

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



**November 8–11, 2015**  
Asilomar Hotel and  
Conference Grounds

**Technical Co-sponsor**

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# FORTY-NINTH ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS AND COMPUTERS

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# Welcome from the General Chairman

Prof. Erik G. Larsson  
Linköping University, Sweden

Welcome to the 49th Asilomar Conference on Signals, Systems, and Computers!

It is a privilege for me to serve as General Chair of the Asilomar conference this year. Asilomar is a unique conference and I believe what makes it so special is the combination of an exceptional quality of the technical presentations and papers, the congenial atmosphere that forms around the social events, and the opportunity for long outdoor walks along the California coast. For me personally, Asilomar stands out as the one conference that I have tried, and am trying to consistently attend since I first participated fifteen years ago.

We are looking forward to an exciting technical program that spans two and a half days. All credit for preparing the technical program goes to the Technical Chair, Prof. Timothy Davidson and his team of area chairs: Wei Yu, David Love, Randall Berry, Bhaskar Rao, Gerald Matz, Aleksandar Jeremic, Warren Gross, Shahram Shirani and Keshab Parhi (Vice Chair). I would like to thank Tim and his team for assembling the program, which this year consists of 363 papers, of which 158 are invited. Among these papers, 78 were submitted to the student paper contest and a list of finalists have been selected. The finalists in the student contest will present their contributions as posters to a committee of judges on Sunday afternoon and of course, everyone is invited to attend. The top-three ranked papers will then be awarded prizes at the Monday plenary session.

The plenary talk this year will be given by Prof. Frank R. Kschischang from the University of Toronto. Frank is an authority in information theory and coding with applications to wireline, wireless as well as optical communications. The topic of his talk is applications of the nonlinear Fourier transform, a signal analysis technique first introduced by mathematicians and physicists in the 1970s and now used to analyze optical communication links, where nonlinearities are present. I am greatly excited about this talk and the opportunity for us all to learn from a world-renowned expert about this advanced and useful tool.

It has been an honor to serve as General Chair, and I hope that you will all enjoy the conference.

Erik G. Larsson  
Linköping University, Sweden, July 2015

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McMaster University

## 2015 Asilomar Technical Program Committee Members

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University of Toronto, Canada

### **TRACK B: MIMO COMMUNICATIONS AND SIGNAL PROCESSING**

David Love  
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### **TRACK C: NETWORKS**

Randall Berry  
Northwestern University, USA

### **TRACK D: SIGNAL PROCESSING AND ADAPTIVE SYSTEMS**

Bhaskar Rao  
University of California,  
San Diego, USA

### **TRACK E: ARRAY SIGNAL PROCESSING**

Gerald Matz  
Technische Universität Wien, Austria

### **TRACK F: BIOMEDICAL SIGNAL AND IMAGE PROCESSING**

Aleksandar Jeremic  
McMaster University, Canada

### **TRACK G: ARCHITECTURE AND IMPLEMENTATION**

Warren Gross  
McGill University, Canada

### **TRACK H: SPEECH, IMAGE AND VIDEO PROCESSING**

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McMaster University, Canada

### **VICE TRACK CHAIR**

Keshab Parhi  
University of Minnesota, USA

# 2015 Asilomar Conference Session Schedule

## Sunday Afternoon, November 8, 2015

- 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 9, 2015

- 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

### 10:15–11:55 AM MORNING SESSIONS

- MA1b FANTASTIC-5G on MTC  
MA2b Interference Management: New Techniques and Emerging Challenges  
MA3b Optimization of Wireless Networks  
MA4b Bayesian Methods for Compressed Sensing  
MA5b Radar Signal Processing  
MA6b Large Data Sets  
MA7b Biological Communication  
MA8b1 Cognitive Radio (Poster)  
MA8b2 Parallel Processing (Poster)  
MA8b3 Adaptive Filtering (Poster)  
MA8b4 Synchronization and Localization (Poster)

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

## Monday Afternoon, November 9, 2015

### 1:30–5:10 PM AFTERNOON SESSIONS

- MP1a Underwater Acoustic Communications and Signal Processing  
MP1b Physical Layer Security  
MP2 Distributed Coherent Communication Systems  
MP3 5G Cellular Networks  
MP4a Distributed Signal Processing  
MP4b Designing Sparse Sensing Structures  
MP5a Co-Prime Arrays  
MP5b MIMO Radar  
MP6 Signal Processing and Optimization Methods for Big Data Analytics  
MP7a Signal Processing in Biology: Theoretical Advances and Open Problems  
MP7b ECG and EEG Signal Processing  
MP8a1 Implementation of Digital Signal Processing Algorithms (Poster)  
MP8a2 Sparsity and Compressed Sensing (Poster)  
MP8a3 Applications of Adaptive Signal Processing (Poster)  
MP8a4 Wireless and Sensor Networks (Poster)

## Monday Evening, November 9, 2015

- 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.

# 2015 Asilomar Conference Session Schedule (continued)

## Tuesday Morning, November 10, 2015

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

8:00 AM–5:00 PM Registration

### 8:15–11:55 AM MORNING SESSIONS

TA1a Topics in Communications

TA1b Coding and Signal Processing for Modern Memories

TA2a All About Spectrum

TA2b Methodologies for Signal Processing on Random Graphs

TA3a Estimation

TA3b Wearable and Body Area Networks

TA4 Workshop on Contributions of Louis Scharf

TA5a Smart Grid

TA5b Energy Management

TA6 Massive MIMO

TA7 Arithmetic

TA8a1 Biomedical Signal Processing I (Poster)

TA8a2 Relayed Communications I (Poster)

TA8b1 Sampling, Sensing and Detection (Poster)

TA8b2 Biomedical Signal Processing II (Poster)

TA8b3 Relayed Communications II (Poster)

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

## Tuesday Afternoon, November 10, 2015

### 1:30–5:35 PM AFTERNOON SESSIONS

TP1 Coherent Optical Communications

TP2 Enabling Technologies for Future Wireless Networks

TP3a Social Networks

TP3b Caching in Wireless Networks

TP4 Workshop on Contributions of Louis Scharf

TP5a Interference Channels

TP5b Interference in Networks

TP6a Multi-Agent Systems and Optimization

TP6b Epidemic Control in Networks

TP7a Algorithm and Hardware Aspects for 5G Wireless Systems

TP7b VLSI Signal Processing

TP8a1 Multicarrier and DFE (Poster)

TP8a2 Speech and Image Processing (Poster)

TP8a3 Communication Techniques for the Downlink (Poster)

TP8a4 Estimation and Learning (Poster)

TP8b1 Radar Co-existence and Satellite Communications (Poster)

TP8b2 Video Processing (Poster)

TP8b3 MIMO Links and Uplink (Poster)

## Tuesday Evening Open Evening — Enjoy the Monterey Peninsula

# 2015 Asilomar Conference Session Schedule (continued)

## Wednesday Morning, November 11, 2015

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 Communications with Low-Precision Analog-to-Digital Converters
- WA1b Broadband Access Evolution
- WA2a Cooperative Communications
- WA2b 5G and mmWave
- WA3 Sparsity in Signal Processing
- WA4 Statistical Signal Processing for Social and Information Networks
- WA5a Sparse Estimation
- WA5b Compressive Beamforming and Sparsity-Based Techniques
- WA6a Tracking
- WA6b Structure in Adaptive Signal Processing Algorithms
- WA7a Image Processing
- WA7b Graph Signal Processing
- WA8a1 Coding and Decoding (Poster)
- WA8a2 Implementation of Communication Systems (Poster)
- WA8a3 Array Signal Processing (Poster)
- WA8a4 Parameter and Waveform Estimation (Poster)
- WA8a5 Adaptive Signal Processing Techniques (Poster)

12:00–1:00 PM Lunch — This meal is not included in the registration.



