quality Assessment of Stereoscopic Images by Modeling Binocular Rivalry<br><i>Ming-Jun Chen, Che-Chun Su, University of Texas at Austin; Do-Kyoung Kwon, Texas Instruments; Lawrence K. Cormack, Alan Bovik, University of Texas at Austin</i> | 8:15 AM |
| TA5a-2 | Visual Quality in Stereoscopic 3DTV<br><i>Ramanathan Palaniappan, Nikil Jayant, Georgia Institute of Technology; Pravin Mane, VQLink</i>  | 8:40 AM |
| TA5a-3 | Depth Map Estimation in DIBR Stereoscopic 3D Videos Using a Combination of Monocular Cues<br><i>Mohammed Aabed, Dogancan Temel, Ghassan AlRegib, Georgia Institute of Technology</i>  | 9:05 AM |
| TA5a-4 | Perceptual Depth Indicator for S-3D Content Based on Binocular and Monocular cues<br><i>Pierre Lebreton, Alexander Raake, Telekom Innovation Laboratories; Marcus Barkowsky, Patrick Le Callet, LUNAM Université, Université de Nantes</i>                    | 9:30 AM |

## **Session TA5b Computer Arithmetic Accelerators for Signal Processing**

Chair: *Roger Woods, Queen's University Belfast*

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|--------|--|----------|
| TA5b-1 | Imprecise Arithmetic for Low Power Image Processing<br><i>Pietro Albicocco, Gian Carlo Cardarilli, University of Rome Tor Vergata; Alberto Nannarelli, Technical University of Denmark; Massimo Petricca, Marco Re, University of Rome Tor Vergata</i> | 10:15 AM |
| TA5b-2 | Linearization Using Efficient Complex Polynomial Evaluations<br><i>Pouya Dormiani, Milos Ercegovac, University of California, Los Angeles</i>  | 10:40 AM |
| TA5b-3 | FPGA-Accelerated Simulation of Truncated-Matrix Multipliers<br><i>George Walters, Penn State Erie, The Behrend College</i>   | 11:05 AM |
| TA5b-4 | A Low-Power Dual-Path Floating-Point Fused Add-Subtract Unit<br><i>Jae Hong Min, Jongwook Sohn, Earl E. Swartzlander, Jr., University of Texas at Austin</i>   | 11:30 AM |

## **Session TA6a Low Power I (invited)**

Chair: *James Stine, Oklahoma State University*

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|--------|---|---------|
| TA6a-1 | Breaking the 3-D IC Power Delivery Wall<br><i>Mircea Stan, Kaushik Mazumdar, University of Virginia</i>   | 8:15 AM |
| TA6a-2 | A Review of QCA Adders and Metrics<br><i>Weiqiang Liu, Maire O'Neill, Queen's University of Belfast; Earl Swartzlander, University of Texas at Austin</i> | 8:40 AM |

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|--------|---|---------|
| TA6a-3 | Circuits for Ultra-low Power Millimeter-Scale Sensor Nodes: Progress, Opportunities, and Challenges<br><i>Yoonmyung Lee, Dennis Sylvester, David Blaauw, University of Michigan</i> | 9:05 AM |
| TA6a-4 | Distributed Power Delivery for Energy Efficient and Low Power Systems<br><i>Selcuk Kose, University of South Florida; Eby Friedman, University of Rochester</i>                     | 9:30 AM |

## Session TA6b Low Power II (invited)

Chair: *James Stine, Oklahoma State University*

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|--------|---|----------|
| TA6b-1 | The Energy-Efficiency of Asynchronous Architectures<br><i>Rajit Manohar, Cornell University</i>   | 10:15 AM |
| TA6b-2 | Optimized Low-Power Elementary Function Approximation for Chebyshev Series Approximations<br><i>Masoud Sadeghian, Oklahoma State University; James Stine, Oklahoma State University</i>   | 10:40 AM |
| TA6b-3 | Yield-Driven Minimum Energy CMOS Circuit Design<br><i>Max Korbel, Dylan Stow, Chris Ferguson, David Harris, Harvey Mudd College</i>   | 11:05 AM |
| TA6b-4 | Power Efficient Design of Parallel/Serial FIR Filters in RNS<br><i>Massimo Petricca, Pietro Albicocco, Gian Carlo Cardarilli, University of Rome Tor Vergata; Alberto Nannarelli, Technical University of Denmark; Marco Re, University of Rome Tor Vergata</i> | 11:30 AM |

## Session TA7a Biological Networks and Machine Learning (partly invited)

Chair: *Olgica Milenkovic, University of Illinois, Urbana-Champaign*

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|--------|---|---------|
| TA7a-1 | Wavelet Packets Based Clustering for the Study of Functional Connectivity in the Rat Brain<br><i>Alessio Medda, Georgia Institute of Technology; Shella Keilholz, Emory University School of Medicine</i> | 8:15 AM |
| TA7a-2 | Reconstructing a Sparse Matrix Using Row and Column Pooling<br><i>Or Zuk, Broad Institute of MIT and Harvard</i>  | 8:40 AM |
| TA7a-3 | Alignment of Multiple Biological Networks Based on Semi-Markov Random Walk Scores<br><i>Sayed Mohammad Ebrahim Sahraeian, Byung-Jun Yoon, Texas A&amp;M University</i>                                    | 9:05 AM |
| TA7a-4 | Reducing the Number of Features for Seizure Prediction of Spectral Power in Intracranial EEG<br><i>Yun Park, Brown University; Theoden Netoff, Keshab Parhi, University of Minnesota</i>                  | 9:30 AM |



## Session TA7b Sequence and Genome Analysis (partly invited)

Chair: *Sharon Aviran, University of California, Berkeley*

- TA7b-1 Sparse Inference of Regulatory Networks 10:15 AM  
Using Information-Theoretic Methods  
*Mo Deng, Amin Emad, Olgica Milenkovic, University of Illinois, Urbana-Champaign*
- TA7b-2 Structural Stabilization of RNA-Protein 10:40 AM  
Binding Sites through High Linkage SNPs  
*Matthew Halvorsen, Joshua S. Martin, Wes Sanders, Justin Ritz, Alain Laederach, University of North Carolina, Chapel Hill*
- TA7b-3 Detection of Antipodal Persistence in Large 11:05 AM  
Scale Differential Gene Expression Experiments  
*Alfred Hero, Robert Brown, Hamed Firouzi, University of Michigan, Ann Arbor*
- TA7b-4 Efficient Genotyping of Individuals Using 11:30 AM  
Overlapping Pool Sequencing and Imputation  
*Farhad Hormozdiari, Zhanyong Wang, Wen-Yun Yang, Eleazar Eskin, University of California, Los Angeles*

## Session TA8a1 Array Signal Processing II

Chair: *Peter Gerstoft, University of California San Diego*

8:15 AM - 9:55 AM

- TA8a1-1 An Analytical Framework for Transmit Beamforming  
with Peak Power Constraint  
*Zhenhua Yu, Xiaoli Ma, G. Tong Zhou, Georgia Institute of Technology*
- TA8a1-2 On the Applicability of Source Localization Techniques  
to Passive Multistatic Radar  
*Daniel Hack, Lee Patton, Matrix Research, Inc.; Braham Himed, Michael Saville, Air Force Research Laboratory*
- TA8a1-3 Sparse Frequency Diverse MIMO Radar Imaging  
*Changchang Liu, Weidong Chen, University of Science and Technology of China*
- TA8a1-4 EEG Source Localization Using Beamforming in  
Energy-Constrained Regions  
*D. Gutiérrez, C. C. Zaragoza-Martínez, Center of Research and Advanced Studies*
- TA8a1-5 Hybrid Cramer-Rao Lower Bound for Sniper  
Localization via a Helicopter-Based Acoustic Array  
*Lou Fertig, Georgia Tech Research Institute*
- TA8a1-6 A ML Localizer of Multiple Radar Targets  
*Francesco Bandiera, Michele Mancino, Giuseppe Ricci, University of Salento; Danilo Orlando, ELETTRONICA S.p.A.*
- TA8a1-7 Recursive Updating Algorithm for Robust Capon  
Beamforming with Steering Vector Mismatches  
*Evgeny Mavrychev, Nizhniy Novgorod State Technical University*

