

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

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



**October 26 - 29, 2008**  
Asilomar Hotel and  
Conference Grounds

**Technical Co-sponsor**



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

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**Welcome from the General Chairman**

Prof. Michael Schulte, University of Wisconsin

I am delighted to welcome you to the 42<sup>nd</sup> Asilomar Conference on Signals, Systems and Computers. For those of you coming to Asilomar for the first time, I hope you have a chance to enjoy the technical sessions and social events that make this conference a special event and encourage many of us to return year after year. The conference, which is relaxed and friendly, provides an excellent opportunity to interact with some of the top scholars in our field. The conference grounds, which are next to the Pacific coast, are beautiful and provide an excellent setting for meeting with friends and colleagues.

The Asilomar conference provides a welcoming environment for students to present their research. This year, the student paper contest received a record number of 108 submissions. The eight finalists in the student paper contest, chaired by Professor James Stine, will present their posters on Sunday afternoon before the welcome reception and social gathering. I hope you have an opportunity to attend this important event.

We are very fortunate to have Professor Deborah Estrin give this year's Sydney Parker Memorial Lecture, which will be held on Tuesday morning. Professor Estrin holds the Jon Postel Chair in Computer Networks at UCLA and is Founding Director of the NSF-funded Center for Embedded Networked Sensing. Her plenary talk, "Wireless Sensing Systems: From Ecosystems to Human Systems," will explore how wireless sensing is enabling new discoveries in human and natural systems.

This year's technical program is outstanding. It features important research in communication systems, MIMO, networking, adaptive systems, array processing, biomedical signal and image processing, multi-rate processing, architectures, hardware implementations, and speech, image and video processing. The success of this year's conference is due to the tremendous efforts of Professor Linda DeBrunner. Linda recruited outstanding technical area chairs, arranged the program committee meeting, and provided the overall technical organization and leadership for the conference. The technical area chairs, Robert Heath, Aylin Yener, Akbar Sayeed, Xiaoli Ma, Milos Doroslavacki, Lina Karam, Scott Acton, Oscar Gustafsson, and John W. Fisher, III, recruited outstanding session chairs, who invited papers from leading researchers in their fields. Linda and the technical area chairs arranged an exciting program from a total of 569 submitted papers, including 221 invited papers.

I would like to thank all the people who made this conference possible. I am extremely grateful to Linda, the technical area chairs, the session chairs, and all the authors for providing us with such a high quality program. I am also grateful to the members of the Steering Committee for providing the overall direction for the conference. Finally, special thanks are extended to Monique Fargues, Mike Matthews, Frank Kragh, Murali Tummala, and Sue Netzorg who work so hard each year to organize this conference.

On behalf of the entire Conference Committee, I hope you enjoy the 42<sup>nd</sup> Asilomar Conference on Signals, Systems and Computers.

Michael Schulte, University of Wisconsin, July 2008

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## 2008 Asilomar Conference Session Schedule

### Sunday Afternoon, October 26, 2008

2:00 - 7:00 PM Registration – Main Lodge  
5:00 - 6:30 PM Student Paper Contest – Merrill Hall  
7:00 - 9:00 PM Welcoming Reception – Merrill Hall

### Monday Morning, October 27, 2008

7:30 - 9:00 AM Breakfast – Crocker Dining Hall  
8:00 AM - 6:00 PM Registration

8:30 AM - 12:10 PM MORNING SESSIONS  
MA1 Waveform Design Methods  
MA2 Advances in Bioimaging and Analysis  
MA3a Relaying and Cooperation I  
MA3b Stochastic Control and Decision Theory for Cognitive Radio Networks  
MA4 Multiuser MIMO Networks  
MA5 Programmable and Reconfigurable Architectures  
MA6 MIMO Radar and Sensor Fusion  
MA7 Adaptive Filtering: Theory and Applications  
MA8a1 Array Processing and Source Localization (Poster)  
MA8a2 Multiuser MIMO (Poster)  
MA8a3 Beamforming (Poster)  
MA8b1 Topics in Communications (Poster)  
MA8b2 Radar Signal Processing (Poster)  
MA8b3 Multi-rate and Digital Signal Processing (Poster)

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

### Monday Afternoon, October 27, 2008

1:30 - 5:10 PM AFTERNOON SESSIONS  
MP1 MIMO Radar  
MP2 Retinal Image Analysis  
MP3 Information Theory  
MP4 Feedback in MIMO Systems  
MP5 Computer Arithmetic I  
MP6 Blind System Identification, Multi-channel System Inversion, and Speech Dereverberation  
MP7 Signal Processing and Learning for Sensor Signal Exploitation  
MP8a1 Distributed Detection and Estimation (Poster)  
MP8a2 Wireless Network Management (Poster)  
MP8a3 OFDM/UWB (Poster)  
MP8a4 MIMO OFDM and Cooperative Relaying (Poster)

### Monday Evening, October 27, 2008

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 guest.

## 2008 Asilomar Conference Session Schedule

(continued)

### Tuesday Morning, October 28, 2008

7:30 - 9:00 AM Breakfast – Crocker Dining Hall  
8:00 AM - 5:00 PM Registration  
8:15 - 9:45 AM TA1a - Conference Welcome and Plenary Session  
9:45 - 10:15 AM Coffee Social

10:15 AM - 12:20 PM MORNING SESSIONS  
TA1b Compressive Sensing  
TA2b Functional Imaging and Analysis  
TA3b Secrecy Capacity and Interference Channels  
TA4b Multiuser MIMO Broadcast  
TA5b Communication Architectures  
TA6b Wireless Sensor Networks  
TA7b Adaptive Methods and Monte Carlo Signal Processing  
TA8b1 Image/Video Processing, Quantization and Coding (Poster)  
TA8b2 Speech Analysis and Recognition (Poster)  
TA8b3 Quantization, Coding, and Encryption (Poster)  
TA8b4 Limited Feedback and Precoding (Poster)

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

### Tuesday Afternoon, October 28, 2008

1:30 - 5:35 PM AFTERNOON SESSIONS  
TP1a Distributed Statistical Inference  
TP1b Statistical Signal Processing for Forensics and Security  
TP2 Analysis Methods for Functional and Structural Brain Imaging  
TP3a Delay-Rate Tradeoffs  
TP3b Relaying and Cooperation II  
TP4 Cooperative MIMO  
TP5a Integrated Algorithm and Architecture Implementation  
TP5b Cognitive Systems and Spectrum Sharing  
TP6 Interference Management and Cooperative Communication in Ad-hoc Networks  
TP7a Detection, Processing and Fusion in Distributed Sensor Systems  
TP7b Performance Prediction and Analysis for Signal and Image Processing Systems  
TP8a1 Adaptive Systems and Processing (Poster)  
TP8a2 Detection and Estimation (Poster)  
TP8a3 Space-Time Coding and Decoding (Poster)  
TP8b1 Computer Arithmetic II (Poster)  
TP8b2 Architectures and Implementation (Poster)  
TP8b3 Image Analysis for Biomedical Applications (Poster)

### Tuesday Evening, October 28, 2008

8:00 - 10:00 PM Bonfire at the fire pit next to Crocker Hall

## 2008 Asilomar Conference Session Schedule

(continued)

### Wednesday Morning, October 29, 2008

- 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.
- 8:30 AM - 12:35 PM MORNING SESSIONS
- WA1 Sensor Networks  
WA2 Biological Imaging: Acquisition, Analysis and Modeling  
WA3a Ultra Wide Band  
WA3b OFDMA and Multiple Access  
WA4 New Directions in MIMO  
WA5a Architectures for Positioning and Navigation  
WA5b Low Power Methods  
WA6a Network Information Theory and Security  
WA6b Wireless Network Utility Maximization: Fundamental Limits and Protocols  
WA7a Speech Recognition and Analysis  
WA7b Adaptive Receivers for OFDM and UWB Systems  
WA8a Network Coding  
WA8b Video Coding
- 12:00 - 1:00 PM Lunch – Meal tickets may be purchased at registration desk. This meal is not included in the registration.

## Student Paper Contest

Merrill Hall - Sunday, October 26, 2008  
Judging starts at 5:00 PM

(Listed in paper number order)

*“Spectrum Allocation in Two-Tier Networks”*

**Vikram Chandrasekhar** and Jeffrey Andrews, The University of Texas at Austin

*“Signal-Domain Registration for Change Detection in Time-Reversal SAR”*

**Nicholas O’Donoghue**, José Moura, and Yuanwei Jin, Carnegie Mellon University

*“Parallel High-Radix Montgomery Multipliers”*

**Philip Amberg**, Nathaniel Pinckney, and David Money Harris, Harvey Mudd College

*“Refined Error Concealment for Multiple State Video Coding over Ad Hoc Networks”*

**Yiting Liao** and Jerry D. Gibson, University of California, Santa Barbara

*“Diffusion LMS Algorithms with Information Exchange”*

**Federico S. Cattivelli** and Ali H. Sayed, University of California, Los Angeles

*“Sparsity Adaptive Matching Pursuit Algorithm for Practical Compressed Sensing”*

**Thong Do**, Johns Hopkins University, Lu Gan, Brunel University, Nam Nguyen, and Trac Tran, Johns Hopkins University

*“Distortion-Rate Tradeoff of a Source Uniformly Distributed over Positive Semi-definite Matrices”*

**Rajesh Krishnamachari** and Mahesh Varanasi, University of Colorado

*“Delay-minimal Transmission for Average Power Constrained Multi-access Communications”*

**Jing Yang** and Sennur Ulukus, University of Maryland

## 2008 Asilomar Conference Session Schedule

Coffee breaks will be at 10:10 AM and 3:10 PM, except on Tuesday morning when refreshments will be served outside Merrill Hall from 9:45-10:15 AM.

**Tuesday, October 28, 2008**

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

1. Welcome from the General Chairperson:

**Prof. Michael Schulte**  
University of Wisconsin

2. Student Paper Contest:

**Prof. James Stine**  
Oklahoma State University

3. Session TA1a Distinguished Lecture for the 2008  
Asilomar Conference

#### **Wireless Sensing Systems: From Ecosystems to Human Systems**

**Prof. Deborah Estrin**  
University of California – Los Angeles

#### **Abstract**

Miniaturization and Moore's law has enabled us to combine sensing, computation and wireless communication in integrated, low-power devices, and to embed networks of these devices in the physical world. By placing sensing devices up close to the physical phenomena we are now able to study details in space and time that were previously unobservable. Looking back over the past few years we have made significant progress toward the vision of programmable, multi-modal, multi-scale observatories. We have made our greatest strides in these applications using: judicious application of server-side and in situ processing, mobility at multiple scales, and multi-scale data and models as context for in situ measurements. We are now applying these lessons learned and technical approaches to human as well as natural

systems, in particular by exploring use of the installed base of image, location, and acoustic sensors that we all carry around in our pockets or on our belts-mobile phones. In this talk I will draw upon experiences with pilots and prototypes at CENS.

#### **Biography**

**Deborah Estrin** (Ph.D. MIT, 1985; BSEE UCB, 1980) is a Professor of Computer Science, holds the Jon Postel Chair in Computer Networks, and is Founding Director of the National Science Foundation funded Center for Embedded Networked Sensing (CENS). CENS' mission is to explore and develop innovative, end-to-end, distributed sensing systems, from ecosystems to human systems. Since the late 90's Estrin's work has focused on multi-disciplinary, experimental-systems research as applied to a variety of environmental monitoring challenges. Most recently this work includes participatory-sensing systems, at the personal and community level, leveraging the location, acoustic, image, and attached-sensor data streams increasingly available from mobile phones. Previously, Estrin's research addressed Internet protocol design and scaling, in particular, inter-domain and multicast routing.

Estrin chaired a 1998 DARPA/ISAT study on sensor networks and a 2001 NRC study on Networked Embedded Computing which produced the report Embedded Everywhere. She served as a founding member of the National Ecological Observatory Network (NEON) Advisory board, and is currently a member of the NRC Computer Science and Telecommunications Board (CSTB), and TTI/Vanguard. Estrin was selected as the first ACM-W Athena Lecturer in 2006, was awarded the Anita Borg Institute's Women of Vision Award for Innovation in 2007, and was inducted as a member of the American Academy of Arts and Sciences in 2007.

**Program of 2008 Asilomar Conference  
on  
Signals, Systems, and Computers**

**Technical Program Chairman  
Prof. Linda DeBrunner  
Florida State University**

## Session MA1 Waveform Design Methods

Chair: Arye Nehorai

MA1-1	Waveform Design for Cognitive Radar <i>Simon Haykin, McMaster University</i>	8:30 AM
MA1-2	Frames and a vector-valued ambiguity function <i>John Benedetto, University of Maryland; Jeffrey Donatelli, University of California at Berkeley</i>	8:55 AM
MA1-3	Novel waveform and processing techniques for monostatic and bistatic radar <i>Shahzada Basharat Rasool, Mark R. Bell, Purdue University</i>	9:20 AM
MA1-4	Evaluating Spatial Diversity in Randomly Distributed Radar Networks <i>Rani Daher, Raviraj Adve, Univ. of Toronto</i>	9:45 AM
	BREAK	10:10 AM
MA1-5	Unitary Design of Radar Waveform Diversity Sets <i>Michael Zoltowski, Purdue University; Robert Calderbank, Princeton University; Tariq Qureshi, Purdue University; William Moran, University of Melbourne</i>	10:30 AM
MA1-6	Waveform Design for Dynamic Target Tracking in MIMO Radar <i>Jun Zhang, Bhavana Manjunath, Antonia Papandreou-Suppappola, Arizona State University; Darryl Morrell, Arizona State University East</i>	10:55 AM
MA1-7	Bat-Inspired Adaptive Design of Waveform and Trajectory for Radar <i>Martin Hurtado, Arye Nehorai, Washington University in St. Louis</i>	11:20 AM
MA1-8	Compressed Sensing in MIMO Radar <i>Chun-Yang Chen, P. P. Vaidyanathan, California Institute of Technology</i>	11:45 AM

## Session MA2 Advances in Bioimaging and Analysis

Chair: Jean-Christophe Olivo-Marin

MA2-1	Towards Monitoring Cellular Motion and Function <i>Jens Rittscher, Dirk Padfield, GE Global Research; Nick Thomas, GE Healthcare</i>	8:30 AM
MA2-2	Tracking Live Cells in 4D Microscopy: Active Surfaces vs. Active Meshes <i>Alexandre Dufour, Jean-Christophe Olivo-Marin, Institut Pasteur</i>	8:55 AM
MA2-3	Quantitative Analysis of Border Cell Migration <i>Shann-Ching Chen, The Scripps Research Institute</i>	9:20 AM

MA2-4	Intelligent Acquisition and Learning of Fluorescence Microscope Data Models <i>Charles Jackson, Robert Murphy, Jelena Kovacevic, Carnegie Mellon University</i>	9:45 AM
	BREAK	10:10 AM