# Student Paper Contest

Heather - Sunday, November 8, 2015, 4:00–6:30 PM

## Track A

*“A Tractable Model for Per User Rate in Multiuser Millimeter Wave Cellular Networks”*

**Mandar Kulkarni**, Ahmed Alkhateeb, Jeffrey Andrews, University of Texas at Austin, United States

## Track B

*“Interference Alignment-Aided Base Station Clustering using Coalition Formation”*

**Rasmus Brandt**, Rami Mochaourab, Mats Bengtsson, KTH Royal Institute of Technology, Sweden

## Track C

*“Sampling of Graph Signals: Successive Local Aggregations at a Single Node”*

**Santiago Segarra**, University of Pennsylvania, United States; Antonio Marques, King Juan Carlos University, Spain; Geert Leus, Delft University of Technology, Netherlands; Alejandro Ribeiro, University of Pennsylvania, United States

## Track D

*“Minimal Dictionaries for Spanning Periodic Signals”*

**Srikanth V. Tanneti**, P. P. Vaidyanathan, California Institute of Technology, United States

## Track E

*“SQR: Successive QCQP Refinement for MIMO Radar Waveform Design under Practical Constraints”*

**Omar Aldayel**, Vishal Monga, Pennsylvania State University, United States; Muralidhar Rangaswamy, Air Force Research Laboratory, United States

## Track F

*“Optimal Gene Regulatory Network Inference using the Boolean Kalman Filter and Multiple Model Adaptive Estimation”*

**Mahdi Imani**, Ulisses Braga-Neto, Texas A&M University, United States

## Track G

*“Architectures for Stochastic Normalized and Modified Lattice IIR Filters”*

**Yin Liu**, Keshab Parhi, University of Minnesota, Twin Cities, United States

## Track H

*“Screen Content Image Segmentation using Sparse-Smooth Decomposition”*

**Shervin Minaee**, Amirali Abdolrashidi, New York University, United States

# 2015 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 9, 2015**

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

1. Welcome from the General Chair

**Prof. Erik G. Larsson**  
Linköping University, Sweden

2. Session MA1a      Distinguished Lecture for the 2015  
Asilomar Conference

### **Fiber-Optic Communication via the Nonlinear Fourier Transform**

**Frank R. Kschischang**  
University of Toronto, Canada

#### **Abstract**

In this work we explore some of the potential fiber-optic data transmission applications of the nonlinear Fourier transform (NFT), a signal analysis technique introduced by mathematicians and physicists in the 1970s. Just as the usual Fourier transform converts linear convolution to multiplication, the NFT transforms the action of the ideal (noiseless, lossless) nonlinear Schrödinger equation (and other integrable evolution equations) to the action of a multiplicative filter in the nonlinear frequency domain. One potential application is a nonlinear analogue of linear frequency-division multiplexing that, unlike many other fiber-optic transmission strategies, deals with both dispersion and nonlinearity unconditionally, without the need for dispersion or nonlinearity compensation methods.

(Joint work with Mansoor I. Yousefi and Siddarth Hari.)

#### **Biography**

Frank R. Kschischang is the Distinguished Professor of Digital Communication in the Department of Electrical and Computer Engineering at the University of Toronto, where he has been a

faculty member since 1991. He received the B.A.Sc. degree (with honors) from the University of British Columbia, Vancouver, BC, Canada, in 1985 and the M.A.Sc. and Ph.D. degrees from the University of Toronto, Toronto, ON, Canada, in 1988 and 1991, respectively, all in electrical engineering. During 1997-98, he was a visiting scientist at MIT, Cambridge, MA; in 2005 he was a visiting professor at the ETH, Zurich, and in 2011 and again in 2012-13 he was a visiting Hans Fischer Senior Fellow at the Institute for Advanced Study at the Technical University of Munich.

His research interests are focused primarily on the area of channel coding techniques, applied to wireline, wireless and optical communication systems and networks. In 1999 he was a recipient of the Ontario Premier's Excellence Research Award and in 2001 (renewed in 2008) he was awarded the Tier I Canada Research Chair in Communication Algorithms at the University of Toronto. In 2010 he was awarded the Killam Research Fellowship by the Canada Council for the Arts. Jointly with Ralf Koetter he received the 2010 Communications Society and Information Theory Society Joint Paper Award. He is a recipient of the 2012 Canadian Award in Telecommunications Research. He is a Fellow of IEEE, of the Engineering Institute of Canada, and of the Royal Society of Canada.

During 1997-2000, he served as an Associate Editor for Coding Theory for the IEEE TRANSACTIONS ON INFORMATION THEORY, and since January 2014, he serves as this journal's Editor-in-Chief. He also served as technical program co-chair for the 2004 IEEE International Symposium on Information Theory (ISIT), Chicago, and as general co-chair for ISIT 2008, Toronto. He served as the 2010 President of the IEEE Information Theory Society.

**Tuesday, November 10, 2015**

## **WORKSHOP ON CONTRIBUTIONS OF LOUIS SCHARF**

8:15–11:55 AM and 1:30–5:35 PM

*Forty-Six Years (and counting) of Statistical Signal Processing* - A workshop in recognition of the career contributions of Louis Scharf. This workshop will acknowledge the substantial influence of Louis Scharf's career contributions to statistical signal processing. It will feature presentations by a few of the many people whose work has been influenced by collaboration and other interactions with Professor Scharf over the past four decades.



**Program of the  
2015 Asilomar Conference on  
Signals, Systems, and Computers**

**Technical Program Chairman  
Prof. Timothy Davidson  
McMaster University**

## **Session MA1b FANTASTIC-5G on MTC**

Chair: *Gerhard Wunder, Fraunhofer Heinrich-Hertz-Institut*

- MA1b-1 FBMC Based Asynchronous Uplink Access 10:15 AM  
*Zhao Zhao, Qi Wang, Xitao Gong, Malte Schellmann, Martin Schubert, Huawei European Research Center, Germany*
- MA1b-2 Radio Access Protocols and Preamble Design 10:40 AM  
for Machine-Type Communications in 5G  
*Stephan Saur, Andreas Weber, Gerhard Schreiber, Alcatel-Lucent, Germany*
- MA1b-3 Compressive Coded Random Access for 11:05 AM  
Massive MTC Traffic in 5G Systems  
*Gerhard Wunder, Heinrich Hertz Institut, Germany; Cedomir Stefanovic, Petar Popovski, Aalborg University, Denmark*
- MA1b-4 A Potential Solution for MTC: Multi-Carrier 11:30 AM  
Compressive Sensing Multi-User Detection  
*Fabian Monsees, Matthias Woltering, Carsten Bockelmann, Armin Dekorsy, University of Bremen, Germany*