- TA8a1-8     A Generalized Sinusoidal Frequency Modulated Waveform for Active Sonar  
*David Hague, John Buck, University of Massachusetts Dartmouth*
- TA8a1-9     Consistent Linear Tracker with Position and Range Rate Measurements  
*Steven Bordonaro, Naval Undersea Warfare Center; Peter Willett, Yaakov Bar-Shalom, University of Connecticut*
- TA8a1-10    Joint Adaptive Beamforming and Echo Cancellation Using a Non Reference Anchor Array Framework  
*Karan Nathwani, Rajesh Hegde, Indian Institute of Technology Kanpur*
- TA8a1-11    Tensor Decompositions with Vandermonde Factor and Applications in Signal Processing  
*Mikael Sorensen, Lieven De Lathauwer, KU Leuven*
- TA8a1-12    A Correction and Generalization to the Sparse Learning via Iterative Minimization Method for Target off the Grid in MIMO Radar Imaging  
*Changchang Liu, Li Ding, Weidong Chen, University of Science and Technology of China*
- TA8a1-13    Synthetic Beamforming with Distributed Digital Subarrays  
*Bo-Kai Feng, David Jenn, Naval Postgraduate School*
- TA8a1-14    Velocity Spectrum Analysis in Seismic Prospecting Combining Detection Principles, Beam-space Techniques and Coherent Signal-Subspace Processing  
*Rafael Krummenauer, Martin Tygel, Amauri Lopes, University of Campinas*
- TA8a1-15    Cooperative Localization in Wireless Networks under Bandwidth Constraints  
*Panos Alevizos, Nikos Fasarakis-Hilliard, Aggelos Bletsas, Technical University of Crete*
- TA8a1-16    Cramer-Rao Lower Bounds for Estimation of Phase in LBI Based Localization Systems  
*Mohammad Pourhomayoun, Mark Fowler, Binghamton University*

## **Session TA8a2 Signal Processing and Adaptive Systems II**

Chair: *Nascimento Vitor, Univ. of Sao Paulo*

8:15 AM - 9:55 AM

- TA8a2-1     Comparison of Least Mean Fourth and Least Mean Square Tracking  
*Eweda Eweda, National Knowledge Center, Abu Dhabi*
- TA8a2-2     Extending MC-SURE to Denoise Sensor Data Streams  
*Mandoye Ndoye, Chandrika Kamath, Lawrence Livermore National Laboratory*
- TA8a2-3     Improved Robustness and Accelerated Power Amplifier Identification with Adaptive Wiener Models in the Complex Domain  
*Robert Dallinger, Markus Rupp, Vienna University of Technology*

- TA8a2-4     Efficient FFT Based Comb Filtering without Doing the FFT  
*Jim Rasmussen, The MITRE Corporation*
- TA8a2-5     A Connection-Constraint Algorithm for a Sparse Adaptive Photonic Filter  
*Suk-seung Hwang, Chosun University; John J. Shynk, University of California, Santa Barbara*
- TA8a2-6     Discriminative Dictionary Learning via Mutual Exclusion  
*Raghu Raj, U.S. Naval Research Laboratory*
- TA8a2-7     Convergence Analysis of Clipped Input Adaptive Filters Applied to System Identification  
*Mehdi Bekrani, Andy W. H. Khong, Nanyang Technological University*
- TA8a2-8     Sparse RLS Adaptive Filter with Diagonal Loading  
*Yuriy Zakharov, University of York; Vitor Nascimento, University of São Paulo*
- TA8a2-9     Distributed Consensus Based Joint Resource and Routing Optimization in Wireless Sensor Networks  
*Markus Leinonen, Marian Codreanu, Markku Juntti, University of Oulu*
- TA8a2-10    Tracking Analysis of the  $\epsilon$ -NSRLMMN Algorithm  
*Mohammed Faiz, Azzedine Zerguine, King Fahd University of Petroleum and Minerals*
- TA8a2-11    Homotopy algorithm Using Dichotomous Coordinate Descent Iterations for Sparse Recovery  
*Yuriy Zakharov, University of York; Vitor Nascimento, University of São Paulo*
- TA8a2-12    Hirschman Uncertainty Using Rényi, Instead of Shannon, Entropy is Invariant to the Rényi Entropy Order  
*Kirandeep Ghuman, Victor DeBrunner, Florida State University*
- TA8a2-13    Joint Distributed Parameter and Channel Estimation in Wireless Sensor Networks via Variational Inference  
*Aitzaz Ahmad, Erchin Serpedin, Hazem Nounou, Mohamed Nounou, Texas A&M University*
- TA8a2-14    Performance Analysis for 2-D Convolution Implemented with the 2-D Modified Discrete Fourier Transform  
*Chandrashekar Radhakrishnan, University of Illinois; William Jenkins, Pennsylvania State University*

## **Session TA8b1 Communication Systems II**

Chair: *Yao Xie, Duke University*

10:15 AM - 12:00 PM

- TA8b1-1     Experimental Analysis of Cyclostationary Detectors under Cyclic Frequency Offsets  
*Eric Rebeiz, Paulo Urriza, Danijela Cabric, University of California, Los Angeles*
- TA8b1-2     Buffer Aware Power Control for Cognitive Radio Networks  
*Eman Naguib, Tamer Elbatt, Mohammed Nafie, Nile University*

- TA8b1-3 Suboptimal Method for Pilot and Data Power Allocation in Combined Positioning and Communications OFDM Systems  
*Rafael Montalban, Gonzalo Seco-Granados, Universitat Autònoma de Barcelona; A. Lee Swindlehurst, University of California, Irvine*
- TA8b1-4 Stochastic Online Learning under Unknown Time-Varying Models  
*Pouya Tehrani, Qing Zhao, University of California, Davis*
- TA8b1-5 Spectrum Sensing Scheduling in a Cost-based Framework  
*Aditya Kelkar, Qi Cheng, Oklahoma State University*
- TA8b1-6 The Optimal Fusion Rule for Cooperative Spectrum Sensing from a Diversity Perspective  
*Dongliang Duan, Liuqing Yang, Louis L. Scharf, Colorado State University*
- TA8b1-7 Diffuse Mid-UV Communication in the Presence of Obscurants  
*Derek Young, Jerry Brewer, Jeannette Chang, Tina Chou, Jacques Kvam, Matthew Pugh, Sandia National Labs*
- TA8b1-8 Quickest Search for Anomaly Detection  
*Sattar Vakili, Qing Zhao, University of California, Davis; Ananthram Swami, Army Research Laboratory*
- TA8b1-9 Weighted Cyclic Prefix OFDM: PAPR Analysis and Performances Comparison with DFT-Precoding  
*Damien Roque, GIPSA-lab and DGA; Cyrille Siclet, Jean-Marc Brossier, GIPSA-lab; Pierre Siohan, Orange-Labs*
- TA8b1-10 Predicting Spectrum Vacancy for Opportunistic Communications  
*David Browne, MIT Lincoln Laboratory*
- TA8b1-11 Cross-Layer Transmission Rate/Power Policy for Cognitive Multi-Access Networks with Imperfect Sensing  
*Ghada Saleh, Amr El-Keyi, Mohammed Nafie, Nile University*
- TA8b1-12 A Cross Layer Routing Protocol for Cognitive Radio Networks Using Channel Activity Tracking  
*Sandeep Gogineni, Syracuse University; Onur Ozdemir, ANDRO Computational Solutions; Engin Masazade, Chilukuri Mohan, Pramod Varshney, Syracuse University*

## **Session TA8b2 MIMO Communications and Signal Processing II**

Chair: *Ali Tajer, Princeton University*

10:15 AM - 12:00 PM

- TA8b2-1 Relaying and Base Station Cooperation: a Comparative Survey for Future Cellular Networks  
*Raphael Rolny, Marc Kuhn, Armin Wittneben, Swiss Federal Institute of Technology Zurich; Thomas Zasowski, Swisscom ICC*