MA2-5	Quantitative imaging of the collective cell movements shaping an embryo <i>Willy Supatto, Scott E. Fraser, California Institute of Technology</i>	10:30 AM
MA2-6	Navigation and Estimation of Shape Variation on a Shape Manifold for Anatomical Segmentation. <i>Saurav Basu, Scott T. Acton, University of Virginia</i>	10:55 AM
MA2-7	Quantitative analysis of deconvolution methods for fluorescence microscopy images <i>Mahsa Ranji, Diego Calzolari, Jeffrey Price, The Burnham Institute for Medical Research</i>	11:20 AM
MA2-8	Localizing single molecules in three dimensions <i>Sripad Ram, UT Southwestern Medical Center at Dallas; Jerry Chao, UT Dallas; E. Sally Ward, UT Southwestern Medical Center at Dallas; Raimund Ober, UT Dallas</i>	11:45 AM

## Session MA3a Relaying and Cooperation I

Chair: Yingbin Liang & Venu Veeravalli

MA3a-1	Compute-and-Forward: A Novel Strategy for Cooperative Networks <i>Bobak Nazer, Michael Gastpar, University of California, Berkeley</i>	8:30 AM
MA3a-2	Three-User Gaussian Multiple Access Channel with Partially Cooperating Encoders <i>Oswaldo Simeone, NJIT; Oren Somekh, Princeton; Gerhard Kramer, Bell Laboratories; H. Vincent Poor, Princeton University; Shlomo Shamai, Technion</i>	8:55 AM
MA3a-3	On the Capacity of Wireless Interference Networks <i>V. Sreekanth Annapureddy, CSL; Venugopal Veeravalli, University of Illinois at Urbana-Champaign</i>	9:20 AM
MA3a-4	Threshold based distributed detection that achieves full diversity in wireless sensor networks <i>Yijia Fan, Princeton University; Furuzan Atay Onat, Halim Yanikomeroglu, Carleton University; H. Vincent Poor, Princeton University</i>	9:45 AM

## Session MA3b Stochastic Control and Decision Theory for Cognitive Radio Networks

Chair: Qing Zhao

MA3b-1	Channel Probing for Opportunistic Access with Multi-channel Sensing <i>Keqin Liu, Qing Zhao, University of California at Davis</i>	10:30 AM
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- MA3b-2 Medium Access in Cognitive Radio Networks: A Competitive Multi-armed Bandit Framework 10:55 AM  
*Lifeng Lai, Princeton University; Hai Jiang, University of Alberta; H. Vincent Poor, Princeton University*
- MA3b-3 Dynamic spectrum access with learning for cognitive radio 11:20 AM  
*Jayakrishnan Unnikrishnan, Venugopal Veeravalli, University of Illinois at Urbana-Champaign*
- MA3b-4 Optimal channel probing and access through learning 11:45 AM  
*Sahand Haji Ali Ahmad, Mingyan Liu, University of Michigan*

### Session MA4 Multiuser MIMO Networks

Chair: *Jeff Andrews & Ashu Sabharwal*

- MA4-1 Random Access Cooperative Communication 8:30 AM  
*Chris Hunter, Ashutosh Sabharwal, Rice University*
- MA4-2 Enhancing uplink throughput via local base station cooperation 8:55 AM  
*Oswaldo Simeone, New Jersey Institute of Technology; Oren Somekh, Princeton; H. Vincent Poor, Princeton University; Shlomo Shamai, Technion*
- MA4-3 Utilizing Temporal Correlation in Multiuser MIMO Feedback 9:20 AM  
*Il Han Kim, Kyeongyeon Kim, David Love, Purdue University*
- MA4-4 Generalized Degrees of Freedom of the K User Symmetric Gaussian Interference Channel 9:45 AM  
*Syed Jafar, University of California Irvine; Sriram Vishwanath, University of Texas at Austin*
- BREAK 10:10 AM
- MA4-5 Spatial Interference Cancellation for Mobile Ad Hoc Networks: Imperfect CSI 10:30 AM  
*Kaibin Huang, Robert Heath, Jr., The University of Texas at Austin; Jeffrey Andrews, University of Texas at Austin; Dongning Guo, Randall Berry, Northwestern University*
- MA4-6 Parametric channel estimation and prediction, with applications to channel state feedback for MIMO downlink schemes 10:55 AM  
*Hooman Shirani-Mehr, Giuseppe Caire, University of Southern California*
- MA4-7 On the performance of iterative receivers for interfering MIMO-OFDM systems in measured channels 11:20 AM  
*Peter Hammarberg, Lund University; PierLuigi Salvo Rossi, NTNU; Fredrik Tufvesson, Ove Edfors, Lund University; Veli-Matti Kolmonen, Helsinki University of Technology; Peter Almers, Lund University; Ralf Mueller, NTNU; Andreas Molisch, MERL and Lund University*

- MA4-8 Is Relayed collaborative Communication Worth it 11:45 AM  
*Sana Sfar, Interdigital Communications LLC; Jerry Foschini, Reinaldo Valenzuela, Laurence Mailaender, Dimitri Chizikh, Kemal Karakayali, Bell labs; Alcatel-lucent; Rick Blum, Lehigh University*

### Session MA5 Programmable and Reconfigurable Architectures

Chair: *Suleyman Demirsoy*

- MA5-1 A Low-power Two-in-One Flexible Decimation and Channel Selection Filter for Bandpass Sampling SDR 8:30 AM  
*Alper Ucar, Ediz Cetin, Izzet Kale, University of Westminster*
- MA5-2 High Performance Matrix Multiplier using Fused Vector Operators 8:55 AM  
*Martin Langhammer, Altera*
- MA5-3 Design and architecture of spatial multiplexing MIMO decoders for FPGAs 9:20 AM  
*Chris H. Dick, Xilinx, Inc.; Kiarash Amiri, Rice University; Raghu Rao, Xilinx; Joseph R. Cavallaro, Rice University*
- MA5-4 Optimised and Targeted Arithmetic Implementation of UMB Physical Layer on Low Cost FPGA 9:45 AM  
*R. W. Stewart, Y. Awad, Q. Gao, L. Crockett, University of Strathclyde; G. Rice, J. Bowman, Steepest Ascent Ltd*
- BREAK 10:10 AM
- MA5-5 Design Considerations for Reconfigurable Computing in Embedded Applications 10:30 AM  
*Robert Voigt, U.S. Naval Academy*
- MA5-6 A Complete Full-Rate 802.11a Baseband Receiver Implemented on an Array of Programmable Processors 10:55 AM  
*Anh Tran, Dean Truong, Bevan Baas, University of California, Davis*
- MA5-7 A Parallel Decoding Algorithm of LDPC Codes using CUDA 11:20 AM  
*Shuang Wang, Samuel Cheng, University of Oklahoma-Tulsa; Qiang Wu, Soft Imaging, LLC*
- MA5-8 Efficient Time-Frequency and Bi-Frequency Signal Processing On A Reconfigurable Computer 11:45 AM  
*Gary Upperman, Teresa Upperman, Department of Defense; Douglas Fouts, Phillip Pace, Naval Postgraduate School*

### Session MA6 MIMO Radar and Sensor Fusion

Chair: *Rabinder Madan*

- MA6-1 MIMO radar: snake oil or good idea? 8:30 AM  
*Frederick Daum, Jim Huang, Raytheon*

MA6-2	MIMO radar waveform design based on filter bank theory <i>P. P. Vaidyanathan, Chun-Yang Chen, California Institute of Technology</i>	8:55 AM
MA6-3	Communication-Inspired Sensing <i>Liuqing Yang, Univ. of Florida</i>	9:20 AM
MA6-4	On the Distribution of Ambiguity Levels in MIMO Radar <i>Mohamed Haleem, Alexander Haimovich, New Jersey Institute of Technology</i>	9:45 AM
	BREAK	10:10 AM
MA6-5	Cooperative Transmit Beamforming for MIMO Radar Systems <i>Athina Petropulu, Lun Dong, Drexel University; H. Vincent Poor, Princeton University</i>	10:30 AM
MA6-6	MIMO Radar Detection of Targets in Compound-Gaussian Clutter <i>Murat Akcakaya, Martin Hurtado, Arye Nehorai, Washington University in St. Louis</i>	10:55 AM
MA6-7	Compressed Sensing for OFDM/MIMO Radar <i>Christian Berger, Shengli Zhou Zhou, Peter Willett, University of Connecticut</i>	11:20 AM
MA6-8	Adaptive Sensing for MIMO Radar Systems <i>Daniel Fuhrmann, Washington University in St. Louis</i>	11:45 AM

## Session MA7 Adaptive Filtering: Theory and Applications

Chair: *Jean-Yves Tournet & Neil Bershad*

MA7-1	Variable length adaptive filtering within incremental learning algorithms for distributed networks <i>Leilei Li, Yonggang Zhang, Jonathon Chambers, Electronic and Electrical Engineering School, Loughborough University</i>	8:30 AM
MA7-2	An Affine Combination of Two NLMS Adaptive Filters - Transient Mean-Square Analysis <i>Jose Carlos M. Bermudez, Federal University of Santa Catarina; Neil J. Bershad, University of California Irvine; Jean-Yves Tournet, University of Toulouse</i>	8:55 AM
MA7-3	Affine combination of adaptive filters <i>Renato Candido, Magno T. M. Silva, Vitor H. Nascimento, University of Sao Paulo</i>	9:20 AM
MA7-4	Interference-Driven Adaptation in Sparse Approximations <i>Bob L. Sturm, John J. Shynk, University of California, Santa Barbara</i>	9:45 AM

BREAK 10:10 AM

MA7-5	Distributed prediction of time series data with kernels and adaptive filtering techniques in sensor networks <i>Paul Honeine, Cédric Richard, Université de Technologie de Troyes; Jose Carlos M. Bermudez, Federal University of Santa Catarina; Hichem Snoussi, Université de Technologie de Troyes</i>	10:30 AM
MA7-6	Diffusion LMS Algorithms with Information Exchange <i>Federico S. Cattivelli, Ali H. Sayed, Univ. of California, Los Angeles</i>	10:55 AM
MA7-7	Analytical Analysis of Transient and Steady-State Properties of the Proportionate NLMS Algorithm <i>Kevin Wagner, Naval Research Laboratory; Milos Doroslovacki, The George Washington University</i>	11:20 AM
MA7-8	Fault Tolerant Adaptive Filters Based on Number Theoretic Transforms <i>Chandrashekar Rhadakrishnan, William Jenkins, The Pennsylvania State University</i>	11:45 AM

## Session MA8a1 Array Processing and Source Localization

Chair: *Brian Evans*

8:30 AM - 10:10 AM

MA8a1-1	On the use of the Global Matched Filter for DOA estimation in the presence of correlated waveforms. <i>Jean Jacques Fuchs, IRISA/université de Rennes</i>
MA8a1-2	Hybrid Cramer-Rao Bound for Moving Array <i>Da Xie, Tingting Niu, Jianguo Huang, Northwestern Polytechnical University; Hongya Ge, New Jersey Institute of Technology</i>
MA8a1-3	Nonparametric and Sparse Signal Representations in Array Processing via Iterative Adaptive Approaches <i>Tarik Yardibi, Jian Li, University of Florida; Petre Stoica, Uppsala University</i>
MA8a1-4	Passive Sonar Target Localization Using a Histogram Filter with Model Derived Priors <i>Colin Jemmott, R. Lee Culver, Nirmal Bose, The Pennsylvania State University</i>
MA8a1-5	Localization of Packet Based Radio Transmitters in Space, Time, and Frequency <i>Goran Ivkovic, Predrag Spasojevic, Ivan Seskar, Rutgers University</i>
MA8a1-6	DOA Estimation Using Vector Sensor Arrays <i>Hung Lai, Lockheed Martin; Kristine Bell, George Mason University; Henry Cox, Lockheed Martin</i>
MA8a1-7	Array Steered Response Time-alignment for Propagation Delay Compensation for Acoustic Localization <i>Pasi Pertilä, Tampere University of Technology</i>

- MA8a1-8 Advanced Sonar Processing Techniques for Underwater Acoustic Multi-Input Multi-Output Communications  
*Brian Stein, Yang You, Terry Brudner, Brian Evans, The University of Texas at Austin*
- MA8a1-9 GPS Free Positioning in Ad Hoc Wireless Networks Using 4th Generation Mobiles  
*Brian Kelley, University of Texas at San Antonio*
- MA8a1-10 Analog preprocessor mapping in antenna arrays to reduce ADC power consumption  
*Vijay Venkateswaran, Electrical engineering (EWI), TU-Delft*

### Session MA8a2 Multiuser MIMO

Chair: *James Zeidler* 8:30 AM - 10:10 AM

- MA8a2-1 A GMD-Based Precoding Scheme for Downlink Multiuser Multistream MIMO Channels  
*Zhilan Xiong, Ranaji Krishna, Sangarapillai Lambotharan, Jonathon Chambers, Loughborough University*
- MA8a2-2 A Combinatorial Approach to Maximizing the Sum Rate in the MIMO BC with Linear Precoding  
*Raphael Hunger, David A. Schmidt, Michael Joham, Technische Universität München*
- MA8a2-3 Transceiver Design for Sum-MSE Optimization in MIMO MAC with Imperfect Channel Estimation  
*Patricia Layec, Orange Labs; Pablo Piantanida, SUPELEC, Department of Telecommunications; Raphaël Visoz, Orange Labs; Antoine O. Berthet, SUPELEC, Department of Telecommunications*
- MA8a2-4 Instantaneous and Average Rate Maximization in MIMO Multiple-Access Channels (MAC) with Linear Processing  
*Adam Anderson, James Zeidler, University of California, San Diego; Michael Jensen, Brigham Young University*
- MA8a2-5 LMMSE Channel Estimation for MIMO W-CDMA with Out-of-Cell Interference Mitigation  
*Roland Tresch, ftw.; Christian Mehlführer, Vienna University of Technology; Maxime Guillaud, ftw.*
- MA8a2-6 Efficient Linear Successive Allocation for the MIMO Broadcast Channel  
*Christian Guthy, Wolfgang Utschick, Technische Universität München; Guido Dietl, DoCoMo Communications Laboratories Europe GmbH; Pedro Tejera, Technische Universität München*
- MA8a2-7 Dirty Paper Coding for Fading Channels with Partial Transmitter Side Information  
*Chinmay Vaze, Mahesh Varanasi, University of Colorado, Boulder*
- MA8a2-8 On Capacity Scaling of (Long) MIMO Amplify-and-Forward Multi-Hop Networks  
*Jörg Wagner, Witteben Armin, ETH Zurich*

- MA8a2-9 Zero-Forcing-Based Two-Phase Relaying with Multiple Mobile Stations  
*Hyun Jong Yang, Bang Chul Jung, Joohwan Chun, Korea Advanced Institute of Science and Technology*
- MA8a2-10 Coordinated Linear Beamforming in Downlink Multi-Cell Wireless Networks  
*Luca Venturino, Università degli Studi di Cassino; Narayan Prasad, NEC Labs America; Xiaodong Wang, Columbia University*

