

Welcome from the General Chairman

Prof. Robert W. Heath
University of Texas at Austin

Welcome to the 47th Asilomar Conference on Signals, Systems, and Computers! I am thrilled that you are joining me at this incredible conference. I have a long history with Asilomar. I published my first paper at Asilomar in 1996, incidentally the second paper I had ever published. I have attended Asilomar most of the past 15 years, with the notable exception of when my son was born in November 2007 (a reasonable exception I think). Every year I look forward the same experiences: carrying around that thick blue abstract book in the cool morning mist, getting lost while looking for that elusive conference room (after so many years!), and wondering what surprise will be found in the dining hall for lunch. Of course, what keeps me coming back are the hot-off-the-presses technical results. Returning to Asilomar is like a high school reunion. I enjoy reconnecting with old friends and making new friends as well. I hope you find something that makes Asilomar special for you.

The technical program was expertly crafted by the Technical Program Chair Phil Schniter and his team of Technical Area Chairs: Matt McKay, Dan Bliss, Milica Stojanovic, Marco Duarte, Biao Chen, Rebecca Willett, Andreas Gerstlauer, James Fowler, and Gerald Matz. I would like to thank Phil and his team for assembling a high quality program with 445 accepted papers and 182 invited papers.

The student paper contest this year was chaired by D. Richard Brown III and received a total of 144 submissions out of which eight were chosen for final presentation. The student finalists will present poster presentations to the judges Sunday afternoon and anyone else who would like to attend. The awards for the top three papers will be made at the plenary session.

This year's plenary talk will be given by Dr. Thomas L. Marzetta, Bell Laboratories, Alcatel-Lucent. I am pleased to have someone from industry sharing his insights on signal processing for wireless communication. Tom will talk about his ground breaking work on large-scale antenna systems. He presented the first paper on this topic at Asilomar in 2006. Since that time, the area of large-scale antenna wireless (also known as massive MIMO) has exploded, including invited sessions at past Asilomar conferences, special issues in journals, and hundreds of published papers. I am looking forward to seeing what can be accomplished with many antennas.

I am thrilled to have served as this year's General Chair. I hope that you enjoy this year's Asilomar conference and that you discover everything that Asilomar has to offer.

Robert W. Heath Jr.

The University of Texas at Austin, June 2013

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2013 Asilomar Conference Session Schedule

Sunday Afternoon, November 3, 2013

3:00–7:00 PM	Registration — Merrill Hall
4:00–6:30 PM	Student Paper Contest — Heather
7:00–9:00 PM	Welcoming Dessert Reception — Merrill Hall

Monday Morning, November 4, 2013

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

10:15 AM–11:55 PM MORNING SESSIONS

MA1b	Full-Duplex MIMO Communications I
MA2b	Stochastic Optimization in Control and Wireless Communications
MA3b	Applications of Signal Processing in Financial Engineering
MA4b	Networking with Physical Layer Security
MA5b	Wireless Healthcare
MA6b	Underwater Acoustic Communication and Localization
MA7b	Approximate Computing
MA8b1	Biological Image Analysis (Poster)
MA8b2	Network Optimization (Poster)
MA8b3	Adaptive and Robust Methods (Poster)
MA8b4	Compressive Sensing (Poster)

12:00–1:00 PM	Lunch – Crocker Dining Hall
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Monday Afternoon, November 4, 2013

1:30–5:10 PM AFTERNOON SESSIONS

MP1a	Massive MIMO
MP1b	Distributed Coherent MIMO
MP2a	Wireless Security
MP2b	Energy Harvesting and Transfer
MP3a	Blind Source Separation and Deconvolution
MP3b	Distributed Signal Processing and Learning
MP4a	Network Optimization and Control
MP4b	Network Coding and Compression
MP5a	Extracting Information from Electrophysiology Data
MP5b	Optimization in (Bio)Medical Imaging
MP6a	Smart Grid Signal Processing
MP6b	Statistical Signal Processing
MP7a	Recent Progress in Computer Arithmetic
MP7b	3D Content Processing
MP8a1	Distributed Signal Processing (Poster)
MP8a2	Wireless Sensor Networks (Poster)
MP8a3	Array Signal Processing (Poster)
MP8a4	Speech, Audio, Image, and Video Processing (Poster)
MP8a5	Hardware Implementation (Poster)

Monday Evening, November 4, 2013

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 and a guest.
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2013 Asilomar Conference Session Schedule

(continued)

Tuesday Morning, November 5, 2013

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

8:00 AM–5:00 PM Registration

8:15 AM–11:55 PM MORNING SESSIONS

- TA1a Applied MIMO communications
- TA1b Implementation Aspects for Full Duplex and Large-Scale MIMO Wireless Systems
- TA2a Stochastic Geometry and Random Networks
- TA2b Random Matrices and Applications
- TA3a Active Sensing and Learning
- TA3b Optimization in Signal Processing
- TA4a Cooperation Techniques for Wireless Networks
- TA4b Body Area Nanonetworks
- TA5a Signal Processing in MEG and EEG
- TA5b Quantitative Image Analysis
- TA6a Geospatial Image Processing
- TA6b Control and Signal Processing for Information Fusion
- TA7a Heterogeneous and Reconfigurable Computing
- TA7b High Efficiency Video Coding
- TA8a1 Radar and Sonar Signal Processing (Poster)
- TA8a2 Communication Systems I (Poster)
- TA8a3 Machine Learning and Statistical Signal Processing (Poster)
- TA8a4 Machine Learning for Biological Signals (Poster)
- TA8b1 Communications Systems II (Poster)
- TA8b2 Computer Arithmetic (Poster)
- TA8b3 MIMO Systems (Poster)
- TA8b4 Adaptive Learning and Information Theory (Poster)

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

Tuesday Afternoon, November 5, 2013

1:30–5:35 PM AFTERNOON SESSIONS

- TP1a Advanced MIMO Networking
- TP1b Full-Duplex MIMO Communications II
- TP2a Multimedia Quality Assessment
- TP2b PHY Performance Abstraction Techniques
- TP3a New Geometric Models for Processing in Big-Data World
- TP3b Low-Dimensional Signal Models
- TP4a Power Networks
- TP4b Location-Aware Networking
- TP5a Analysis of Complex Biological Systems and Omics Data I
- TP5b Analysis of Complex Biological Systems and Omics Data II
- TP6a MIMO Radar
- TP6b Target Tracking I
- TP7a Algorithm/Architecture Co-design
- TP7b Machine Learning and Statistical Signal Processing
- TP8a1 Spectrum Sensing and Sharing (Poster)
- TP8a2 Relays in Communications (Poster)
- TP8a3 Cellular and Heterogeneous Networks (Poster)
- TP8a4 Adaptive Filtering (Poster)
- TP8b1 Electrophysiology and Brain Imaging (Poster)
- TP8b2 Multiuser MIMO Systems (Poster)
- TP8b3 Design Automation (Poster)

Tuesday Evening Open Evening — Enjoy the Monterey Peninsula

2013 Asilomar Conference Session Schedule

(continued)

Wednesday Morning, November 6, 2013

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

8:00 AM–12:00 PM Registration — Copyright forms must be turned in before the registration closes at 12:00 noon.

8:15 AM–11:55 PM MORNING SESSIONS

WA1a MIMO Interference Management

WA1b MIMO Processing

WA2a OFDM

WA2b Advances in Coding and Decoding

WA3a Adaptive Filtering

WA3b Detection

WA4a Relaying and Cooperation

WA5a Image Analysis and Processing

WA5b Target Tracking II

WA6a Multi-Sensor Signal Processing

WA6b Direction of Arrival Estimation

WA7a Communication System Design

WA7b Energy- and Reliability-Aware Design

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

Heather - Sunday, November 3, 2013, 4:00–6:30 PM

Track A

“Delay-Optimal Streaming Codes under Source-Channel Rate Mismatch”

Pratik Patil, Ahmed Badr, Ashish Khisti, Wai-Tian Tan

Track C

“Throughput Improvements for Cellular Systems with Device-to-Device Communications”

PhuongBang Nguyen, Bhaskar Rao

Track D

“Recovering Graph-Structured Activations using Adaptive Compressive Measurements”

Akshay Krishnamuthy, James Sharpnack, Aarti Singh

Track E

“Adaptive Non-myopic Quantizer Design for Target Tracking in Wireless Sensor Networks”

Sijia Liu, Engin Masazade, Xiaojing Shen, Pramod K. Varshney

Track F

“Parallel and Distributed Sparse Optimization”

Zhimin Peng, Ming Yan, Wotao Yin

Track G

“FPGA Implementation of a Message-Passing OFDM Receiver for Impulsive Noise Channels”

Karl Nieman, Marcel Nassar, Jing Lin, Brian Evans

Track H

“On the Effectiveness of Natural Videos in Masking Dynamic DCT Noise”

Jeremy Evert, Damon Chandler

2013 Asilomar Conference Session Schedule

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

Monday, November 4, 2013

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

1. Welcome from the General Chairperson

Prof. Robert Heath
University of Texas at Austin

2. Session MA1a Distinguished Lecture for the 2013
Asilomar Conference

Large-Scale Antenna Systems: The Future of Wireless

Thomas L. Marzetta
Bell Labs, Alcatel-Lucent

Abstract

Large-Scale Antenna Systems (LSAS) - also called “Massive MIMO”, “Large-Scale MIMO”, or “Hyper-MIMO” - feature multi-user MIMO transmission of data, unprecedented numbers of service-antennas with a high ratio of service-antennas to terminals, and channel-state information derived from up-link pilots and time-division duplex (TDD) reciprocity. The scale of LSAS confers immense advantages over existing wireless schemes: huge spectral-efficiency, cheap single-antenna terminals, the replacement of expensive ultra-linear power amplifiers with many low-power low-precision units, simple but near-optimal multiplexing pre-coding and decoding, freedom from the “rich scattering environment” assumption, and effective powercontrol based on slow-fading only. There is no obvious evolutionary path from LTE to LSAS and wireless standards committees are often resistant to radical innovations. For this reason the best initial opportunities for the commercial introduction of LSAS may be dedicated systems for communication tasks that have heretofore been considered impossible or impractical for wireless. A dedicated

LSAS would use specially-designed hardware with no back-compatibility requirements, and it could operate in unlicensed spectrum which would minimize issues of standards. LSAS is likely to be very “green” compared with existing wireless technology in terms of the number of bits delivered per Joule expended.

Biography

Thomas L. Marzetta was born in Washington, D.C. He received the PhD in electrical engineering from the Massachusetts Institute of Technology in 1978. His dissertation extended, to two dimensions, the three-way equivalence of autocorrelation sequences, minimum-phase prediction error filters, and reflection coefficient sequences. He worked for Schlumberger-Doll Research (1978 - 1987) to modernize geophysical signal processing for petroleum exploration. He headed a group at Nichols Research Corporation (1987 - 1995) which improved automatic target recognition, radar signal processing, and video motion detection. He joined Bell Laboratories in 1995 (formerly part of AT&T, then Lucent Technologies, now Alcatel-Lucent). Within the former Mathematical Sciences Research Center he was director of the Communications and Statistical Sciences Department. He specializes in multiple-antenna wireless, with a particular emphasis on the acquisition and exploitation of channel-state information. He is the originator of Large-Scale Antenna Systems which can provide huge improvements in wireless spectral-efficiency and energy-efficiency over 4G technologies. Dr. Marzetta was a member of the IEEE Signal Processing Society Technical Committee on Multidimensional Signal Processing, a member of the Sensor Array and Multichannel Technical Committee, an associate editor for the IEEE Transactions on Signal Processing, an associate editor for the IEEE Transactions on Image Processing, and a guest associate editor for the IEEE Transactions on Information Theory Special Issue on Signal Processing Techniques for Space- Time Coded Transmissions (Oct. 2002), for the IEEE Transactions on Information Theory Special Issue on Space-Time Transmission, Reception, Coding, and Signal Design (Oct. 2003), and for the IEEE JSAC Special Issue on Large-Scale Multiple Antenna Wireless Systems (Feb. 2013). He is currently the lead guest editor for the JCN Special Issue on Massive MIMO (Aug. 2013). Dr. Marzetta was the recipient of the 1981 ASSP Paper Award from the IEEE Signal Processing Society. He was elected a Fellow of the IEEE in Jan. 2003.

**Program of the
2013 Asilomar Conference on
Signals, Systems, and Computers**

**Technical Program Chairman
Prof. Phil Schniter
The Ohio State University**

Session MA1b Full-Duplex MIMO Communications I

Chair: *Risto Wichman, Aalto University*

- MA1b-1 Advanced Self-Interference Cancellation and 10:15 AM
Multiantenna Techniques for Full-Duplex Radios
*Dani Korpi, Tampere University of Technology, Finland;
Sathya Venkatasubramanian, Taneli Riihonen, Aalto
University, Finland; Lauri Anttila, Tampere University of
Technology, Finland; Sergei Tretyakov, Aalto University,
Finland; Mikko Valkama, Tampere University of
Technology, Finland; Risto Wichman, Aalto University,
Finland*
- MA1b-2 Effects of Channel Estimation Errors on 10:40 AM
Cochannel Full-Duplex MIMO Relays Using
Adaptive Transmit Spatial Mitigation
*Daniel Bliss, Yu Rong, Arizona State University, United
States*
- MA1b-3 New Results in Multiuser Full-Duplex 11:05 AM
Ashutosh Sabharwal, Rice University, United States
- MA1b-4 Transmit Antenna-switched Receive Diversity 11:30 AM
for Bi-directional Beamforming in Two-way
Communications
*Dongkyu Kim, Yonsei University, Republic of Korea;
Hyungsik Ju, National University of Singapore, Singapore;
Seokjung Kim, Daesik Hong, Yonsei University, Republic
of Korea*

Session MA2b Stochastic Optimization in Control and Wireless Communications

Chair: *Vincent Lau, Hong Kong University of Science and
Technology (HKUST)*

- MA2b-1 Enhancing the Delay Performance of 10:15 AM
Dynamic Backpressure Algorithms
*Ying Cui, Edmund Yeh, Northeastern University, United
States*
- MA2b-2 A Study of Estimation and Communication 10:40 AM
Tradeoff using an Event-based Approach
*Ling Shi, Hong Kong University of Science and
Technology, China*
- MA2b-3 Event-triggered Anytime Control with 11:05 AM
Random Processor Availability and Dropouts
*Wann-Jiun Ma, University of Notre Dame, United States;
Daniel Quevedo, University of Newcastle, Australia; Vijay
Gupta, University of Notre Dame, United States; Serdar
Yuksel, Queen's University, Canada*
- MA2b-4 Convergence of Mixed Timescales 11:30 AM
Cross-Layer Stochastic Optimization
*Junting Chen, Vincent Lau, Hong Kong University of
Science and Technology, Hong Kong SAR of China*