- TA8b2-2     A Feasibility Study on Opportunistic Interference Alignment: Limited Feedback and Sum-Rate Enhancement  
*Hyun Jong Yang, Stanford University; Won-Yong Shin, Dankook University; Bang Chul Jung, Gyeongsang National University; Arogyaswami Paulraj, Stanford University*
- TA8b2-3     Joint Interference and Phase Alignment in Multiuser MIMO Interference Channels  
*Seyed Morteza Razavi, Tharmalingam Ratnarajah, Mathini Sellathurai, Queen's University Belfast*
- TA8b2-4     User-Aided Sub-Clustering for CoMP Transmission: Feedback Overhead vs. Data Rate Trade-off  
*Lars Thiele, Fraunhofer Heinrich Hertz Institute*
- TA8b2-5     Chance Constrained and Ergodic Robust QoS Power Minimization in the Satellite Downlink  
*Andreas Gründinger, Arailym Butabayeva, Michael Joham, Wolfgang Utschick, Technische Universität München*
- TA8b2-6     Joint Channel and Data Estimation for MIMO Communications with Sparse Pilots  
*Yejian Chen, Stephan ten Brink, Bell Laboratories, Alcatel-Lucent*
- TA8b2-7     Simulated Annealing User Scheduling for Coordinated Heterogeneous MIMO Networks  
*Hakimeh Purmehdi, Robert Elliott, Witold Krzymien, University of Alberta, and TRLabs*
- TA8b2-8     Carrier-Cooperative Zero-Forcing for Power Minimization in Parallel MIMO Broadcast Channels  
*Stephan Herrmann, Christoph Hellings, Wolfgang Utschick, Technische Universität München*
- TA8b2-9     Performance of MMSE Multi-antenna Receiver under Hierarchical Poisson Random Fields of Interferences  
*Wei Shi, James Ritcey, University of Washington*
- TA8b2-10    Concurrent Training and Data Transmission in Multiple-Access Channels  
*Adriano Pastore, Javier Rodríguez Fonollosa, Universitat Politècnica de Catalunya*
- TA8b2-11    Best and Worst-Case Statistics for Linear Beamforming in the MISO Correlated Broadcast Channel  
*Vasanthan Raghavan, University of Southern California; Stephen Hanly, Macquarie University*
- TA8b2-12    From Single- to Multi-User Scheduling in LTE-A Uplink Exploiting Virtual MIMO  
*Martin Kurras, Lars Thiele, Fraunhofer Heinrich Hertz Institute*

## Session TA8b3 Architecture and Implementation of Signal Processing Systems

Chair: *Jörn W. Janneck, Lund University*

10:15 AM - 12:00 PM

- TA8b3-1 Receiver Implementations for Co-Channel Interference Suppression in MIMO-OFDM  
*Johanna Ketonen, Markku Juntti, University of Oulu*
- TA8b3-2 Implementation of LS, MMSE and SAGE Channel Estimators for Mobile MIMO-OFDM  
*Johanna Ketonen, Markku Juntti, University of Oulu; Jari Ylioinas, Nokia Siemens Networks; Joseph R. Cavallaro, Rice University*
- TA8b3-3 Low Complexity Opportunistic Decoder for Network Coding  
*Bei Yin, Michael Wu, Guohui Wang, Joseph R. Cavallaro, Rice University*
- TA8b3-4 Sparse Polynomial Equalization of an RF Receiver via Algorithm, Analog, and Digital Codesign  
*Andrew Bolstad, Benjamin A. Miller, Karen Gettings, Mike Ericson, Helen Kim, Merlin Green, Dan Santiago, MIT Lincoln Laboratory*
- TA8b3-5 Implementation of a QPSK Transceiver for Software Defined Radio on a Graphic Processing Unit (GPU)  
*Rehan Muzammil, M. Salim Beg, The Aligarh Muslim University; Mohsin M. Jamali, University of Toledo*
- TA8b3-6 Karatsuba Implementation of FIR Filters  
*Pietro Albicocco, Gian Carlo Cardarilli, Salvatore Pontarelli, Marco Re, University of Rome Tor Vergata*
- TA8b3-7 Real-Time Hardware Design for Improving Laser Detection and Ranging Accuracy  
*Jarrod Brown, Graduate Student; Clay Hughes, Linda DeBrunner, Florida State University*
- TA8b3-8 Dataflow Programming in CAL—Balancing Expressiveness, Analyzability, and Implementability  
*Johan Eker, Ericsson Research; Jörn Janneck, Lund University*

## Session TP1a Network Optimization (invited)

Chair: *Atila Eryilmaz, Ohio State University*

- TP1a-1 Optimizing Transmissions for Wireless Video 1:30 PM  
*Michael Neely, Giuseppe Caire, University of Southern California*
- TP1a-2 Gossip-Based Random Projection Algorithm 1:55 PM  
for SVMs  
*Lee Soo Min, Angelia Nedich, University of Illinois, Urbana-Champaign*
- TP1a-3 Random Hamiltonian Cycles with Random 2:20 PM  
Link Deletions  
*Joohwan Kim, R. Srikant, University of Illinois, Urbana-Champaign*

TP1a-4      Temporal Statistical Characterization of      2:45 PM  
Interference for Joint Encoding and Random Access  
*C. Emre Koksal, Atilla Eryilmaz, Nithin Sugavanam,  
Oklahoma State University*

## **Session TP1b   Distributed Signal Processing (invited)**

Co-Chairs: *Hongbin Li, Stevens Institute of Technology and Jun  
Fang, Stevens Institute of Technology*

TP1b-1      Gossip-based Distributed Stochastic      3:30 PM  
Approximation: The Price of Non-double  
Stochasticity

*Gemma Morral, Pascal Bianchi, Gersende Fort, Institut  
Telecom / Telecom ParisTech / CNRS-LTCI; Jérémie  
Jakubowicz, Institut Telecom / Telecom Sud Paris*

TP1b-2      Distributed Maximum a Posteriori Probability      3:55 PM  
Estimation for Tracking of Dynamic Systems  
*Felicia Jakubiec, Alejandro Ribeiro, University of  
Pennsylvania*

TP1b-3      Identifying Multiple Infection Sources in a      4:20 PM  
Network  
*Wuqiong Luo, Wee Peng Tay, Nanyang Technological  
University*

TP1b-4      Distributed Learning in Large Scale      4:45 PM  
Multi-Agent Games: A Modified Fictitious Play  
Approach  
*Brian Swenson, Soumya Kar, Carnegie Mellon  
University*

TP1b-5      An Iterative Precoding Approach for Joint      5:10 PM  
Transmission of Distributed Correlated Sources  
*Jun Fang, University of Electronic Science and  
Technology of China; Hongbin Li, Stevens Institute of  
Technology*

## **Session TP2a   Consensus Based Algorithms**

Chair: *Lara Dolecek, University of California, Los Angeles*

TP2a-1      Toward Resource-Optimal Averaging      1:30 PM  
Consensus over the Wireless Medium  
*Matthew Nokedby, Rice University; Waheed U. Bajwa,  
Rutgers; Robert Calderbank, Duke University; Behnaam  
Aazhang, Rice University*

TP2a-2      Distributed Average Consensus Using      1:55 PM  
Bounded Transmissions  
*Sivaraman Dasarathan, Mahesh Banavar, Cihan  
Tepedelenlioglu, Andreas Spanias, Arizona State  
University*

TP2a-3      Distributed Gram-Schmidt Orthogonalization      2:20 PM  
Based on Dynamic Consensus  
*Ondrej Sluciak, Vienna University of Technology; Hana  
Strakova, University of Vienna; Markus Rupp, Vienna  
University of Technology; Wilfried Gansterer, University  
of Vienna*

TP2a-4      Simultaneous Distributed Sensor      2:45 PM  
 Self-Localization and Target Tracking Using Belief  
 Propagation and Likelihood Consensus  
*Florian Meyer, Erwin Riegler, Ondrej Hlinka, Franz  
 Hlawatsch, Vienna University of Technology*

## **Session TP2b   Cooperative Adaptation and Learning (invited)**

Co-Chairs: *Danilo Mandic, Imperial College and Ali Sayed,  
University of California, Los Angeles*

TP2b-1      Mean-Square Analysis of Continuous-Time      3:30 PM  
Distributed Estimation Strategies  
*Vitor Nascimento, University of São Paulo; Ali Sayed,  
University of California, Los Angeles*

TP2b-2      Extrinsic Gossip and Reducing      3:55 PM  
Self-reinforcement in Distributed Consensus  
*Andrew Bean, Angelia Nedich, Andrew Singer, University  
of Illinois, Urbana-Champaign*