### Session MA8a3 Beamforming

Chair: *Jian Li* 8:30 AM - 10:10 AM

- MA8a3-1 Review of User Parameter-Free Robust Adaptive Beamforming Algorithms  
*Lin Du, Tarik Yardibi, Jian Li, University of Florida; Petre Stoica, Uppsala University*
- MA8a3-2 A Semiblind Adaptive Antenna for WCDMA Using a Least-Squares Constant-Modulus Formulation  
*Sheng-Luen Wei, John J. Shynk, University of California, Santa Barbara*
- MA8a3-3 Designing a spatial filter to improve SNR in two-class discrimination problems for BCI applications  
*David Gutierrez, Cinvestav Monterrey*
- MA8a3-4 Robust Interference Control Techniques for Multi-User Cognitive Radios Using Worst-Case Performance Optimization  
*Kanapathippillai Cumanan, Ranaji Krishna, Vimal Sharma, Sangarapillai Lambotharan, Loughborough University*
- MA8a3-5 Passive Beamforming Enhancements in Relation to Active-Passive Data Fusion  
*Bryan Yocom, Thomas Yudichak, Brian La Cour, Applied Research Laboratories: The University of Texas at Austin*
- MA8a3-6 Preprocessing by Eigenbeams and Doppler Filters to Improve Performance of Detection of Signal Number  
*Ryuhei Takahashi, Kazufumi Hirata, Maniwa Hisakazu, Mitsubishi Electric Corporation*
- MA8a3-7 Antenna Grouping Techniques for MIMO Beamforming Systems  
*Kyungchul Kim, Jungwoo Lee, Seoul National University*
- MA8a3-8 Sensibility study for the Near-Field Sub-Band Beamforming method for Damage Detection in Bridges  
*Alessio Medda, Victor DeBrunner, Florida State University*
- MA8a3-9 Adaptive Factored Beamforming For Vector Sensor Arrays  
*Hung Lai, Henry Cox, Lockheed Martin; Kristine Bell, George Mason University*
- MA8a3-10 Sidelobe Suppressing Beamforming Using Linearly Constrained Adaptive Arrays for Low Angle Tracking  
*Jungtai Kim, Hyun Jong Yang, Joohwan Chun, Korea Advanced Institute of Science and Technology*

## Session MA8b1 Topics in Communications

Chair: *Todd Moon*

10:30 AM - 12:10 PM

- MA8b1-1 Reed Solomon Coded M-ary Hyper Phase-Shift Keying  
*James Caldwell, Student/ Naval Postgraduate School; Clark Robertson, Professor/ Naval Postgraduate School*
- MA8b1-2 Bandwidth Efficient Constant Envelope Modulation with Binary Convolutional Coding  
*Douglas Hermes, United States Air Force; Frank Kragh, Clark Robertson, Naval Postgraduate School*
- MA8b1-3 Joint Channel and Frequency Offset Estimators for Frequency-Flat Fast Fading Channels  
*Rami Khal, Yuriy Zakharov, Junruo Zhang, University of York*
- MA8b1-4 Multi-threshold TOP --- Full-diversity Vector Perturbation Precoding with Finite-rate Feedforward  
*Johannes Maurer, Joakim Jaldén, Gerald Matz, Vienna University of Technology*
- MA8b1-5 Performance of Bit-interleaved Frequency Domain Turbo Equalization over Experimental Underwater Acoustic Channels  
*Chantri Polprasert, James Ritcey, U. of Washington*
- MA8b1-6 Joint Bayesian Soft Multiuser Decoding and Multichannel Estimation Based on the Variational IEM Algorithm  
*Alexander Kocian, University of Rome Tor Vergata; Bin Hu, Nokia Denmark; Bernard Fleury, Aalborg University*
- MA8b1-7 MIMO-BICM with Imperfect Channel State Information: EXIT Chart Analysis and LDPC Code Optimization  
*Clemens Novak, Vienna University of Technology; Gottfried Lechner, Telecommunications Research Center Vienna (ftw.); Gerald Matz, Vienna University of Technology*
- MA8b1-8 A Thresholding Algorithm for Improved Split-Row Decoding of LDPC Codes  
*Tinoosh Mohsenin, Bevan Baas, UC Davis*
- MA8b1-9 Theoretical Models of Oscillators, Phase Noise and the Effects of Nonlinearity  
*Yenming Chen, University of Southern California / Northrop Grumman; Robert Scholtz, University of Southern California*
- MA8b1-10 ISI Effects in a Hybrid ICA-SVM Modulation Recognition Algorithm  
*David Boutte, Balu Santhanam, University of New Mexico*
- MA8b1-11 Generalized Minimum Probability of Symbol Error Adaptive Equalization  
*Jacob Gunther, Todd Moon, Utah State University*
- MA8b1-12 An Efficient Early Stopping Scheme for LDPC Decoding Based on Check-Node Messages  
*Z. H. Cai, J. Hao, U. Ubolthip Sethakaset, Institute for Infocomm Research*

MA8b1-13 Optimal Detection in MIMO Rayleigh Fast Fading Channels with Imperfect Channel Estimation  
*Junruo Zhang, Yuriy Zakharov, University of York; Vladimir Baronkin, N. N. Andreev Acoustics Institute*

MA8b1-14 Optimal Power Allocation Policies for the Reliable Transmission of a Single Packet via ARQ Protocols  
*Moritz Wiese, Technical University of Berlin; Anastasios Giovanidis, Gerhard Wunder, Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute*

MA8b1-15 Opportunistic Power Allocation for Point-to-Point Communication in Self-Organized Networks  
*Mehdi Bennis, Centre for Wireless Communications, CWC; Merouane Debbah, SUPELEC*

## Session MA8b2 Radar Signal Processing

Chair: *Scott Hensley*

10:30 AM - 12:10 PM

- MA8b2-1 Parameter Estimation of Linear Frequency-Modulated Signal Using Integrated Cubic Phase Function  
*Pu Wang, Hongbin Li, Stevens Institute of Technology; Braham Himed, Signal Labs Inc.*
- MA8b2-2 High-Resolution Wavenumber Domain Focusing of Squinted SAR Data with a Curved Orbit Geometry  
*Thierry Michel, Scott Hensley, Jet Propulsion Laboratory*
- MA8b2-3 A Terrain Elevation Error Model for Stereometric SAR Systems Engineering  
*Nick Marechal, The Aerospace Corp*
- MA8b2-4 Signal-Domain Registration for Change Detection in Time-Reversal SAR  
*Nicholas O'Donoghue, José M. F. Moura, Yuanwei Jin, Carnegie Mellon University*
- MA8b2-5 The Use of Complementary Sets in MIMO Radar  
*Stephen Searle, University of Melbourne; Stephen Howard, DSTO; Bill Moran, University of Melbourne*
- MA8b2-6 Retrodirective Airborne Radar for Urban Surveillance  
*Louis Fertig, Georgia Tech Research Institute*
- MA8b2-7 MIMO Radar Direction Finding Performance Using Swerling Models  
*Tuomas Aittomäki, Visa Koivunen, Helsinki University of Technology*
- MA8b2-8 Overcoming Polar Format Issues in MultiChannel SAR Autofocus  
*Hyun Jeong Cho, David Munson, University of Michigan*
- MA8b2-9 Nonlinear Decision Rules for Robust Noncoherent Integration  
*Don Day, Johns Hopkins University*
- MA8b2-10 Reduced-Rank STAP Algorithm for Adaptive Radar Based on Joint Iterative Optimization of Adaptive Filters  
*Rui Fa, Rodrigo de Lamare, Danilo Zanatta Filho, University of York*

## Session MA8b3 Multi-rate and Digital Signal Processing

Chair: *Peter Stoica*

10:30 AM - 12:10 PM

- MA8b3-1 A Nyquist Folding Analog-to-Information Receiver  
*Gerald Fudge, Mark Chivers, Sujit Ravindran, L-3 Communications Integrated Systems; Ross Bland, UT Southwestern; Phillip Pace, Naval Postgraduate School; Jarvis Haupt, University of Wisconsin at Madison*
- MA8b3-2 Extensive Behavioral Analysis of Super Resolution Techniques for Time of Arrival Estimation in Indoor Positioning Systems  
*G M Roshan Indika Godaliyadda, Hari K. Garg, National University of Singapore*
- MA8b3-3 Finite Wordlength Digital Filter Design Using Simulated Annealing  
*Byung Wook Jung, Hyun Jong Yang, Joohwan Chun, Korea Advanced Institute of Science and Technology*
- MA8b3-4 Sub-Band Analysis for Fault Detection and its Geometric Interpretation  
*S. Serhat Seker, Ahmet Hamdi Kayran, Istanbul Technical University*
- MA8b3-5 Performance Analysis of Post-Doppler STAP  
*Christopher Teixeira, Northrop Grumman Corporation*
- MA8b3-6 Coefficient Dither in Fixed-Point FIR Digital Filters  
*Sourav Dey, Alan Oppenheim, MIT*
- MA8b3-7 Optimal Preconditioning for the Interpolation of Missing Data in a Band-Limited Sequence  
*Prabhu Babu, Erik Gudmundson, Petre Stoica, Uppsala University*
- MA8b3-8 Fixed-Point Filter Design and Riemannian Geometry  
*Michael Cerna, Jim Nagle, Lothar Wenzel, National Instruments*
- MA8b3-9 Shortest Paths in Spaces of IIR-Filters  
*Michael Cerna, Jim Nagle, Lothar Wenzel, National Instruments*
- MA8b3-10 The Nth-Order Cyclostationarity of OFDM Signals in Time Dispersive Channels  
*Anjana Punchihewa, University of British Columbia; Octavia Dobre, Qiyun Zhang, Memorial University of Newfoundland; Sreeraman Rajan, Robert Inkol, Defence Research and Development Canada*
- MA8b3-11 Sparsity Adaptive Matching Pursuit Algorithm for Practical Compressed Sensing  
*Thong Do, Johns Hopkins University; Lu Gan, Brunel University; Nam Nguyen, Trac Tran, Johns Hopkins University*
- MA8b3-12 Piece-wise linear DFT interpolation for IIR systems: performance and error bound computation  
*Vahid Raissi Dehkordi, Fabrice Labeau, Benoit Boulet, McGill University*

MA8b3-13 A Polyphase Nonlinear Equalization Architecture and Semi-blind Identification Method  
*Benjamin Miller, Joel Goodman, Matthew Herman, MIT Lincoln Laboratory*

MA8b3-14 Comparison of multiplierless implementation of nonlinear-phase versus linear-phase FIR filters  
*Muhammad Abbas, Fahad Qureshi, Zakaullah Sheikh, Oscar Gustafsson, Hakan Johansson, Kenny Johansson, Linkoping University*

MA8b3-15 Factorization of Paraunitary Polyphase Matrices Using Subspace Projections  
*Peter Vouras, Naval Research Lab; Trac Tran, Johns Hopkins University*

## Session MP1 MIMO Radar

Chair: *Rick Blum*

- MP1-1 Sparse signal representation for MIMO radar imaging 1:30 PM  
*William Roberts, Tarik Yardibi, Jian Li, Xing Tan, University of Florida; Petre Stoica, Uppsala University*
- MP1-2 Target Localization Accuracy and Multiple Target Localization: Tradeoff in MIMO Radars 1:55 PM  
*Hana Godrich, NJIT; Alexander Haimovich, New Jersey Institute of Technology; Rick Blum, NJIT*
- MP1-3 Antenna Placement for Velocity Estimation using MIMO Radar 2:20 PM  
*Qian He, currently visiting Lehigh University, University of Electronic Science and Technology of China; Rick Blum, Lehigh University; Alexander Haimovich, New Jersey Institute of Technology; Zishu He, University of Electronic Science and Technology of China*
- MP1-4 Complex Point Target Model for Multistatic Radar 2:45 PM  
*Daniel Fuhrmann, Washington University in St. Louis*
- BREAK 3:10 PM
- MP1-5 Theoretical assessment of MIMO Radar Performance in the Presence of Discrete and Distributed Clutter 3:30 PM  
*Yuri I. Abramovich, Gordon Frazer, Defence Science Technology Organisation*
- MP1-6 MIMO STAP Clutter Mitigation Performance Demonstration using Acoustic Arrays 3:55 PM  
*Vito Mecca, Jeffrey Krolik, Duke University; Frank Robey, MIT Lincoln Laboratory*
- MP1-7 HF Skywave MIMO Radar: The HiLoW Experimental Program 4:20 PM  
*Gordon Frazer, Yuri I. Abramovich, Defence Science and Technology Organization; Ben A. Johnson, RLM Pty. Ltd.*

## Session MP2 Retinal Image Analysis

Chair: *Peter Soliz*

- MP2-1 Using Image Content to Diagnose and Stratify Diabetic Retinopathy 1:30 PM  
*Kenneth Tobin, Oak Ridge National Laboratory; Edward Chaum, University of Tennessee Health Science Center; Luca Giancardo, Thomas Karnowski, Oak Ridge National Laboratory*
- MP2-2 Implications of Computer-assisted Retinal Image Analysis to Clinical Practice and Research in Ophthalmology: A need for Inter-disciplinary Teams 1:55 PM  
*Stephen Russell, University of Iowa*
- MP2-3 Survey of Automatic Retina Image Processing for Computer-aided Diagnosis 2:20 PM  
*Michael Abramoff, University of Iowa*
- MP2-4 Retinal Fundus Image Constrast Normalization using Mixture of Gaussians 2:45 PM  
*Abhir Bhalerao, Sarabjot Singh Anand, University of Warwick; Ponnusamy Saravanan, University Hospitals of Coventry and Warwickshire*
- BREAK 3:10 PM
- MP2-5 Autofluorescence Image Analysis in Age-related Macular degeneration (AMD) and Stargardt Disease (STGD) 3:30 PM  
*R Theodore Smith, Nuno Gomes, Mihai Busuioc, Noah Lee, Andrew Laine, Columbia University*
- MP2-6 Interactive Segmentation for Geographic Atrophy in Retinal Fundus Images 3:55 PM  
*Noah Lee, R Theodore Smith, Andrew Laine, Columbia University*
- MP2-7 Detection and Phenotyping of Retinal Disease using AM-FM Processing for Feature Extraction 4:20 PM  
*Carla Agurto, Sergio Murillo, Victor Murray, Marios Pattichis, The University of New Mexico; Stephen Russell, Michael Abramoff, University of Iowa; Peter Soliz, VisionQuest Biomedical*
- MP2-8 New AM-FM Analysis Methods for Retinal Image Characterization 4:45 PM  
*Victor Murray, Marios Pattichis, University of New Mexico; Peter Soliz, VisionQuest Biomedical and University of Iowa*

## Session MP3 Information Theory

Chair: *Sennur Ulukus*

- MP3-1 Secret communication and key-sharing using sources and channels 1:30 PM  
*Vinod Prabhakaran, University of Illinois, Urbana-Champaign; Krishnan Eswaran, Kannan Ramchandran, University of California, Berkeley*
- MP3-2 On Secure Broadcasting 1:55 PM  
*Ersen Ekrem, Sennur Ulukus, University of Maryland*

- MP3-3 End-to-end Secure Multi-hop Communication with Untrusted Relays is Possible 2:20 PM  
*Xiang He, Aylin Yener, Penn State*
- MP3-4 Multiple descriptions with codebook reuse 2:45 PM  
*Young-Han Kim, UCSD*
- BREAK 3:10 PM
- MP3-5 Cognitive Relaying with One-sided Interference 3:30 PM  
*Onur Sahin, Elza Erkip, Polytechnic University*
- MP3-6 On the Capacity of Cognitive Channels with Strong Interference 3:55 PM  
*Sriram Sridharan, Goochul Jung, Sriram Vishwanath, UT Austin*
- MP3-7 Gaussian Fading Interference Channels: Power Control and Outage Probability 4:20 PM  
*Yang Weng, Daniela Tuninetti, UIC*
- MP3-8 Interference Channels with Co-operating Receivers 4:45 PM  
*Vinod Prabhakaran, Pramod Viswanath, University of Illinois, Urbana-Champaign*