## **Session MA2b Interference Management: New Techniques and Emerging Challenges**

Chair: *Salman Avestimehr, University of Southern California*

- MA2b-1 Interference Surge in Full-Duplex Wireless 10:15 AM  
Systems  
*Ratheesh K. Mungara, Angel Lozano, Universitat Pompeu Fabra, Spain*
- MA2b-2 Interference Mitigation Utilizing Antenna 10:40 AM  
Mutual Coupling  
*Wonseok Jeon, Sae-Young Chung, KAIST, Republic of Korea*
- MA2b-3 Optimality of Treating Interference As Noise 11:05 AM  
in the IRC: A GDOF Perspective  
*Soheil Gherekhloo, Aydin Sezgin, Ruhr-University Bochum, Germany*
- MA2b-4 Secure Degrees of Freedom of the Gaussian 11:30 AM  
MIMO Interference Channel  
*Karim Banawan, Sennur Ulukus, University of Maryland, United States*

## **Session MA3b Optimization of Wireless Networks**

Chair: *Mark Bell, Purdue University*

- MA3b-1 Frameless ALOHA with Multiple Base 10:15 AM  
Stations  
*Shun Ogata, Koji Ishibashi, The University of Electro-Communications, Japan*

- MA3b-2 On the Delay Optimal User Association in Heterogeneous Wireless Networks 10:40 AM  
*Narayan Prasad, NEC Labs America, United States; Vaibhav Singh, University of Maryland, United States; Sampath Rangarajan, NEC Labs America, United States*
- MA3b-3 Scheduling for Compute and Forward Networks 11:05 AM  
*David Ramirez, Behnaam Aazhang, Rice University, United States*
- MA3b-4 Carriers Allocation in Mobile Bacteria Network 11:30 AM  
*Wei-Kang Hsu, Mark Bell, Xiaojun Lin, Purdue University, United States*

## **Session MA4b Bayesian Methods for Compressed Sensing**

Chair: *Philip Schniter, The Ohio State University*

- MA4b-1 Hierarchical Bayesian Formulation of Sparse Signal Recovery Algorithms using Scale Mixture Priors 10:15 AM  
*Ritwik Giri, Bhaskar D. Rao, University of California, San Diego, United States*
- MA4b-2 Understanding the MMSE of Compressed Sensing One Measurement at a Time 10:40 AM  
*Galen Reeves, Henry Pfister, Duke University, United States*
- MA4b-3 Connecting Bayesian and Denoising-Based Approximate Message Passing 11:05 AM  
*Christopher Metzler, Rice University, United States; Arian Maleki, Columbia University, United States; Richard Baraniuk, Rice University, United States*
- MA4b-4 On Robust Approximate Message Passing 11:30 AM  
*Philip Schniter, The Ohio State University, United States; Henry Pfister, Duke University, United States*

## **Session MA5b Radar Signal Processing**

Chair: *Braham Himed, Air Force Research Laboratory*

- MA5b-1 On Waveform Conditions and Range Compression in MIMO Radars using Matrix Completion 10:15 AM  
*Shunqiao Sun, Athina Petropulu, Rutgers, The State University of New Jersey, United States*
- MA5b-2 Detection of Low-Signature Targets in Rough Surface Terrain for Forward-Looking Ground Penetrating Radar Imaging 10:40 AM  
*Davide Comite, Fauzia Ahmad, Moeness Amin, Villanova University, United States; Traian Dogaru, US Army Research Lab, United States*

- MA5b-3 SQR: Successive QCQP Refinement for MIMO Radar Waveform Design under Practical Constraints 11:05 AM  
*Omar Aldayel, Vishal Monga, Pennsylvania State University, United States; Muralidhar Rangaswamy, Air Force Research Laboratory, United States*
- MA5b-4 A Sparsity Based GLRT for Moving Target Detection in Distributed MIMO Radar on Moving Platforms 11:30 AM  
*Zhe Wang, Hongbin Li, Stevens Institute of Technology, United States; Braham Himed, Air Force Research Laboratory/RYMD, United States*

## Session MA6b Large Data Sets

Chair: *Nicholas Asendorf, University of Michigan*

- MA6b-1 Big Data Sketching with Model Mismatch 10:15 AM  
*Sundeep Prabhakar Chepuri, Delft University of Technology, Netherlands; Yu Zhang, University of Minnesota, United States; Geert Leus, Delft University of Technology, Netherlands; Georgios B. Giannakis, University of Minnesota, United States*
- MA6b-2 Change-Point Detection of High-Dimensional Streaming Data via Sketching 10:40 AM  
*Yuejie Chi, The Ohio State University, United States; Yihong Wu, University of Illinois at Urbana-Champaign, United States*
- MA6b-3 Large-Scale Subspace Clustering using Random Sketching and Validation 11:05 AM  
*Panagiotis Traganitis, Konstantinos Slavakis, Georgios B. Giannakis, University of Minnesota, United States*
- MA6b-4 Improving Multiset Canonical Correlation Analysis in High Dimensional Sample Deficient Settings 11:30 AM  
*Nicholas Asendorf, Raj Rao Nadakuditi, University of Michigan, United States*

## Session MA7b Biological Communication

Chair: *Joerg Klierer, New Jersey Institute of Technology*

- MA7b-1 Information Theory of Intercellular Signal Transduction 10:15 AM  
*Andrew Eckford, York University, Canada; Peter Thomas, Case Western Reserve University, United States*
- MA7b-2 Directed Information Measures for Assessing Perceived Audio Quality using EEG 10:40 AM  
*Ketan Mehta, New Mexico State University, United States; Joerg Klierer, New Jersey Institute of Technology, United States*
- MA7b-3 Molecular Communication and Signaling in Human Cells 11:05 AM  
*Iman Habibi, Ali Abdi, New Jersey Institute of Technology, United States; Effat Emamian, Advanced Technologies for Novel Therapeutics, United States*



MA7b-4 A Stochastic Queuing Model of Quorum Sensing in Microbial Communities 11:30 AM  
*Nicolo Michelusi, James Boedicker, Moh El-Naggar, Urbashi Mitra, University of Southern California, United States*

## **Session MA8b1 Cognitive Radio**

Chair: *Cihan Tepedelenlioglu, Arizona State University*

10:15 AM–11:55 AM

- MA8b1-1 Efficient Wideband Spectrum Sensing using Random Projection  
*Soumendu Majee, Purdue University, United States; Priyadip Ray, Indian Institute of Technology Kharagpur, United States; Qi Cheng, Oklahoma State University, United States*
- MA8b1-2 An Agile Wideband Interferers Identification Algorithm for Spectrum Sensing  
*Han Yan, Danijela Cabric, University of California, Los Angeles, United States*
- MA8b1-3 Identifying the Presence and Footprints of Multiple Incumbent Transmitters  
*Mihir Laghate, Danijela Cabric, University of California, Los Angeles, United States*
- MA8b1-4 Sequential Detection of Number of Primary Users in Cognitive Radio Networks  
*Liping Du, University of Science and Technology Beijing, China; Chun-Hao Liu, Mihir Laghate, Danijela Cabric, University of California, Los Angeles, United States*
- MA8b1-5 Determining User Specific Spectrum Usage via Sparse Channel Characteristics  
*Dennis Wieruch, Fraunhofer HHI, Germany; Peter Jung, Technische Universität Berlin, Germany; Thomas Wirth, Fraunhofer HHI, Germany*
- MA8b1-6 Recognizing FM, BPSK and 16-QAM using Supervised and Unsupervised Learning Techniques  
*Mohammad Bari, George Washington University, United States; Awais Khawar, Virginia Tech, United States; Milos Doroslovacki, George Washington University, United States; Charles Clancy, Virginia Tech, United States*
- MA8b1-7 Design of Spectrally Shaped Binary Sequences via Randomized Convex Relaxations  
*Dian Mo, Marco Duarte, University of Massachusetts, United States*
- MA8b1-8 Dynamic Scheduling for Delay Guarantees for Heterogeneous Cognitive Radio Users  
*Ahmed Ewaisha, Cihan Tepedelenlioglu, Arizona State University, United States*