TP2b-3      Non-linear Least Squares Estimation via      4:20 PM  
Network Diffusion  
*Simon Li, Anna Scaglione, University of California, Davis*

TP2b-4      Fast Cooperative Distributed Learning      4:45 PM  
*Dusan Jakovetic, Jose M F. Moura, Joao Xavier, Carnegie  
Mellon University*

TP2b-5      Exploiting the Noncircularity of Complex      5:10 PM  
Cooperative Learning Systems  
*Dahir Dini, Danilo Mandic, Imperial College London*

## **Session TP3a   Information Theoretic Signal Processing**

Co-Chairs: *P. P. Vaidyanathan, California Institute of Technology  
and Piya Pal, California Institute of Technology*

TP3a-1      The Gaussian CEO Problem for a Scalar      1:30 PM  
Source with Memory: A Necessary Condition  
*Jie Chen, Feng Jiang, Arnold Swindlehurst, University of  
California, Irvine*

TP3a-2      Empirical Rate-Distortion Study of      1:55 PM  
Compressive Sensing-based Joint Source-Channel  
Coding  
*Muriel L. Rambeloarison, Soheil Feizi, Georgios  
Angelopoulos, Muriel Medard, Massachusetts Institute of  
Technology*

TP3a-3      Greedy Adaptive Measurements with Signal      2:20 PM  
and Measurement Noise  
*Entao Liu, Edwin Chong, Louis Scharf, Colorado State  
University*

TP3a-4      Role of Bandwidth in the Quality of Inversion      2:45 PM  
of Linear Multirate Systems with Noise  
*P. P. Vaidyanathan, Piya Pal, California Institute of  
Technology*



## **Session TP3b Underwater Communications (invited)**

Chair: *Geert Leus, TU Delft*

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|--------|--|---------|
| TP3b-1 | Differentially Coherent OFDM with Fractional FFT Demodulation<br><i>Yashar M Aval, Millica Stojanovic, Northeastern University</i>   | 3:30 PM |
| TP3b-2 | Channel Estimation for Multi-layer Block Transmissions over Underwater Acoustic Channels<br><i>Srinivas Yerramalli, University of Southern California; Zijian Tang, Netherlands Organization for Applied Scientific Research; Urbashi Mitra, University of Southern California</i>           | 3:55 PM |
| TP3b-3 | Outage Performance of a Multiuser Distributed Antenna System in Underwater Acoustic Channels<br><i>Zhaohui Wang, Shengli Zhou, University of Connecticut; Zhengdao Wang, Iowa State University; Josko Catipovic, Naval Undersea Warfare Center; Peter Willett, University of Connecticut</i> | 4:20 PM |
| TP3b-4 | Underwater Channel Aware Routing<br><i>Paolo Casari, Matteo Lazzarin, Michele Zorzi, University of Padova</i>  | 4:45 PM |
| TP3b-5 | Soft-Adaptive Turbo Equalization- Using Soft Information in Adaptation<br><i>Atulya Yellepeddi, Massachusetts Institute of Technology/ Woods Hole Oceanographic Institute; James Preisig, Woods Hole Oceanographic Institute</i>   | 5:10 PM |

## **Session TP4a Decoding and Detection**

Chair: *Rodrigo de Lamare, The University of York*

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|--------|---|---------|
| TP4a-1 | Low-Complexity and Approximative Sphere Decoding of Sparse Signals<br><i>Benjamin Knoop, Till Wiegand, Steffen Paul, University of Bremen</i>   | 1:30 PM |
| TP4a-2 | Dynamic Threshold Schemes for Multi-Level Nonvolatile Memories<br><i>Frederic Sala, Ryan Gabrys, Lara Dolecek, University of California, Los Angeles</i>  | 1:55 PM |
| TP4a-3 | Iterative Detection and Decoding for MIMO Systems with Knowledge-Aided Belief Propagation Algorithms<br><i>Jingjing Liu, Peng Li, Rodrigo de Lamare, University of York</i>   | 2:20 PM |
| TP4a-4 | Quantization, Absorbing Regions and Practical Message Passing Decoders<br><i>Behzad Amiri, University of California, Los Angeles; Shayan Garani Srinivasa, Western Digital Corporation; Lara Dolecek, University of California, Los Angeles</i> | 2:45 PM |

## **Session TP4b Smart Grid Communications and Networks (invited)**

Co-Chairs: *Anna Scaglione, University of California, Davis and Zhifang Wang, University of California, Davis*

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|--------|---|---------|
| TP4b-1 | Demand Response in Radial Distribution Networks<br><i>Na Li, Lingwen Gan, Steven Low, California Institute of Technology; Lijun Chen, University of Colorado at Boulder</i>   | 3:30 PM |
| TP4b-2 | Competitive Privacy in the Smart Grid<br><i>Lalitha Sankar, Princeton University; Soumya Kar, Carnegie Mellon University; H. Vincent Poor, Princeton University</i>   | 3:55 PM |
| TP4b-3 | Secure Network and Information Architectures for Smart Grid Data Analysis and Control<br><i>Marina Thottan, Young Jin Kim, Gary Atkinson, Bell Laboratories, Alcatel-Lucent</i>   | 4:20 PM |
| TP4b-4 | The Impact of Volatile Generation/Load Profile in Smart Grid on the Grid Vulnerability to Cascading Overload Failures<br><i>Zhifang Wang, Anna Scaglione, University of California, Davis; Robert J. Thomas, Cornell University</i> | 4:45 PM |
| TP4b-5 | Power Resource Allocation in a Network of Fast Charging Stations<br><i>George Michailidis, Michael Devetsikiotis, Safak Bayram, University of Michigan</i>  | 5:10 PM |

## **Session TP5a Design Methodologies and Architectures for Communications**

Chair: *Joseph R. Cavallaro, Rice University*

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|--------|---|---------|
| TP5a-1 | High-Level Architecture Modeling and Exploration for Streaming Applications<br><i>Usman Mazhar Mirza, Flavius Gruian, Lund University</i>                     | 1:30 PM |
| TP5a-2 | Sequential Decoding of Non-Binary LDPC Codes on Graphics Processing Units<br><i>David Romero, Nicholas Chang, MIT Lincoln Laboratory</i>                      | 1:55 PM |
| TP5a-3 | A GPU Implementation of Belief Propagation Decoder for Polar Codes<br><i>Bharath Kumar Reddy, Nitin Chandrakhodan, Indian Institute of Technology, Madras</i> | 2:20 PM |
| TP5a-4 | High Performance Efficient Parallel Nonbinary LDPC Decoding on GPU<br><i>Guohui Wang, Hao Shen, Bei Yin, Yang Sun, Joseph R. Cavallaro, Rice University</i>   | 2:45 PM |

## **Session TP5b Interference Alignment (invited)**

Chair: *Tharm Ratnarajah, Queen's University Belfast*

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|--------|---|---------|
| TP5b-1 | System-level Performance of Distributed Cooperation<br><i>Ratheesh Mungara, Geordie George, Angel Lozano, Universitat Pompeu Fabra</i>  | 3:30 PM |
| TP5b-2 | On the DoF of the Multiple-Antenna Time Correlated Interference Channel with Delayed CSIT<br><i>Xinping Yi, David Gesbert, Eurecom Institute; Sheng Yang, Mari Kobayashi, École supérieure d'électricité</i>        | 3:55 PM |
| TP5b-3 | Linear Transceiver Design for the Noisy Gaussian MIMO Interference Channel with Partial CSI<br><i>Francesco Negro, Eurecom Institute; Irfan Ghauri, Infineon Technologies France; Dirk Slock, Eurecom Institute</i> | 4:20 PM |
| TP5b-4 | On the Nuclear Norm Approach for Interference Alignment<br><i>Huiqin Du, Tharm Ratnarajah, Queen's University Belfast</i>   | 4:45 PM |
| TP5b-5 | Interference Alignment in Coordinated Multi-Point Systems<br><i>Seyed Morteza Razavi, Tharm Ratnarajah, Queen's University Belfast</i>  | 5:10 PM |