## Session MP4 Feedback in MIMO Systems

Chair: *David Love & Vasanthan Raghavan*

- MP4-1 On the Use of Feedback in Multiple Antenna Common Information Broadcasting 1:30 PM  
*Chun Kin Au Yeung, David Love, Purdue University*
- MP4-2 Two Models for Noisy Feedback in MIMO Channels 1:55 PM  
*Vaneet Aggarwal, Princeton University; Gajanana Krishna, Stanford University; Srikrishna Bhashyam, Indian Institute of Technology Madras; Ashutosh Sabharwal, Rice University*
- MP4-3 Nested Codebook Design For MIMO Precoders 2:20 PM  
*Badri Varadarajan, Eko Onggosanusi, Anand Dabak, Runhua Chen, Texas Instruments*
- MP4-4 Codebook Design for the Spatially Correlated MISO Broadcast Channel 2:45 PM  
*Vasanthan Raghavan, University of Illinois; Venugopal Veeravalli, University of Illinois at Urbana-Champaign*
- BREAK 3:10 PM
- MP4-5 On the Capacity of MIMO Broadcast Channels with Reduced Feedback by Antennas Selection and Optimal Combining 3:30 PM  
*Matthew Pugh, Bhaskar Rao, University of California, San Diego*
- MP4-6 Feedback Requirements in MIMO Broadcast Channels: An Asymptotic Analysis 3:55 PM  
*Alireza Bayesteh, Amir K. Khandani, University of Waterloo*

MP4-7 Space-Frequency Coding for MIMO-OFDM Systems with Limited Feedback 4:20 PM  
*Eunmo Kang, Akbar Sayeed, University of Wisconsin-Madison*

MP4-8 Progressive Feedback for High Resolution Limited Feedback in MIMO Systems 4:45 PM  
*Robert Heath, Jr., The University of Texas at Austin; Tao Wu, Anthony C.K. Soong, Huawei Technologies (USA)*

### Session MP5 Computer Arithmetic I

Chair: *Braden Phillips*

MP5-1 Optimizing addition for sub-threshold logic 1:30 PM  
*David Blaauw, University of Michigan; Braden Phillips, The University of Adelaide*

MP5-2 Fast and Accurate Activity Evaluation in Multipliers 1:55 PM  
*Arnaud Tisserand, LIRMM, CNRS-Univ. Montpellier*

MP5-3 Radix-10 Digit-Recurrence Algorithm for Combined Division and Square Root with Limited Precision Primitives 2:20 PM  
*Milos D. Ercegovic, UCLA*

MP5-4 Design challenges in floating-point addition and multiplication rounding for x87 2:45 PM  
*Dimitri Tan, Carl Lemonds, Peter-Michael Seidel, Advanced Micro Devices Inc.*  
BREAK 3:10 PM

MP5-5 Fused Floating-Point Arithmetic for DSP 3:30 PM  
*Earl E. Swartzlander, Jr., University of Texas at Austin; Hani Saleh, Advanced Micro Devices*

MP5-6 Parallel High-Radix Montgomery Multipliers 3:55 PM  
*Philip Amberg, Nathaniel Pinckney, David Money Harris, Harvey Mudd College*

MP5-7 Dual Base Number System and Elliptic Curve Cryptography 4:20 PM  
*Christophe Doche, Macquarie University; Laurent Imbert, University of Calgary*

MP5-8 Improving Fused Multiply Add Performance 4:45 PM  
*David Lutz, ARM*

### Session MP6 Blind System Identification, Multi-channel System Inversion, and Speech Dereverberation

Chair: *Patrick A. Naylor*

MP6-1 Model-Based Dereverberation of Speech in the Mel-Spectral Domain 1:30 PM  
*Armin Sehr, Walter Kellermann, University Erlangen-Nuremberg*

MP6-2 Adaptive Inverse Filtering of Room Acoustics 1:55 PM  
*Wancheng Zhang, Patrick Naylor, Imperial College London*

MP6-3 Principles and applications of dereverberation for noisy and reverberant audio signals 2:20 PM  
*Masato Miyoshi, Keisuke Kinoshita, Tomohiro Nakatani, Takuya Yoshioka, NTT Communication Science Laboratories, NTT Corporation*

MP6-4 Decomposition and dereverberation of multichannel audio 2:45 PM  
*Michael M. Goodwin, Creative ATC*

BREAK 3:10 PM

MP6-5 Multi-Microphone Speech Dereverberation Based on Eigen-Decomposition - A Study 3:30 PM  
*Sharon Gannot, School of Engineering, Bar-Ilan University*

MP6-6 Towards Multi-Microphone Speech Dereverberation using Spectral Enhancement and Statistical Reverberation Models 3:55 PM  
*Emanuel A.P. Habets, Technion - Israel Institute of Technology*

MP6-7 Multi-Channel Listening-Room Compensation using a Decoupled Filtered-X LMS Algorithm 4:20 PM  
*Stefan Goetze, University of Bremen; Markus Kallinger, University of Oldenburg; Alfred Mertins, University of Luebeck; Karl-Dirk Kammeyer, University of Bremen*

MP6-8 A General Derivation of Wave-Domain Adaptive Filtering and Application to Acoustic Echo Cancellation 4:45 PM  
*Herbert Buchner, Sascha Spors, Deutsche Telekom Laboratories*

### Session MP7 Signal Processing and Learning for Sensor Signal Exploitation

Chair: *Emre Ertin*

MP7-1 Interaction Analysis using Switching Structures Autoregressive Models 1:30 PM  
*Michael Siracusa, John Fisher, MIT*

MP7-2 Learning Classifiers for Wireless Sensor Networks 1:55 PM  
*Emre Ertin, Ohio State University*

MP7-3 Space Cutting for Distributed Localization 2:20 PM  
*Volkan Cevher, Petros Boufounos, Marco Duarte, Richard Baraniuk, Rice University*

MP7-4 Joint Shape and Texture Analysis of Object Boundaries in Images Using A Riemannian Approach 2:45 PM  
*Wei Liu, Anuj Srivastava, Florida State University*

BREAK 3:10 PM

MP7-5 Fast posterior updates for sparse undetermined linear models 3:30 PM  
*Lee Potter, Philip Schniter, Justin Ziniel, Ohio State University*

- MP7-6 Virtual Sensors for Remote Sensing: Algorithms and Performance Analysis 3:55 PM  
*Benjamin Friedlander, University of California, Santa Cruz*
- MP7-7 Fourier-Domain Multichannel Autofocus for Synthetic Aperture Radar 4:20 PM  
*Kuang-Hung Liu, David Munson, University of Michigan*
- MP7-8 A CMOS Video Sensor for High Dynamic Range (HDR) Imaging 4:45 PM  
*Thomas Poonnen, Li Liu, Ketan Karia, Michael Joyner, Jeffrey Zarnowski, Panavision Imaging, LLC*

### Session MP8a1 Distributed Detection and Estimation

Chair: *Weilian Su* 1:30 PM - 3:10 PM

- MP8a1-1 Resource Allocation for Distributed Detection in Sensor Networks  
*Frank Namin, Aria Nosratinia, University of Texas at Dallas*
- MP8a1-2 Distributed Non-Parametric Detection with Adaptive Quantization for Wireless Sensor Networks  
*Hongbin Li, Pu Wang, Stevens Institute of Technology*
- MP8a1-3 Outage Diversity for Distributed Estimation over Parallel Fading Channels  
*Cihan Tepedelenlioglu, Arizona State University; Habib Senol, Kadir Has University; Kai Bai, Arizona State University*
- MP8a1-4 Modeling of Data Fusion Algorithms in Cluster-based Wireless Sensor Networks  
*Weilian Su, Theodoros Bougiouklis, NAVAL POSTGRADUATE SCHOOL*
- MP8a1-5 Distributed Routing in Wireless Sensor Networks for Signal Detection with Random Phase  
*Yang Yang, Rick Blum, Lehigh University*
- MP8a1-6 An Energy-efficient and Distributed Approach to Beamforming in a Wireless Sensor Network  
*Nikolaos Papalexidis, Owens Walker, Murali Tummala, John McEachen, Naval Postgraduate School*

### Session MP8a2 Wireless Network Management

Chair: *Keith Teague* 1:30 PM - 3:10 PM

- MP8a2-1 A Closer Look at the Physical and Protocol Models for Wireless Ad Hoc Networks with Multi-Packet Reception  
*Hyunchul Kim, Hamid Sadjadpour, University of California Santa Cruz; Jose Joaquin Garcia-Luna-Aceves, University of California, Santa Cruz*
- MP8a2-2 Doppler Measurements Rendering Random Routing  
*Liang Dong, Western Michigan University*
- MP8a2-3 Protocols For Half-Duplex Multiple Relay Networks  
*Peter Rost, Gerhard P. Fettweis, Technische Universität Dresden*

- MP8a2-4 Admission Control for Power-Controlled Wireless Networks under General Interference Functions  
*Slawomir Stanczak, Michal Kaliszczan, Fraunhofer German-Sino Lab for Mobile Communications; Nicholas Bambos, Stanford University*
- MP8a2-5 Multi-Channel Packet Capture in 802.11b/g Wireless Networks  
*Douglas Geiger, George Scheets, Keith Teague, Jason Pitts, Oklahoma State University*
- MP8a2-6 A New Achievable Rate For A Stochastic Two Relay Network With No Interference  
*Ghosheh Abed Hodtani, Sharif Univ.of Tech.*
- MP8a2-7 Joint Distributed Adaptive Quantization and Power Allocation in Wireless Sensor Networks  
*Muhammad Hafeez Chaudhary, Abdellatif Vandendorpe, Luc Vandendorpe, Ecole Polytechnique de Louvain*

### Session MP8a3 OFDM/UWB

Chair: *Xiaoli Ma* 1:30 PM - 3:10 PM

- MP8a3-1 Iterative Detection for the Uplink of an OFDMA System with Frequency Offsets  
*Sajid Ahmed, Li Zhang, University of Leeds*
- MP8a3-2 Performance Evaluation of Adaptive MIMO-OFDM Systems with Imperfect Feedback in Measurement Based Channels  
*Harri Pennanen, Jouko Leinonen, Xiaojia Lu, Marek Skowron, Matti Latva-aho, Centre for Wireless Communications, university of Oulu*
- MP8a3-3 Frequency-Domain Joint Channel and Phase Noise Estimation in OFDM WLAN Systems  
*Payam Rabiei, Won Namgoong, Naofal Al-Dhahir, University of Texas at Dallas*
- MP8a3-4 Fast-Varying Doppler Compensation for Underwater Acoustic OFDM Systems.  
*Taehyuk Kang, Ronald A. Iltis, University of California Santa Barbara*
- MP8a3-5 Peak-to-Average Power Ratio versus Instantaneous-to-Average Power Ratio for OFDM  
*Qijia Liu, G. Tong Zhou, Xiaoli Ma, Georgia Institute of Technology; Jie Wu, FutureWei Technologies Inc.*
- MP8a3-6 Optimal Constellation Distortion for PAR Reduction in MIMO-OFDM Systems  
*Moshe Malkin, Hao Zou, Alan John Malek, Stanford EE; Brian Krongold, University of Melbourne; John Cioffi, Stanford University*
- MP8a3-7 A Regularized Least Squares Approach for Ultra-Wideband Time-of-Arrival Estimation with Wavelet Denoising  
*Ted C.-K. Liu, Xiaodai Dong, Wu-Sheng Lu, University of Victoria*



- MP8a3-8 Adaptive Reduced-Rank Interference Suppression for DS-UWB Systems Based on Switched Approximation of Basis Functions  
*Sheng Li, Rodrigo de Lamare, Danilo Zanatta Filho, University of York*
- MP8a3-9 CDMA vs. OFDM for Wideband Cellular Systems  
*Yong Peng, Southern Methodist University; Giridhar Mandyam, Qualcomm Inc.; Dinesh Rajan, Southern Methodist University*
- MP8a3-10 New Multi-User OFDM Scheme: Braided Code Division Multiple Access  
*Marcos B.S. Tavares, Michael Lentmaier, Technische Universitaet Dresden; Kamil Sh. Zigangirov, University of Notre Dame; Gerhard P. Fettweis, Technische Universität Dresden*
- MP8a3-11 Equalization for OFDM Over Doubly-Selective Channels Based on Oversampling  
*Shakti Prasad Shenoy, Institut Eurecom; Francesco Negro, Irfan Ghauri, Infineon Technologies France; Dirk Slock, Institut Eurecom*

### Session MP8a4 MIMO OFDM and Cooperative Relaying

Chair: *Lars Thiele*

1:30 PM - 3:10 PM

- MP8a4-1 A Novel Framework for the Utilisation of Dynamic Relays in Cellular Networks  
*Agisilaos Papadogiannis, Eric Hardouin, Ahmed Saadani, France Telecom R&D*
- MP8a4-2 Power Allocation Method for GMD-based Precoded MIMO-OFDM System with Reduced Feedback  
*Kyeong Jin Kim, Nokia, Inc.; Peter Wang, Nokia Siemens Network; Ronald A. Ilitis, University of California*
- MP8a4-3 New protocols for the Cooperative MAC  
*Charlotte Hucher, Ghaya Rekaya-Ben Othman, Ecole Nationale Supérieure des Télécommunications; Ahmed Saadani, France Telecom Research & Developpement*
- MP8a4-4 Weighted Sum-Rate Maximization for Downlink OFDMA Systems  
*Chathuranga Weeraddana, Wei Li, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications*
- MP8a4-5 Temporal Autocorrelation Estimation for OFDM with Application to Spatial Interpolation  
*Peter Klenner, Karl-Dirk Kammeyer, University Bremen*
- MP8a4-6 Robust Gain Allocation against Phase Uncertainty at the Relays for Multiuser Cooperative Networks  
*Celal Esli, Armin Wittneben, ETH Zurich*
- MP8a4-7 Distributed Turbo Coding Using Log-Likelihood Thresholding for Cooperative Communications  
*Ghaleb Al-Habian, Ali Ghayeb, Concordia University; Mazen Hasna, Adnan Abu-Dayya, Qatar University*
- MP8a4-8 On Distributed Codes with Noisy Relays  
*Ragnar Thobaben, Royal Institute of Technology (KTH)*

- MP8a4-9 A low-complexity Doppler compensation scheme for mobile SIMO-OFDM systems  
*Malte Schellmann, Lars Thiele, Volker Jungnickel, Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut*
- MP8a4-10 Predicting SINR conditions in mobile MIMO-OFDM systems by interpolation techniques  
*Malte Schellmann, Lars Thiele, Volker Jungnickel, Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut*
- MP8a4-11 Cooperation Diversity for Clipped OFDM with Iterative Reception  
*Thomas Ketsseoglou, California State Polytechnic University, Pomona*
- MP8a4-12 Design of Co-phasing Allpass Filters for Full-Duplex OFDM Relays  
*Taneli Riihonen, Stefan Werner, Helsinki University of Technology; Juan Cousseau, Universidad Nacional del Sur; Risto Wichman, Helsinki University of Technology*
- MP8a4-13 Implementation Concepts for Distributed Cooperative Transmission  
*Volker Jungnickel, Lars Thiele, Malte Schellmann, Thomas Wirth, Fraunhofer Institute for Telecommunications; Wolfgang Zirwas, Thomas Haustein, Egon Schulz, Nokia Siemens Networks*