## **Session MA8b2 Parallel Processing**

Chair: *Jorn Janneck, Lund University*

10:15 AM–11:55 AM

- MA8b2-1 Implementing a Streaming Application on a Processor Array: A Case Study on the Epiphany Architecture  
*Jerry Linström, Stefan Nannesson, Jorn W. Janneck, Lund University, Sweden*
- MA8b2-2 Extreme Multi-Core, Multi-Network Java Dataflow Machine (JavaFlow)  
*Robert Ascott, Earl E. Swartzlander, Jr., University of Texas at Austin, United States*
- MA8b2-3 Data-Parallel Implementation of Reconfigurable Digital Predistortion on a Mobile GPU  
*Amanullah Ghazi, Jani Boutellier, Markku Juntti, University of Oulu, Finland; Lauri Anttila, Mikko Valkama, Tampere University of Technology, Finland*
- MA8b2-4 A Software LDPC Decoder Implemented on a Many-Core Array of Programmable Processors  
*Brent Bohnenstiehl, Bevan Baas, University of California, Davis, United States*

## **Session MA8b3 Adaptive Filtering**

Chair: *Jacob Gunther, Utah State University*

10:15 AM–11:55 AM

- MA8b3-1 Transform Domain LMF Algorithm for Sparse System Identification under Low SNR  
*Murwan Bashir, Azzedine Zerguine, KFUPM, Saudi Arabia*
- MA8b3-2 Incorporating Signal History Into Transfer Logic for Two-Path Echo Cancelers  
*Jacob H. Gunther, Todd K. Moon, Utah State University, United States*
- MA8b3-3 Performance Comparisons of Three IIR Structures for Adaptive System Identification Based on Genetic Algorithms (GA)  
*Xin Shao, Guoxin Sun, William Jenkins, Pennsylvania State University, United States*

## **Session MA8b4 Synchronization and Localization**

Chair: *Florian Roemer, Ilmenau University of Technology*

10:15 AM–11:55 AM

- MA8b4-1 Greedy Node Localization in Mobile Sensor Networks using Doppler Frequency Shift  
*Sudhir Kumar, Shriman Tiwari, Rajesh Hegde, Indian Institute of Technology, Kanpur, India, India*

- MA8b4-2 Compressed Temporal Synchronization with Opportunistic Signals  
*Mohamed Ibrahim, Florian Roemer, Technische Universität Ilmenau, Germany; Niels Hadaschik, Fraunhofer Institute for Integrated Circuits IIS, Germany; Hans-Martin Tröger, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany; Benjamin Sackenreuter, Norbert Franke, Fraunhofer Institute for Integrated Circuits IIS, Germany; Joerg Robert, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany; Giovanni Del Galdo, Fraunhofer Institute for Integrated Circuits IIS, Germany*
- MA8b4-3 Synchronization and Delay Estimation with Sub-Tick Resolution  
*Bernhard Eitzlinger, Nino Palaoro, Andreas Springer, Johannes Kepler University, Linz, Austria, Austria*
- MA8b4-4 Single-Anchor Localization in Inductively Coupled Sensor Networks using Passive Relays and Load Switching  
*Eric Slotke, Armin Wittneben, ETH Zurich, Switzerland*

## **Session MP1a Underwater Acoustic Communications and Signal Processing**

Chair: *Milica Stojanovic, Northeastern University*

- MP1a-1 Challenges and Analysis of Adaptive Multichannel Equalization for Large-N Arrays 1:30 PM  
*James Preisig, JPAanalytics LLC, United States*
- MP1a-2 Noise Variance Estimation for Signal and Noise Subspace Models 1:55 PM  
*Magnus Nordenvaad, Swedish Defence Research Agency (FOI), Sweden*
- MP1a-3 Experimental Results with HFModem for High Bandwidth Applications 2:20 PM  
*Thomas Riedl, Andrew Bean, James Younce, OceanComm, Incorporated, United States; Toros Arikian, Andrew Singer, University of Illinois at Urbana Champaign, United States*
- MP1a-4 Structured Compressive Methods for Wideband Signal Localization 2:45 PM  
*Sajjad Beygi, Urbashi Mitra, University of Southern California, United States*

## **Session MP1b Physical Layer Security**

Chair: *Mario Goldenbaum, Princeton University*

- MP1b-1 Can Linear Minimum Storage Regenerating Codes Be Universally Secure? 3:30 PM  
*Sreechakra Goparaju, University of California, San Diego, United States; Salim El Rouayheb, Illinois Institute of Technology, United States; Robert Calderbank, Duke University, United States*

- MP1b-2    Secure Degrees of Freedom of the Gaussian MIMO Multiple Access Wiretap Channel    3:55 PM  
*Pritam Mukherjee, Sennur Ulukus, University of Maryland, United States*
- MP1b-3    Strong Secrecy for Interference Channels from Channel Resolvability    4:20 PM  
*Zhao Wang, Royal Institute of Technology (KTH), Sweden; Rafael F. Schaefer, Princeton University, United States; Mikael Skoglund, Royal Institute of Technology (KTH), Sweden; H. Vincent Poor, Princeton University, United States; Ming Xiao, Royal Institute of Technology (KTH), Sweden*
- MP1b-4    The Multiple-Access Channel with an External Eavesdropper: Trusted vs. Untrusted Users    4:45 PM  
*Mario Goldenbaum, Technische Universität Berlin, Germany; Rafael F. Schaefer, H. Vincent Poor, Princeton University, United States*

## **Session MP2      Distributed Coherent Communication Systems**

Co-Chairs: *D. Richard Brown III, Worcester Polytechnic Institute and Daniel Bliss, Arizona State University*

- MP2-1    An Approach to Kalman Filtering for Oscillator Tracking    1:30 PM  
*Sairam Goguri, Soura Dasgupta, University of Iowa, United States*
- MP2-2    Rate Adaptive Distributed Source Coding for Wireless Applications    1:55 PM  
*Nicholas Chang, Anthony Triolo, Joseph Liberti, Applied Communication Sciences, United States*
- MP2-3    Wideband Retrodirective Distributed Transmit Beamforming with Endogenous Relative Calibration    2:20 PM  
*Raghuraman Mudumbai, University of Iowa, United States; Patrick Bidigare, Raytheon BBN Technologies, United States; D. Richard Brown III, Worcester Polytechnic Institute, United States; Upamanyu Madhow, University of California, Santa Barbara, United States; Soura Dasgupta, Amy Kumar, Ben Peiffer, University of Iowa, United States*
- MP2-4    Algorithms and Protocols for Wideband DMIMO    2:45 PM  
*Muhammed Faruk Gencel, Maryam Eslami Rasekh, Upamanyu Madhow, University of California, Santa Barbara, United States*
- BREAK    3:10 PM
- MP2-5    Bounds on the Information Capacity of a Broadcast Channel with Quantizing Receivers    3:30 PM  
*Christian Chapman, Arizona State University, United States; Adam Margetts, MIT Lincoln Laboratory, United States; Daniel Bliss, Arizona State University, United States*