Session MA3b Applications of Signal Processing in Financial Engineering

Chair: *Daniel Palomar, Hong Kong University of Science and Technology (HKUST)*

- MA3b-1 Robust Order Execution Under Box 10:15 AM
Uncertainty Sets
Yiyong Feng, Daniel Palomar, Hong Kong University of Science and Technology, Hong Kong SAR of China; Francisco Rubio, Genetic Finance Limited, Hong Kong SAR of China
- MA3b-2 ARCH Modeling in the Presence of Missing 10:40 AM
Data
Pascal Bondon, CNRS, France
- MA3b-3 Modeling Transaction-Level Asset Prices by 11:05 AM
Point Processes
Alexander Aue, University of California, Davis, United States; Lajos Horvath, University of Utah, United States; Clifford Hurvich, Philippe Soulier, New York University, United States
- MA3b-4 Structured Regularization for Large Vector 11:30 AM
Autoregression
William B. Nicholson, David S. Matteson, Jacob Bien, Cornell University, United States

Session MA4b Networking with Physical Layer Security

Chair: *Emre Koksall, The Ohio State University*

- MA4b-1 Creating Erasure Channels for Wireless 10:15 AM
Network Secrecy
Panagiotis Kostopoulos, Marios Gkatzianas, Christina Fragouli, Katerina Argyraki, Suhas Diggavi, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
- MA4b-2 Guessing a Password over a Wireless 10:40 AM
Channel: On the Effect of Noise Non-uniformity
Flavio Calmon, Muriel Médard, Massachusetts Institute of Technology, United States; Mark Christiansen, Ken Duffy, National University of Ireland, Maynooth, Ireland
- MA4b-3 Key Generation under Active Attacks 11:05 AM
Heng Zhou, Worcester Polytechnic Institute, United States; Lauren Hui, Air Force Research Laboratory, United States; Lifeng Lai, Worcester Polytechnic Institute, United States
- MA4b-4 Basic Limits of RF-Fingerprint Based 11:30 AM
Authentication
Onur Gungor, C. Emre Koksall, Hesham El Gamal, The Ohio State University, United States

Session MA5b Wireless Healthcare

Chair: *Yuejie Chi, The Ohio State University*

- MA5b-1 A Unified Framework for Energy Efficient 10:15 AM
Physical Activity Tracking
Daphney-Stavroula Zois, Urbashi Mitra, University of Southern California, United States
- MA5b-2 Practical Energy Expenditure Estimation for 10:40 AM
Human Daily Activity Using Mobile Phones
Mi Zhang, Harshvardhan Vathsangam, Alexander Sawchuk, Gaurav S. Sukhatme, University of Southern California, United States
- MA5b-3 Compressed Sensing for Energy-Efficient 11:05 AM
Wireless Telemonitoring: Challenges and Opportunities
Zhilin Zhang, Samsung R&D Institute America-Dallas, United States; Bhaskar D. Rao, Tzyy-Ping Jung, University of California, San Diego, United States
- MA5b-4 Contactless Sensing of Physiological Signals 11:30 AM
Using Wideband RF Probes
Ju Gao, Emre Ertin, The Ohio State University, United States; Santosh Kumar, University of Memphis, United States; Mustafa al'Absi, University of Minnesota, United States

Session MA6b Underwater Acoustic Communication and Localization

Co-Chairs: *Shengli Zhou, University of Connecticut and Geert Leus, TU Delft*

- MA6b-1 Effective Inter-carrier Interference Reduction 10:15 AM
Techniques for OFDM Underwater Acoustic Communications
Miaowen Wen, Xiang Cheng, Peking University, China; Xilin Cheng, Liuqing Yang, Colorado State University, United States; Bingli Jiao, Peking University, China
- MA6b-2 DMC-MAC: Dynamic Multi-channel MAC in 10:40 AM
Underwater Acoustic Networks.
Hamid Ramezani, Geert Leus, Technical University of Delft, Netherlands
- MA6b-3 Target Localization and Tracking in a 11:05 AM
Random Access Sensor Network
Kivanc Kerse, Fatemeh Fazel, Milica Stojanovic, Northeastern University, United States
- MA6b-4 Field Test Results of An On-demand 11:30 AM
Collaborative Underwater Localization Protocol
Kaleel Mahmood, Patrick Lazar, Tausif Shaikh, Johanna Thomas, Shengli Zhou, University of Connecticut, United States

Session MA7b Approximate Computing

Chair: Alberto Nannarelli, Technical University of Denmark

- MA7b-1 Exploiting Inherent Application Resilience 10:15 AM
Through Approximate Computing
Vinay Chippa, Swagath Venkataramani, Purdue University, United States; Srimat Chakradhar, NEC Laboratories America, Inc., United States; Kauhik Roy, Ananad Raghunathan, Purdue University, United States
- MA7b-2 Computing with Parsimonious Resource 10:40 AM
Budgets: An Evaluation of Inexact Design Approaches
Avinash Lingamneni, Rice University, United States; Christian Enz, Centre Suisse d'Electronique et de Microtechnique, Switzerland; Krishna Palem, Rice University, United States; Christian Piguet, Centre Suisse d'Electronique et de Microtechnique, Switzerland
- MA7b-3 On Robustifying Applications by Casting 11:05 AM
Them as Markov Chain Algorithms
Biplab Deka, University of Illinois at Urbana-Champaign, United States; Alex Birklykke, University of Aalborg / University of Illinois at Urbana-Champaign, United States; Henry Duwe, University of Illinois at Urbana-Champaign, United States; Vikash Mansighka, Massachusetts Institute of Technology, United States; Rakesh Kumar, University of Illinois at Urbana-Champaign, United States
- MA7b-4 On Approximate Arithmetic 11:30 AM
Milos D. Ercegovac, University of California, Los Angeles, United States

Session MA8b1 Biological Image Analysis

Chair: Sally Wood, Santa Clara University

10:15 AM - 11:55 AM

- MA8b1-1 An Automated Algorithm for the Quantification of hCG
Level in Novel Fabric-based Home Pregnancy Test Kits
Manasa K, Manasa Priya K V S N L, Sadhana Reddy Sadu, Sumohana Channappayya, Sivaramakrishna Vanjari, IIT Hyderabad, India; Dhananjaya Dendukuri, Swathy Sridharan, Tripurari Choudhary, Paridhi Bhandari, Achira Labs, India
- MA8b1-2 Waveform Processing for Protein Multi-Alignment by
Mapping Locational, Structural and Functional Attributes
Alexander Maurer, Brian O'Donnell, Antonia Papandreou-Suppappola, Arizona State University, United States
- MA8b1-3 3D Medical Image Denoising Using 3D Block Matching
and Low-rank Matrix Completion
Aminmohammad Roozgard, Nafise Barzigar, Pramode Verma, Samuel Cheng, University of Oklahoma, United States

- MA8b1-4 Automated Denoising and Segmentation of Optical Coherence Tomography Images
Sohini Roychowdhury, Dara D. Koozekanani, Keshab K. Parhi, University of Minnesota, United States
- MA8b1-5 Fourier Descriptor Based Diagnosis of Vocal-Fold Partial Asymmetry from High Speed Image Sequences
Jasmin Gonzalez, Sally Wood, Yuling Yan, Santa Clara University, United States
- MA8b1-6 Prostate Cancer Detection and Gleason Grading of Histological Images using Shearlet Transform
Hadi Rezaeilouyeh, Mohammad H. Mahoor, University of Denver, United States; Francisco La Rosa, University of Colorado, United States; Jun Jason Zhang, University of Denver, United States

Session MA8b2 Network Optimization

Chair: *Bhaskar Rao, University of California, San Diego*

10:15 AM - 11:55 AM

- MA8b2-1 Cooperative AF Wireless Relay Strategy under Relay Power Constraint
Kanghee Lee, Hyuck M. Kwon, Edwin M. Sawan, Wichita State University, United States; Hyuncheol Park, Korea Advanced Institute of Science and Technology, Republic of Korea
- MA8b2-2 SNR-Based Channel Pairing Design in Multichannel TDBC-based Two-Way Relaying
Mingchun Chang, Min Dong, University of Ontario Institute of Technology, Canada
- MA8b2-3 An Exhaustive Message Splitting Scheme for Partial Decode-Forward in A Three-Relay Network
Yao Tang, McGill University, Canada; Mai Vu, Tufts University, United States
- MA8b2-4 Convergence Analysis of Mixed Timescale Cross-Layer Stochastic Optimization
Junting Chen, Vincent Lau, Hong Kong University of Science and Technology, Hong Kong SAR of China
- MA8b2-5 On Achievable Degrees of Freedom of 3-user MIMO Interference Channels
Lu Yang, Wei Zhang, University of New South Wales, Australia
- MA8b2-6 Grassmannian Delay-Tolerant Limited Feedback for Interference Alignment
Zhinan Xu, Thomas Zemen, Telecommunications Research Center Vienna (FTW), Austria
- MA8b2-7 Minimum Cost Caching-Aided Multicast under Arbitrary Demand
Jaime Llorca, Antonia Tulino, Bell Labs, Alcatel-Lucent, United States
- MA8b2-8 Distributed Node-Weighted Connected Dominating Set Problems
Sattar Vakili, Qing Zhao, University of California, Davis, United States

Session MA8b3

Adaptive and Robust Methods

Chair: *Benoit Champagne, McGill University*

10:15 AM - 11:55 AM

- MA8b3-1 Low-Complexity Variable Forgetting Factor Constant Modulus RLS-based Algorithm for Blind Adaptive Beamforming
Boya Qin, Yunlong Cai, Zhejiang University, China; Benoit Champagne, McGill University, Canada; Minjian Zhao, Zhejiang University, China
- MA8b3-2 Parameter Bounds Under Misspecified Models
Christ Richmond, Larry Horowitz, MIT Lincoln Laboratory, United States
- MA8b3-3 High Resolution Doppler and Delay Estimation
Benjamin Friedlander, University of California, Santa Cruz, United States
- MA8b3-4 Enhanced Edge Kernel Estimation for Robust Positioning
Davide Macagnano, Giuseppe Destino, University of Oulu, Finland
- MA8b3-5 QR-TLS ESPRIT for Source Localization and Frequency Estimations
Nizar Tayem, Muhammad Omer, Prince Mohammad Bin Fahd University, Saudi Arabia
- MA8b3-6 Parallel TSQR-TLS and QR-TLS factorization for Joint Time Delay and Frequency Estimation
Nizar Tayem, Muhammad Omer, Syed Raza, Mohammad Lakkis, Prince Mohammad Bin Fahd University, Saudi Arabia
- MA8b3-7 Analyzing the FD-MIMO Sparse Imaging Under Carrier Frequency Offsets from the Prospective of Point Spread Function
Li Ding, Changchang Liu, Weidong Chen, University of Science and Technology of China, China
- MA8b3-8 A Generalized Framework for Development of Partially-Updated Signal and Parameter Estimation Algorithms Based on Subspace Optimization Constraints
Brian Agee, B3 Advanced Communication Systems, United States

Session MA8b4

Compressive Sensing

Chair: *Laura Balzano, University of Michigan*

10:15 AM - 11:55 AM

- MA8b4-1 Model-based Compressive Harmonic-aware Matching Pursuit: An Evaluation
Bashar Ahmad, University of Cambridge, United Kingdom; Wei Dai, Cong Ling, Imperial College London, United Kingdom
- MA8b4-2 Compressive Recovery of 2-D Off-Grid Frequencies
Yuejie Chi, The Ohio State University, United States; Yuxin Chen, Stanford University, United States

- MA8b4-3 **An Adaptive Compressive Sensing with Side Information**
William Guicquero, CEA-Leti: Laboratoire d'électronique des technologies de l'information, France; Pierre Vanderghyest, Swiss Federal Institute of Technology (EPFL), Switzerland; Antoine Dupret, CEA-Leti: Laboratoire d'électronique des technologies de l'information, France
- MA8b4-4 **Multi-Capture High Dynamic Range Compressive Imaging**
William Guicquero, CEA-Leti: Laboratoire d'électronique des technologies de l'information, France; Pierre Vanderghyest, Swiss Federal Institute of Technology (EPFL), Switzerland; Antoine Dupret, CEA-Leti: Laboratoire d'électronique des technologies de l'information, France
- MA8b4-5 **Bayesian Compressed Sensing with Unknown Measurement Noise Level**
Thomas L. Hansen, Peter B. Jørgensen, Niels L. Pedersen, Carles Navarro Manchón, Bernard H. Fleury, Aalborg University, Denmark
- MA8b4-6 **Power Spectrum Blind Sampling Using Minimum Mean Square Error and Weighted Least Squares**
Bamrung Tausiesakul, Nuria González Prelcic, University of Vigo, Spain
- MA8b4-7 **Mixing Space-Time Derivatives for Video Compressive Sensing**
Yi Yang, Hayden Schaeffer, University of California, Los Angeles, United States; Wotao Yin, Rice University, United States; Stanley Osher, Level Set Systems, United States
- MA8b4-8 **Compressive Measurement Designs for Estimating Structured Signals in Structured Clutter: A Bayesian Experimental Design Approach**
Swayambhoo Jain, Akshay Soni, Jarvis Haupt, University of Minnesota, Twin Cities, United States

Session MP1a Massive MIMO

Chair: *Erik Larsson, Linköping University*

- MP1a-1 **Spectral Efficiency of the Multipair Two-Way Relay Channel with Massive Arrays** 1:30 PM
Hien Quoc Ngo, Erik G. Larsson, Linköping University, Sweden
- MP1a-2 **How Bad is FDD for Large-Scale Antenna Systems?** 1:55 PM
Thomas L. Marzetta, Bell Labs, Alcatel-Lucent, United States
- MP1a-3 **Massive MIMO channels - measurements and models** 2:20 PM
Xiang Gao, Fredrik Tufvesson, Ove Edfors, Lund University, Sweden
- MP1a-4 **A Low-Complexity Linear Precoding and Power Allocation Scheme for Downlink Massive MIMO** 2:45 PM
Shahram Zarei, Wolfgang Gerstacker, Robert Schober, University of Erlangen-Nuernberg, Germany

Session MP1b Distributed Coherent MIMO

Chair: *Adam Margetts, MIT Lincoln Laboratory*

- MP1b-1 Optimal Training and Data Power Allocation 3:30 PM
for Distributed Transmit Beamforming
*Adam R. Margetts, Rebekah Bartlett, Eric G. Torkildson,
Shawn Kraut, Massachusetts Institute of Technology,
United States*
- MP1b-2 Distributed MIMO Channel Prediction 3:55 PM
*Patrick Bidigare, BBN Technologies, United States; D.
Richard Brown, Worcester Polytechnic Institute, United
States; Shawn Kraut, MIT Lincoln Laboratory, United
States; Upamanyu Madhow, University of California,
Santa Barbara, United States*
- MP1b-3 Distributed Reception with Hard Decision 4:20 PM
Exchanges: Performance Bounds
*Donald Brown, Rui Wang, Min Ni, Worcester Polytechnic
Institute, United States; Upamanyu Madhow, University
of California, Santa Barbara, United States; Pat Bidigare,
BBN, United States*
- MP1b-4 Receive Spatial Coding for Distributed 4:45 PM
Diversity
*David Love, Purdue University, United States; Patrick
Bidigare, Raytheon BBN, United States*