## **Session TP6a Wireless Full Duplex**

Chair: *Ashutosh Sabharwal, Rice University*

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|--------|---|---------|
| TP6a-1 | Decode-and-Cancel for Interference Cancellation in Full-duplex Networks<br><i>Jingwen Bai, Ashutosh Sabharwal, Rice University</i>  | 1:30 PM |
| TP6a-2 | Full-Duplex MIMO Relaying: Achievable Rates under Limited Dynamic Range<br><i>Brian Day, Ohio State University; Daniel Bliss, Adam Margetts, MIT Lincoln Laboratory; Philip Schniter, Ohio State University</i>   | 1:55 PM |
| TP6a-3 | Full Duplex Wireless Communications with Partial Interference Cancellation<br><i>Jianshu Zhang, Seyed Omid Taghizadeh Motlagh, Ilmenau University of Technology; Jian Luo, Fraunhofer Heinrich-Hertz-Institute; Martin Haardt, Ilmenau University of Technology</i> | 2:20 PM |
| TP6a-4 | Wideband Digital Cancellation for Full-Duplex Communications<br><i>Mohammad Ali Khojastepour, Sampath Rangarajan, NEC Laboratories America, Inc.</i>  | 2:45 PM |

## **Session TP6b Biological Image Analysis**

Chair: *Scott T. Acton, University of Virginia*

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|--------|---|---------|
| TP6b-1 | Assessment of Wallerian Degeneration by Automated Image Analysis<br><i>Andrea Vaccari, Kanchana Gamage, Sapir Nachum, Barry Condon, Christopher Deppmann, Scott Acton, University of Virginia</i> | 3:30 PM |
|--------|---|---------|

TP6b-2	Robust Biological Image Sequence Analysis Using Graph Based Approaches <i>B.S. Manjunath, Diana Delibaltov, Karthikeyan Shanmuga Vadivel, Vignesh Jagadeesh, University of California, Santa Barbara</i>	3:55 PM
TP6b-3	A Linear, Transportation-based, Embedding Method for Analyzing Biomedical Images <i>G.K. Rohde, W. Wang, S. Basu, D. Slepcev, Carnegie Mellon University</i>	4:20 PM
TP6b-4	An Information Theoretic Framework for MRI Preprocessing, Multiclass Feature Selection and Segmentation of PF Tumors <i>Shaheen Ahmed, Emory U.; K.M. Iftikharuddin, Old Dominion University; E.O. George, University of Memphis</i>	4:45 PM
TP6b-5	The Effect of Image Registration on the Localization of Single Molecules in Microscopy Experiments <i>Raimund Ober, Edward Cohen, University of Texas at Dallas</i>	5:10 PM

## **Session TP7a MIMO Radar and Waveform Design**

Chair: *Marius Pesavento, TU Darmstadt*

TP7a-1	Transmit Beam-space Design for Direction Finding in Colocated MIMO Radar with Arbitrary Receive Array and Even Number of Waveforms <i>Arash Khabbazi-basmenj, Sergiy Vorobyov, Aboulnasr Hassanien, Matthew Morency, University of Alberta</i>	1:30 PM
TP7a-2	Jammer Detection and Estimation with MIMO Radar <i>Xiufeng Song, Peter Willett, Shengli Zhou, University of Connecticut</i>	1:55 PM
TP7a-3	Non-linear Processing for Multicarrier MIMO Radar for Improved Target Resolution <i>Mir H. Mahmood, Mark R. Bell, Purdue University</i>	2:20 PM
TP7a-4	Generating Correlated QPSK Waveforms by Exploiting Real Gaussian Random Variables <i>Jardak Seifallah Jardak, Tunisia Polytechnic School (TPS)-University of Carthage; Sajid Ahmed, Slim Alouini, King Abdullah University of Science and Technology</i>	2:45 PM

## **Session TP7b Speech Processing and Speech Recognition (invited)**

Chair: *Tokunbo Ogunfunmi, Santa Clara University*

TP7b-1	Reproducing Kernel-based Methods for Extracting and Identifying Noise-Robust Speech Features <i>Shantanu Chakrabartty, Michigan State University</i>	3:30 PM
TP7b-2	Joint Tracking of Clean Speech and Noise Using HMMS and Particle Filters for Robust Speech Recognition <i>Aleem Mushtaq, Chin-Hui Lee, Georgia Institute of Technology</i>	3:55 PM

- TP7b-3 Sparsity-Constrained Stranded Gaussian Mixture Hidden Markov Models for Automatic Speech Recognition 4:20 PM  
*Yong Zhao, Biing-Hwang (Fred) Juang, Georgia Institute of Technology*
- TP7b-4 Visual Speech Recognition Using Stereo-Vision Image 4:45 PM  
*Chao Sui, Mohammed Bennamoun, Roberto Togneri, Serajul Haque, Damien Pontifex, University of Western Australia*
- TP7b-5 On the Integration of Time-Frequency Masking Source Separation and Missing Data Speech Recognition in Underdetermined Environments 5:10 PM  
*Ingrid Jafari, Serajul Haque, Roberto Togneri, Sven Nordholm, University of Western Australia*

## Session TP8a1 Relay Networks

Chair: Maite Brandt-Pearce, University of Virginia

1:30 PM - 3:10 PM

- TP8a1-1 On OFDMA Resource Allocation for Delay Constrained HARQ Systems  
*Sébastien Marcille, Thales Communications and Security; Philippe Ciblat, Télécom ParisTech; Christophe Le Martret, Thales Communications and Security*
- TP8a1-2 Cooperative AF MIMO Wireless Relay Networks under Relay Power Constraint  
*Kanghee Lee, Hyuck Kwon, Hyunggi Kim, Wichita State University; Hyuncheol Park, Yong Lee, Korea Advanced Institute of Science and Technogy*
- TP8a1-3 Average Sum-BER Analysis of AF Two-way Relay Networks with Direct Links  
*Cihan Tepedelenlioglu, Hyunjun Kim, Arizona State University*
- TP8a1-4 Performance Analysis of Amplify-and-Forward Relaying Using Fractional Calculus  
*Mehdi Mortazawi Molu, Norbert Goertz, Vienna University of Technology*
- TP8a1-5 Delay-Optimal Multi-flow Buffered Decode-and-Forward Relay Communications with Limited Renewable Energy Storage  
*Fan Zhang, Vincent Lau, Hong Kong University of Science and Technology*
- TP8a1-6 Relay Selection in Amplify-and-Forward Relay Networks with Frequency Selective Fading  
*Qingxiong Deng, Andrew G. Klein, Worcester Polytechnic Institute*
- TP8a1-7 On SINR Balancing for a Two-Hop Downlink Channel  
*Jan Schreck, Slawomir Stanczak, Technische Universität Berlin*

- TP8a1-8     A Power Saving Dual-Hop Architecture Based on Hybrid Spatial Modulation  
*Athanasios Stavridis, Sinan Sinanovic, University of Edinburgh; Marco Di Renzo, French National Center for Scientific Research (CNRS); Harald Haas, University of Edinburgh*
- TP8a1-9     On the Performance Loss of Distributed over Centralized Relay Beamforming  
*Qiang Xiao, University of Toronto; Min Dong, University of Ontario Institute of Technology; Ben Liang, University of Toronto*
- TP8a1-10    SNR Advantage of Group Transmissions in Multihop Networks with Amplify-and-forward Relays  
*Birsen Sirkeci-Mergen, San Jose State University*