- MP3-7      Towards a P2P Mobile Contents Trading      4:20 PM  
*Sameh Hosny, Faisal Alotaibi, Hesham El Gamal, Atilla Eryilmaz, The Ohio State University, United States*
- MP3-8      Cell-Free Massive MIMO Versus Small Cells      4:45 PM  
*Hien Ngo, Linköping University, Sweden; Alexei Ashikhmin, Hong Yang, Bell Labs, United States; Erik G. Larsson, Linköping University, Sweden; Thomas L. Marzetta, Bell Laboratories, Alcatel-Lucent, United States*

### **Session MP4a      Distributed Signal Processing**

Chair: *Cihan Tepedelenlioglu, Arizona State University*

- MP4a-1      Budgeted Kalman Filtering and Smoothing      1:30 PM  
 for Economical Tracking with Big Distributed Data  
*Dimitris Berberidis, Georgios B. Giannakis, University of Minnesota, United States*
- MP4a-2      Detection of Data Injection Attacks in      1:55 PM  
 Decentralized Learning  
*Reinhard Gentz, Hoi-To Wai, Anna Scaglione, Arizona State University, United States; Amir Leshem, Bar-Ilan University, Israel*
- MP4a-3      Distributed Clustering Based on Message      2:20 PM  
 Passing  
*Songtao Lu, Zhengdao Wang, Iowa State University, United States*
- MP4a-4      Distributed Node Counting in Wireless      2:45 PM  
 Sensor Networks  
*Sai Zhang, Cihan Tepedelenlioglu, Andreas Spanias, Arizona State University, United States; Mahesh Banavar, Clarkson University, United States*

### **Session MP4b      Designing Sparse Sensing Structures**

Chair: *Geert Leus, Delft University of Technology*

- MP4b-1      On Optimal Sensor Collaboration for      3:30 PM  
 Distributed Estimation with Individual Power Constraints  
*Sijia Liu, Syracuse University, United States; Swarnendu Kar, Intel Corporation, United States; Makan Fardad, Pramod Varshney, Syracuse University, United States*
- MP4b-2      Optimal Sensor and Actuator Selection for      3:55 PM  
 Large-Scale Dynamical Systems  
*Neil Dhingra, Mihailo Jovanovic, Zhi-Quan Luo, University of Minnesota, United States*
- MP4b-3      Information Discovery in Heterogeneous      4:20 PM  
 Sensor Networks via Regularized Canonical Correlations  
*Jia Chen, Ioannis Schizas, University of Texas at Arlington, United States*
- MP4b-4      Sparse Sensing for Estimation with      4:45 PM  
 Correlated Observations  
*Sundeep Prabhakar Chepuri, Geert Leus, Delft University of Technology, Netherlands*

## Session MP5a Co-Prime Arrays

Chair: *Ali Pezeshki, Colorado State University*

- MP5a-1 Performance Breakdown in Parameter Estimation using Co-Prime Arrays 1:30 PM  
*Pooria Pakrooh, Louis Scharf, Ali Pezeshki, Colorado State University, United States*
- MP5a-2 Detecting Gaussian Signals in the Presence of Interferers using the Coprime Sensor Arrays with the Min Processor 1:55 PM  
*Yang Liu, John Buck, University of Massachusetts Dartmouth, United States*
- MP5a-3 Multitapered Power Spectral Density Estimation for Co-Prime Sensor Arrays 2:20 PM  
*Ian Rooney, John Buck, University of Massachusetts Dartmouth, United States*
- MP5a-4 Co-Prime Array Processing with Sum and Difference Co-Array 2:45 PM  
*Xiaomeng Wang, Xin Wang, Stony Brook University, United States; Xuehong Lin, Beijing University of Posts and Telecomm., China*

## Session MP5b MIMO Radar

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

- MP5b-1 Reducing the Effects of Training Data Heterogeneity in Multistatic MIMO Radar 3:30 PM  
*Tariq Qureshi, Muralidhar Rangaswamy, Air Force Research Laboratory, United States; Kristine Bell, Metron Inc., United States*
- MP5b-2 Coherent MIMO Radar with Sparse Recovery: Joint vs. Separate Range and Azimuth Estimation 3:55 PM  
*Lorenz Weiland, Thomas Wiese, Wolfgang Utschick, Technische Universität München, Germany*
- MP5b-3 Three Dimensional Compressive Sensing in MIMO Radar 4:20 PM  
*Yaqi Liu, Jun Tang, Ning Zhang, Wei Zhu, Tsinghua University, China*

## Session MP6 Signal Processing and Optimization Methods for Big Data Analytics

Chair: *Gesualdo Scutari, Purdue University*

- MP6-1 Fitting Graph Models to Big Data 1:30 PM  
*Jonathan Mei, José M.F. Moura, Carnegie Mellon University, United States*
- MP6-2 Robust Low-Rank Optimization for Large Scale Problems 1:55 PM  
*Licheng Zhao, Prabhu Babu, Daniel P. Palomar, Hong Kong University of Science and Technology, China*

MP6-3	Solvetime Complexity for Parallel Optimization <i>Peter Richtarik, University of Edinburgh, United Kingdom; Martin Takac, Lehigh University, United States</i>	2:20 PM
MP6-4	A Distributed Strategy for Computing Proximity Operators <i>Feriel Abboud, Emilie Chouzenoux, Jean-Christophe Pesquet, Universite Paris-Est Marne-la-Vallee, France; Jean-Hugues Chenot, Louis Laborelli, Institut national de l'audiovisuel, France</i>	2:45 PM
	BREAK	3:10 PM
MP6-5	Max-Min Feasible Point Pursuit for Nonconvex QCQP <i>Charilaos Kanatsoulis, Nicholas Sidiropoulos, University of Minnesota, United States</i>	3:30 PM
MP6-6	A Family of Friendly Proximals <i>Michael Friedlander, Gabriel Goh, University of California, Davis, United States</i>	3:55 PM
MP6-7	Decentralized Double Stochastic Averaging Gradient <i>Aryan Mokhtari, Alejandro Ribeiro, University of Pennsylvania, United States</i>	4:20 PM
MP6-8	Nonconvex Distributed Optimization over Graphs <i>Paolo Di Lorenzo, "Sapienza" University of Rome, Italy; Gesualdo Scutari, Purdue University, United States</i>	4:45 PM

## **Session MP7a    Signal Processing in Biology: Theoretical Advances and Open Problems**

Co-Chairs: *Byung-Jun Yoon, Texas A&M University and Xiaoning Qian, Texas A&M University*

MP7a-1	A Risk-Based Approach to Optimal Clustering under Random Labeled Point Processes <i>Lori Dalton, The Ohio State University, United States</i>	1:30 PM
MP7a-2	Small Data Is the Problem <i>Edward Dougherty, Texas A&amp;M University, United States; Lori Dalton, Ohio State University, United States; Frank Alexander, Los Alamos National Laboratory, United States</i>	1:55 PM
MP7a-3	Infinite Vocabulary Naive Bayes Classifiers <i>Mingyuan Zhou, University of Texas at Austin, United States</i>	2:20 PM
MP7a-4	Optimal Gene Regulatory Network Inference using the Boolean Kalman Filter and Multiple Model Adaptive Estimation <i>Mahdi Imani, Ulisses Braga-Neto, Texas A&amp;M University, United States</i>	2:45 PM