### Session TA1b Compressive Sensing

Chair: *Emmanuel Candes*

- TA1b-1 Robust Recovery of Low-rank Matrices from Noisy Measurements 10:15 AM  
*Emmanuel Candes, Caltech; Maryam Fazel, University of Washington; Pablo Parrilo, MIT; Ben Recht, Caltech*
- TA1b-2 Greedy Signal Recovery and Uncertainty Principles 10:40 AM  
*Deanna Needell, Roman Vershynin, UC Davis; Joel Tropp, California Institute of Technology*
- TA1b-3 Exact Low-rank Matrix Completion via Semidefinite Programming 11:05 AM  
*Benjamin Recht, Emmanuel Candes, California Institute of Technology*
- TA1b-4 L1 filtering and streaming measurements in compressive sampling 11:30 AM  
*Muhammad Asif, Justin Romberg, Georgia Tech*
- TA1b-5 Group Testing and Sparse Signal Recovery 11:55 AM  
*Anna Gilbert, University of Michigan*

## Session TA2b Functional Imaging and Analysis

Chair: *Yongyi Yang*

- TA2b-1 Current Role of PET in Oncology: Potentials and Challenges in the Management of Non-Small Cell Lung Cancer 10:15 AM  
*Phaneendra Yalavarthy, Daniel Low, Camille Noel, Washington University in St. Louis; Zhouping Wei, Philips Medical Systems; Deshan Yang, Aditya Apte, Jeffrey Bradley, Joseph Deasy, Issam El Naqa, Washington University in St. Louis*
- TA2b-2 Helical Artifact Suppression in Iterative CT Reconstruction 10:40 AM  
*Jiao Wang, University of Notre Dame; Jean-Baptiste Thibault, GE Healthcare; Zhou Yu, Purdue University; Ken Sauer, University of Notre Dame; Charles Bouman, Purdue University*
- TA2b-3 Improved PASL EPI Acquisitions With Parallel Imaging and UNFOLD 11:05 AM  
*W. Scott Hoge, Brigham and Women's Hospital and Harvard Medical School; Huan Tan, Robert A. Kraft, Wake Forest University School of Medicine*
- TA2b-4 Spatio-temporal MAP reconstruction of gated cardiac images using DFT basis functions 11:30 AM  
*Xiaofeng Niu, Yongyi Yang, Illinois Institute of Technology*
- TA2b-5 New Image Analysis Tools for Hyperpolarized Helium-3 Magnetic Resonance Imaging Ventilation Defect Changes over time. 11:55 AM  
*Grace Parraga, Robarts Research Institute; David G. McCormack, The University of Western Ontario*

## Session TA3b Secrecy Capacity and Interference Channels

Chair: *Daniela Tuninetti*

- TA3b-1 Feedback is useful for Two-way Secure Communication 10:15 AM  
*Xiang He, Aylin Yener, Penn State*
- TA3b-2 On the Noisy Interference Regime of the MISO Gaussian Interference Channel 10:40 AM  
*Bernd Bandemer, Aydin Sezgin, Arogyaswami Paulraj, Stanford University*
- TA3b-3 Parametrization of the MISO Interference Channel with Transmit Beamforming and Partial Channel State Information 11:05 AM  
*Johannes Lindblom, Erik G. Larsson, Linköping University; Eduard A. Jorswieck, Dresden University of Technology*
- TA3b-4 Outer bounds for the MIMO interference channel 11:30 AM  
*Peter Parker, Daniel W. Bliss, MIT Lincoln Laboratory*

## Session TA4b Multiuser MIMO Broadcast

Chair: *Timothy Davidson*

- TA4b-1 Probabilistically Constrained Robust Power Allocation in Downlink Multiuser MISO Systems 10:15 AM  
*Nikola Vucic, Fraunhofer HHI; Holger Boche, TU Berlin*
- TA4b-2 Probabilistically-Constrained Approaches to the Design of the Multiple Antenna Downlink 10:40 AM  
*Michael Botros Shenouda, Timothy Davidson, McMaster University*
- TA4b-3 Network MIMO with reduced backhaul requirements by MAC coordination 11:05 AM  
*Federico Boccardi, Howard Huang, Angeliki Alexiou, Alcatel-Lucent*
- TA4b-4 Spectral Efficiency of Wireless Networks with Multi-Antenna Base-Stations and Spatially Distributed Nodes 11:30 AM  
*Siddharta Govindasamy, Daniel W. Bliss, David H. Staelin, Massachusetts Institute of Technology*

## Session TA5b Communication Architectures

Chair: *Joseph R. Cavallaro*

- TA5b-1 Configurable High-Throughput Decoder Architecture for Quasi-Cyclic LDPC Codes 10:15 AM  
*Christoph Studer, Nicholas Preyss, Christoph Roth, Andreas Burg, ETH Zurich, Switzerland*
- TA5b-2 High-level Methodology for Implementing Communication Algorithms in Programmable Logic: a Sphere Decoder Case Study 10:40 AM  
*Jorn W. Janneck, Ian D. Miller, David B. Parlour, Xilinx Inc.; Chris H. Dick, Xilinx, Inc.*
- TA5b-3 Forward Error Correction Decoding for WiMAX and 3GPP LTE Modems 11:05 AM  
*Manish Goel, Jing-Fei Ren, Yuming Zhu, Seok-Jun Lee, Texas Instruments, Inc; Yang Sun, Rice University*
- TA5b-4 Next Generation Iterative LDPC Solutions for Magnetic Recording Storage 11:30 AM  
*Kiran Gunnam, Shaohua Yang, Yuanxing Lee, LSI Corporation; Mark Yeary, University of Oklahoma; Gwan Choi, Texas A&M University*
- TA5b-5 FPGA Implementation of High Throughput 600 Mbps Wireless LAN System using 4 X 2 MIMO-OFDM 11:55 AM  
*Wahyul Amien Syafei, Yuhei Nagao, Masayuki Kurosaki, Baiko Sai, Hiroshi Ochi, Kyushu Institute of Technology*

## Session TA6b Wireless Sensor Networks

Chair: *Ananthram Swami*

- TA6b-1 Information Quality Aware Sensor Network Services 10:15 AM  
*Sadaf Zahedi, UCLA; Edith Ngai, Erol Gelenbe, Imperial College; Dinkar Mylaraswamy, Honeywell; Mani Srivastava, UCLA*

- TA6b-2 A Linear Iterative Algorithm for Distributed Sensor Localization 10:40 AM  
*Usman Khan, Soumya Kar, José M. F. Moura, Carnegie Mellon University*
- TA6b-3 Utility-Based Joint Sensor Selection and Congestion Control for Mission-Oriented WSNs 11:05 AM  
*Thomas La Porta, Penn State University; Amotz Bar Noy, CUNY; Sharanya Eswaran, Penn State University; Matt Johnson, CUNY; Archan Misra, IBM Research; Diego Pizzocaro, Alun Preece, University of Cardiff; Hosam Rowaihy, Penn State University*
- TA6b-4 Distributed Equalization and Decoding Using Wireless Sensor Networks 11:30 AM  
*Hao Zhu, Alfonso Cano, Georgios B. Giannakis, University of Minnesota*
- TA6b-5 Network Information Flow: Gossiping with Groups 11:55 AM  
*Mehmet E. Yildiz, Tuncer Can Aysal, Anna Scaglione, Cornell University*

### Session TA7b Adaptive Methods and Monte Carlo Signal Processing

Chair: *Petar Djuric*

- TA7b-1 Complex systems and particle filtering 10:15 AM  
*Monica F. Bugallo, Petar M. Djuric, Stony Brook University*
- TA7b-2 Multiple Target Tracking Using Likelihood Particle Filtering and Adaptive Waveform Design 10:40 AM  
*Ioannis Kyriakides, Tom Trueblood, Antonia Papandreou-Suppappola, Arizona State University*
- TA7b-3 Detection of variance changes and mean value jumps in measurement noise for multipath mitigation in urban navigation 11:05 AM  
*Mariana Spangenberg, TESA; Jean-Yves Tourneret, ENSEEIHT; Vincent Calmettes, University of Toulouse; Grégoire Duchâteau, Thales Alenia Space*
- TA7b-4 Cooperative Blind Equalization of Frequency-Selective Channels in Sensor Networks using Decentralized Particle Filtering 11:30 AM  
*Claudio Jose Bordin, Jr., Marcelo G. S. Bruno, Instituto Tecnológico de Aeronautica*
- TA7b-5 Adaptive Local Quantizer Design for Tracking in a WSN 11:55 AM  
*Onur Ozdemir, Ruixin Niu, Pramod K. Varshney, Syracuse University*

### Session TA8b1 Image/Video Processing, Quantization and Coding

Chair: *John Fisher* 10:15 AM - 11:55 AM

- TA8b1-1 Joint Detection, Segmentation, and Registration of Elastically Deformable Objects  
*Gilad Cohen, Joseph Francos, Rami Hagege, Ben Gurion University*

- TA8b1-2 A Spatial Neighborhood Model for Detection for Hyperspectral Imaging  
*Cameron Grant, Todd Moon, Jacob Gunther, Matthew Stites, Utah State University; Gustavious Williams, Brigham Young University*
- TA8b1-3 Iris Recognition using the Ridge Energy Direction (RED) Algorithm  
*Robert Ives, Randy Broussard, Lauren Kennell, Ryan Rakvic, Delores Etter, U.S. Naval Academy*
- TA8b1-4 Image and Video Colorization  
*Vivek Jacob, Postgraduate student; Sumana Gupta, Professor*
- TA8b1-5 Invariance Properties of AM-FM Image Features  
*Senthil Prakash Ramalingam, Aravind Rangarajan, Indian Institute of Technology Madras*
- TA8b1-6 Comparison of Wavelet Filters Using Objective Quality Measures  
*Bhawna Garg, Panjab University, Chandigarh*
- TA8b1-7 Complex Wavelet Based Modulation Analysis  
*Jean-Marc Lumeau, Aalborg University; Jerome Lebrun, CNRS; Søren Holdt Jensen, Aalborg University*
- TA8b1-8 Algorithms for Old Master Painting Canvas Thread Counting from X-Rays  
*Andrew Klein, Worcester Polytechnic Institute; William Sethares, Heichang Lee, Univ. of Wisconsin - Madison; C. Richard Johnson, Jr., Cornell University; Ella Hendriks, Van Gogh Museum*
- TA8b1-9 Performance prediction for reconstruction problems in computer vision  
*Matthew Ferrara, Air Force Research Laboratory; Peter Stiller, Texas A & M University*

### Session TA8b2 Speech Analysis and Recognition

Chair: *John Fisher* 10:15 AM - 11:55 AM

- TA8b2-1 LSF and LPC - Derived Features for Large Vocabulary Distributed Continuous Speech Recognition in Brazilian Portuguese  
*Vladimir Alencar, Abraham Alcaim, PUC-RIO*
- TA8b2-2 Automatic labelling of foreign-accented speech  
*Rene Arechiga, New Mexico Tech*
- TA8b2-3 Objective Analysis of Temporally Varying Audio Quality Metrics  
*Joseph Hardin, Charles Creusere, Klipsch School of Electrical and Computer Engineering*
- TA8b2-4 Improved Detection Performance of a Speech Recognizer in an Automotive Environment.  
*Ashtosh Sapru, Aricent Communications Pvt. Ltd.; Ravi Lakkundi, Nisar Ahmed, Aricent Communications Pvt Limited*
- TA8b2-5 Waveform Approximating Residual Audio Coding with Perceptual Pre- and Post-Filtering  
*Jesper Kjær Nielsen, Jesper Rindom Jensen, Mads Græsbøll Christensen, Søren Holdt Jensen, Torben Larsen, Aalborg University*

TA8b2-6 Fast Speaker Identification Using Speaker Model Clustering  
*Vijendra Raj Apsingekar, Phillip De Leon, New Mexico State University*

TA8b2-7 An Off-site Text-Independent Speaker Identification Model Using Multi-Classifiers  
*Pankaj Sharma, Maheshchandra Srivastava, Vineet Khandelwal, Jaypee Institute of Information Technology University*

### Session TA8b3 Quantization, Coding, and Encryption

Chair: *John Fisher* 10:15 AM - 11:55 AM

TA8b3-1 An Improved WSQ Fingerprint Image Compression Algorithm  
*Jinshan Tang, Xiaoming Liu, Alcorn State University*

TA8b3-2 Efficient Correlation Extraction for Distributed Audio Coding  
*Sandeep Matta, Charles Creusere, New Mexico State University*

TA8b3-3 Weighted Distortion for Robust Video Coding  
*Sunday Nyamweno, Ramdas Satyan, Sedat Burak Solak, Fabrice Labeau, McGill University*

TA8b3-4 Optimization of Audience Encoding in Low-Resolution Soccer Video Sequences  
*Luca Superiori, Alfredo Font Perez, Markus Rupp, TU Vienna*

TA8b3-5 Generalized Fast Index Assignment for Robust Multiple Description Scalar Quantizers  
*Rui Ma, Fabrice Labeau, McGill University*

TA8b3-6 Image Encryption Algorithms Based on Generalized P-Gray Code Bit Plane Decomposition  
*Yicong Zhou, Karen Panetta, Tufts University; Sos Agaian, University of Texas at San Antonio*

### Session TA8b4 Limited Feedback and Precoding

Chair: *P. P. Vaidyanathan & Eduard Jorswieck* 10:15 AM - 11:55 AM

TA8b4-1 Limited CSI Feedback based on an Adaptive Codebook for Temporally Correlated MISO Fading Channels  
*Dan Zhang, Meik Dörpinghaus, Gerd Ascheid, RWTH Aachen University*

TA8b4-2 Per-Antenna Power Constrained MIMO Transceivers Optimized for BER  
*Ching-Chih Weng, P. P. Vaidyanathan, California Institute of Technology*

TA8b4-3 Joint Design of Limited Feedback and Multiuser Precoding Based on a Precoding MSE Metric  
*Michael Joham, TU Munich; Paula Castro, University of A Coruna; Jian Zhen, TU Munich; Luis Castedo, University of A Coruna; Wolfgang Utschick, TU Munich*

TA8b4-4 Joint Optimization of Transceivers with Decision Feedback and Bit Loading  
*Ching-Chih Weng, Chun-Yang Chen, P. P. Vaidyanathan, California Institute of Technology*

TA8b4-5 Mobility Dependent Feedback Scheme for point-to-point MIMO Systems  
*Gonzalo Vazquez-Vilar, Vinay Majjigi, Aydin Sezgin, Arogyaswami Paulraj, Stanford University*

TA8b4-6 Joint Throughput Optimized CQI and Precoding Weight Calculation for MIMO HSDPA  
*Christian Mehlführer, Sebastian Caban, Martin Wrulich, Markus Rupp, Vienna University of Technology*