## **Session TP8a2 Sensor and Interference Networks**

Chair: *Lifeng Lai, Worcester Polytechnic Institute*

1:30 PM - 3:10 PM

- TP8a2-1     Multiple Access Game with a Cognitive Jammer  
*Karim Khalil, Eylem Ekici, Ohio State University*
- TP8a2-2     Stochastic Ordering of Interferences in Large-scale Networks  
*Junghoon Lee, Cihan Tepedelenlioglu, Arizona State University*
- TP8a2-3     Improving WLAN-Based Indoor Mobile Positioning Using Sparsity  
*Mohammad Pourhomayoun, Mark Fowler, Binghamton University*
- TP8a2-4     Parameter Tracking via Optimal Distributed Beamforming in an Analog Sensor Network  
*Feng Jiang, Jie Chen, Lee Swindlehurst, University of California, Irvine*
- TP8a2-5     On the Diversity Multiplexing Tradeoff in a 4-user Clustered Z-channel  
*Myung Gil Kang, Young-bin Kim, Wan Choi, Korea Advanced Institute of Science and Technology (KAIST)*
- TP8a2-6     Distributed Cross-Layer Optimal Power and Rate Control in Single-Hop Wireless Interference Networks  
*Ying Cui, Stephen Hanly, Macquarie University*
- TP8a2-7     Performance Analysis of Ad Hoc Networks with Interference Alignment  
*Yi Luo, Huiqin Du, Tharm Ratnarajah, Dave Wilcox, Queen's University Belfast*
- TP8a2-8     Convergence Properties of Incremental Subgradient Algorithms for Least-Squares Source Localization  
*Michael Rabbat, McGill University; Angelia Nedic, University of Illinois*
- TP8a2-9     Traffic Handling of Hybrid MAC in IEEE 802.15.4 Networks  
*Jae-Seok Bang, Hyung-Sin Kim, Yong-Hwan Lee, Seoul National University*

- TP8a2-10 Lifetime Maximization in Distributed Sensor Network with Event Triggered Adaptive Filtering  
*Amaresh Malipatil, Yih-Fang Huang, University of Notre Dame*
- TP8a2-11 Joint Localization and Clock Synchronization for Wireless Sensor Networks  
*Sundeepr Prabhakar Chepuri, Geert Leus, Alle-Jan van der Veen, Delft University of Technology*

## **Session TP8a3 Design Methodology and Computer Arithmetic**

Chair: *Milos Ercegovac, University of California, Los Angeles*

1:30 PM - 3:10 PM

- TP8a3-1 Runtime Voltage/Frequency Scaling for Energy-Aware Streaming Applications  
*Flavius Gruian, Lund University*
- TP8a3-2 Residue Codes for Error Correction in a Combined Decimal/Binary Redundant Floating Point Adder  
*Shehab Y. Elsayed, Hossam A. H. Fahmy, Cairo University*
- TP8a3-3 Hardware Implementation of the Hirschman Optimal Transform  
*Soumak Mookherjee, Linda DeBrunner, Victor DeBrunner, Florida State University*
- TP8a3-4 Partitioning and Mapping Dynamic Dataflow Programs  
*Mehmet Ali Arslan, Jörn Janneck, Krzysztof Kuchcinski, Lund University*
- TP8a3-5 Effects on Power Saving of Butterfly and Inverse Butterfly Nets Integration in Embedded Processors  
*Gian Carlo Cardarilli, Princeton University; Luca Di Nunzio, Rocco Fazzolari, Marco Re, Ruby B. Lee, University of Rome Tor Vergata*
- TP8a3-6 Modified Non-restoring Division Algorithm with Improved Delay Profile and Error Correction  
*Kihwan Jun, Earl Swartzlander, Jr., University of Texas at Austin*
- TP8a3-7 Analysis of Trade-offs in V2P-Table Design for NAND Flash  
*Borja Peleato, Rajiv Agarwal, John Cioffi, Stanford University*
- TP8a3-8 Toward Efficient Execution of Dataflow Actors  
*Gustav Cedersjö, Jörn Janneck, Lund University*

## **Session TP8b1 Speech, Image, and Video Processing**

Chair: *Michael Santoro, University of Chile / Georgia Tech*

3:30 PM - 5:10 PM

- TP8b1-1 Improved Modeling of the Correlation Between Continuous-Valued Sources in LDPC-Based DSC  
*Mojtaba Vaezi, Fabrice Labeau, McGill University*

- TP8b1-2      Multispectral Vegetation Detection for Improved SAR  
CCD  
*Bea Yu, Rhonda Phillips, MIT Lincoln Laboratory*
- TP8b1-3      HVS Based Dictionary Learning for Scalable Sparse  
Image Representation  
*Bojana Begovic, Vladimir Stankovic, Lina Stankovic,  
University of Strathclyde; Samuel Cheng, School of  
Electrical and Computer Engineering*
- TP8b1-4      Regional Features with Adaptable Global Mappings for  
Recognition Systems  
*Katia Estabridis, Naval Air Weapons Center*
- TP8b1-5      A Robust Super Resolution Method for Video  
*Nafise Barzigar, Aminmohammad Roozgard, Samuel  
Cheng, Pramode Verma, University of Oklahoma*
- TP8b1-6      An Efficient Video Denoising Method Using  
Decomposition Approach for Low-Rank Matrix  
Completion  
*Nafise Barzigar, Aminmohammad Roozgard, Samuel  
Cheng, Pramode Verma, University of Oklahoma*
- TP8b1-7      Speech Enhancement of Color Noise Using Empirical  
Mode Decomposition  
*Min-Sung Koh, Esteban Rodriguez-Marek, Eastern  
Washington University*
- TP8b1-8      Objective Quality Assessment of Multiply Distorted  
Images  
*Dinesh Jayaraman, Anish Mittal, Anush Moorthy, Alan  
Bovik, University of Texas at Austin*
- TP8b1-9      Temporal Dispersal of Multiple Representations for  
Error-Resilient Video Streaming  
*Sourabh Khire, Georgia Institute of Technology; Arturo  
Rodriguez, Cisco Systems; Nikil Jayant, Georgia Institute  
of Technology*
- TP8b1-10     A New Map-based Approach to Video De-interlacing  
Using Forward-Backward Algorithm  
*Farhang Vedadi, Shahram Shirani, McMaster University*
- TP8b1-11     A Novel De-interlacing Method Based on Locally-  
Adaptive Nonlocal-Means  
*Roozbeh Dehghannasiri, Shahram Shirani, McMaster  
University*
- TP8b1-12     Regularization Function for Video Super-Resolution  
Using Auxillary High Resolution Still Images  
*Seyedreza Najafi, Shahram Shirani, McMaster University*
- TP8b1-13     Making Image Quality Assessment Robust  
*Anish Mittal, Anush Moorthy, Alan Bovik, University of  
Texas at Austin*
- TP8b1-14     Blur Identification Based on Spectrum Density  
Distribution  
*Dalong Li, Simske Steve, HP*
- TP8b1-15     Probabilistic Three-Pass SAR Coherent Change  
Detection  
*Jarred Barber, Stephen Kogon, MIT Lincoln Laboratory*
- TP8b1-16     A Generalized Likelihood Ratio Test for SAR CCD  
*Michael Newey, Gerald Benitz, Stephen Kogon,  
Massachusetts Institute of Technology Lincoln Laboratory*



- TP8b1-17 Camera Placement for Handheld 3D Video Communications  
*Stephen Mangiat, Jerry Gibson, University of California, Santa Barbara*
- TP8b1-18 Depth-Less 3D Rendering  
*Mashhour Solh, Ghassan AlRegib, Georgia Institute of Technology*

## **Session TP8b2 Biomedical Signal and Image Processing**

Chair: *Keshab K. Parhi, University of Minnesota*

3:30 PM - 5:10 PM

*[Paper TP8b2-1 will be presented in MP8a.]*

- TP8b2-1 Ultrasonic Bone Assessment of the Distal Forearm  
*Jonathan Kaufman, Gangming Luo, CyberLogic, Inc.; Robert Siffert, Mount Sinai School of Medicine*
- TP8b2-2 Performance Analysis of a 2-D EEG Compression Algorithm Using an Automatic Seizure Detection System  
*Hoda Daou, Fabrice Labeau, McGill University*
- TP8b2-3 A Novel Method for Tumor Localization and Tracking in Radiation Therapy  
*Mohammad Pourhomayoun, Mark Fowler, Zhanpeng Jin, Binghamton University*
- TP8b2-4 Screening Fundus Images for Diabetic Retinopathy  
*Sohini RoyChowdhury, Dara Koozakanani, Keshab K. Parhi, University of Minnesota*
- TP8b2-5 EEG/MEG Artifact Suppression for Improved Neural Activity Estimation  
*Alexander Maurer, Lifeng Miao, Arizona State University; Jun Jason Zhang, University of Denver; Antonia Papandreou-Suppappola, Arizona State University*
- TP8b2-6 Beta Process Based Adaptive Learning of Immunosignaturing Peptide-Antibody Factors  
*Anna Malin, Narayan Kovvali, Antonia Papandreou-Suppappola, Stephen Johnston, Phillip Stafford, Arizona State University*