## **Session MP7b ECG and EEG Signal Processing**

Chair: *Francisco Solis, Arizona State University*

- MP7b-1 Adaptive EEG Artifact Suppression using Gaussian Mixture Modeling 3:30 PM  
*Francisco Solis, Alexander Maurer, Jiewei Jiang, Antonia Papandreou-Suppappola, Arizona State University, United States*
- MP7b-2 Signal Denoising via Quadratic Semi-Infinite Programming 3:55 PM  
*Carlos Davila, Southern Methodist University, United States*
- MP7b-3 Heart Rate Estimation from Photoplethysmogram During Intensive Physical Exercise using Non-Parametric Bayesian Factor Analysis 4:20 PM  
*Sandep Dsouza, Siddharth Jar, Indian Institute of Technology Kharagpur, India; Mahasweta Chakraborti, Anvesha Chatterjee, Jadavpur University, India; Priyadip Ray, Indian Institute of Technology Kharagpur, India*

## **Session MP8a1 Implementation of Digital Signal Processing Algorithms**

Chair: *Majid Ahmadi, University of Windsor*

1:30 PM–3:10 PM

- MP8a1-1 CRT RSA Decryption: Modular Exponentiation Based Solely on Montgomery Multiplication  
*Joao Carlos Neto, University of Sao Paulo, Brazil; Alexandre Tenca, Synopsys, Inc., United States; Wilson Ruggiero, University of Sao Paulo, Brazil*
- MP8a1-2 Low Power Design of a Word-Level Finite Field Multiplier using Reordered Normal Basis  
*Parham Hosseinzadeh Namin, Roberto Muscedere, Majid Ahmadi, University of Windsor, Canada*
- MP8a1-3 Canonic Real-Valued Radix-2<sup>n</sup> FFT Computations  
*Yingjie Lao, Keshab Parhi, University of Minnesota, Twin Cities, United States*
- MP8a1-4 A Low Power Radix-2 FFT Accelerator for FPGA  
*Soumak Mookherjee, Linda DeBrunner, Victor DeBrunner, Florida State University, United States*
- MP8a1-5 Indoor Fall Detection using a Network of Seismic Sensors  
*Halil Ibrahim Sümer, Sevgi Zübeyde Gürbüz, TOBB University of Economics and Technology, Turkey*

## Session MP8a2 Sparsity and Compressed Sensing

Chair: *Piya Pal, University of Maryland*

1:30 PM–3:10 PM

- MP8a2-1 RSCS: Minimum Measurement MMV Deterministic Compressed Sensing Based on Complex Reed Solomon Coding  
*Tobias Schnier, Carsten Bockelmann, Armin Dekorsy, Universität Bremen, Germany*
- MP8a2-2 Autoregressive Process Parameter Estimation from Compressed Sensing Measurements  
*Matteo Testa, Enrico Magli, Politecnico di Torino, Italy*
- MP8a2-3 An Adaptive Greedy Pursuit Algorithm for Pulse-Doppler Radar  
*Abdur Rahman Maud, Mark Bell, Purdue University, United States*
- MP8a2-4 Dictionary Learning from Quadratic Measurements in Block Sparse Models  
*Piya Pal, University of Maryland, College Park, United States*
- MP8a2-5 Signal Parameter Estimation Performance under a Sampling Rate Constraint  
*Andreas Lenz, Manuel Stein, Josef A. Nossek, Technische Universität München, Germany*
- MP8a2-6 On the Block-Sparse Solution of Single Measurement Vectors  
*Mohammad Shekaramiz, Todd K. Moon, Jacob H. Gunther, Utah State University, United States*
- MP8a2-7 Distributed Compression and Maximum Likelihood Reconstruction of Finite Autocorrelation Sequences  
*Aritra Konar, Nicholas Sidiropoulos, University of Minnesota, United States*
- MP8a2-8 A Study on the Impact of the Fourier Transform on Hirschman Uncertainty  
*Kirandeep Ghuman, Victor DeBrunner, Florida State University, United States*
- MP8a2-9 Minimal Dictionaries for Spanning Periodic Signals  
*Srikanth V. Tenneti, P. P. Vaidyanathan, California Institute of Technology, United States*

## Session MP8a3 Applications of Adaptive Signal Processing

Chair: *George Moore, Keysight Technologies*

1:30 PM–3:10 PM

- MP8a3-1 Dithered Multi-Pulsing and Non-Parametric Statistical Inference Algorithm for Time-of-Flight Mass Spectrometry  
*George Moore, Keysight Technologies, United States*

- MP8a3-2 Correlated Maximum Likelihood Temperature/  
Emissivity Separation of Hyperspectral Images  
*David Neal, Todd K. Moon, Jacob H. Gunther, Utah State  
University, United States; Gustavious Williams, Brigham  
Young University, United States*
- MP8a3-3 Probabilistic Low-Rank Matrix Recovery from  
Quantized Measurements: Application to Image  
Denoising  
*Sonia Bhaskar, Stanford University, United States*

## Session MP8a4 Wireless and Sensor Networks

Chair: *Fatemeh Afghah, Northern Arizona University*

1:30 PM–3:10 PM

- MP8a4-1 Implementation of Fog Computing for Reliable E-Health  
Applications  
*Razvan Craciunescu, Alben Mihovska, Mihail Mihaylov,  
Sofoklis Kyriazakos, Ramjee Prasad, Aalborg University,  
Denmark; Simona Halunga, University Politehnica of  
Bucharest, Romania*
- MP8a4-2 Context-Aware D2D Peer Selection for Load  
Distribution in LTE Networks  
*Nima Namvar, Niloofar Bahadori, Fatemeh Afghah, North  
Carolina A&T State University, United States*
- MP8a4-3 Using Mobility for Increasing the Energy Efficiency of  
Multihop Communications  
*Fernando Rosas, Mahdi Azari, Bertold Van den Bergh,  
KU Leuven, Belgium; Richard Demo Souza, Federal  
University of Technology - Paraná (UTFPR), Brazil; Sofie  
Pollin, Marian Verhelst, KU Leuven, Belgium*
- MP8a4-4 Instantaneous Relaying for the 3-Way Relay Channel  
with Circular Message Exchanges  
*Bho Matthiesen, Eduard A. Jorswieck, Technische  
Universität Dresden, Germany*

## Session TA1a Topics in Communications

Chair: *Fatemeh Afghah, Northern Arizona University*

- TA1a-1 Covert Communication with the Help of an Uninformed  
Jammer Achieves Positive Rate 8:15 AM  
*Tamara Sobers, Boulat Bash, Dennis Goeckel, University  
of Massachusetts Amherst, United States; Saikat Guha,  
Raytheon BBN Technologies, United States; Don Towsley,  
University of Massachusetts Amherst, United States*
- TA1a-2 Cooperative Power and DoT Estimation for a Directive  
Source 8:40 AM  
*Sina Maleki, University of Luxembourg, Luxembourg;  
Philippe Ciblat, Telecom ParisTech, France; Symeon  
Chatzinotas, University of Luxembourg, Luxembourg;  
Dzevdan Kapetanovic, Ericsson, Sweden; Björn Ottersten,  
University of Luxembourg, Luxembourg*
- TA1a-3 BER Analysis of High Speed Links with Nonlinearity  
9:05 AM  
*Gaurav Malhotra, Jalil Kamali, Samsung, United States*