TA8b4-7 Tile based MIMO OFDMA systems: Impact of outdated feedback  
*Aydin Sezgin, Bernd Bandemer, Stanford University; Eduard A. Jorswieck, Dresden University of Technology*

TA8b4-8 Distortion-Rate Tradeoff of a Source Uniformly Distributed over Positive Semi-definite Matrices  
*Rajesh Krishnamachari, Mahesh Varanasi, University of Colorado*

TA8b4-9 LR-Aided Precoding with a Modified LLL Algorithm for Limited Feedback MIMO Systems  
*Hyun Jong Yang, Joohwan Chun, Korea Advanced Institute of Science and Technology*

TA8b4-10 Hybrid ARQ Schemes in Multiple-Antenna Slow Fading Channels: A Capacity Perspective  
*Cong Shen, Michael Fitz, University of California, Los Angeles*

### Session TP1a Distributed Statistical Inference

Chair: *Lang Tong & Parv Venkitasubramaniam*

TP1a-1 Distributed Parameter Estimation in Sensor Networks With Random Link Failures and Quantized Inter-Sensor Communication  
*Soumya Kar, José M. F. Moura, Carnegie Mellon University* 1:30 PM

TP1a-2 Analysis of noisy consensus algorithms on arbitrary graphs  
*Ram Rajagopal, Martin Wainwright, University of California at Berkeley* 1:55 PM

TP1a-3 Decentralized Detection with Long-Distance Communication  
*O. Patrick Kreidl, Alan S. Willsky, MIT* 2:20 PM

TP1a-4 On the Divergence-Cost Function in Distributed Detection with a Secrecy Constraint  
*Stefano Marano, Vincenzo Matta, University of Salerno; Peter Willett, University of Connecticut* 2:45 PM

## Session TP1b Statistical Signal Processing for Forensics and Security

Chair: *Hong (Vicky) Zhao*

- TP1b-1 Secure Methods for Fuzzy Key Binding in Biometric Authentication Applications 3:30 PM  
*Francis Minhthang Bui, Dimitrios Hatzinakos, University of Toronto*
- TP1b-2 Detection and Defense against Colluded Misbehaviors in Reputation Systems 3:55 PM  
*Yafei Yang, Yuhong Liu, Yan Sun, University of Rhode Island*
- TP1b-3 Attack-Resistant Cooperation Strategies in P2P Live Streaming Social Networks 4:20 PM  
*W. Sabrina Lin, University of Maryland, College Park; H. Vicky Zhao, University of Alberta; K. J. Ray Liu, University of Maryland, College Park*
- TP1b-4 Several Practical Versions of the Gradient Attack on Fingerprinting Schemes 4:45 PM  
*Shan He, Thomson Corporate Research; Darko Kirovski, Microsoft Research*
- TP1b-5 Statistical Fusion of Multiple Cues for Image Tampering Detection 5:10 PM  
*Yu-Feng Hsu, Shih-Fu Chang, Columbia University*

## Session TP2 Analysis Methods for Functional and Structural Brain Imaging

Chair: *Vince Calhoun & Sunanda Mitra*

- TP2-1 Generating Structure-function Correlation by ICA- based Mapping of Activation Patterns on Co-registered fMRI and FA-DTI 1:30 PM  
*Sunanda Mitra, M. O'Boyle, F. Afrin, B. Nutter, M. Baker, R. Pal, B. Ghosh, Texas Tech University*
- TP2-2 Optimal Sampling Geometries for TV-Norm Reconstruction of fMRI Data 1:55 PM  
*Oliver Jeromin, Vince Calhoun, Marios Pattichis, University of New Mexico*
- TP2-3 Spatial Patterns and Functional Profiles for Discovering Structure in fMRI Data 2:20 PM  
*Polina Golland, Danial Lashkari, Archana Venkataraman, MIT CSAIL*
- TP2-4 Brain Surface Conformal Parameterization with Holomorphic Flow Method and Its Application to HIV/AIDS 2:45 PM  
*Yalin Wang, UCLA, Neurology Department; Jie Zhang, Zhejiang University, China; Tony Chan, Arthur Toga, Paul Thompson, UCLA Mathematics Department*
- BREAK 3:10 PM
- TP2-5 Exploration of the Optimal Group-discriminating Features Using CC-ICA 3:30 PM  
*Jing Sui, Vince Calhoun, The Mind Research Network*

- TP2-6 Pushing the limits of MR diffusion tensor imaging 3:55 PM  
*Edward Hsu, University of Utah*
- TP2-7 Hippocampal Shape in Twin Pairs Discordant for Schizophrenia 4:20 PM  
*Theo van Erp, Paul Thompson, Gil Hoftman, University of California Los Angeles; Matti Huttunen, Jouko Lönqvist, Jaakko Kaprio, Oili Salonen, Leena Valanne, Carl-Gustav Standertskjöld-Nordenstam, Department of Mental Health and Alcohol Research; Veli-Pekka Poutanen, University of Helsinki Central Hospital, Meilahti Clinics; Arthur Toga, Tyrone Cannon, University of California Los Angeles*
- TP2-8 Comparison of Boosting and Partial Least Squares techniques for real-time Pattern Recognition of Brain Activation in Functional Magnetic Resonance Imaging 4:45 PM  
*Herbert Davis, Stefan Posse, E. Castro Witting, Peter Soliz, VisionQuest Biomedical LLC*

## Session TP3a Delay-Rate Tradeoffs

Chair: *Tara Javidi*

- TP3a-1 Achievable throughput and queueing delay for imperfect cooperative retransmission MAC protocols 1:30 PM  
*Steven Weber, Athina Petropulu, Drexel University*
- TP3a-2 Delay-minimal Transmission for Average Power Constrained Multi-access Communications 1:55 PM  
*Jing Yang, Sennur Ulukus, University of Maryland*
- TP3a-3 Delay analysis of Block Coding over a Noisy Channel with Limited Feedback 2:20 PM  
*Raghava N. Swamy, Tara Javidi, UCSD*
- TP3a-4 Throughput Delay Tradeoff for Wireless Multicast Using Hybrid-ARQ Protocols 2:45 PM  
*Jianqi Wang, Seung Young Park, David Love, Michael Zoltowski, Purdue University*

## Session TP3b Relaying and Cooperation II

Chair: *Oswaldo Simeone*

- TP3b-1 Inter-cell Relay Cooperation in Heterogeneous Cellular Uplink Systems 3:30 PM  
*Harish Ganapathy, The University of Texas, Austin; Jeffrey Andrews, University of Texas at Austin; Constantine Caramanis, The University of Texas, Austin*
- TP3b-2 Training Design for Information Rate Optimization over Amplify and Forward Relay Channels 3:55 PM  
*Yupeng Jia, Azadeh Vosoughi, University of Rochester*
- TP3b-3 Distributed Space-time Codes with Relay Preprocessing for Low SNR Source-Relay Links 4:20 PM  
*Birsen Sirkeci-Mergen, San Jose State University*

TP3b-4 Analysis of Amplify-and-Forward DSTBCs over the Random Set Relay Channel 4:45 PM  
*Qiang Xue, Giuseppe Abreu, University of Oulu; Behnaam Aazhang, Rice University*

TP3b-5 Circumventing Base Station Cooperation through Kalman Prediction of Intercell Interference 5:10 PM  
*Ralf Bendlin, Yih-Fang Huang, University of Notre Dame; Josef Nosssek, Michel Ivrlac, Munich University of Technology*

## Session TP4 Cooperative MIMO

Chair: *Aria Nosratinia*

TP4-1 Switching Between Antenna Selection and Spatial Multiplexing in the Amplify-and-Forward MIMO Relay Channel 1:30 PM  
*Steven Peters, Robert Heath, Jr., University of Texas at Austin*

TP4-2 MIMO Two-way Relay Channel: Diversity-Multiplexing Trade-off Analysis 1:55 PM  
*Deniz Gunduz, Princeton/Stanford University; Andrea Goldsmith, Stanford University; H. Vincent Poor, Princeton University*

TP4-3 Deterministic capacity of MIMO relay networks 2:20 PM  
*Anders Host-Madsen, University of Hawaii*

TP4-4 Layered Randomized Cooperation for Multicast 2:45 PM  
*Ozgu Alay, Ran Ding, Elza Erkip, Yao Wang, Polytechnic University; Anna Scaglione, Cornell University*

BREAK 3:10 PM

TP4-5 Coding for the fading interference channel 3:30 PM  
*Jean-Claude Belfiore, Maya Badr, Lina Mroueh, ENST*

TP4-6 Multiaccess Relay Channel with Opportunistic Channel Access 3:55 PM  
*Mohamed Abouelseoud, Aria Nosratinia, University of Texas at Dallas*

TP4-7 Optimum Time-Division in MIMO Two-Way Decode-and-Forward Relaying Systems 4:20 PM  
*Jian Zhao, Marc Kuhn, Armin Wittneben, ETH Zurich; Gerhard Bauch, DoCoMo Euro-Labs*

TP4-8 Resource Allocation for the Parallel Relay Channel with Multiple Relays 4:45 PM  
*Kagan Bakanoglu, Elza Erkip, POLYTECHNIC UNIVERSITY; Stefano Tomasin, University of Padova*

TP4-9 To Code or Not To Code In Multi-Hop Relay Channels 5:10 PM  
*Rahul Vaze, Robert Heath, Jr., The University of Texas at Austin*

## Session TP5a Integrated Algorithm and Architecture Implementation

Chair: *Keshab Parhi*

TP5a-1 Forward Error Correction for High-Speed I/O 1:30 PM  
*Rajan Narasimha, Naresh Shanbhag, University of Illinois at Urbana-Champaign*

TP5a-2 VLSI Architecture Design for Algebraic Soft-decision Reed-Solomon Decoding 1:55 PM  
*Xinmiao Zhang, Case Western Reserve University*

TP5a-3 Efficient Algorithm and VLSI Architecture Design for Variable Block Size Motion Compensated De-Interlacing 2:20 PM  
*Hongbin Sun, Nanning Zheng, Xi'an Jiaotong University; Tong Zhang, Rensselaer Polytechnic Institute*

TP5a-4 High-Speed Implementation of Smith-Waterman Algorithm for DNA Sequence Scanning in VLSI 2:45 PM  
*Chao Cheng, Marvell Semiconductor; Keshab K. Parhi, University of Minnesota, Twin Cities*

## Session TP5b Cognitive Systems and Spectrum Sharing

Chair: *Sriram Vishwanath*

TP5b-1 Spectrum Sharing in Cellular Networks: An Ad Hoc Network Underlay 3:30 PM  
*Brett Kaufman, Behnaam Aazhang, Rice University*

TP5b-2 Spectrum Allocation from a Game Theoretic Perspective: Properties of Nash Equilibria 3:55 PM  
*Peter von Wrycza, M. R. Bhavani Shankar, Mats Bengtsson, Björn Ottersten, Royal Institute of Technology (KTH)*

TP5b-3 Secondary Transmission Profile for a Single-band Cognitive Interference Channel 4:20 PM  
*Debashis Dash, Ashutosh Sabharwal, Rice University*

TP5b-4 Experimental Study of a Wavelet-based Spectrum Sensing Technique 4:45 PM  
*Erika Portela Lopes de Almeida, Paulo Henrique Portela de Carvalho, Pedro Antero Braga Cordeiro, University of Brasilia; Robson Domingos Vieira, Instituto Nokia de Tecnologia*

TP5b-5 Wireless Resource Allocation With Perceived Quality Fairness 5:10 PM  
*Andreas Saul, DoCoMo Euro-Labs*

## Session TP6 Interference Management and Cooperative Communication in Ad-hoc Networks

Chair: *Min Dong & Ben Liang*

TP6-1 Generalized Degrees of Freedom of X Networks 1:30 PM  
*Syed Jafar, Chiachi Huang, University of California Irvine*

TP6-2	On the Role of Feedback and Interaction in Networks <i>Krishnan Eswaran, Michael Gastpar, UC Berkeley</i>	1:55 PM
TP6-3	Adaptive Power Loading for OFDM Cooperative Networks <i>Osama Amin, Murat Uysal, University of Waterloo</i>	2:20 PM
TP6-4	Spectrum Enforcement and Liability Assignment in Cognitive Radio Systems <i>George Atia, Venkatesh Saligrama, Boston University; Ananti Sahai, UC Berkeley</i>	2:45 PM
	BREAK	3:10 PM
TP6-5	Generalized Relaying in the Presence of Interference <i>Ron Dabora, Ivana Maric, Andrea Goldsmith, Stanford Univ.</i>	3:30 PM
TP6-6	Spectrum Allocation in Two-Tier Networks <i>Vikram Chandrasekhar, The University of Texas at Austin; Jeffrey Andrews, University of Texas at Austin</i>	3:55 PM
TP6-7	Distributed Spectrum Sensing for Cognitive Radios by Exploiting Sparsity <i>Juan-Andres Bazerque, Georgios B. Giannakis, University of Minnesota</i>	4:20 PM
TP6-8	Interference Channel with One Cognitive Transmitter <i>Yi Cao, Biao Chen, Syracuse University</i>	4:45 PM

### Session TP7a Detection, Processing and Fusion in Distributed Sensor Systems

Chair: Akos Ledeczi & Xenofon Koutsoukos

TP7a-1	Lightweight Acoustic Classification for Cane-Toad Monitoring <i>Thanh Dang, Nirupama Bulusu, Portland State University; Wen Hu, CSIRO ICT Centre</i>	1:30 PM
TP7a-2	Applying Blind Methods to Bird Call Classification and Detection in a Complex Acoustic Environment <i>Lewis Girod, Vladimir Bychkovsky, MIT</i>	1:55 PM
TP7a-3	Target Tracking in Urban Environments using Audio-Video Signal Processing in Heterogeneous Wireless Sensor Networks <i>Manish Kushwaha, ISIS, Vanderbilt University; Songhwai Oh, School of Engineering, UC Merced; Isaac Amundson, Xenofon Koutsoukos, Akos Ledeczi, ISIS, Vanderbilt University</i>	2:20 PM
TP7a-4	Energy-efficient Sensor Management in Multi-static Active Sonar Networks <i>Andreas Terzis, I-Jeng Wang, Johns Hopkins University</i>	2:45 PM

### Session TP7b Performance Prediction and Analysis for Signal and Image Processing Systems

Chair: Matthew Ferrara

TP7b-1	Performance of Cued Target Acquisition Systems: Impact of Automatic Target Recognition <i>Robert Frankot, Raytheon Missile Systems</i>	3:30 PM
TP7b-2	Confuser Rejection Performance Model <i>David Doria, Raytheon Space and Airborne Systems</i>	3:55 PM
TP7b-3	SAR Focusing Performance for Moving Objects with Random Motion Components <i>Ahmed Fasih, Emre Ertin, Randolph Moses, The Ohio State University</i>	4:20 PM
TP7b-4	Detecting Curves in SAR Data <i>Kaitlyn Voccola, Margaret Cheney, Birsan Yazici, Rensselaer Polytechnic Institute; Matthew Ferrara, Air Force Research Lab</i>	4:45 PM
TP7b-5	Non-Algorithm-Specific ATR Performance Estimation <i>Donald Waagen, Nitesh Shah, Harry Schmitt, Raytheon Company</i>	5:10 PM