## **Session WA1a Feedback and Cooperation (invited)**

Chair: *Giuseppe Abreu, Jacobs University*

- WA1a-1 Random Access on Graphs: A Survey and New Results 8:15 AM  
*Enrico Paolini, University of Bologna; Gianluigi Liva, German Aerospace Center (DLR); Marco Chiani, University of Bologna*
- WA1a-2 Node Cooperation with Local Views 8:40 AM  
*David Kao, Ashutosh Sabharwal, Rice University*
- WA1a-3 A Feedback Strategy for the Full-Duplex Butterfly Network 9:05 AM  
*Aydin Sezgin, Anas Chaaban, Ruhr-University Bochum; Daniela Tuninetti, University of Illinois, Chicago*

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|--------|---|---------|
| WA1a-4 | Characterizing the Mutual Information Distribution of MIMO Systems: Beyond the Gaussian Approximation<br><i>Shang Li, Matthew McKay, Hong Kong University of Science and Technology; Yang Chen, University of Macau</i> | 9:30 AM |
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## Session WA1b Security

Chair: *A. Lee Swindlehurst, University of California, Irvine*

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|--------|---|----------|
| WA1b-1 | Distributed Jamming for Secure Communication in a Poisson Field of Legitimate Nodes and Eavesdroppers<br><i>Wei Shi, James Ritcey, University of Washington</i>                           | 10:15 AM |
| WA1b-2 | Deploying Multi-antenna Energy-Harvesting Cooperative Jammers in the MIMO Wiretap Channel<br><i>Amitav Mukherjee, Nokia Research Center; Jing Huang, University of California, Irvine</i> | 10:40 AM |
| WA1b-3 | Unicasting on the S-Graph<br><i>Satyanaranaya Vuppala, Giuseppe Abreu, Jacobs University Bremen</i>   | 11:05 AM |
| WA1b-4 | Secrecy Capacity Limits of Multiple Antenna Multiple Eavesdropper Multicast<br><i>Jafar Mohammadi, Michal Kaliszan, Slawomir Stanczak, Berlin Institute of Technology</i>                 | 11:30 AM |

## Session WA2a Distributed Algorithms for Wireless Networks

Chair: *Lee Swindlehurst, University of California, Irvine*

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|--------|--|---------|
| WA2a-1 | Distributed and Autonomous Resource Allocation for Femto-Cellular Networks<br><i>Harald Burchardt, University of Edinburgh; Zubin Bharucha, DoCoMo Euro-Labs; Harald Haas, University of Edinburgh</i>                                   | 8:15 AM |
| WA2a-2 | Universal Computation with Low-Complexity Wireless Relay Networks<br><i>Eric Slotke, Raphael Rolny, Armin Wittneben, Swiss Federal Institute of Technology Zurich</i>  | 8:40 AM |
| WA2a-3 | A Unified Analysis of CDF-based Distributed Scheduling in a Heterogeneous Multicell<br><i>Yichao Huang, Bhaskar D. Rao, University of California, San Diego</i>  | 9:05 AM |
| WA2a-4 | Unsupervised Algorithms for Distributed Estimation over Adaptive Networks<br><i>Muhammad Bin Saeed, Azzedine Zerguine, Salam Zummo, King Fahd University of Petroleum and Minerals; Ali Sayed, University of California, Los Angeles</i> | 9:30 AM |

## Session WA2b Topics in Wireless Networking

Chair: *Harald Haas, University of Edinburgh*

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|--------|--|----------|
| WA2b-1 | Joint Design of Multi-resolution Codes and Intra/Inter-layer Network Coding<br><i>Tong Wang, Muriel Medard, Lizhong Zheng, Massachusetts Institute of Technology</i> | 10:15 AM |
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|--------|--|----------|
| WA2b-2 | Link Allocation, Routing, and Scheduling for Fading Hybrid FSO/RF Networks<br><i>Yi Tang, Maite Brandt-Pearce, University of Virginia</i>  | 10:40 AM |
| WA2b-3 | Approximating the Capacity of Wireless Multiple Unicast Networks by Discrete Superposition Model<br><i>Nicolas Schrammar, Mikael Skoglund, KTH Royal Institute of Technology</i> | 11:05 AM |
| WA2b-4 | Convolutional Network Codes for Reliable Point-to-Point Wireless Communication<br><i>Samantha Summerson, Rice University; Anuj Batra, Texas Instruments</i>                      | 11:30 AM |

## Session WA3a Adaptive Signal Processing

Chair: *Cedric Richard, Univ. de Nice Sophia-Antipolis*

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|--------|--|---------|
| WA3a-1 | Diffusion Least-Mean Squares over Distributed Networks in the Presence of MAC Errors<br><i>Saeed Ghazanfari-Rad, Fabrice Labeau, McGill University</i>   | 8:15 AM |
| WA3a-2 | Stochastic Adaptive Filtering Using Model Combinations<br><i>Chandrasekhar Radhakrishnan, Andrew Singer, University of Illinois, Urbana-Champaign</i>  | 8:40 AM |
| WA3a-3 | A Closed-Form Condition for Convergence of the Gaussian Kernel-Least-Mean-Square Algorithm<br><i>Cédric Richard, Université de Nice Sophia-Antipolis; Jose Carlos M. Bermudez, Federal University of Santa Catarina, Florianópolis</i> | 9:05 AM |
| WA3a-4 | Complex Colored Water-Filling Algorithm for Gain Allocation in Proportionate Adaptive Filtering<br><i>Kevin Wagner, Naval Research Laboratory; Milos Doroslovacki, George Washington University</i>                                    | 9:30 AM |

## Session WA3b Compressive Signal Processing

Chair: *Sergiy Vorobyov, University of Alberta*

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|--------|---|----------|
| WA3b-1 | 2D Signal Compression via Parallel Compressed Sensing with Permutations<br><i>Hao Fang, Sergiy A. Vorobyov, Hai Jiang, Omid Taheri, University of Alberta</i>                                     | 10:15 AM |
| WA3b-2 | Detecting an Abrupt Change of Finite Duration<br><i>Blaise Kévin Guépié, Lionel Fillatre, Igor Nikiforov, Université de Technologie de Troyes</i>   | 10:40 AM |
| WA3b-3 | Adaptive Sensing: A Tight Lower Bound and the Near-Optimal Compressive Binary Search<br><i>Matthew Malloy, Robert Nowak, University of Wisconsin Madison</i>                                      | 11:05 AM |
| WA3b-4 | Rapid Sensing of Underutilized, Wideband Spectrum Using the Random Demodulator<br><i>Andrew Harms, Princeton University; Waheed Bajwa, Rutgers University; Robert Calderbank, Duke University</i> | 11:30 AM |

## Session WA4a Interference and Cognition

Chair: *Thomas L Marzetta, Alcatel-Lucent/Bell Labs*

- WA4a-1      Interference Alignment for Channel-Adaptive Waveform Modulation      8:15 AM  
*Urs Niesen, Thomas Marzetta, Bell Laboratories, Alcatel-Lucent*
- WA4a-2      On the Discrete Superposition Model of Partially Cognitive Interference Channels      8:40 AM  
*Nicolas Schrammar, Chao Wang, Lars K. Rasmussen, Mikael Skoglund, KTH Royal Institute of Technology*
- WA4a-3      Interference Management for Cognitive Radio Systems Exploiting Primary IR-HARQ: a Constrained Markov Decision Process approach      9:05 AM  
*Romain Tajan, University of Cergy - Pontoise; Charly Poulliat, University of Toulouse; Inbar Fijalkow, University of Cergy - Pontoise*
- WA4a-4      Energy-Aware Cooperative Quickest Detection for Cognitive Radio Networks      9:30 AM  
*Yan Xin, Kyungtae Kim, Sampath Rangarajan, NEC Laboratories America, Inc.*