## **Session TA1b Coding and Signal Processing for Modern Memories**

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

- TA1b-1 Signal Processing Techniques for Ensuring Fidelity of Back-End Signal Transmission in Flash Memory Based Solid-State Drives 10:15 AM  
*Ravi Motwani, Intel, United States*
- TA1b-2 Dynamic Voltage Allocation with Quantized Voltage Levels and Simplified Channel Modeling 10:40 AM  
*Haobo Wang, Nathan Wong, Richard Wesel, University of California, Los Angeles, United States*
- TA1b-3 Compensating for Sneak Currents in Multi-Level Crossbar Resistive Memories 11:05 AM  
*Tianqiong Luo, Purdue University, United States; Olga Milenkovic, University of Illinois Urbana-Champaign, United States; Borja Peleato, Purdue University, United States*
- TA1b-4 Asymmetric Error Control Coding Techniques for Flash Memories: Theory and Applications 11:30 AM  
*Frederic Sala, Clayton Schoeny, Ahmed Hareedy, Dariush Divsalar, Lara Dolecek, University of California, Los Angeles, United States*

## **Session TA2a All About Spectrum**

Chair: *Dongning Guo, Northwestern University*

- TA2a-1 Spectrum Policy in 21st Century - Where are We Going, Why, and What are the Technology Implications? 8:15 AM  
*Dennis Roberson, Illinois Institute of Technology, United States*
- TA2a-2 Competition and Investment in Shared Spectrum 8:40 AM  
*Chang Liu, Randall Berry, Northwestern University, United States*
- TA2a-3 Covariance Shaping for Interference Coordination in Cellular Wireless Communication Systems 9:05 AM  
*Michael Newinger, Wolfgang Utschick, Technische Universität München, Germany*
- TA2a-4 Optimal Resource Allocation in Ultra-Dense Networks with Many Carriers 9:30 AM  
*Jialing Liu, Weimin Xiao, Huawei Technologies Co., Ltd., United States*

## **Session TA2b Methodologies for Signal Processing on Random Graphs**

Chair: *Laura Cottatellucci, EURECOM*

- TA2b-1 Information Propagation in Clustered Multi-Layer Networks 10:15 AM  
*Yong Zhuang, Osman Yagan, Carnegie Mellon University, United States*

- TA2b-2 Community Mining with Graph Wavelets for Correlation Matrices 10:40 AM  
*Pierre Borgnat, Ecole normale supérieure de Lyon, CNRS, France; Paulo Gonçalves, Ecole normale supérieure de Lyon, Inria, France; Nicolas Tremblay, Ecole normale supérieure de Lyon, France*
- TA2b-3 An Exact Large System Analysis of Randomized Kaczmarz Methods 11:05 AM  
*Chuang Wang, Yue Lu, Harvard University, United States*
- TA2b-4 Characterization of Random Matrix Eigenvectors for Stochastic Block Model 11:30 AM  
*Konstantin Avrachenkov, Inria, France; Laura Cottatellucci, EURECOM, France; Arun Kadavankandy, Inria, France*

### Session TA3a Estimation

Chair: *Donald Reid, Lockheed Martin Retiree*

- TA3a-1 High-Accuracy Vehicle Position Estimation using a Cooperative Algorithm with Anchors and Probe Vehicles 8:15 AM  
*Ramez L. Gerges, John J. Shynk, University of California, Santa Barbara, United States; Suk-Seung Huang, Chosun University, Republic of Korea*
- TA3a-2 Prediction-Correction Methods for Time-Varying Convex Optimization 8:40 AM  
*Andrea Simonetto, Delft University of Technology, Netherlands; Alec Koppel, Aryan Mokhtari, University of Pennsylvania, United States; Geert Leus, Delft University of Technology, Netherlands; Alejandro Ribeiro, University of Pennsylvania, United States*
- TA3a-3 Improving Convergence of Distributed LMS Estimation by Enabling Propagation of Good Estimates Through Bad Nodes 9:05 AM  
*Kevin Wagner, Naval Research Laboratory, United States; Milos Doroslovacki, The George Washington University, United States*
- TA3a-4 Distributed Covariance Estimation for Compressive Signal Processing 9:30 AM  
*Matteo Testa, Enrico Magli, Politecnico di Torino, Italy*

### Session TA3b Wearable and Body Area Networks

Co-Chairs: *Robert W. Heath, Jr., University of Texas at Austin and Angel Lozano, Universitat Pompeu Fabra*

- TA3b-1 Reducing Random Access Collisions via Machine Learning 10:15 AM  
*Alexander Pyattaev, Tampere University of Technology, Finland; Kerstin Johnsson, Intel, United States; Olga Galinina, Sergey Andreev, Yevgeni Koucheryavy, Tampere University of Technology, Finland*
- TA3b-2 Channel Dynamics in Body Area Networks: Recent Results and Challenges 10:40 AM  
*Claude Oestges, UCLouvain, Belgium*

TA3b-3 Analysis of Millimeter-Wave Networked Wearables in Crowded Environments 11:05 AM  
*Kiran Venugopal, University of Texas at Austin, United States; Matthew Valenti, University of West Virginia, United States; Robert W. Heath Jr., University of Texas at Austin, United States*

TA3b-4 Characterizing Fading in Wearable Communications Channels using Composite Models 11:30 AM  
*Simon Cotton, Seong Ki Yoo, Queen's University Belfast, United Kingdom; Paschalis Sofotasios, Tampere University of Technology, Finland*

## Session TA5a Smart Grid

Chair: *Ermin Wei, Northwestern University*

TA5a-1 The Perils of Dynamic Electricity Pricing in the Presence of Retail Market Power 8:15 AM  
*Mahnoosh Alizadeh, Andrea Goldsmith, Stanford University, United States; Anna Scaglione, Arizona State University, United States*

TA5a-2 Value of Limited Communication in Voltage Regulation of Distribution Systems 8:40 AM  
*Baosen Zhang, University of Washington, United States; Alejandro Dominguez-Garcia, University of Illinois at Urbana-Champaign, United States; David Tse, Stanford University, United States*

TA5a-3 Control of Electric Car Sharing Networks 9:05 AM  
*Kia Khezeli, Eilyan Bitar, Cornell University, United States*

TA5a-4 Efficiency Of Supply Function Equilibrium In Networked Markets 9:30 AM  
*Yuanzhang Xiao, Chaithanya Bandi, Ermin Wei, Northwestern University, United States*

## Session TA5b Energy Management

Chair: *Nikolaos Gatsis, The University of Texas at San Antonio*

TA5b-1 Risk-Averse Placement and Sizing of Photovoltaic Generators in Radial Distribution Networks 10:15 AM  
*Mohammadhafez Bazrafshan, Nikolaos Gatsis, University of Texas at San Antonio, United States*

TA5b-2 Towards Green Distributed Storage Systems 10:40 AM  
*Abdelrahman Ibrahim, Ahmed Zewail, Aylin Yener, The Pennsylvania State University, United States*