### Session TP8a1 Adaptive Systems and Processing

Chair: Victor DeBrunner

1:30 PM - 3:10 PM

TP8a1-1	Reduced-Rank Interference Suppression for GPS Systems based on Adaptive Basis-Function Approximation <i>Danilo Zanatta Filho, Rodrigo de Lamare, Rui Fa, University of York</i>
TP8a1-2	Active Noise Control Based On Kernel Least-Mean-Square Algorithm <i>Hua Bao, University of Texas at Dallas; Issa Panahi, Nishank Pathak, University of Texas at Dallas</i>
TP8a1-3	An Efficient and Effective Variable Step Size NLMS Algorithm <i>Hideki Takekawa, Tetsuya Shimamura, Saitama University; Shihab Jimaa, KUSTAR University</i>
TP8a1-4	A Robust Active Noise Control Algorithm without identifying secondary path <i>Hieu Thai, Minh Ta, Victor DeBrunner, Florida State University</i>
TP8a1-5	New Stable IIR Modeling of Long FIR filters with Low Complexity <i>Jie Chen, Keshab K. Parhi, University of Minnesota</i>

### Session TP8a2 Detection and Estimation

Chair: Antonia Papandreou-Suppappola

1:30 PM - 3:10 PM

TP8a2-1	Leading Edge Detection in Colored Noise for IR-UWB Signals <i>Sayit Korkmaz, Alle-Jan van der Veen, TU Delft</i>
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- TP8a2-2 Estimating Homeomorphic Deformations of Multi-Dimensional Signals - An Accuracy Analysis  
*Benjamin Friedlander, University of California, Santa Cruz*
- TP8a2-3 Subspace-based Cooperative Spectrum Sensing for Cognitive Radio  
*Raghavendra Rao, Qi Cheng, Oklahoma State University; Priyadip Ray, Syracuse University*
- TP8a2-4 An Exact Recursive Filter For Quadrature Amplitude Modulation Dynamics  
*Robert Elliott, University of Calgary; William Malcolm, Australian national University*
- TP8a2-5 Propagator Method for Joint Time Delay and Frequency Estimation  
*Mahmoud Qasaymeh, Hirenkumar Gami, Wichita State University; Nizar Tayem, IIT Technical Institute; Ravi Pendse, Wichita State University*
- TP8a2-6 Joint Estimation of Gain/Phase Mismatches And I/Q Imbalances In Array Antenna Subsystems  
*Zhiwen Zhu, Xinping Huang, Communications Research Centre Canada*
- TP8a2-7 Nonparametric detection of the number of signals and random matrix theory  
*Shira Kritchman, Boaz Nadler, Weizmann Institute of Science*
- TP8a2-8 Extension of Reed-Mallett-Brennan (RMB) Loss for Application to STAP With Collected Data  
*Christopher Teixeira, Northrop Grumman Corporation*
- TP8a2-9 Parameter estimation in wireless channel networks using second order statistics  
*Magnus Mossberg, Karlstad University*
- TP8a2-10 Parameter Estimation from Shift-Invariant Subspaces  
*Richard Vaccaro, University of Rhode Island*
- TP8a2-11 Structured Non-negative Matrix Factorization with Sparsity Patterns  
*Hans Laurberg, Aalborg University; Mikkel N. Schmidt, Technical University of Denmark; Mads Græsbøll Christensen, Søren Holdt Jensen, Aalborg University*
- TP8a2-12 An Overview of Renyi Entropy and Some Potential Applications  
*Ed Beadle, Jim Schroeder, Harris Corp.; Bill Moran, University of Melbourne*
- TP8a2-13 Detection of Signal Discontinuities from Noisy Fourier Data  
*Adityavikram Viswanathan, Douglas Cochran, Anne Gelb, Dennis Cates, Arizona State University*
- TP8a2-14 On the Effect of Channel Estimation Error Upon the Performance of Distributed Detection Systems  
*Hamidreza Ahmadi, Azadeh Vosoughi, University of Rochester*
- TP8a2-15 Sequential Unfolding SVD for Low Rank Orthogonal Tensor Approximation  
*Jussi Salmi, Andreas Richter, Visa Koivunen, Helsinki University of Technology*
- TP8a2-16 On Separation Performance Enhancement in Convolutional Blind Source Separation  
*Radoslaw Mazur, Alfred Mertins, University of Luebeck*
- TP8a2-17 The Decentralized Estimation of the Sample Covariance  
*Anna Scaglione, Roberto Pagliari, Cornell University; Hamid Krim, North Carolina State University*
- TP8a2-18 Adaptive Discovery of Sparse Signals in Noise  
*Jarvis Haupt, Rui Castro, Robert Nowak, University of Wisconsin -- Madison*
- TP8a2-19 Applying Blind Methods to Bird Call Classification and Detection in a Complex Acoustic Environment  
*Vladimir Bychkovsky, Lewis Girod, MIT*
- TP8a2-20 Maximum Likelihood Parameters Estimation in Non-uniform Noise Fields Using Moving Array  
*Da Xie, Tingting Niu, Jianguo Huang, Northwestern Polytechnical University; Hongya Ge, New Jersey Institute of Technology*
- Session TP8a3 Space-Time Coding and Decoding**
- Chair: *Benjamin Friedlander* 1:30 PM - 3:10 PM
- TP8a3-1 Full-Rate Full-Diversity Differential MIMO  
*M. Rezk, UCSC; Benjamin Friedlander, University of California, Santa Cruz*
- TP8a3-2 Joint Channel-Symbol Estimation for High-Performance Differential MIMO  
*M. Rezk, UCSC; Benjamin Friedlander, University of California, Santa Cruz*
- TP8a3-3 Embedded Alamouti Space-Time Codes for High Rate and Low Decoding Complexity  
*Mohanned Sinnokrot, John Barry, Vijay Madisetti, Georgia Institute of Technology*
- TP8a3-4 New Soft Stack Decoder for MIMO Channel  
*Abdellatif Salah, Ghaya Rekaya Ben-Othman, Rym Ouertani, TELECOM ParisTech; Samuel Guillaouard, Thomson R&D*
- TP8a3-5 Multiple Phase Decoder for MIMO Systems  
*Zhi Quan, Yuriy Zakharov, Junruo Zhang, University of York*
- TP8a3-6 4x4 Perfect Space-Time Code Partition  
*Mireille Sarkiss, Ghaya Rekaya-Ben Othman, Jean-Claude Belfiore, Ecole Nationale Supérieure des Télécommunications*
- TP8a3-7 Systematic Design of Space-Time Convolutional Codes  
*Christophe Rouchy, Hamid Sadjadpour, UCSC*
- TP8a3-8 Iterative Inter-symbol Interference Canceling Receiver for Direct Space-Time GF(q) LDPC Modulation  
*Adam R. Margetts, Nicholas B. Chang, Keith W. Forsythe, Daniel W. Bliss, MIT Lincoln Laboratory*
- TP8a3-9 Space-Time Coding with Receive Switch Diversity  
*Adarsh Narasimhamurthy, Cihan Tepedelenlioglu, Arizona State University*



## Session TP8b1 Computer Arithmetic II

Chair: *Alberto Nannarelli*

3:30 PM - 5:10 PM

- TP8b1-1 A Residue to Binary Converter for the  $\{2n + 2, 2n + 1, 2n\}$  Moduli Set  
*Kazeem Alagbe Gbolagade, Delft University of Technology/University For Development Studies, Ghana; Sorin Dan Cotofana, Delft University of Technology,*
- TP8b1-2 Power Dissipation in Division  
*Wei Liu, Alberto Nannarelli, Technical University of Denmark*
- TP8b1-3 Transcendental Functions on a Shift-Enabled Reconfigurable Device: CORDIC as a Case-Study  
*Scott Miller, Mihai Sima, Michael McGuire, University of Victoria*
- TP8b1-4 A Decimal Fully Parallel and Pipelined Floating Point Multiplier  
*Ramy Eissa, Amira Mohamed, Rodina Samy, Tarek Eldeeb, Yasmeen Farouk, Mostafa Elkhoully, SilMinds; Hossam Fahmy, Cairo University*
- TP8b1-5 Towards Optimal Multiple Constant Multiplication: A Hypergraph Approach  
*Oscar Gustafsson, Linkoping University*
- TP8b1-6 An Empirical Study on Standard Cell Synthesis of Elementary Function Look-Up Tables  
*Oscar Gustafsson, Kenny Johansson, Linkoping University*
- TP8b1-7 A Rounding Method with Improved Error Tolerance for Division by Convergence  
*Inwook Kong, Earl E. Swartzlander, Jr., University of Texas at Austin*
- TP8b1-8 Polynomial Multiplication over Finite Fields Using Field Extensions and Interpolation  
*Murat Cenk, Cankaya University; Cetin Koc, Oregon State University; Ferruh Ozbudak, Middle East Technical University*
- TP8b1-9 Spectral Modular Arithmetic for Binary Extension Fields  
*Gokay Saldamli, Eczacibasi Embedded Design Center; Cetin Koc, Oregon State University*
- TP8b1-10 A Low Power Radix-4 Dual Recoded Integer Squaring Implementation For Use in Design of Application Specific Arithmetic Circuits  
*Jason Moore, Student/SMU; Mitchell A. Thornton, David W. Matula, Professor/SMU*
- TP8b1-11 High-Speed Parallel CRC Circuits  
*Christopher Kennedy, Arash Reyhani-Masoleh, The University of Western Ontario*
- TP8b1-12 Forcing one-sided results in Goldschmidt algorithm  
*Daniel Piso Fernández, Javier Díaz Bruguera, University of Santiago de Compostela*

## Session TP8b2 Architectures and Implementation

Chair: *Oscar Gustafsson*

3:30 PM - 5:10 PM

- TP8b2-1 Implementation of a correlator of bipolar sequences and matrix element squaring with application to interference-limited multiple-access systems  
*Hossam Fahmy, Cairo University; Ayman Elezabi, American University in Cairo*
- TP8b2-2 Power Estimation Methodology for VLIW Digital Signal Processor  
*Mostafa E.A. Ibrahim, Cairo University; Markus Rupp, Vienna University of Technology; Hossam Fahmy, Cairo University*
- TP8b2-3 Filter Designs for a Reconfigurable Photonic Integrated Circuit  
*Yujia Wang, John J. Shynk, University of California, Santa Barbara*
- TP8b2-4 High Performance On the Fly Reconfigurable MIMO Detector  
*Pankaj Bhagawat, Rajballav Dash, Gwan Choi, Texas A&M University*
- TP8b2-5 Implementation and Complexity Analysis of List Sphere Detector for MIMO-OFDM systems  
*Markus Myllylä, Markku Juntti, Centre for Wireless Communications; Joseph R. Cavallaro, Rice University*
- TP8b2-6 The Cube Coefficient Subspace Architecture for Nonlinear Digital Predistortion  
*Matthew Herman, Benjamin Miller, Joel Goodman, MIT Lincoln Laboratory*
- TP8b2-7 Sparse FIR filters and its impact on FPGA area usage  
*Sean Patronis, Linda DeBrunner, Florida State University*
- TP8b2-8 Implementing Indoor Positioning System via ZigBee Devices  
*Yao Zhao, Liang Dong, Western Michigan University; Jiang Wang, Bo Hu, Yuzhuo Fu, Shanghai Jiao Tong University*
- TP8b2-9 Iris Recognition Processing via Parallel Logic in Field Programmable Gate Arrays  
*Ryan Rakvic, Bradley Ullis, Randy Broussard, Robert Ives, USNA*
- TP8b2-10 Dynamically regularized RLS-DCD algorithm and its FPGA design  
*Jie Liu, Yuriy Zakharov, Junruo Zhang, University of York*
- TP8b2-11 ASIC implementation comparison of SIC and LSD receivers for MIMO-OFDM  
*Johanna Ketonen, Markus Myllylä, Markku Juntti, Centre for Wireless Communications, University of Oulu*
- TP8b2-12 Optimally Quantized Offset Min-Sum Algorithm for Flexible LDPC Decoder  
*Daesun Oh, Keshab K. Parhi, University of Minnesota*
- TP8b2-13 A New MIMO Detector Architecture Based on a Forward-Backward Trellis Algorithm  
*Yang Sun, Joseph R. Cavallaro, Rice University*

TP8b2-14 Architecture-aware design of a decimation filter based on a dual wordlength multiply-accumulate unit  
*Erik Lindahl, Oscar Gustafsson, Linköping University*

### Session TP8b3 Image Analysis for Biomedical Applications

Chair: *Nilanjan Ray* 3:30 PM - 5:10 PM

- TP8b3-1 An Image enhancement technique in the JPEG domain for cancer detection  
*Jinshan Tang, Alcorn State University*
- TP8b3-2 Real-Time Motion Tracking in MRI: A Simulation Study  
*Jeff Orchard, University of Waterloo; Robert Staruch, University of Toronto*
- TP8b3-3 Ultrasound Despeckling for Active Contour Segmentation  
*Peter Tay, Western Carolina University*
- TP8b3-4 Automatic Blood Cell Classification by Joint Histogram Based Feature and Bhattacharya Kernel  
*Sharmin Nilufar, PhD Student; Nilanjan Ray, Assistant Professor; Hong Zhang, Professor*
- TP8b3-5 Learning Shape Features for Tracking Multiple Leukocytes in Intravital Microscopic Experiment  
*Baidya Nath Saha, University of Alberta; Dipti Prasad Mukherjee, Indian Statistical Institute*
- TP8b3-6 Separating Backscatter and Attenuation in Ultrasound Imagery Using Anisotropic Regularization  
*Yongjian Yu, Xiaodong Tao, GE Corporate - Americas; Feng Lin, GE Corporate -Americas; Mirsaid Seyed-Bolorforosh, GE Corporate - Americas*
- TP8b3-7 Estimation in real-time affinity-based biosensors  
*Haris Vikalo, Arjang Hassibi, University of Texas at Austin*
- TP8b3-8 Reduced Rank Formulation for Increased Computational Efficiency in Medical Ultrasound Model-Based Beamforming  
*Michael Ellis, William Walker, University of Virginia*
- TP8b3-9 Joint Maximum Likelihood Estimation of the fMRI Hemodynamic Response Function and Activation  
*Negar Bazargani, Aria Nosratinia, University of Texas at Dallas*
- TP8b3-10 A Fast Inverse Consistent Deformable Image Registration Method Based on Symmetric Optical Flow Computation  
*Deshan Yang, Hua Li, Daniel Low, Joseph Deasy, Issam El Naqa, Washington University in Saint Louis*
- TP8b3-11 An Automated Three-Dimensional Visualization and Classification of Emphysema using Neural Network  
*Kok Liang Tan, Toshiyuki Tanaka, Keio University; Hidetoshi Nakamura, Tokyo Electric Power Hospital; Toru Shirahata, Hiroaki Sugiura, Keio University*