Session MP2a Wireless Security

Chair: *Giuseppe Abreu, Jacobs University*

- MP2a-1 Secure Degrees of Freedom Region of 1:30 PM
Interference Channels with Confidential Messages
*Jianwei Xie, Sennur Ulukus, University of Maryland,
United States*
- MP2a-2 The Effect of Channel Spatial Correlation on 1:55 PM
Physical Layer Security in Multi-antenna Scenarios
*Gianni Pasolini, University of Bologna, Italy; Stefano
Severi, Giuseppe Abreu, Jacobs University Bremen,
Germany; Davide Dardari, University of Bologna, Italy*
- MP2a-3 Random Puncturing for Secrecy 2:20 PM
*João Almeida, João Barros, Faculdade de Engenharia da
Universidade do Porto, Portugal*
- MP2a-4 Interference Engineering for Heterogeneous 2:45 PM
Wireless Networks with Secrecy
*Alberto Rabbachin, Massachusetts Institute of Technology,
United States; Andrea Conti, ENDIF, Università di
Ferrara, Italy; Jemin Lee, Moe Win, Massachusetts
Institute of Technology, United States*

Session MP2b Energy Harvesting and Transfer

Chair: *Kaibin Huang, Hong Kong Polytechnic University*

- MP2b-1 Energy Harvesting Communications with 3:30 PM
Hybrid Energy Storage and Processing Energy
Costs
*Omur Ozel, Khurram Shahzad, Sennur Ulukus, University
of Maryland, United States*

MP2b-2	Multi-pair and Multi-way Communications Using Energy Harvesting Nodes <i>Aylin Yener, Burak Varan, Pennsylvania State University, United States</i>	3:55 PM
MP2b-3	Wireless Info-Power Transfer: Theory and Practice <i>Pulkit Grover, Carnegie Mellon University, United States</i>	4:20 PM
MP2b-4	Simultaneous Information-and-Power Transfer Over Broadband Channels <i>Kaibin Huang, Hong Kong Polytechnic University, Hong Kong SAR of China; Erik G. Larsson, Linköping University, Hong Kong SAR of China</i>	4:45 PM

Session MP3a Blind Source Separation and Deconvolution

Chair: *Justin Romberg, Georgia Institute of Technology*

MP3a-1	Recovery of Decision Factors from Incomplete Rankings <i>Laura Balzano, University of Michigan, United States</i>	1:30 PM
MP3a-2	Blind Deconvolution with Subspace Constraints <i>Ali Ahmed, Justin Romberg, Georgia Institute of Technology, United States</i>	1:55 PM
MP3a-3	Nonlinear Basis Pursuit <i>Henrik Ohlsson, Allen Yang, Roy Dong, Shankar Sastry, University of California, Berkeley, United States</i>	2:20 PM
MP3a-4	The Sample Complexity of Independent Component Analysis <i>Santosh Vempala, Ying Xiao, Georgia Institute of Technology, United States</i>	2:45 PM

Session MP3b Distributed Signal Processing and Learning

Chair: *Alejandro Ribeiro, University of Pennsylvania*

MP3b-1	Optimal Solutions to Distributed Finite Horizon Stochastic Team Problems <i>Ceyhan Eksin, Pooya Molavi, Ali Jadbabaie, Alejandro Ribeiro, University of Pennsylvania, United States</i>	3:30 PM
MP3b-2	Distributed Kalman Filtering and Network Tracking Capacity <i>Subhro Das, Jose M. F. Moura, Carnegie Mellon University, United States</i>	3:55 PM
MP3b-3	Distributed Underwater Acoustic Source Localization and Tracking <i>Jun Ye Yu, Deniz Ustebay, McGill University, Canada; Stephane Blouin, Defence Research and Development Canada, Canada; Michael Rabbat, McGill University, Canada</i>	4:20 PM
MP3b-4	Distributed Sparse and Rank-Aware Canonical Correlation Analysis <i>Jia Chen, Ioannis Schizas, University of Texas at Arlington, United States</i>	4:45 PM

Session MP4a Network Optimization and Control

Co-Chairs: *Chih-Ping Li, MIT and Eytan Modiano, MIT*

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| MP4a-1 | Energy Trading in the Smart Grid: From
End-user's Perspective
<i>Shengbo Chen, Ness Shroff, Prasun Sinha, The Ohio State
University, United States</i> | 1:30 PM |
| MP4a-2 | Bayesian Congestion Control over a
Markovian Network Bandwidth Process
<i>Parisa Mansourifard, Bhaskar Krishnamachari,
University of Southern California, United States; Tara
Javidi, University of California, San Diego, United States</i> | 1:55 PM |
| MP4a-3 | Exploring the Tradeoff between Waiting Time
and Service Cost in Non-Asymptotic Operating
Regimes
<i>Bin Li, Atilla Eryilmaz, The Ohio State University, United
States</i> | 2:20 PM |
| MP4a-4 | Pricing and Bandwidth Optimization in
Heterogeneous Wireless Networks
<i>Cheng Chen, Randall Berry, Michael Honig, Vijay
Subramanian, Northwestern University, United States</i> | 2:45 PM |

Session MP4b Network Coding and Compression

Chair: *Daniel Lucani, University of Aalborg*

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| MP4b-1 | Constructions of Fractional Repetition Codes
from Combinatorial Designs
<i>Oktay Olmez, Aditya Ramamoorthy, Iowa State University,
United States</i> | 3:30 PM |
| MP4b-2 | Network Coded Storage with Multi-resolution
codes
<i>Ulric Ferner, Tong Wang, Muriel Médard, Massachusetts
Institute of Technology, United States</i> | 3:55 PM |
| MP4b-3 | Lattice Interference Alignment:
State-of-the-Art and Challenges
<i>Vasilis Ntranos, University of Southern California,
United States; Viveck Cadambe, Massachusetts Institute
of Technology / Boston University, United States; Bobak
Nazer, Boston University, United States; Giuseppe Caire,
University of Southern California, United States</i> | 4:20 PM |
| MP4b-4 | Bounds and Algorithms for Pliable Index
Coding
<i>Sid Brahma, Christina Fragouli, Ecole Polytechnique
Fédérale de Lausanne (EPFL), Switzerland</i> | 4:45 PM |

Session MP5a Extracting Information from Electrophysiology Data

Chair: *Christopher Rozell, Georgia Institute of Technology*

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| MP5a-1 | Sparse Nonnegative Deconvolution of
Compressive Calcium Imaging Data
<i>Eftychios A. Pnevmatikakis, Shyam S. Chandramouli,
Liam Paninski, Columbia University, United States</i> | 1:30 PM |
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| MP5a-2 | Learning Shift-Invariant Dictionaries to Classify Local Field Potentials
<i>Austin Brockmeier, Jose C. Principe, University of Florida, United States</i> | 1:55 PM |
| MP5a-3 | Modeling Neural Population Data
<i>Urs Koster, Bruno Olshausen, University of California, Berkeley, United States; Charles Gray, Montana State University Bozeman, United States</i> | 2:20 PM |
| MP5a-4 | A Neuron as a Signal Processing Device
<i>Tao Hu, Janelia Farm, HHMI, United States; Alex Genkin, AVG Consulting, United States; Dmitri Chklovskii, Janelia Farm, HHMI, United States</i> | 2:45 PM |

Session MP5b Optimization in (Bio)Medical Imaging

Chair: Roummel Marcia, University of California, Merced

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| MP5b-1 | Parallel and Distributed Sparse Optimization
<i>Zhimin Peng, Ming Yan, Wotao Yin, University of California, Los Angeles, United States</i> | 3:30 PM |
| MP5b-2 | Nonconvex Compressive Sensing for X-ray CT: An Algorithm Comparison
<i>Rick Chartrand, Los Alamos National Laboratory, United States; Emil Y. Sidky, Xiaochuan Pan, University of Chicago, United States</i> | 3:55 PM |
| MP5b-3 | Computing Optimal Low-Rank Matrix Inverse Approximations for Image Processing
<i>Julianne Chung, Matthias Chung, Virginia Tech, United States</i> | 4:20 PM |
| MP5b-4 | Accurate and Fast Optimization for a Parameterized Diffuse Optical Tomography Problem
<i>Eric de Sturler, Virginia Tech, United States; Misha Kilmer, Tufts University, United States; Christopher Beattie, Saifon Chaturantabut, Serkan Gugercin, Virginia Tech, United States</i> | 4:45 PM |

Session MP6a Smart Grid Signal Processing

Chair: Rick Blum, Lehigh University

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| MP6a-1 | Optimal Distributed Generation Placement in Smart Microgrids via Semidefinite Relaxation
<i>Emiliano Dall'Anese, Georgios B. Giannakis, University of Minnesota, United States</i> | 1:30 PM |
| MP6a-2 | Clustering Consumption in Queues: A Scalable Model for Electric Vehicle Scheduling
<i>Mahnoosh Alizadeh, University of California, Davis, United States; George Kesidis, Pennsylvania State University, United States; Anna Scaglione, University of California, Davis, United States</i> | 1:55 PM |
| MP6a-3 | Forecasting Real-time Locational Marginal Price: A State Space Approach
<i>Yuting Ji, Jinsub Kim, Lang Tong, Cornell University, United States</i> | 2:20 PM |

- MP6a-4 Optimal Design of Sensor Networks for 2:45 PM
Enhanced Ocean Wave Energy Conversion
Rick S. Blum, Basel Alnajjab, Lehigh University, United States

Session MP6b Statistical Signal Processing

Chair: *Pramod Varshney, Syracuse University*

- MP6b-1 Estimation with Correlated Additive Noise: 3:30 PM
Does Dependency Always Imply Redundancy?
Fangrong Peng, Biao Chen, Syracuse University, United States
- MP6b-2 Expected Likelihood Approach for Low 3:55 PM
Sample Support Covariance Matrix Estimation in
Angular Central Gaussian Distributions
Olivier Besson, University of Toulouse-ISA, France; Yuri Abramovich, W R Systems, Ltd., United States
- MP6b-4 Efficient Approximation of Structured 4:45 PM
Covariance under Joint Toeplitz and Rank
Constraints
Bosung Kang, Vishal Monga, Pennsylvania State University, United States; Muralidhar Rangaswamy, Air Force Research Laboratory, United States

Session MP7a Recent Progress in Computer Arithmetic

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

- MP7a-1 Automated Circuit Elaboration from 1:30 PM
Incomplete Architectural Description
Andrew Becker, David Novo Bruna, Paolo Ienne, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
- MP7a-2 Avoiding Double Roundings in Scaled 1:55 PM
Newton-Raphson Division
Jean-Michel Muller, CNRS/ENSL/INRIA/UCBL, France
- MP7a-3 Implementation of a High Speed Multiplier 2:20 PM
Using Carry Lookahead Adders
Wesley Chu, Ali Unwala, Pohan Wu, Earl Swartzlander, University of Texas at Austin, United States
- MP7a-4 Exhaustive Testing of Fused Multiply-Add 2:45 PM
RTL
Neil Burgess, David Lutz, ARM Inc., United States

Session MP7b 3D Content Processing

Chair: *Béatrice Pesquet-Popescu, Telecom ParisTech*

- MP7b-1 A Distributed Video Coding System for 3:30 PM
Multi-view Video Plus Depth
Giovanni Petrazzuoli, Institut Mines-Telecom, Telecom-ParisTech, France; Thomas Maugey, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Marco Cagnazzo, Béatrice Pesquet-Popescu, Institut Mines-Telecom, Telecom-ParisTech, France

- MP7b-2 Compact, Low-Power 3D Imaging of Simple Planar Scenes Using Parametric Signal Processing 3:55 PM
Jonathan Mei, Andrea Colaco, Ahmed Kirmani, Vivek Goyal, Massachusetts Institute of Technology, United States
- MP7b-3 Graph-Based Coding for Interactive Multi-view Navigation 4:20 PM
Thomas Maugey, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Antonio Ortega, University of Southern California, United States; Pascal Frossard, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
- MP7b-4 A Compression Method for Computer Generated Phase-shifting Holograms of Virtual 3D objects 4:45 PM
Yafei Xing, Béatrice Pesquet-Popescu, Frédéric Dufaux, TELECOM ParisTech, France

Session MP8a1 Distributed Signal Processing

Chair: *Weiyu Xu, University of Iowa*

1:30 PM - 3:10 PM

- MP8a1-1 Scaled Canonical Coordinates for Compression and Transmission of Noisy Sensor Measurements
Yuan Wang, Haonan Wang, Louis Scharf, Colorado State University, United States
- MP8a1-2 Joint Recovery Algorithms Using Difference of Innovations for Distributed Compressed Sensing
Diego Valsesia, Giulio Coluccia, Enrico Magli, Politecnico di Torino, Italy
- MP8a1-3 Distributed Correlated Data Gathering in Wireless Sensor Networks via Compressed Sensing
Markus Leinonen, Marian Codreanu, Markku Juntti, University of Oulu, Finland
- MP8a1-4 Distributed Object Tracking based on Cubature Kalman Filter
Venkata Pathuri Bhuvana, Melanie Schranz, Mario Huemer, Bernhard Rinner, Alpen-Adria Universität Klagenfurt, Austria
- MP8a1-5 Distributed Location Detection in Wireless Sensor Networks
Xue Zhang, Cihan Tepedelenlioglu, Mahesh Banavar, Andreas Spanias, Arizona State University, United States
- MP8a1-6 Max-Consensus using the Soft Maximum
Sai Zhang, Cihan Tepedelenlioglu, Mahesh Banavar, Andreas Spanias, Arizona State University, United States
- MP8a1-7 Diffusion LMS Algorithm with Multi-Combination for Distributed Estimation over Networks
Jun-Taek Kong, Jae-Woo Lee, Woo-Jin Song, Pohang University of Science and Technology, Republic of Korea
- MP8a1-8 Exploiting Temporal and Spatial Correlation in Wireless Sensor Networks
Daniel Parker, Milica Stojanovic, Northeastern University, United States; Christopher Yu, Draper Laboratory, United States

Session MP8a2 Wireless Sensor Networks

Chair: *Bernhard Etzlinger, Johannes Kepler University, Austria*

1:30 PM - 3:10 PM

- MP8a2-1 **A Low-Complexity Particle-based Belief Propagation Algorithm for Cooperative Simultaneous Localization and Synchronization**
Florian Meyer, Vienna University of Technology, Austria; Bernhard Etzlinger, Johannes Kepler University, Austria; Franz Hlawatsch, Vienna University of Technology, Austria; Andreas Springer, Johannes Kepler University, Austria
- MP8a2-2 **Effects of Approximate Representation in Belief Propagation for Inference in Wireless Sensor Networks**
Yao Li, Lara Dolecek, University of California, Los Angeles, United States
- MP8a2-3 **Collaborative Beamforming from Tethered Multirotor Aerial Vehicle Wireless Sensor Network**
Tan Ngo, Murali Tummala, John McEachen, Naval Postgraduate School, United States
- MP8a2-4 **Localization of Acoustic Beacons Using Iterative Null Beamforming over Ad-hoc Wireless Sensor Networks**
Vatsal Sharan, Sudhir Kumar, Rajesh Hegde, Indian Institute Of Technology Kanpur, India
- MP8a2-5 **Limited-Feedback-Based Channel-Aware Power Allocation for Linear Distributed Estimation**
Mohammad Fanaei, Matthew C. Valenti, Natalia A. Schmid, West Virginia University, United States