## Session WA4b OFDM(A)

Chair: *Michael Zoltowski, Purdue University*

- WA4b-1      Effect of Oscillator Phase Noise and Processing Delay in Full-Duplex OFDM Repeaters      10:15 AM  
*Taneli Riihonen, Pramod Mathecken, Risto Wichman, Aalto University*
- WA4b-2      Weighted CDF-based Scheduling for an OFDMA Relay Downlink with Partial Feedback      10:40 AM  
*Anh Nguyen, Yichao Huang, Bhaskar Rao, University of California, San Diego*
- WA4b-3      Transmitter-Side Timing Adjustment to Mitigate Interference between Multiple Nodes for OFDMA Mesh Network      11:05 AM  
*Sungeun Lee, Xiaoli Ma, Georgia Institute of Technology*
- WA4b-4      Detection of Code Spread OFDM Based on 0-1 Integer Quadratic Programming      11:30 AM  
*Ali Elgharini, Purdue university*

## Session WA5a Applications of Video Processing

Chair: *Mashhour Solh, Texas Instruments Inc.*

- WA5a-1      Automatic Track Tracing in SAR CCD Images Using Search Cues      8:15 AM  
*Miriam Cha, Rhonda Phillips, MIT Lincoln Laboratory*
- WA5a-2      H.264/AVC Data Hiding Based on Intra Prediction Modes for Real Time Applications      8:40 AM  
*Samira Bouchama, Research Center on Scientific and Technical Information; Latifa Hamami, National Polytechnic School of Algiers; Hassina Aliane, Research Center on Scientific and Technical Information*

- WA5a-3    A Computer Vision System for Monitoring    9:05 AM  
Vessel Motion in Conjunction with Vessel Wake  
Measurements  
*Sam Tan, Jenelle Armstrong Piepmeier, David Kriebel,  
United States Naval Academy*
- WA5a-4    Acoustic Monitoring Techniques for Avian    9:30 AM  
Detection and Classification  
*Golrokh Mirzaei, Mohammad Wadood Majid, Selin  
Bastas, University of Toledo; Jeremy Ross, Bowling Green  
State University; Mohsin Jamali, University of Toledo;  
Peter Gorveski, Joseph Frizado, Verner Bingman, Bowling  
Green State University*

## **Session WA5b Image and Video Classification**

Chair: *Dihong Tian, Cisco Systems, Inc.*

- WA5b-1    A Joint Sparsity Model for Video Anomaly    10:15 AM  
Detection  
*Xuan Mo, Vishal Monga, Pennsylvania State University;  
Raja Bala, Zhigang Fan, Xerox Research Center Webster*
- WA5b-2    Learning Dictionaries with Graph Embedding    10:40 AM  
Constraints for Image Classification  
*Karthikeyan Natesan Ramamurthy, Jayaraman J.  
Thiagarajan, Andreas Spanias, Arizona State University*
- WA5b-3    Training Image Classifiers with Similarity    11:05 AM  
Metrics, Linear Programming, and Minimal  
Supervision  
*Karl Ni, Ethan Phelps, MIT Lincoln Laboratory;  
Katherine Bouman, Massachusetts Institute of Technology;  
Nadya Bliss, MIT Lincoln Laboratory*
- WA5b-4    Randomized Tensor-based Algorithm for    11:30 AM  
Image Classification  
*Ryan Sigurdson, University of Rochester; Carmeliza  
Navasca, University of Alabama at Birmingham*

## **Session WA6a CSI Feedback**

Chair: *Robert Heath, University of Texas at Austin*

- WA6a-1    Feedback Bit Allocation in a Gateway    8:15 AM  
Channel  
*Sung Lock Seo, Jung Hoon Lee, Wan Choi, Korea  
Advanced Institute of Science and Technology (KAIST)*
- WA6a-2    Tomlinson-Harashima Precoding for    8:40 AM  
Multiuser MIMO Systems with Quantized CSI  
Feedback  
*Liang Sun, Ming Lei, NEC Labs China*
- WA6a-3    Sum Rate Analysis and Quantizer Design for    9:05 AM  
a Quantized Heterogeneous Feedback MIMO  
OFDMA Downlink  
*Yichao Huang, Bhaskar D. Rao, University of California,  
San Diego*
- WA6a-4    CSI Feedback Delay and Degrees of Freedom    9:30 AM  
Gain Trade-Off for the MISO Interference Channel  
*Namyoon Lee, Robert Heath, University of Texas at Austin*

## **Session WA6b Beamforming and Relaying (invited)**

Chair: *Shahram Shahbazpanahi, University of Ontario Institute of Technology*

- WA6b-1 SINR Constrained Beamforming for a MIMO Multi-user Downlink System 10:15 AM  
*Qingjiang Shi, Alcatel-Lucent Shanghai Bell Company; Meisam Razaviyayn, Mingyi Hong, Zhi-Quan Luo, University of Minnesota*
- WA6b-2 Pragmatic Multi-cell MIMO Beamforming with Decentralized Coordination 10:40 AM  
*Harri Pennanen, Antti Tölli, Matti Latva-aho, University of Oulu*
- WA6b-3 A Total Power Minimization Approach to Relay Selection for Two-Way Relay Networks 11:05 AM  
*Saurabh Talwar, Shahram ShahbazPanahi, University of Ontario Institute of Technology*
- WA6b-4 Joint Network-Channel-Coded Multi-Way Relaying 11:30 AM  
*Andreas Winkelbauer, Gerald Matz, Vienna University of Technology*

## **Session WA7a Applications of Sensor Array Processing**

Chair: *Martin Haardt, TU Ilmenau*

- WA7a-1 Maximum Likelihood Source Localization in a Pipe using Guided Acoustic Waves 8:15 AM  
*Nicholas O'Donoughue, Joel Harley, Chang Liu, Jose' M.F. Moura, Irving Oppenheim, Carnegie Mellon University*
- WA7a-2 Field Testing of Indirect Displacement Estimation Using Accelerometers 8:40 AM  
*Viswanadh Kandula, Linda DeBrunner, Victor DeBrunner, Michelle Rambo-Roddenberry, Florida State University*
- WA7a-3 Wireless Sensor Network Discovery Using Large Aperture Array Signal Processing 9:05 AM  
*Marc Willerton, Imperial College London; Mahesh Banavar, Xue Zhang, Arizona State University; Athanassios Manikas, Imperial College London; Andreas Spanias, Trevor Thornton, Arizona State University; Anthony Constantinides, Eric Yeatman, Imperial College London*
- WA7a-4 Clipping Effect on Radiation Pattern in Downtilt Beamforming 9:30 AM  
*Qingsong Wen, Sungeun Lee, Xiaoli Ma, Georgia Institute of Technology*

## **Session WA7b DOA Estimation**

Chair: *Alexandre Renaux, Université d'Orsay*

- WA7b-1 A Robust L-1 Penalized DOA Estimator 10:15 AM  
*Ashkan Panahi, Mats Viberg, Chalmers University of Technology*

- WA7b-2      Adaptive Direction Detection of Extended      10:40 AM  
Targets in Noise Plus Unknown Subspace  
Interference  
*Francesco Bandiera, University of Salento; Olivier Besson, ISAE (Institut Supérieur de l'Aéronautique et de l'Espace); Giuseppe Ricci, University of Salento*
- WA7b-3      A Semi-algebraic Framework for      11:05 AM  
Approximate CP Decompositions via Joint Matrix  
Diagonalization and Generalized Unfoldings  
*Florian Roemer, Carola Schroeter, Martin Haardt, Ilmenau University of Technology*
- WA7b-4      Direction of Arrival Estimation of Correlated      11:30 AM  
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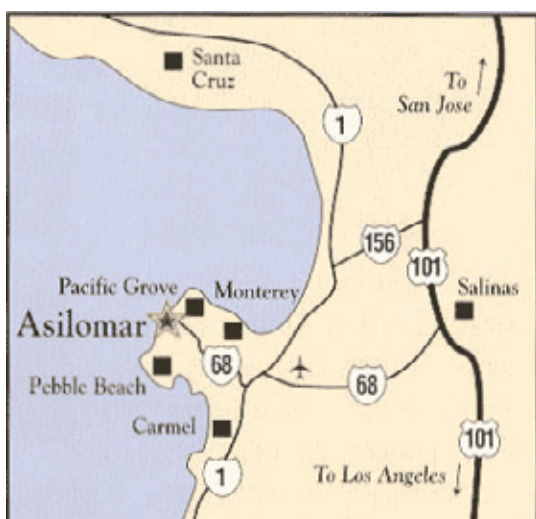
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