### Session WA1 Sensor Networks

Chair: *John W. Fisher, III*

- WA1-1 Estimating a Random Field in Sensor Networks Using Quantized Spatially Correlated Data and Fusion-center Feedback  
*Aleksandar Dogandzic, Kun Qiu, Iowa State University* 8:30 AM
- WA1-2 Quantization for Distributed Detection under Link Outages  
*Ying Lin, State University of New York, New Paltz* 8:55 AM
- WA1-3 Distributed Estimation of Channel Gains in Sensor Networks  
*Sivagnanasundaram Ramanan, John MacLaren Walsh, Drexel University* 9:20 AM
- WA1-4 Evaluation of Local Decision Thresholds for Distributed Detection in Wireless Sensor Networks using Multiobjective Optimization  
*Engin Masazade, Sabanci University; Ramesh Rajagopalan, Florida State University; Pramod K. Varshney, Syracuse University; Gullu Kiziltas Sendur, Mehmet Keskinöz, Sabanci University* 9:45 AM
- BREAK 10:10 AM
- WA1-5 Source Localization using Random Arrays of Sensors under Multipath Fading  
*Georgios Tsvigoulis, Owens Walker III, Murali Tummala, John McEachen, Naval Postgraduate School* 10:30 AM
- WA1-6 Distributed Estimation over Fading Channels Using One-bit Quantization  
*Tao Wu, Qi Cheng, Oklahoma State University* 10:55 AM

### Session WA2 Biological Imaging: Acquisition, Analysis and Modeling

Chair: *Michael Liebling*

- WA2-1 In toto imaging and the Digital Fish Project: Open tools for an imaging based approach to systems biology  
*Sean Megason, Harvard Medical School* 8:30 AM
- WA2-2 Image processing in mechanics of growing plants  
*Tigran Bacarian, University of California, Irvine* 8:55 AM
- WA2-3 Automatic Annotation of Patterns in Bioimages  
*Hanchuan Peng, Janelia Farm Research Campus, Howard Hughes Medical Institute* 9:20 AM
- WA2-4 Multimodality and Multidimensional Microscopy in the Developing Embryonic Heart  
*Michael Liebling, University of California Santa Barbara* 9:45 AM

	BREAK	10:10 AM
WA2-5	Sub-resolution maximum-likelihood localization of fluorescent molecules based on an accurate image formation model <i>François Aguet, Michael Unser, EPFL (Ecole Polytechnique Fédérale de Lausanne)</i>	10:30 AM
WA2-6	Model based MR spectroscopic imaging <i>Mathews Jacob, Ramin Eslami, University of Rochester</i>	10:55 AM
WA2-7	Improved Signal Extraction from Fluorescence Immunoassay Image Sequences <i>Prasun Mahanti, Fulton School of Engineering; Thomas Taylor, College of Liberal Arts and Sciences; Douglas Cochran, Fulton School of Engineering; Mark Hayes, College of Liberal Arts and Sciences; Matthew Petkus, The Dial Corporation</i>	11:20 AM
WA2-8	Signal processing for rapid bacterial detection <i>Vivek Nandakumar, Terry Alford, Department of Electrical Engineering; Jeffrey La Belle, Biodesign Institute</i>	11:45 AM

### Session WA3a Ultra Wide Band

Chair: *Lutz Lampe*

WA3a-1	Effects of Imperfections on the Performance of OFDM-based UWB Systems <i>Juan Montojo, UCSD-ECE and Qualcomm Inc.; Laurence Milstein, UCSD-ECE</i>	8:30 AM
WA3a-2	Performance of Coded Transmitted Reference Pulse Cluster UWB Systems <i>Zhonghua Liang, Xiaodai Dong, T. Aaron Gulliver, University of Victoria</i>	8:55 AM
WA3a-3	Receiver Optimization in Frequency-Shifted Reference Ultra-Wideband Systems <i>Zhiguo Lai, Harshit Joshi, Dennis Goeckel, University of Massachusetts</i>	9:20 AM
WA3a-4	Performance of Concatenated Coded IR-UWB <i>Zahra Ahmadian, Lutz Lampe, University of British Columbia</i>	9:45 AM

### Session WA3b OFDMA and Multiple Access

Chair: *Chia-Chin Chong*

WA3b-1	Reduced-Feedback Opportunistic Scheduling and Beamforming with Power Allocation for MIMO-OFDMA <i>Man-On Pun, Princeton University; Kyeong Jin Kim, Nokia, Inc.; Ronald A. Iltis, Nokia; H. Vincent Poor, Princeton University</i>	10:30 AM
WA3b-2	Impact of Diversity on OFDMA Ranging <i>Jianqiang Zeng, Hlaing Minn, University of Texas at Dallas; Chia-Chin Chong, Fujio Watanabe, DoCoMo USA Labs Inc.</i>	10:55 AM

WA3b-3	Cooperative OFDM Relay Transmission using Rateless Codes <i>Gang Wu, Wei Lin, Deli Jia, Shaoyan Li, University of Electronic Science and Technology of China; Ye (Geoffrey) Li, Georgia Institute of Technology</i>	11:20 AM
WA3b-4	OFDMA based Cooperative Relay Networks <i>Zhongshan Zhang, University of Alberta; Chintha Tellambura, Univ. of Alberta</i>	11:45 AM
WA3b-5	A Practical SDMA Protocol for 60 GHz Millimeter Wave Communications <i>Pengfei Xia, Samsung Electronics</i>	12:10 PM

### Session WA4 New Directions in MIMO

Chair: *Venu Veeravalli*

WA4-1	Adaptive Time Reversal Beamforming in Dense Multipath Communication Networks <i>Yuanwei Jin, José M. F. Moura, Nicholas O'Donoghue, Carnegie Mellon University</i>	8:30 AM
WA4-2	Finite lattice-size effects in MIMO decoding <i>Christoph Studer, Dominik Seethaler, Helmut Bölcskei, ETH Zurich</i>	8:55 AM
WA4-3	Space-time Reversal Techniques for Wideband MIMO Communication <i>Thiagarajan Sivanathan, Akbar Sayeed, University of Wisconsin - Madison</i>	9:20 AM
WA4-4	Angular domain processing for MIMO wireless systems with non-uniform antenna arrays <i>Dayu Huang, Vasanthan Raghavan, Ada Poon, University of Illinois; Venugopal Veeravalli, University of Illinois at Urbana-Champaign</i>	9:45 AM
	BREAK	10:10 AM
WA4-5	Compressed Sensing of Wireless Channels in Time, Frequency, and Space <i>Waheed Uz Zaman Bajwa, Akbar Sayeed, Robert Nowak, University of Wisconsin-Madison</i>	10:30 AM
WA4-6	Broadband SVD and Non-Linear Precoding and Equalisation Applied to Broadband MIMO Channels <i>Waleed Al-Hanafy, Andrew Millar, Chi Hieu Ta, Stephan Weiss, University of Strathclyde</i>	10:55 AM
WA4-7	Diversity-Fidelity Tradeoff in Transmission of Analog Sources over MIMO Fading Channels <i>Mahmoud Taherzadeh, Kamyar Moshksar, Amir K. Khandani, University of Waerloo</i>	11:20 AM
WA4-8	Multi-User and Multi-Cell MIMO based on Limited Feedback in Downlink OFDM Systems <i>Lars Thiele, Malte Schellmann, Thomas Wirth, Volker Jungnickel, Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut</i>	11:45 AM

## Session WA5a Architectures for Positioning and Navigation

Chair: *Andrew Dempster*

- WA5a-1 Efficient Signal Acquisition and Tracking for a Real Time GPS/Galileo Software Receiver 8:30 AM  
*Marco Pini, Maurizio Fantino, Istituto Superiore Mario Boella; Fabio Dovis, Politecnico di Torino*
- WA5a-2 An Unambiguous Detector Architecture for Galileo E5 Signal Acquisition 8:55 AM  
*Nagaraj Channarayapatna Shivaramaiah, Andrew Dempster, University of New South Wales*
- WA5a-3 On the Implications of Analog to Digital Conversion on Variable-Rate Bandpass Sampling GNSS Receivers 9:20 AM  
*Alper Ucar, Ediz Cetin, Izzet Kale, University of Westminster*
- WA5a-4 Understanding the GIOVE-B Broadcast Codes of the Galileo System 9:45 AM  
*Grace Xingxin Gao, Stanford University; Dennis Akos, University of Colorado; Todd Walter, Per Enge, Stanford University*

## Session WA5b Low Power Methods

Chair: *James E. Stine, Jr.*

- WA5b-1 Analysis of Voltage Overscaled Computer Arithmetics in Low Power Signal Processing Systems 10:30 AM  
*Yang Liu, Tong Zhang, Rensselaer Polytechnic Institute; Keshab K. Parhi, University of Minnesota*
- WA5b-2 Low Power Signal Processing Through Complexity Reduction and Quality-Vdd Tradeoffs 10:55 AM  
*Nilanjan Banerjee, Kaushik Roy, Purdue University*
- WA5b-3 Reducing Power Dissipation in Pipelined Accumulators 11:20 AM  
*Alberto Nannarelli, Technical University of Denmark; Marco Re, GianCarlo Cardarilli, University of Rome "Tor Vergata"*
- WA5b-4 Self Modifying Finite Automata (SMFA) based State Machine Implementation for Lower Energy 11:45 AM  
*Ka-Ming Keung, Akhilesh Tyagi, Iowa State University*
- WA5b-5 Single-ended half-swing low-power SRAM design 12:10 PM  
*Harsha Choday, James E. Stine, Oklahoma State University*

## Session WA6a Network Information Theory and Security

Chair: *Faramarz Fekri*

- WA6a-1 Capacity of Ad-Hoc Networks under Multipacket Transmission and Reception 8:30 AM  
*Shirish Karande, Zheng Wang, Hamid Sadjadpour, UCSC; Jose Joaquin Garcia-Luna-Aceves, University of California, Santa Cruz*
- WA6a-2 Analysis of Latency in Secure Wireless Sensor Networks with Key Predistribution 8:55 AM  
*Ramanan Subramanian, Kevin Chan, Faramarz Fekri, Georgia Institute of Technology*
- WA6a-3 Capacity Scaling Laws for Underwater Networks 9:20 AM  
*Daniel E. Lucani, Muriel Médard, Milica Stojanovic, MIT*
- WA6a-4 Entropy Vectors and Network Information Theory 9:45 AM  
*Babak Hassibi, Sormeh Shadbakht, Caltech*

## Session WA6b Wireless Network Utility Maximization: Fundamental Limits and Protocols

Chair: *Alejandro Ribeiro & Georgios Giannakis*

- WA6b-1 Delay Analysis of Scheduling Policies in Wireless Networks (Invited Paper) 10:30 AM  
*Gagan Gupta, Purdue University; Ness Shroff, The Ohio State University*
- WA6b-2 Optimal Spectrum Allocation in Gaussian Interference Networks 10:55 AM  
*Hongxia Shen, Hang Zhou, Randall Berry, Michael Honig, Northwestern University*
- WA6b-3 Asymptotic Delay Guarantees for Throughput Optimal Scheduling 11:20 AM  
*Koushik Kar, Rensselaer Polytechnic Institute; Saswati Sarkar, University of Pennsylvania*
- WA6b-4 Optimal layered architectures for wireless networks 11:45 AM  
*Alejandro Ribeiro, Georgios B. Giannakis, University of Minnesota*
- WA6b-5 Opportunism, Backpressure, and Stochastic Optimization with the Wireless Broadcast Advantage 12:10 PM  
*Michael Neely, Rahul Uргаonkar, USC*

## Session WA7a Speech Recognition and Analysis

Chair: *Jerry Gibson*

- WA7a-1 A Double-Talk Detector Based on Generalized Mutual Information for Stereophonic Acoustic Echo Cancellation in the Presence of Nonlinearity 8:30 AM  
*Kun Shi, Xiaoli Ma, G. Tong Zhou, Georgia Institute of Technology*
- WA7a-2 A Phonetically Switched ADPCM speech coder 8:55 AM  
*Pravin Kumar Ramadas, Jerry D. Gibson, University of California, Santa Barbara*
- WA7a-3 A probabilistic principal component analysis based hidden Markov model for audio-visual speech recognition 9:20 AM  
*Zhanyu Ma, Arne Leijon, Royal Institute of Technology (KTH)*
- WA7a-4 Synthesis of Enhanced Audio from Low Bitrate Compressed Audio Based on Unit Selection and Statistical Conversion Methods 9:45 AM  
*Demetrios Cantzos, University of Southern California; Athanasios Mouchtaris, Foundation for Research and Technology; Chris Kyriakakis, University of Southern California*

## Session WA7b Adaptive Receivers for OFDM and UWB Systems

Chair: *Richard Martin*

- WA7b-1 Adaptive MIMO Channel Shortening with Post-FEQ Diversity Combining 10:30 AM  
*Gokhan Altin, Richard Martin, The Air Force Institute of Technology*
- WA7b-2 On the Ill Convergence of Blind Equalization Algorithms for M-ary PPM with Small Alphabet Size 10:55 AM  
*Andrew Klein, Xinming Huang, Worcester Polytechnic Institute (WPI)*
- WA7b-3 A Cost Function Level Analysis of Autocorrelation Minimization Based Blind Adaptive Channel Shorteners 11:20 AM  
*Ciira Wa Maina, John Walsh, Drexel University*
- WA7b-4 Adaptive Resource Allocation Within Three-Stage OFDM Relay Networks 11:45 AM  
*Nasr Eltayeb, S. K. Kassim, Jonathan Chambers, Loughborough University*
- WA7b-5 Adaptive Downlink OFDMA Resource Allocation 12:10 PM  
*Ian Wong, Freescale Semiconductor; Brian Evans, The University of Texas at Austin*

## Session WA8a Network Coding

Chair: *Shalinee Kishore*

- WA8a-1 Robust network coding subgraph construction under uncertainty 8:30 AM  
*Christopher Chang, Tracey Ho, Michelle Effros, California Institute of Technology*
- WA8a-2 Randomized Network Coding in Broadcast Wireless Networks with Fading Edges 8:55 AM  
*Yingda Chen, Shalinee Kishore, Lehigh University*
- WA8a-3 Two-Way Relaying with Network Coding for Multiple Orthogonal Channels 9:20 AM  
*Petar Popovski, Aalborg University/Oricon A/S; Toshiaki Koike-Akino, Vahid Tarokh, Harvard University*
- WA8a-4 A Study of the Routing Capacity Regions of Networks 9:45 AM  
*Ali Kakhbod, University of Michigan; Serap A. Savari, S. M. Sadegh Tabatabaei Yazdi, Texas A&M University*

## Session WA8b Video Coding

Chair: *Lina Karam*

- WA8b-1 Determining Efficient Bit Stream Extraction Paths in H.264/AVC Scalable Video Coding 10:30 AM  
*Dongun Lee, Yonghee Lee, Heejung Lee, Jonghun Lee, Heonshik Shin, Seoul National University*
- WA8b-2 Bitplane Selective Distributed Video Coding 10:55 AM  
*Wei-Jung Chien, Lina Karam, Arizona State University*
- WA8b-3 Refined Error Concealment for Multiple State Video Coding over Ad Hoc Networks 11:20 AM  
*Yiting Liao, Jerry D. Gibson, University of California, Santa Barbara*
- WA8b-4 Bitrate allocation for multiple video streams at competitive equilibria 11:45 AM  
*Mayank Tiwari, Theodore Groves, Pamela Cosman, University of California, San Diego*
- WA8b-5 Rate Estimation Via Maximum Likelihood Parameter Estimation: Application in Fast Mode-Selection within the H.264/AVC 12:10 PM  
*Koohyar Minoos, Truong Nguyen, UCSD*

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