Session MP8a3 Array Signal Processing

Chair: *Biao Chen, Syracuse University*

1:30 PM - 3:10 PM

- MP8a3-1 **A Unified Detection Framework for Distributed Active and Passive RF Sensing**
Daniel Hack, Lee Patton, Matrix Research, United States; Braham Himed, Air Force Research Laboratory, United States
- MP8a3-2 **Identifiability Analysis of Local Oscillator Phase Self-calibration Based on Hybrid Cramer-Rao Bound in MIMO Radar**
Peilin Sun, Jun Tang, Shuang Wan, Ning Zhang, Tsinghua University, China
- MP8a3-3 **Analysis of a Channel Model for Multipath-assisted Indoor Localization Using UWB Signals**
Erik Leitinger, Markus Fröhle, Paul Meissner, Klaus Witrisal, Graz University of Technology, Austria
- MP8a3-4 **Simultaneous Target and Multipath Positioning via Multi-Hypothesis Single-Cluster PHD Filtering**
Li Li, Jeff Krolik, Duke University, United States
- MP8a3-5 **Analysis of a Purina Fractal Beamformer**
Philipp Karagiannakis, Stephan Weiss, University of Strathclyde, United Kingdom

- MP8a3-6 Algebraic Confidence in Positioning Problems
Jani Saloranta, Davide Macagnano, University of Oulu, Finland; Giuseppe Abreu, Jacobs University Bremen, Germany
- MP8a3-7 Root-MSE Geolocation Performance Using Angle-of-Arrival Measurements from a Moving Sensor System
Neda Adib, Scott Douglas, Southern Methodist University, United States
- MP8a3-8 GPS AOA Selection Algorithm for Multiple GPS Signals
Suk-seung Hwang, Goo-Rak Kwon, Jae-young Pyun, Chosun University, Republic of Korea

Session MP8a4 Speech, Audio, Image, and Video Processing

Chair: *James Fowler, Mississippi State University*

1:30 PM - 3:10 PM

- MP8a4-1 Multi Channel Reverberant Speech Enhancement using LP Residual Cepstrum
Karan Nathwani, Harish Padaki, Rajesh M. Hegde, Indian Institute of Technology Kanpur, India
- MP8a4-2 Phase Estimation for Signal Reconstruction in Dual-Channel Speech Enhancement
Pejman Mowlae, Graz University of Technology, Austria; Jalal Taghia, Ruhr University Bochum, Germany
- MP8a4-3 Multipitch Estimation and Instrument Recognition by Exemplar-Based Sparse Representation
Ikuo Degawa, Kei Sato, Masaaki Ikehara, Keio University, Japan
- MP8a4-4 Data Fusion of IR and Marine Radar Data
Golrokh Mirzaei, Mohsin M. Jamali, University of Toledo, United States; Peter V. Gorsevski, Joseph Firazado, Verner P. Bingman, Bowling Green State University, United States
- MP8a4-5 Multi-modal Aerial Image Registration Using Spatial Structure
Myra Nam, Rhonda Phillips, MIT Lincoln Laboratory, United States
- MP8a4-6 Separating Temperature, Emissivity and Downwelling Radiance in Thermal Infrared Pure-Pixel Hyperspectral Images
Jake Gunther, Todd Moon, Matt Stites, Utah State University, United States; Gus Williams, Brigham Young University, United States
- MP8a4-7 User-Controlled Adaptive Video Streaming Framework for Healthcare Applications
Krupa Pranesh, Yusuf Ozturk, San Diego State University, United States
- MP8a4-8 Low-Complexity Video Compression and Compressive Sensing
Salman Asif, Felix Fernandes, Samsung Research America, United States; Justin Romberg, Georgia Institute of Technology, United States

Session MP8a5 Hardware Implementation

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

1:30 PM - 3:10 PM

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| MP8a5-1 | An Adaptive Power Amplifier and Control Subsystem for use in Space-Based Software Defined Radio Applications
<i>Nehemya Cohen, James Whitney, II, Dontae Ryan, Michel Reece, Morgan State University, United States</i> |
| MP8a5-2 | Compressive Sensing Spectrum Analysis for Space Autonomous Radio Receivers
<i>Gian Carlo Cardarilli, Marco Re, Ilir Shuli, Univ. Roma Tor Vergata, Italy; Lorenzo Simone, Thales Alenia Space, Italy</i> |
| MP8a5-3 | Analog-to-Information Converter Leveraging Diode Harmonics
<i>Erica Daly, Jennifer Bernhard, University of Illinois at Urbana-Champaign, United States</i> |
| MP8a5-4 | Performance and Complexity Comparison of Near-Optimal MIMO Decoders
<i>Mohamed A. El-Aziz, Cairo University / Varkon Semiconductors, Egypt; Karim Seddik, Ayman Alezabi, American University in Cairo, Egypt; Mohamed Nafie, Cairo University / Varkon Semiconductors, Egypt</i> |
| MP8a5-5 | Locally-Connected Viterbi Decoder Architectures and their VLSI Implementation for LDPC and Convolutional Codes
<i>Ahmed Refaey Hussein, University of Western Ontario, Canada; Sebastien Roy, Université de Sherbrooke, Canada; Isabelle Laroche, Benoit Gosselin, Université Laval, Canada</i> |
| MP8a5-6 | On the Tail-Biting Convolutional Code Decoder for the LTE and LTE-A Standards
<i>Mohamed Omar, Cairo University / Varkon Semiconductors, Egypt; Ahmed El-Mahmoudy, Varkon Semiconductors, Egypt; Karim Seddik, Ayman Elezabi, American University in Cairo, Egypt</i> |
| MP8a5-7 | A Hardware Efficient Technique for Linear Convolution of Finite Length Sequences
<i>Soumak Mookherjee, Linda DeBrunner, Victor DeBrunner, Florida State University, United States</i> |
| MP8a5-8 | Novel Architectures for Squares, and Sums of Squares, of Cross-correlations of Bipolar Sequences with Applications to CDMA
<i>Ayman Elezabi, American University in Cairo, Egypt</i> |

Session TA1a Applied MIMO communications

Chair: *Joe Liberti, Applied Communication Sciences*

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| TA1a-1 | Bandwidth-Limited Cluster Networks for Distributed MIMO
<i>Joseph Liberti, John Koshy, Applied Communication Sciences, United States</i> | 8:15 AM |
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TA1a-2	Experimental Results of MIMO Enabled Tactical Mesh Networks <i>Babak Daneshrad, Silvus Technologies / University of California, Los Angeles, United States</i>	8:40 AM
TA1a-3	Achieving Multiple Degrees of Freedom in Long-Range mm-Wave MIMO Channels Using Randomly Distributed Relays <i>Andrew Irish, Francois Quitin, Upamanyu Madhow, University of California, Santa Barbara, United States</i>	9:05 AM
TA1a-4	Experiment Results of Iterative Block-based Decision Feedback Equalizer with Spatial Diversity in Underwater Acoustic Channels <i>Xiang Zou, James Ritcey, Daniel Rouseff, University of Washington, United States</i>	9:30 AM

Session TA1b Implementation Aspects for Full Duplex and Large-Scale MIMO Wireless Systems

Chair: *Christoph Studer, Rice University*

TA1b-1	An Analog Baseband Approach for Designing Full-Duplex Radios <i>Brett Kaufman, Rice University, United States; Jorma Lilleberg, Renesas Mobile, Finland; Behnaam Aazhang, Rice University, United States</i>	10:15 AM
TA1b-2	Characterizing Self-Interference in True Full-Duplex Radio Links <i>Alexios Balatsoukas-Stimming, Pavle Belanovic, Andreas Burg, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i>	10:40 AM
TA1b-3	Implementation of FD-MIMO in LTE <i>Yang Li, Yan Xin, Mian Dong, Gary Xu, Jianzhong (Charlie) Zhang, Samsung R&D Institute America-Dallas, United States; Younsun Kim, Juho Lee, Samsung Electronics, Co., Ltd., Republic of Korea</i>	11:05 AM
TA1b-4	Achievable Rates of ZF Receivers in Large MU-MIMO Systems with Phase Noise Impairments <i>Antonios Pitarokoilis, Linköping University, Sweden; Saif Mohammed, IIT Dehli, India; Erik G. Larsson, Linköping University, Sweden</i>	11:30 AM

Session TA2a Stochastic Geometry and Random Networks

Chair: *Xiangyun Zhou, Australian National University*

TA2a-1	On Decoding the kth Strongest User in Poisson Networks with Arbitrary Fading Distribution <i>Xinchen Zhang, Martin Haegggi, University of Notre Dame, United States</i>	8:15 AM
TA2a-2	A Unified Approach to SINR-based Performance Metrics with Application to D2D and Carrier Aggregation <i>Xingqin Lin, Jeffrey Andrews, University of Texas at Austin, United States</i>	8:40 AM

TA2a-3	Secrecy Transmission Capacity of Random Networks <i>Satyanarayana Vuppala, Giuseppe Abreu, Jacobs University, Germany</i>	9:05 AM
TA2a-4	Coverage by Pairwise Base Station Cooperation under Adaptive Geometric Policies <i>Francois Baccelli, University of Texas at Austin, United States; Anastasios Giovanidis, INRIA, France</i>	9:30 AM

Session TA2b Random Matrices and Applications

Co-Chairs: *Merouane Debbah, Supelec and Romain Couillet, Supelec*

TA2b-1	Decentralized Eigenvalue Algorithms in Wireless Sensor Networks with Limited Energy Supply <i>Jafar Mohammadi, Federico Penna, Slawomir Stanczak, Fraunhofer Heirinch Hertz Institute, Germany</i>	10:15 AM
TA2b-2	Analysis of Blind Pilot Decontamination <i>Ralf Müller, University of Erlangen-Nuremberg, Germany; Laura Cottatellucci, Institute Eurecom, France; Mikko Vehkaperä, Aalto University, Finland</i>	10:40 AM
TA2b-3	Ocean Bottom Sensing using Random Matrix Models for Ocean Noise <i>Ravi Menon, Peter Gerstoft, William Hodgkiss, University of California, San Diego, United States</i>	11:05 AM
TA2b-4	Degrees of Freedom in Line-of-Sight MIMO Systems <i>Marc Desgroseilliers, Olivier Lévêque, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Emmanuel Preissmann, Université de Lausanne, Switzerland</i>	11:30 AM

Session TA3a Active Sensing and Learning

Chair: *Jarvis Haupt, University of Minnesota*

TA3a-1	Quick Search for Rare Events through Sequential Group Sampling <i>Ali Tajer, Wayne State University, United States; H. Vincent Poor, Princeton University, United States</i>	8:15 AM
TA3a-2	A Game Theoretic Approach to Adaptive Compressive Imaging <i>Amit Ashok, James Huang, Mark Neifeld, University of Arizona, United States</i>	8:40 AM
TA3a-3	On the Query Complexity of the Best-Arm Problem <i>Matthew Malloy, Kevin Jamieson, Robert Nowak, Sebastien Bubeck, University of Wisconsin, United States</i>	9:05 AM
TA3a-4	Recovering Graph-Structured Activations using Adaptive Compressive Measurements <i>Akshay Krishnamurthy, James Sharpnack, Aarti Singh, Carnegie Mellon University, United States</i>	9:30 AM

Session TA3b Optimization in Signal Processing

Chair: *Wotao Yin, Rice University*

- TA3b-1 Limited Memory Quasi-Newton Methods for Sparse Optimization 10:15 AM
Roummel Marcia, University of California, Merced, United States
- TA3b-2 New Algorithms for Verifying the Null Space Conditions in Compressed Sensing 10:40 AM
Myung Cho, Weiyu Xu, University of Iowa, United States
- TA3b-3 Sparse Dictionary Recovery with Noise 11:05 AM
John Wright, Columbia University, United States
- TA3b-4 Sparse Recovery over Continuous Dictionaries: Just Discretize 11:30 AM
Gongguo Tang, Badri Narayan Bhaskar, Benjamin Recht, University of Wisconsin-Madison, United States

Session TA4a Cooperation Techniques for Wireless Networks

Co-Chairs: *Michele Zorzi, University of Padova and Leonardo Badia, University of Padova*

- TA4a-1 Analysis and Management of Heterogeneous User Mobility in Large-scale Downlink Systems 8:15 AM
Axel Müller, Supélec, France; Emil Björnson, KTH Royal Institute of Technology, Sweden; Romain Couillet, M'rouane Debbah, Supélec, France
- TA4a-2 Energy Efficiency Optimization in Relay-Assisted Multi-User MIMO Systems 8:40 AM
Alessio Zappone, Pan Cao, Eduard Jorswieck, Dresden University of Technology, Germany
- TA4a-3 Performance Evaluation of Coded Meshed Networks 9:05 AM
Morten V. Pedersen, Daniel E. Lucani, Frank H. P. Fitzek, Aalborg University, Denmark
- TA4a-4 MAC Design for Full-Duplex Relaying 9:30 AM
Sanjay Goyal, Polytechnic Institute of New York University, United States; Ozgur Gurbuz, Sabanci University, United States; Elza Erkip, Shivendra Panwar, Polytechnic Institute of New York University, United States

Session TA4b Body Area Nanonetworks

Chair: *Josep Miguel Jornet, Georgia Institute of Technology*

- TA4b-1 A Molecular Communication Framework for Targeted Drug Delivery Systems 10:15 AM
Youssef Chahibi, Massimiliano Pierobon, Georgia Institute of Technology, United States; Sang Ok Song, Samsung Electronics, Co., Ltd., Republic of Korea
- TA4b-2 Error Control for Calcium Signaling based Molecular Communications 10:40 AM
Michael Barros, Brendan Jennings, Telecommunication Software and Systems Group, Ireland; Sasitharan Balasubramaniam, Tampere University of Technology, Finland

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| TA4b-3 | Nanoscale Magneto-Inductive Communication
<i>Deniz Kilinc, Ozgur B. Akan, Koc University, Turkey</i> | 11:05 AM |
| TA4b-4 | Opto-Ultrasonic Communications in Wireless Body Area Nanonetworks
<i>G. Enrico Santagati, Tommaso Melodia, State University of New York at Buffalo, United States</i> | 11:30 AM |

Session TA5a Signal Processing in MEG and EEG

Chair: *Barry Van Veen, University of Wisconsin-Madison*

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| TA5a-1 | Hierarchical Probabilistic Models for M/EEG Imaging
<i>Srikantan Nagarajan, University of California, San Francisco, United States</i> | 8:15 AM |
| TA5a-2 | EEG Source Imaging and Connectivity Analysis in Epilepsy Patients
<i>Yunfeng Lu, University of Minnesota, United States; Gregory Worrell, Mayo Clinic, United States; Bin He, University of Minnesota, United States</i> | 8:40 AM |
| TA5a-3 | Causality in Variance in Electrophysiological Data Using the GARCH Model
<i>Syed Ashrafulla, University of Southern California, United States; John C Mosher, Cleveland Clinic, United States; Richard M Leahy, University of Southern California, United States</i> | 9:05 AM |
| TA5a-4 | Sparse Multivariate Autoregressive Models with Exogenous Inputs for Modeling Intracerebral Responses to Direct Electrical Stimulation of the Human Brain
<i>Jui-Yang Chang, University of Wisconsin, United States; Andrea Pigorini, Francesca Seregni, Marcello Massimini, University of Milan, Italy; Lino Nobili, Niguarda Hospital, Italy; Barry Van Veen, University of Wisconsin, United States</i> | 9:30 AM |

Session TA5b Quantitative Image Analysis

Chair: *Jean-Christophe Olivo-Marin, INSTITUT PASTEUR – CNRS*

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| TA5b-1 | A Temporal Superresolution Method Applied to Low-Light Cardiac Fluorescence Microscopy
<i>Kevin Chan, University of California, Santa Barbara, United States; Le A. Trinh, University of Southern California, United States; Michael Liebling, University of California, Santa Barbara, United States</i> | 10:15 AM |
| TA5b-2 | Neuron Tracing from Confocal Stacks Using Automated Seed Selection
<i>Suvadip Mukherjee, Barry Condron, Scott Acton, University of Virginia, United States</i> | 10:40 AM |
| TA5b-3 | Quantitative Tissue Characterization in Fluorescence Microscopy
<i>Jenna Mueller, Duke, United States; Albert Oh, Duke University, United States; J. Quincy Brown, Tulane, United States; Nimmi Ramanujam, Rebecca Willett, Duke University, United States</i> | 11:05 AM |

TA5b-4	Analysis of Spatial Clustering with Robust Statistics <i>Thibault Lagache, Institut Pasteur, France; Gabriel Lang, AgroParisTech, France; Nathalie Sauvonnet, Jean-Christophe Olivo-Marin, Institut Pasteur, France</i>	11:30 AM
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Session TA6a Geospatial Image Processing

Chair: *Saurabh Prasad, University of Houston*

TA6a-1	Sparsity and Structure in Hyperspectral Imaging: Sensing, Reconstruction, and Target Detection <i>Rebecca Willett, Duke University, United States; Mark Davenport, Georgia Institute of Technology, United States; Marco Duarte, University of Massachusetts Amherst, United States; Richard Baraniuk, Rice University, United States</i>	8:15 AM
TA6a-2	Sparse Representations for Classification of High Dimensional Multi-sensor Geospatial Data <i>Saurabh Prasad, Minshan Cui, University of Houston, United States</i>	8:40 AM
TA6a-3	Adaptive Compressive Sensing for Wide Area Surveillance and Imaging <i>Abhijit Mahalanobis, Lockheed Martin, MFC, United States</i>	9:05 AM
TA6a-4	Context-based Unmixing and Detection Using Co-registered Hyperspectral and LiDAR Sensors <i>Paul Gader, Taylor Glenn, University of Florida, United States</i>	9:30 AM

Session TA6b Control and Signal Processing for Information Fusion

Chair: *Prakash Ishwar, Boston University*

TA6b-1	Adaptive Non-myopic Quantizer Design for Target Tracking in Wireless Sensor Networks <i>Sijia Liu, Syracuse University, United States; Engin Masazade, Yeditepe University, Turkey; Xiaojing Shen, Sichuan University, China; Pramod K. Varshney, Syracuse University, United States</i>	10:15 AM
TA6b-2	Are Global Sufficient Statistics Always Sufficient: The Impact of Quantization on Decentralized Data Reduction <i>Shengyu Zhu, Ge Xu, Biao Chen, Syracuse University, United States</i>	10:40 AM
TA6b-3	Controlled Sensing for Sequential Multihypothesis Testing with Non-Uniform Sensing Cost <i>Sirin Nitinawarat, Venugopal V. Veeravalli, University of Illinois, United States</i>	11:05 AM
TA6b-4	Dynamic Topic Discovery through Sequential Projections <i>Weicong Ding, Mohammad Rohban, Prakash Ishwar, Venkatesh Saligrama, Boston University, United States</i>	11:30 AM

Session TA7a Heterogeneous and Reconfigurable Computing

Chair: *Joe Cavallaro, Rice University*

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| TA7a-1 | Heterogeneous Processors for Exascale Systems
<i>Michael Schulte, AMD, United States</i> | 8:15 AM |
| TA7a-2 | Autocoded Dataflow Synthesis for Heterogeneous Embedded Targets
<i>Mohammad Hosseinabady, John McAllister, Queen's University Belfast, United Kingdom</i> | 8:40 AM |
| TA7a-3 | Efficient Reconfiguration Methods to Enable Rapid Deployment of Runtime Reconfigurable Systems
<i>Roman Lysecky, Nathan Sandoval, Sean Whitsitt, Casey Mackin, Jonathan Sprinkle, University of Arizona, United States</i> | 9:05 AM |
| TA7a-4 | Multimode Turbo Decoder on GPU
<i>Michael Wu, Guohui Wang, Bei Yin, Christoph Studer, Joseph Cavallaro, Rice University, United States</i> | 9:30 AM |

Session TA7b High Efficiency Video Coding

Chair: *Marios Pattichis, University of New Mexico*

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| TA7b-1 | On the Use of SSIM in HEVC
<i>Tiesong Zhao, Zhou Wang, University of Waterloo, Canada</i> | 10:15 AM |
| TA7b-2 | A Layer-Adaptive Approach to Screen Content Coding for HEVC Application Range Extensions
<i>Chun-Chi Chen, Hung-Cheng Jhu, Tsui-Shan Chang, Wen-Hsiao Peng, National Chiao Tung University, Taiwan</i> | 10:40 AM |
| TA7b-3 | Dynamically Reconfigurable Architecture System for Time-varying Image Constraints (DRASTIC) for HEVC Intra Encoding
<i>Yuebing Jiang, Gangadharan Esakki, Marios Pattichis, University of New Mexico, United States</i> | 11:05 AM |
| TA7b-4 | High Efficiency Video Coding (HEVC) for Reproducible Medical Ultrasound Video Diagnosis
<i>Andreas Panayides, Imperial College, United Kingdom; Marios Pattichis, University of New Mexico, United States; Constantinos Pattichis, University of Cyprus, Cyprus</i> | 11:30 AM |

Session TA8a1 Radar and Sonar Signal Processing

Chair: *Hongbin Li, Stevens Institute of Technology*

8:15 AM - 9:55 AM

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| TA8a1-1 | A Novel Target Motion Compensation Method for Randomized Stepped Frequency ISAR
<i>Peng Song, Huadong Meng, Tianyao Huang, Yimin Liu, Tsinghua University, China</i> | |
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- TA8a1-2 SAR Imaging using Sparse ML Approaches
George-Othon Glentis, University of Peloponnese, Greece; Kexin Zhao, University of Florida, United States; Andreas Jakobsson, Lund University, Sweden; Habti Abeida, University of Taif, Saudi Arabia; Jian Li, University of Florida, United States
- TA8a1-3 Direction Estimation Using Compressive Sampling Array Processing with Reconfigurable Antennas
Erica Daly, Kurt Schab, Jennifer Bernhard, University of Illinois at Urbana-Champaign, United States
- TA8a1-4 Radar Modeling and Validation of Human Gaits using Joint Motion Capture and Radar Data Collections
Ryan Hersey, Georgia Tech Research Institute, United States; David Bowden, Dustin Bruening, Lamar Westbrook, Air Force Research Laboratory, United States
- TA8a1-5 On the Effect of Reconfigurable Antenna Radiation Patterns on Outdoor Channel Characteristics
Hassan El-Sallabi, Mohamed Abdallah, Texas A&M University at Qatar, Qatar; Jean-Francois Chamberland, Texas A&M University, United States; Khalid Qaraqe, Texas A&M University at Qatar, Qatar
- TA8a1-6 Target Detection and Classification Against Non-stationary Interference Using Dynamic Time-Frequency Localization
Ananya Sen Gupta, University of Iowa, United States; Ivars Kirsteins, Naval Undersea Warfare Center, United States
- TA8a1-7 Passive Radar Detection Using Multiple Transmitters
Stephen Howard, Songsri Sirianunpiboon, Defence Science and Technology Organisation, Australia
- TA8a1-8 Optimal Beam Pattern Design For Very Large Sensor Arrays With Sparse Sampling
Yenming Lai, Radu Balan, University of Maryland, United States; Heiko Claussen, Justinian Rosca, Siemens Corporation, United States

Session TA8a2 Communication Systems I

Chair: *Ralf Muller, University of Erlangen-Nuremberg*

8:15 AM - 9:55 AM

- TA8a2-1 Low Latency T-EMS Decoder for NB-LDPC Codes
Erbao Li, David Declercq, ETIS ENSEA/univ. Cergy-Pontoise/CNRS, France; Kiran Gunnam, Nvidia Corporation, United States; Francisco Garcia, Jesus Omar, Javier Valls, Universidad Politecnica de Valencia, Spain
- TA8a2-2 On Polarization for the Linear Operator Channel
Cesar Brito, Joerg Kliever, New Mexico State University, United States
- TA8a2-3 Quickness of the Instantaneous Frequency Based Classifier Distinguishing BFSK from QAM and PSK Modulations
Mohammad Bari, Miloš Doroslovacki, George Washington University, United States

- TA8a2-4 Soft-Input Soft-Output Linear Programming
Decoding for Spread Spectrum Underwater Acoustic
Communications
*Erica Daly, University of Illinois at Urbana-Champaign,
United States*
- TA8a2-5 Coalition Formation for Uplink Device to Device
Coordination with Cooperation Costs
*Srinivas Yerramalli, Rahul Jain, Urbashi Mitra, University
of Southern California, United States*
- TA8a2-6 A Probabilistic Framework for Global Navigation
Satellite System Signal Timing Assurance
*Kyle Wesson, Brian Evans, Todd Humphreys, University of
Texas at Austin, United States*
- TA8a2-7 Channel-Optimized Vector Quantization with Mutual
Information as Fidelity Criterion
*Andreas Winkelbauer, Gerald Matz, Vienna University of
Technology, Austria; Andreas Burg, Ecole Polytechnique
Fédérale de Lausanne (EPFL), Switzerland*
- TA8a2-8 Exploiting Spectral Leakage for Spectrogram Frequency
Super-resolution
*Ray Maleh, Frank Boyle, L-3 Communications Mission
Integration, United States*
- TA8a2-9 Constraint-Based Adaptive OFDM Transmission with
Signaling-Assisted Modulation Classification
*Lars Häring, Christian Kisters, University Duisburg-
Essen, Germany*
- TA8a2-10 Analysis of Min-Sum based Decoders Implemented on
Noisy Hardware
*Christiane Ngassa, Valentin Savin, CEA-LETI, MINATEC
campus, France; David Declercq, ETIS ENSEA/univ.
Cergy-Pontoise/CNRS, France*
- TA8a2-11 Sum-Rate Maximization for Active Channels: Unequal
Noise Power over Different Subchannels
*Javad Mirzaee, Shahram ShahbazPanahi, University of
Ontario Institute of Technology, Canada*

Session TA8a3 Machine Learning and Statistical Signal Processing

Chair: *Mauro Maggioni, Duke University*

8:15 AM - 9:55 AM

- TA8a3-1 On the Periodogram Estimator of Period from Sparse,
Noisy Timing Data
*Barry Quinn, Macquarie University, Australia; Vaughan
Clarkson, University of Queensland, Australia; Robby
McKillop, University of South Australia, Australia*
- TA8a3-2 Random Matrix Theory in Pattern Classification: An
Application to Error Estimation
*Amin Zollanvari, Edward R. Dougherty, Texas A&M
University, United States*

- TA8a3-3 Hierarchical Bayesian Sparse Source Separation of Hyperspectral Signals
Todd K Moon, Jacob H. Gunther, Utah State University, United States; Candace Berrett, Gustavious P. Williams, Brigham Young University, United States
- TA8a3-4 Bayes Clustering Operators for Known Random Labeled Point Processes
Lori Dalton, The Ohio State University, United States; Marco Enrique Benalcázar Palacios, Marcel Brun, Universidad Nacional de Mar del Plata, Argentina; Edward Dougherty, Texas A&M University, United States
- TA8a3-5 A Particle-based Search Strategy for Improved Space Situational Awareness
Tyler A. Hobson, I. Vaughan L. Clarkson, University of Queensland, Australia
- TA8a3-6 Closed-Form CRLBs for CFO and Phase Estimation from Turbo-Coded Square-QAM-Modulated Signals
Achref Methenni, Faouzi Bellili, Sofiène Affès, Institut National de la Recherche Scientifique, Canada
- TA8a3-7 Comparisons of Particle Swarm and CAT Swarm Optimization Algorithms for IIR Adaptive Filtering
Jinhyun So, William Jenkins, Pennsylvania State University, United States
- TA8a3-8 Automated Human Behavioral Analysis Framework using Facial Feature Extraction and Machine Learning
Demiyon Smirnov, Sean Banger, Sara Davis, Rajani Muraleedharan, Ravi Ramachandran, Rowan University, United States

Session TA8a4 Machine Learning for Biological Signals

Chair: *Scott Acton, Virginia Tech*

8:15 AM - 9:55 AM

- TA8a4-1 Projection Operator Based Removal of Baseline Wander Noise from ECG Signals
Sakshi Agrawal, Anubha Gupta, International Institute of Information Technology-Hyderabad, India
- TA8a4-2 A Multi-Scale Energy Detector For Anomaly Detection in Dynamic Graphs
Arash Golibagh Mahyari, Selin Aviyente, Michigan State University, United States
- TA8a4-3 Schizophrenia Classification with Single-Trial MEG during Language Processing
Tingting Xu, University of Minnesota, United States; Massoud Stephane, Oregon Health & Science University, United States; Keshab K. Parhi, University of Minnesota, United States
- TA8a4-4 Virtual Inertial Measurements for Motion Inference in Wireless Health
Xiaoxu Wu, Hua-I Chang, Chu-Hsiang Huang, Yan Wang, Lara Dolecek, Greg Pottie, University of California, Los Angeles, United States

- TA8a4-5 Shape Descriptors Based on Compressed Sensing with Application to Neuron Matching
Suvadip Mukherjee, Rituparna Sarkar, Scott Acton, University of Virginia, United States
- TA8a4-6 Multi-view Network Module Detection
Yu-Teng Chang, Dimitrios Pantazis, McGovern Institute for Brain Research, Massachusetts Institute of Technology, United States
- TA8a4-7 Bayesian Optimal Control of Markovian Genetic Regulatory Networks
Mohammadmahdi Rezaei Yousefi, Edward R. Dougherty, Texas A&M University, United States

Session TA8b1 Communications Systems II

Chair: *Vaughan Clarkson, University of Queensland*

10:15 AM - 11:55 AM

- TA8b1-1 Computing the Multiple Access Rate Region for Real-World Signals
Bruce MacLeod, MIT Lincoln Laboratory, United States
- TA8b1-2 Extraction of a Weak Co-Channel Interfering Communication Signal using Complex Independent Component Analysis
Matthew Hagstette, Monique Fargues, Roberto Cristi, Naval Postgraduate School, United States
- TA8b1-3 Resource Allocation for Mobile Video Conferencing
Chao Yang, Scott Jordan, University of California, Irvine, United States
- TA8b1-4 Multi-User Real-Time Wireless Video with Perceptual Constraints
Andrew Thornburg, Alan Bovik, Robert Heath, University of Texas at Austin, United States
- TA8b1-5 Cross Layer Link Adaptation in Time Varying Mobile Satellite Channels with Outdated and Statistical CSIT
Alberto Rico-Alvarino, Jesus Arnau, Carlos Mosquera, University of Vigo, Spain
- TA8b1-6 Cancellation of Power Amplifier Induced Nonlinear Self-Interference in Full-Duplex Transceivers
Lauri Anttila, Dani Korpi, Ville Syrjälä, Mikko Valkama, Tampere University of Technology, Finland
- TA8b1-7 Self-Interference Cancellation with Nonlinear Distortion Suppression for Full-Duplex Systems
Elsayed Ahmed, Ahmed Eltawil, University of California, Irvine, United States; Ashutosh Sabharwal, Rice University, United States
- TA8b1-8 A Physical Layer Framework for Interference Analysis of LTE and Wi-Fi Operating in the Same Band
Rafael C. D. Paiva, Nokia Institute of Technology, Brazil; Panayiotis Papadimitriou, Sayantan Choudhury, Nokia Research Center, Finland

Session TA8b2 Computer Arithmetic

Chair: *Earl Swartzlander, University of Texas at Austin*

10:15 AM - 11:55 AM

- TA8b2-1 A Partially-Adiabatic Energy-Efficient Logic Family as a Power Analysis Attack Countermeasure
Mihail Cutitaru, Lee A. Belfore, II, Old Dominion University, United States
- TA8b2-2 Arithmetic with Binary-Encoded Balanced Ternary Numbers
Behrooz Parhami, Michael McKeown, University of California, Santa Barbara, United States
- TA8b2-3 Design and Implementation of Radix-10 Algorithm for Cube Root with Limited Precision Primitives
Milos Ercegovic, University of California, Los Angeles, United States; Robert McIlhenny, California State University, Northridge, United States
- TA8b2-4 Radix Conversion for IEEE754-2008 Mixed Radix Floating-Point Arithmetic
Olga Kupriianova, Christoph Lauter, Université Pierre et Marie Curie Paris 6, France; Jean-Michel Muller, Centre National de Recherche Scientifique - Ecole Normale Supérieure de Lyon, France
- TA8b2-5 Logarithmic Arithmetic as an Alternative to Floating-Point: A Review
Manik Chugh, Behrooz Parhami, University of California, Santa Barbara, United States
- TA8b2-6 Comparison of Parallelized Radix-2 and Radix-4 Scalable Montgomery Multipliers
Andrew Carter, Paula Ning, William Koven, David Harris, Michael Braly, Nathan Jones, Julien Massas, Alexandra Simoni, Harvey Mudd College, United States
- TA8b2-7 Implementation of a 64-bit Jackson Adder
Andrew Carter, Tynan McAuley, William Koven, Paula Ning, David Harris, Harvey Mudd College, United States
- TA8b2-8 Fast modulo 2^n-1 and 2^n+1 Adder Using Carry-Chain on FPGA
Laurent-Stephane Didier, Université de Toulon, France; Luc Jaulmes, Ecole Polytechnique, France

Session TA8b3 MIMO Systems

Chair: *Rick Brown, Worcester Polytechnic Institute*

10:15 AM - 11:55 AM

- TA8b3-1 Some Fundamental Limits on Synchronization in Massive MIMO
Hei Victor Cheng, Erik G. Larsson, Linköping University, Sweden
- TA8b3-2 Massive MIMO with Clustered Pilot Contamination Precoding
Mahmood Mazrouei-Sebdani, Witold Krzymien, University of Alberta / Telecommunications Research Laboratories, Canada

- TA8b3-3 Second-Order Analysis of the Joint SINR Distribution in Rayleigh Multiple Access and Broadcast channels
Adrien Pelletier, Romain Couillet, Supélec, France; Jamal Najim, Université Paris-Est, France
- TA8b3-4 Power-Throughput Tradeoff in MIMO Heterogeneous Networks
Shashika Manosha Kapuruhamy Badalge, Satya Joshi, Marian Codreanu, Nandana Rajatheva, Matti Latva-aho, Centre for Wireless Communications, Finland
- TA8b3-5 Decentralized Joint Beamforming and Scheduling for Weighted Sum Rate Maximization
Jarkko Kaleva, Antti Tölli, Markku Juntti, University of Oulu, Finland
- TA8b3-6 Performance Comparison of ZF-DPC to Block Diagonalization for Quantized Feedback
Joydeep Acharya, Long Gao, Sudhanshu Gaur, Hitachi America Ltd, United States
- TA8b3-7 Iterative MMSE-DFE Equalizer for the High Data Rates HF Waveforms in the HF Channel
Mahmoud Elgenedy, VarkonSemiconductors, Egypt; Essam Sourour, Alexandria University, Egypt
- TA8b3-8 Worst-Case Weighted Sum-Rate Maximization for MISO Downlink Systems with Imperfect Channel Knowledge
Uditha Wijewardhana, Satya Joshi, Marian Codreanu, Matti Latva-aho, Centre for Wireless Communications, Finland
- TA8b3-9 Splitting Source Power for a Multicarrier Relay System with Direct Link
Yiming Ma, Yingbo Hua, University of California, Riverside, United States
- TA8b3-10 Channel Estimation Using Time-Shifted Pilot Sequences in Non-Cooperative Cellular TDD Networks with Large Antenna Arrays.
José Luis Lagunas-Morales, Sébastien Roy, University of Sherbrooke, Canada
- TA8b3-11 Blind Separation for Precoding-Based Blind Channel Estimation for MIMO-OFDM Systems
Song Noh, Michael D. Zoltowski, Purdue University, United States
- TA8b3-12 On the Jamming Power Allocation and Signal Design in DF Relay Networks
Xiangyun Zhou, Min Qiu, Australian National University, Australia; Shih-Chun Lin, National Taiwan University of Science and Technology, Taiwan; Y.-W. Peter Hong, National Tsing Hua University, Taiwan

Session TA8b4 Adaptive Learning and Information Theory

Chair: Ric Romero, Naval Postgraduate School

10:15 AM - 11:55 AM

- TA8b4-1 Information Theoretic Upper Bounds on the Number of Distinguishable Classes
C. M. Keller, M. Ho, P. Basu, MIT Lincoln Laboratory, United States; G. H. Whipple, Laboratory for Telecommunications Sciences, United States
- TA8b4-2 Direct Learning Adaptation of Power Amplifier Pre-distortion Based on Wirtinger Calculus
Navid Lashkarian, Jun Shi, Marcellus Forbes, Broadcom, United States
- TA8b4-3 Adaptive Signal Classification of Satellite-Based Recordings of Radiofrequency (RF) Transients Using Learned Dictionaries
Daniela Moody, David Smith, Tess Light, David Suszcynsky, Los Alamos National Laboratory, United States
- TA8b4-4 Reduced-Complexity Binary Search for Doppler Estimation in GNSS Receivers
Baharak Soltanian, Tampere University of Technology, United States; Murat Demirtas, University of California, Irvine, United States; Moncef Gabbouj, Tampere University of Technology, Finland
- TA8b4-5 Adaptive Learning of Immunosignaturing Features for Multi-Disease Pathologies
Anna Malin, Narayan Kovvali, Antonia Papandreou-Suppappola, Stephen Johnston, Phillip Stafford, Arizona State University, United States
- TA8b4-6 Hirschman Uncertainty with the Discrete Fractional Fourier Transform
Kirandeep Ghuman, Victor DeBrunner, Florida State University, United States

Session TP1a Advanced MIMO Networking

Chair: Sidhartan Govindasamy, Olin College

- TP1a-1 Asymptotic Spectral Efficiency of Limited-Rank MIMO Transmissions in Wireless Networks with Nodes at Correlated Locations 1:30 PM
Sidhartan Govindasamy, F. W. Olin College of Engineering, United States; Daniel Bliss, Arizona State University, United States
- TP1a-2 Impact of Spatial Correlation and Distributed Antennas for Massive MIMO systems 1:55 PM
Kien Truong, MIMO Wireless Inc., United States; Robert Heath, University of Texas at Austin, United States

- TP1a-3 Impact of Training on the Transmission 2:20 PM
Capacity of MIMO-SVD Systems in Wireless Ad
Hoc Networks
*Yueping Wu, Raymond Louie, Matthew McKay, Hong
Kong University of Science and Technology, Hong Kong
SAR of China*
- TP1a-4 Area Spectral and Energy Efficiency in 2:45 PM
Multi-antenna Cognitive Underlay Networks
*Syed Ali Raza Zaidi, Mounir Ghogho, Desmond C.
McLernon, University of Leeds, United Kingdom;
Ananthram Swami, US ARL, United States*

Session TP1b Full-Duplex MIMO Communications II

Chair: *Yingbo Hau, University of California, Riverside*

- TP1b-1 Diversity-Multiplexing Tradeoff Analysis of 3:30 PM
MIMO Relay Networks with Full-Duplex Relays
*Qiang Xue, University of Oulu, Finland; Anna Pantelidou,
Renesas Mobile Europe, Finland; Behnaam Aazhang, Rice
University, United States*
- TP1b-2 Ergodic Mutual Information of Full-Duplex 3:55 PM
MIMO Radios with Residual Self-Interference
*Ali Cagatay Cirik, University of California, Riverside,
United States; Yue Rong, Curtin University, Australia;
Yingbo Hua, University of California, Riverside, United
States*
- TP1b-3 Full-Duplex in Large-Scale Wireless Systems 4:20 PM
*Bei Yin, Michael Wu, Christoph Studer, Rice University,
United States; Joseph R. Cavallaro, rice university, United
States*
- TP1b-4 Full-Duplex Communication via Adaptive 4:45 PM
Nulling
*Scott Johnston, Paul Fiore, Massachusetts Institute of
Technology, United States*
- TP1b-5 Weighted-Sum-Rate Maximization for 5:10 PM
Bi-directional Full-Duplex MIMO Systems
*Ali Cagatay Cirik, University of California, Riverside,
United States; Rui Wang, Shanghai Jiao Tong University,
China; Yingbo Hua, University of California, Riverside,
United States*

Session TP2a Multimedia Quality Assessment

Chair: *Patrick Le Callet, IRCCyN/Université de Nantes*

- TP2a-1 On the Effectiveness of Natural Videos in 1:30 PM
Masking Dynamic DCT Noise
*Jeremy Evert, Damon Chandler, Oklahoma State
University, United States*
- TP2a-2 Investigating Electrophysiology for 1:55 PM
Measuring Emotions Triggered by Audio Stimuli
*Filippo Mazza, IRCCyN, France; Matthieu Perreira Da
Silva, Patrick Le Callet, IRCCyN/University of Nantes,
France*
- TP2a-3 Perceptual Evaluation of Image Denoising 2:20 PM
Algorithms
Kai Zeng, Zhou Wang, University of Waterloo, Canada

TP2a-4	Coding of 3D Videos based on Visual Discomfort <i>Dogancan Temel, Ghassan AlRegib, Georgia Institute of Technology, United States</i>	2:45 PM
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Session TP2b PHY Performance Abstraction Techniques

Chair: *Carlos Mosquera, University of Vigo*

TP2b-1	Stochastic Dynamic Models in PHY Abstraction <i>Francesc Rey, Josep Sala-Alvarez, Technical University of Catalonia, Spain</i>	3:30 PM
TP2b-2	On Scalability, Robustness and Accuracy of Physical Layer Abstraction for Large-Scale System Level Evaluations of LTE networks <i>Florian Kaltenberger, Imran Latif, Raymond Knopp, Eurecom, France</i>	3:55 PM
TP2b-3	Link Adaptation in MIMO-OFDM with Practical Impairments <i>Alberto Rico-Alvarino, University of Vigo, Spain; Robert W. Heath Jr., University of Texas at Austin, United States</i>	4:20 PM
TP2b-4	Digital Pre-distortion of Radio Frequency Front-end Impairments in the Design of Spectrally Agile Multicarrier Transmission <i>Zhu Fu, Alexander Wyglinski, Worcester Polytechnic Institute, United States</i>	4:45 PM
TP2b-5	System-Level Interfaces and Performance Evaluation Methodology for 5G Physical Layer Based on Non-orthogonal Waveforms <i>Gerhard Wunder, Martin Kasparick, Fraunhofer Heinrich Hertz Institute, Germany; Stephan ten Brink, Frank Schaich, Thorsten Wild, Bell Labs, Alcatel-Lucent, Germany; Ivan Gaspar, Nicola Michailow, Gerhard Fettweis, Technische Universität Dresden, Germany; Nicolas Cassiau, Commissariat à l'énergie atomique et aux énergies alternatives, France; Marcin Dryjanski, Slawomir Pietrzyk, IS-Wireless, Poland; Bertalan Eged, National Instruments, Hungary</i>	5:10 PM

Session TP3a New Geometric Models for Processing in Big-Data World

Chair: *Waheed Bajwa, Rutgers University*

TP3a-1	Robust Subspace Clustering <i>Mahdi Soltanolkotabi, Emmanuel Candes, Stanford University, United States</i>	1:30 PM
TP3a-2	Geometric Estimation of Probability Measures in High-Dimensions <i>Mauro Maggioni, Duke University, United States</i>	1:55 PM
TP3a-3	Change-point Detection for High-Dimensional Data <i>Yao Xie, Rebecca Willett, Duke University, United States</i>	2:20 PM

TP3a-4 Image Analysis with 2:45 PM
Transformation-Invariant Group Sparsity
*Alhussein Fawzi, Pascal Frossard, Ecole Polytechnique
Fédérale de Lausanne (EPFL), Switzerland*

Session TP3b Low-Dimensional Signal Models

Chair: *John Wright, Columbia University*

TP3b-1 Nearest Subspace Classification with Missing 3:30 PM
Data
Yuejie Chi, The Ohio State University, United States

TP3b-2 Reflections on Sampling-Filters for 3:55 PM
Compressive Sensing and Finite-Innovations-Rate
Models
*P. P. Vaidyanathan, California Institute of Technology,
United States*

TP3b-3 Identifiability Bounds for Bilinear Inverse 4:20 PM
Problems
*Sunav Choudhary, Urbashi Mitra, University of Southern
California, United States*

TP3b-4 Load Forecasting via Low Rank and Sparse 4:45 PM
Matrix Factorization
*Seung-Jun Kim, Georgios Giannakis, University of
Minnesota, United States*

TP3b-5 Semi-Blind Source Separation via Sparse 5:10 PM
Representations and Online Dictionary Learning
*Sirisha Rambhatla, Jarvis Haupt, University of Minnesota,
United States*

Session TP4a Power Networks

Chair: *Edmund Yeh, Northeastern University*

TP4a-1 Convex Relaxation for Optimal Power Flow 1:30 PM
Problem: Mesh Networks
*Ramtin Madani, Columbia University, United States;
Somayeh Sojoudi, California Institute of Technology,
United States; Javad Lavaei, Columbia University, United
States*

TP4a-2 Nonstationary Demand-side Management 1:55 PM
*Yuanzhang Xiao, Mihaela van der Schaar, University of
California, Los Angeles, United States*

TP4a-3 Framing Attack on State Estimation 2:20 PM
*Jinsub Kim, Lang Tong, Robert J. Thomas, Cornell
University, United States*

TP4a-4 Power System Dynamics as Primal-Dual 2:45 PM
Algorithm for Optimal Load Control
*Changhong Zhao, California Institute of Technology,
United States; Ufuk Topcu, University of Pennsylvania,
United States; Lina Li, Steven Low, California Institute of
Technology, United States*

Session TP4b Location-Aware Networking

Chair: *Henk Wymeersch, Chalmers University*

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|--------|---|---------|
| TP4b-1 | Robust Link Scheduling with Channel Estimation and Location Information
<i>Srikar Muppirisetty, Rocco Di Taranto, Henk Wymeersch, Chalmers University of Technology, Sweden</i> | 3:30 PM |
| TP4b-2 | Simultaneous Routing and Power Allocation using Location Information
<i>Rocco Di Taranto, Henk Wymeersch, Chalmers University of Technology, Sweden</i> | 3:55 PM |
| TP4b-3 | Location Aware Training Scheme for D2D Networks
<i>Daoud Burghal, Andreas F. Molisch, University of Southern California, United States</i> | 4:20 PM |
| TP4b-4 | Cooperative High-Accuracy Localization Algorithms for Improved Road Workers' Safety
<i>Sankalp Dayal, Khanh H. Huynh, Adam Mortazavi, University of California, Santa Barbara, United States; Ramez L. Gerges, California Department of Transportation, United States; John J. Shynk, University of California, Santa Barbara, United States</i> | 4:45 PM |
| TP4b-5 | Real-Time Energy Storage Management with Renewable Energy of Arbitrary Generation Dynamics
<i>Tianyi Li, Min Dong, University of Ontario Institute of Technology, Canada</i> | 5:10 PM |

Session TP5a Analysis of Complex Biological Systems and Omics Data I

Chair: *Byung-Jun Yoon, Texas A&M University*

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|--------|--|---------|
| TP5a-1 | Predicting Responsiveness of Ovarian Cancer Patients to Platinum Chemotherapy Using Differentially Weighted Lone Star Algorithm
<i>Eren Ahsen, Burook Misganaw, Nitin Singh, Mathukumalli Vidyasagar, University of Texas at Dallas, United States; Michael White, University of Texas Southwestern Medical Center, United States</i> | 1:30 PM |
| TP5a-2 | Classifier Risk Analysis under Bayesian Uncertainty Models
<i>Lori Dalton, The Ohio State University, United States</i> | 1:55 PM |
| TP5a-3 | Reconstruction of Novel Transcription Factor Regulons through Inference of their Binding Sites
<i>Abdulkadir Elmas, Xiaodong Wang, Columbia University, United States; Michael Samoilov, University of California, United States</i> | 2:20 PM |
| TP5a-4 | Sample-Based Prior Construction Using Biological Pathway Knowledge
<i>Mohammad Shahrokh Esfahani, Edward R Dougherty, Texas A&M University, United States</i> | 2:45 PM |

Session TP5b Analysis of Complex Biological Systems and Omics Data II

Chair: *Byung-Jun Yoon, Texas A&M University*

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|--------|---|---------|
| TP5b-1 | Characterizing Functions in Uncertain Signaling Network Topologies
<i>Haitham Gabr, Tamer Kahveci, University of Florida, United States</i> | 3:30 PM |
| TP5b-2 | Statistical Validation of Parametric Approximations to the Chemical Master Equation
<i>Garrett Jenkinson, John Goutsias, The Johns Hopkins University, United States</i> | 3:55 PM |
| TP5b-3 | Objective-Based Experimental Design for Optimal Reduction of Model Uncertainty
<i>Byung-Jun Yoon, Texas A&M University, United States</i> | 4:20 PM |
| TP5b-4 | A message-passing algorithm for haplotype assembly
<i>Zrinka Puljiz, Haris Vikalo, University of Texas at Austin, United States</i> | 4:45 PM |

Session TP6a MIMO Radar

Co-Chairs: *Jian Li, University of Florida and Dan Bliss, Arizona State University*

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|--------|---|---------|
| TP6a-1 | Ziv-Zaikai Bound for Target Location and Velocity Estimation using Noncoherent MIMO Radar
<i>Vlad Chiriac, New Jersey Institute of Technology, United States; Qian He, University of Electronic Science and Technology of China, China; Alexandra Haimovich, New Jersey Institute of Technology, United States; Rick Blum, University of Electronic Science and Technology of China, United States</i> | 1:30 PM |
| TP6a-2 | Parametric Moving Target Detection with MIMO Radar in Non-Homogeneous Environments
<i>Pu Wang, Hongbin Li, Stevens Institute of Technology, United States; Braham Himed, AFRL/RVMD, United States</i> | 1:55 PM |
| TP6a-3 | The MIMO radar MIRA-CLE Ka
<i>Jens Klare, Fraunhofer FHR, Germany</i> | 2:20 PM |
| TP6a-4 | Joint Estimation of Non-Coherent Returns for MIMO Radar
<i>William Rowe, Ode Ojowu, University of Florida, United States; Petre Stoica, Uppsala University, Sweden; Jian Li, University of Florida, United States</i> | 2:45 PM |

Session TP6b Target Tracking I

Chair: *Peter Willett, University of Connecticut*

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|--------|--|---------|
| TP6b-1 | Track State Augmentation for Feature-Aided Active Sonar Tracking
<i>Evan Hanusa, David Krout, University of Washington, United States</i> | 3:30 PM |
|--------|--|---------|

TP6b-2	Hypothesis Structure in Enhanced Multiple-Hypothesis Tracking <i>Stefano Coraluppi, Craig Carthel, Compunetix Inc., United States</i>	3:55 PM
TP6b-3	The Spline Probability Hypothesis Density Filter for Maneuvering Target Tracking <i>Rajiv Sithravel, Xin Chen, Thia Kirubarajan, McMaster University, Canada; Mike McDonald, Defence Research and Development Canada, Canada</i>	4:20 PM
TP6b-4	Performance Analysis of the Converted Range Rate and Position Linear Kalman Filter <i>Steven Bordonaro, Naval Undersea Research Center, United States; Peter Willett, Yaakov Bar-Shalom, University of Connecticut, United States</i>	4:45 PM
TP6b-5	MAP-PF Multitarget Tracking with Propagation Modeling Uncertainties <i>Kristine Bell, Robert Zarnich, Metron, United States</i>	5:10 PM

Session TP7a Algorithm/Architecture Co-design

Chair: *Gunar Schirner, Northeastern University*

TP7a-1	Using Stream Rewriting for Mapping and Scheduling Data Flow Graphs onto Many-Core Architectures <i>Christian Haubelt, Lars Middendorf, Christian Zebelein, University of Rostock, Germany</i>	1:30 PM
TP7a-2	A System-Level Design Approach for Dynamic Resource Coordination and Energy Optimization in Sensor Network Platforms <i>Inkeun Cho, Chung-Ching Shen, University of Maryland at College Park, United States; Jonathan McGee, Laboratory for Physical Sciences, United States; Shuvra Bhattacharyya, University of Maryland at College Park, United States</i>	1:55 PM
TP7a-3	Architecture/Algorithm Codesign in Molecular Dynamics Processors <i>Martin Herbordt, Boston University, United States; Md. Ashfaquzzaman Khan, Intel, United States</i>	2:20 PM
TP7a-4	Flexible Function-Level Acceleration of Embedded Vision Applications using the Pipelined Vision Processor <i>Robert Bushey, Analog Devices Inc., United States</i>	2:45 PM

Session TP7b Machine Learning and Statistical Signal Processing

Chair: *Yao Xie, Georgia Institute of Technology*

TP7b-1	Forward/Back State and Model Parameter Estimation for Continuum-State Hidden Markov Models (CHMM) with Dirichlet State Distributions <i>Todd K Moon, Jacob H Gunther, Utah State University, United States</i>	3:30 PM
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TP7b-2	Low-Rank Kernel Learning for Electricity Market Inference <i>Vassilis Kekatos, Yu Zhang, Georgios Giannakis, University of Minnesota, United States</i>	3:55 PM
TP7b-3	Hierarchical Clustering Methods and Algorithms for Asymmetric Networks <i>Gunnar Carlsson, Stanford University, United States; Facundo Mémoli, University of Adelaide, Australia; Alejandro Ribeiro, Santiago Segarra, University of Pennsylvania, United States</i>	4:20 PM
TP7b-4	Maximum Likelihood SNR Estimation over Time-Varying Flat-Fading SIMO Channels <i>Faouzi Bellili, Rabii Meftahi, Sofène Affes, Institut National de la Recherche Scientifique, Canada</i>	4:45 PM
TP7b-5	Achieving Complete Learning in Multi-Armed Bandit Problems <i>Sattar Vakili, Qing Zhao, University of California, Davis, United States</i>	5:10 PM

Session TP8a1 Spectrum Sensing and Sharing

Chair: *Geert Leus, Delft University of Technology (TU Delft)*

1:30 PM - 3:10 PM

TP8a1-1	Cognitive Coexistence: A Throughput Study of MUD-enhanced Opportunistic Spectrum Access <i>Rachel Learned, Scott Johnston, Massachusetts Institute of Technology, United States</i>
TP8a1-2	Throughput Maximization in Multichannel Cognitive Radio Systems with Delay Constraints <i>Ahmed Ewaisha, Cihan Tepedelenlioglu, Arizona State University, United States</i>
TP8a1-3	Joint Random Beam and Spectrum Selection for Spectrum Selection with Partial Channel State Information <i>Mohamed Abdallah, Mostafa Sayed, Texas A&M University at Qatar, Qatar; Mohamed-Slim Alouini, KAUST, Saudi Arabia; Khalid Qaraqe, Texas A&M University at Qatar, Qatar</i>
TP8a1-5	Signal Detection for Dynamic Spectrum Access <i>Jim Schroeder, Dave Chester, Jerry Sonnenberg, Bryan Hehn, Steve Andrews, Nick Van Stralen, Ihsan Akbar, Harris Corporation, United States</i>
TP8a1-6	Multi-Bit Cooperative Spectrum Sensing Strategy in Closed Form <i>Xiaoyuan Fan, Dongliang Duan, University of Wyoming, United States; Liuqing Yang, Colorado State University, United States</i>
TP8a1-7	Identifying Statistical Mimicry Attacks in Distributed Spectrum Sensing <i>Mihir Laghate, Chu-Hsiang Huang, Chung-Kai Yu, Lara Dolecek, Danijela Cabric, University of California, Los Angeles, United States</i>

- TP8a1-8 **An Amplify and Forward Scheme for Cognitive Radios**
Francesco Verde, University Federico II of Naples, Italy; Anna Scaglione, University of California, Davis, United States; Donatella Darsena, Parthenope University of Naples, Italy; Giacinto Gelli, University Federico II of Naples, Italy
- TP8a1-9 **Non-Compressive Wideband Spectrum Sensing with Sub-Nyquist Sampling Rates**
Mustafa Al-Ani, University of Westminster, United Kingdom; Bashar Ahmad, University of Cambridge, United Kingdom; Andrzej Tarczynski, University of Westminster, United Kingdom
- TP8a1-10 **Opportunistic Transmitter Selection for Selfless Overlay Cognitive Radios**
Mohammad Shaqfeh, Texas A&M University at Qatar, Qatar; Ammar Zafar, King Abdullah University of Science and Technology, Saudi Arabia; Hussein Alnuweiri, Texas A&M University at Qatar, Qatar; Mohamed-Slim Alouini, King Abdullah University of Science and Technology, Saudi Arabia
- TP8a1-11 **A Game Theoretic Power Control Framework for Spectrum Sharing in Competitive Environments**
Raghd El-Bardan, Swastik Brahma, Pramod K. Varshney, Syracuse University, United States
- TP8a1-12 **Cognitive Radio Transmission Strategies for Primary Erasure Channels**
Ahmed ElSamadony, Mohammed Nafie, Ahmed Sultan, Nile University, Egypt

Session TP8a2 Relays in Communications

Chair: *Cihan Tepedelenlioglu, Arizona State University*

1:30 PM - 3:10 PM

- TP8a2-1 **Optimized Receiver Design for Decode-and-Forward Relays using Hierarchical Modulation**
Tu Nguyen, Pamela Cosman, Laurence Milstein, University of California, San Diego, United States
- TP8a2-2 **Optimal Linear-combining Receiver for Decode-and-Forward Relays using Superposition Coding**
Tu Nguyen, Laurence Milstein, University of California, San Diego, United States
- TP8a2-3 **Alternate Relaying and the Degrees of Freedom of One-Way Cellular Relay Networks**
Aya Salah, Amr El-Keyi, Mohammed Nafie, Nile University, Egypt
- TP8a2-4 **Distributed AF Beamforming Relay Networks under Transmit Power Constraint**
Kanghee Lee, Hyuck M. Kwon, Edwin M. Sawan, Wichita State University, United States; Hyuncheol Park, Korea Advanced Institute of Science and Technology, Republic of Korea
- TP8a2-5 **Joint Transmit Design and Node Selection for One-Way and Two-Way Untrusted Relay Channels**
Jing Huang, A. Lee Swindlehurst, University of California, Irvine, United States

- TP8a2-6 **Wireless Physical Layer Security Enhancement with Buffer-Aided Relaying**
Jing Huang, A. Lee Swindlehurst, University of California, Irvine, United States
- TP8a2-7 **Training Slot Allocation for Mitigating Estimation Error Propagation in a Two-Hop Relaying System**
Qian Gao, Gang Chen, Yingbo Hua, University of California, Riverside, United States
- TP8a2-8 **Transmit Outage Pre-equalization for Amplify-and-Forward Relay Channels**
Fernando Sanchez, Gerald Matz, Vienna University of Technology, Austria

Session TP8a3 Cellular and Heterogeneous Networks

Chair: *Sundeep Rangan, NYU Poly*

1:30 PM - 3:10 PM

- TP8a3-1 **Downlink Coverage Analysis of N-Tier Heterogeneous Cellular Networks Based on Clustered Stochastic Geometry**
Chunlin Chen, Robert Elliott, Witold Krzymien, University of Alberta / Telecommunications Research Laboratories, Canada
- TP8a3-2 **System-Level Performance of the MIMO-OFDM Downlink with Dense Small Cell Overlays**
Thomas Wirth, Bernd Hofeld, Fraunhofer Heinrich Hertz Institute, Germany
- TP8a3-3 **Adaptive HARQ and Scheduling for Video over LTE**
Avi Rapaport, Weimin Liu, Liangping Ma, Gregory S. Sternberg, Ariela J. Zeira, Anantharaman Balasubramanian, InterDigital, United States
- TP8a3-4 **Novel Partial Feedback Schemes and Their Evaluation in an OFDMA System with CDF Based Scheduling**
Anh Nguyen, University of California, San Diego, United States; Yichao Huang, Qualcomm Technologies, Inc., United States; Bhaskar Rao, University of California, San Diego, United States
- TP8a3-5 **Opportunistic Third-Party Backhaul for Cellular Wireless Networks**
Russell Ford, Changkyu Kim, Sundeep Rangan, Polytechnic Institute of New York University, United States
- TP8a3-6 **Proactive User Association in Small Cell Networks via Collaborative Filtering**
Francesco Pantisano, Mehdi Bennis, Centre for Wireless Communications, Finland; Walid Saad, University of Miami, United States; Stefan Valentin, Bell Labs, Alcatel-Lucent, Germany; Mérouane Debbah, Alcatel-Lucent Chair in Flexible Radio, France
- TP8a3-7 **An Environmentally Friendly Approach to the Relay-Aided Cellular Network Architecture**
Hyoseok Yi, Harvard University, United States; Won-Yong Shin, Dankook University, Republic of Korea; Vahid Tarokh, Harvard University, United States

TP8a3-8 Interference Analysis of Multi-hop Cellular Networks
*Yeashfi Hasan, R. Michael Buehrer, Virginia Polytechnic
Institute and State University, United States*

Session TP8a4 Adaptive Filtering

Chair: *Gongguo Tang, University of Wisconsin Madison*

1:30 PM - 3:10 PM

TP8a4-1 A Gradient-Controlled Improved Proportionate Multi-Delay Filter

*Jie Yang, Texas Instruments, United States; Sobelman
Gerald, University of Minnesota, United States*

TP8a4-2 Complex Proportionate-Type Affine Projection Algorithms

*Kevin Wagner, Naval Research Laboratory, United States;
Milos Doroslovacki, George Washington University,
United States*

TP8a4-3 Radar Waveform Design in Active Communications Channel

*Kevin Shepherd, Ric Romero, Naval Postgraduate School,
United States*

TP8a4-4 The Leaky Least Mean Mixed Norm Algorithm

*Moahmmed Abdul Nasar, Azzedine Zerguine, King Fahd
University of Petroleum & Minerals, Saudi Arabia*

TP8a4-5 A New Variable Step-Size Zero-Point Attracting Projection Algorithm

*Jianming Liu, Steven Grant, Missouri University of
Science and Technology, United States*

TP8a4-6 Reliable and Low Power Least Squares Lattice Filtering

*Chandrasekhar Radhakrishnan, Andrew Singer, University
of Illinois at Urbana-Champaign, United States*

Session TP8b1 Electrophysiology and Brain Imaging

Chair: *Behnaam Aazhang, Rice University*

3:30 PM - 5:10 PM

TP8b1-1 Joint Compression of Neural Action Potentials and Local Field Potentials

*Sebastian Schmale, Benjamin Knoop, Janpeter
Hoeffmann, Dagmar Peters-Drolshagen, Steffen Paul,
University of Bremen, Germany*

TP8b1-2 Reducing the Effect of Correlated Brain Sources in MEG Using a Linearly Constrained Spatial Filter Based on Minimum Norm

*Jose Alfonso Sanchez De Lucio, David M. Halliday,
University of York, United Kingdom*

TP8b1-3 Online Bayesian Change Point Detection Algorithms for Segmentation of Epileptic Activity

*Rakesh Malladi, Behnaam Aazhang, Rice University,
United States; Giridhar P Kalamangalam, University of
Texas Health Science Center, United States*

- TP8b1-4 Spiking Neural Networks based on LIF with Latency: Simulation and Synchronization Effects
Gian Carlo Cardarilli, Alessandro Cristini, Marco Re, Mario Salerno, Gianluca Susi, University of Rome Tor Vergata, Italy
- TP8b1-5 Time-frequency Analysis of Brain Electrical Signals for Behaviour Recognition in Patients with Parkinson's Disease
Huaiguang Jiang, Jun Jason Zhang, University of Denver, United States; Adam Hebb, Colorado Neurological Institute, United States; Mohammad Mahoor, University of Denver, United States
- TP8b1-6 Modified Hodgkin-Huxley Model using Fractional Differential Equation
Harsh Wardhan, Anubha Gupta, Shubhajit Roy Chowdhury, IIIT Hyderabad, India
- TP8b1-7 A Measure of Connectivity in the Presence of Crosstalk
Sergul Aydore, Syed Ashrafulla, Anand Joshi, Richard Leahy, University of Southern California, United States

Session TP8b2 Multiuser MIMO Systems

Chair: *Thomas Svantesson, ArrayComm*

3:30 PM - 5:10 PM

- TP8b2-1 Multi-User MIMO Scheduling in the Fourth Generation Cellular Uplink
Narayan Prasad, Honghai Zhang, NEC Laboratories America, Inc., United States; Hao Zhu, University of Minnesota, United States; Sampath Rangarajan, NEC Laboratories America, Inc., United States
- TP8b2-2 Optimal DoF Region of the Two-User MISO-BC with General Alternating CSIT
Jinyuan Chen, Petros Elia, Eurecom, France
- TP8b2-3 Exploiting Spatial Spectrum Holes in Multiuser MIMO systems
Feeby Salib, Karim Seddik, American University in Cairo, Egypt
- TP8b2-4 Achievable Degrees of Freedom of Three-Cell MIMO Cellular Networks Using Subspace Alignment Chains
Gokul Sridharan, Wei Yu, University of Toronto, Canada
- TP8b2-5 Interference Alignment for MISO Broadcast Channels under Jamming attacks
SaiDhiraj Amuru, Ravi Tandon, R. Michael Buehrer, T. Charles Clancy, Virginia Tech, United States
- TP8b2-6 Performance Study of MRC and IRC Weights In LTE/LTE-A Systems With Interference Management
Thomas Svantesson, ArrayComm, United States
- TP8b2-7 MIMO Broadcast Channels with Partial CSIT and Application to Location based CSIT
Habib Chabbi, Yohan Lejosne, Dirk Slock, EURECOM, France; Yuan-Wu Yi, Orange Labs, France

- TP8b2-8 A System-Level Study on Multi-User MIMO Transmission for Ultra Dense FDD Networks
Lars Thiele, Martin Kurras, Kai Börner, Fraunhofer Institute, Germany
- TP8b2-9 Diversity-Multiplexing Tradeoff of MIMO Linear Precoding
Ahmed Mehana, Samsung Electronics, Co., Ltd., United States; Aria Nosratinia, University of Texas at Dallas, United States

Session TP8b3 Design Automation

Chair: *Christian Haubelt, University of Rostock*

3:30 PM - 5:10 PM

- TP8b3-1 MPMAP: A High Level Synthesis and Mapping Tool for MPSoCs
Amr Hussien, Ahmed Eltawil, University of California, Irvine, United States; Rahul Amin, Jim Martin, Clemson University, United States
- TP8b3-2 Software Tool for FPGA Based MIMO Radar Applications
Amin Jarrah, Mohsin M. Jamali, University of Toledo, United States
- TP8b3-3 Multi-clock Domain Optimization for Reconfigurable Architectures in High-Level Dataflow Applications
Simone Casale Brunet, Endri Bezati, Claudio Alberti, Marco Mattavelli, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Edoardo Amaldi, Politecnico di Milano, Italy; Jörn Janneck, Lund University, Sweden
- TP8b3-4 Actor Classification using Actor Machines
Gustav Cedersjö, Jörn Janneck, Lund University, Sweden
- TP8b3-5 Systems Design Space Exploration by Serial Dataflow Program Executions
Simone Casale Brunet, Marco Mattavelli, Claudio Alberti, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; Jörn Janneck, Lund University, Sweden
- TP8b3-6 Porting an MPEG-HEVC Decoder to a Low-Power Many-Core Platform
Damien de Saint-Jorre, Claudio Alberti, Marco Mattavelli, Simone Casale Brunet, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
- TP8b3-7 Real-time Radar Signal Processing on Massively Parallel Processor Arrays
Zain Ul-Abdin, Halmstad University, Sweden; Anders Åhlander, Saab AB, Sweden; Bertil Svensson, Halmstad University, Sweden
- TP8b3-8 Algorithm and Architecture Co-Design of Mixture of Gaussian (MoG) Background Subtraction for Embedded Vision
Hamed Tabkhi, Northeastern University, United States; Robert Bushey, Analog Devices Inc., United States; Gunar Schirner, Northeastern University, United States

Session WA1a MIMO Interference Management

Chair: *Rachel Learned, MIT Lincoln Laboratory*

- WA1a-1 Degrees of Freedom for the Constant MIMO 8:15 AM
Interference Channel with CoMP Transmission
*Craig Wilson, Venugopal Veeravalli, University of Illinois
at Urbana-Champaign, United States*
- WA1a-2 Dynamic Interference Management 8:40 AM
*Aly El Gamal, Venugopal Veeravalli, University of Illinois
at Urbana-Champaign, United States*
- WA1a-3 A MUD/Rate Selection Tool for Cognitive 9:05 AM
Radios in Packet Based Asynchronous Gaussian
Multiple Access Channels
*Prabahan Basu, Rachel Learned, MIT Lincoln Laboratory,
United States*
- WA1a-4 Precoder Design for Fractional Interference 9:30 AM
Alignment
*Hari Ram Balakrishnan, Giridhar K, Indian Institute of
Technology Madras, India*

Session WA1b MIMO Processing

Chair: *David Love, Purdue University*

- WA1b-1 MMSE Receive Filtering for Precoded 10:15 AM
MIMO Systems
*Ahmed Mehana, Samsung Electronics, Co., Ltd., United
States; Aria Nosratinia, University of Texas at Dallas,
United States*
- WA1b-2 Multiuser Hybrid Precoding for Millimeter 10:40 AM
Wave Cellular Systems
*Ahmed Alkhateeb, Omar El Ayach, Robert Heath,
University of Texas at Austin, United States*
- WA1b-3 Linear Precoding for MIMO with LDPC 11:05 AM
Coding and Reduced Receiver Complexity
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- WA1b-4 Optimal Pilot Beam Pattern Design for 11:30 AM
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*Song Noh, Michael D. Zoltowski, Purdue University,
United States; Youngchul Sung, KAIST, Republic of Korea;
David J. Love, Purdue University, United States*

Session WA2a OFDM

Chair: *Wei Zhang, University of New South Wales*

- WA2a-1 MIMO-OFDM Outage Channel Capacity 8:15 AM
With Practical Imperfect CSI
*Marko Kocic, MIT Lincoln Laboratory, United States;
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- WA2a-2 Biased Estimation of Symbol Timing Offset 8:40 AM
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*Rohan Ramlall, University of California, Irvine, United
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- WA2a-3 A Factor-Graph Approach to Joint OFDM Channel Estimation and Decoding in Impulsive Noise Channels 9:05 AM
Marcel Nassar, University of Texas at Austin, United States; Philip Schniter, The Ohio State University, United States; Brian Evans, University of Texas at Austin, United States
- WA2a-4 Widely Linear Data Estimation for Unique Word OFDM 9:30 AM
Mario Huemer, Alexander Onic, Christian Hofbauer, Stefan Trampitsch, Alpen-Adria-Universität Klagenfurt, Austria

Session WA2b Advances in Coding and Decoding

Chair: *Ashish Khisti, University of Toronto*

- WA2b-1 Efficiently Encodable Non-Binary Generalized LDPC Codes 10:15 AM
Nicholas Chang, Applied Communication Sciences, United States; Marko Kocic, MIT Lincoln Laboratory, United States
- WA2b-2 Practical Non-Binary Rateless Codes for Wireless Channels 10:40 AM
David Romero, Massachusetts Institute of Technology, United States; Nicholas Chang, Applied Communication Sciences, United States; Adam Margetts, Massachusetts Institute of Technology, United States
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Ali Fakoorian, Lee Swindlehurst, University of California, Irvine, United States
- WA2b-4 Delay-Optimal Streaming Codes under Source-Channel Rate Mismatch 11:30 AM
Pratik Patil, Ahmed Badr, Ashish Khisti, University of Toronto, Canada; Wai-Tian Tan, Hewlett-Packard Labs, United States

Session WA3a Adaptive Filtering

Chair: *Ric Romero, Naval Postgraduate School*

- WA3a-1 A Gradient-Controlled Proportionate Technique for Acoustic Echo Cancellation 8:15 AM
Jie Yang, Texas Instruments, United States; Gerald Sobelman, University of Minnesota, United States
- WA3a-2 Interference Identification in Cellular Networks via Adaptive Projected Subgradient Methods 8:40 AM
Konstantin Oltmann, Renato L. G. Cavalcante, Slawomir Stanczak, Fraunhofer Heirinch Hertz Institute, Germany
- WA3a-3 A Reconsideration of Improved PNLMS Algorithm From Metric Combining Viewpoint 9:05 AM
Osamu Toda, Masahiro Yukawa, Keio University, Japan
- WA3a-4 Detection Performance of Matched Transmit Waveform for Moving Extended Targets 9:30 AM
Ric Romero, Naval Postgraduate School, United States

Session WA3b Detection

Chair: *Nicholas Chang, Applied Communication Sciences*

- WA3b-1 Asynchronous Signal Detection in 10:15 AM
Frequency-Selective Non-Gaussian Channels
SaiDhiraj Amuru, Daniel Jakubisin, R. Michael Buehrer, Virginia Tech, United States; Claudio da Silva, Samsung Electronics, Co., Ltd., United States
- WA3b-2 An Information Theoretic Characterization of 10:40 AM
the Channel Shortening Receiver
Fredrik Rusek, Lund University / Huawei, Sweden; Ove Edfors, Lund University, Sweden
- WA3b-3 Iterative MMSE-SIC Receiver with 11:05 AM
Low-Complexity Soft Symbol and Residual
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Guosen Yue, Sampath Rangarajan, NEC Laboratories America, Inc., United States
- WA3b-4 New Results in the Analysis of 11:30 AM
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Ahmed Mehana, Samsung Electronics, Co., Ltd., United States; Aria Nosratinia, University of Texas at Dallas, United States

Session WA4a Relaying and Cooperation

Chair: *Hieu Do, KTH Royal Institute of Technology*

- WA4a-1 Two-Way Amplify-and-Forward Relay 8:15 AM
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PhuongBang Nguyen, Bhaskar Rao, University of California, San Diego, United States
- WA4a-4 Cooperative Simultaneous Localization and 9:30 AM
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Bernhard Etzlinger, Johannes Kepler University Linz, Austria; Florian Meyer, Vienna University of Technology, Austria; Andreas Springer, Johannes Kepler University Linz, Austria; Franz Hlawatsch, Vienna University of Technology, Austria; Henk Wymeersch, Chalmers University of Technology, Sweden

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Chair: *Samuel Cheng, University of Oklahoma*

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Chair: *Shawn Kraut, MIT Lincoln Laboratory*

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Chair: *Mark Fowler, SUNY Binghamton*

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Chair: *Jorn Janneck, Lund University*

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- WA7a-2 Efficient Error-Aware Power Management for 8:40 AM
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