TA5b-3 Joint Real-Time Energy and Demand-Response Management using a Hybrid Coalitional-Noncooperative Game 11:05 AM  
*Fulin He, Huazhong University of Science and Technology, United States; Yi Gu, Jun Hao, Jun Jason Zhang, University of Denver, United States; Jiaolong Wei, Huazhong University of Science and Technology, United States; Yingchen Zhang, National Renewable Energy Laboratory, United States*

## Session TA6 Massive MIMO

Chair: *Alexei Ashikhmin, Bell-Labs, Alcatel-Lucent*

- TA6-1 Cell-Free Massive MIMO Systems 8:15 AM  
*Elna Nayebi, University of California, San Diego, United States; Alexei Ashikhmin, Thomas L. Marzetta, Hong Yang, Bell Laboratories, Alcatel-Lucent, United States*
- TA6-2 Multi-Stage Beamforming for Interference 8:40 AM  
Coordination in Massive MIMO Networks  
*Martin Kurras, Lars Thiele, Fraunhofer Institute for Telecommunications, Germany; Giuseppe Caire, Technische Universität Berlin, Germany*
- TA6-3 Angle of Arrival Based Beamforming 9:05 AM  
Schemes for Massive MIMO FDD Systems  
*Xing Zhang, John Tadrous, Evan Everett, Rice University, United States; Feng Xue, Intel Corporation, United States; Ashutosh Sabharwal, Rice University, United States*
- TA6-4 An Enhanced Threshold-Based Feedback 9:30 AM  
Scheme for Massive MU-MIMO Downlink FDD Systems  
*Jinsoon Kim, Wonjae Shin, Yonghee Han, Jungwoo Lee, Seoul National University, Republic of Korea*

## Session TA7 Arithmetic

Co-Chairs: *Milos Ercegovic, University of California, Los Angeles and Peter-Michael Seidel, University of Hawaii at Manoa*

- TA7-1 24-Bit Significand Multiplier for FPGA 8:15 AM  
Floating-Point Multiplication  
*E. George Walters III, Penn State Erie, United States*
- TA7-2 Exploiting Asymmetry in Booth-Encoded 8:40 AM  
Multipliers for Reduced Energy Multiplication  
*Mike O'Connor, NVIDIA / University of Texas at Austin, United States; Earl E. Swartzlander, Jr., University of Texas at Austin, United States*
- TA7-3 A Parametric Error Analysis of Goldschmidt's 9:05 AM  
Square Root Algorithm  
*Peter-Michael Seidel, University of Hawai'i at Manoa, United States*
- TA7-4 Area Efficient Backprojection Computation 9:30 AM  
with Reduced Floating-Point Word Width for SAR Image Formation  
*Jon Pimentel, Aaron Stillmaker, Brent Bohnenstiehl, Bevan Baas, University of California, Davis, United States*
- BREAK 9:55 AM
- TA7-5 Determining Fixed-Point Formats for a 10:15 AM  
Digital Filter Implementation using the Worst-Case Peak Gain Measure  
*Anastasia Volkova, Thibault Hilaire, Christoph Lauter, University of Pierre and Marie Curie, France*
- TA7-6 Easing Development of Precision-Sensitive 10:40 AM  
Applications with a Beyond-Quad-Precision Library  
*Christoph Lauter, Sorbonne Universités, UPMC Univ Paris 06, UMR 7606, LIP6, France*

TA7-7      An Error-Compensated Piecewise Linear      11:05 AM  
Logarithmic Arithmetic Unit for Phong Lighting  
Acceleration  
*Ching-En Lee, Milos Ercegovac, University of California,  
Los Angeles, United States*

## **Session TA8a1    Biomedical Signal Processing I**

Chair: *Jun Jason Zhang, University of Denver*

8:15 AM–9:55 AM

- TA8a1-1    Regularization Parameter Trimming for Iterative Image  
Reconstruction  
*Haoyi Liang, Daniel Weller, University of Virginia,  
United States*
- TA8a1-2    Iterative Reconstruction from Limited Angle, Limited  
View Projections for Cryo-Electron Tomography  
*Sally Wood, Santa Clara University, United States;  
Ernesto Fontenla, Baylor College of Medicine, United  
States; Chris Metzler, Rice University, United States; Wah  
Chiu, Baylor College of Medicine, United States; Richard  
Baraniuk, Rice University, United States*
- TA8a1-3    A Parametric Model for Heart Sounds  
*Roilhi Frajo Ibarra, Miguel Angel Alonso, Salvador  
Villarreal, Carlos Ivan Nieblas, CICESE, Mexico*
- TA8a1-4    Experimental Evaluations of Sequential Adaptive  
Processing for Fetal Electrocardiograms (ECGs)  
*Ziyan Yao, Yuqing Dong, William Jenkins, Pennsylvania  
State University, United States*
- TA8a1-5    Seizure Prediction using Cross-Correlation and  
Classification Tree  
*Zisheng Zhang, Thomas Henry, Keshab Parhi, University  
of Minnesota, United States*
- TA8a1-6    A New Approach for Automated Detection of Behavioral  
Task Onset for Patients with Parkinson's Disease using  
Subthalamic Nucleus Local Field Potentials  
*Nazanin Zaker, Jun Jason Zhang, University of Denver,  
United States; Sara Hanrahan, Joshua Nedrud, Adam  
Hebb, Colorado Neurological Institute, United States*
- TA8a1-7    A Joint Sparsity and Linear Regression Based Method  
for Customization of Median Plane HRIR  
*Sandeep Reddy C, Rajesh M Hegde, Indian Institute of  
Technology Kanpur, India*
- TA8a1-8    Non-Contact Heart Rate Detection via Periodic Signal  
Detection Methods  
*Gizem Tabak, Andrew Singer, University of Illinois at  
Urbana-Champaign, United States*



## **Session TA8a2 Relayed Communications I**

Chair: *Jiaxin Yang, McGill University*

8:15 AM–9:55 AM

- TA8a2-1 Optimal Equalization and Network Beamforming in Asynchronous Two-Way Relay Networks  
*Farzaneh Eshaghian Dorcheh, Shahram ShahbazPanahi, University of Ontario Institute of Technology, Canada*
- TA8a2-2 Symmetric Beamforming for Multi-Antenna Two-Way Relay Networks  
*Razgar Rahimi, Shahram ShahbazPanahi, University of Ontario Institute of Technology, Canada*
- TA8a2-3 Maximum Likelihood Channel Estimation for Full Duplex Relay  
*Xiaofeng Li, Cihan Tepedelenlioglu, Arizona State University, United States*
- TA8a2-4 Power Allocation for Three-Phase Two-Way Relay Networks with Simultaneous Wireless Information and Power Transfer  
*Shahab Farazi, D. Richard Brown III, Worcester Polytechnic Institute, United States; Andrew G. Klein, Western Washington University, United States*
- TA8a2-5 Online Power Control for Cooperative Relaying with Energy Harvesting  
*Fatemeh Amirnavaei, Min Dong, University of Ontario Institute of Technology, Canada*
- TA8a2-6 Transmission Power Optimization for Energy Harvesting Wireless Nodes  
*Remun Koirala, Stefano Severi, Giuseppe Abreu, Jacobs University Bremen, Germany*

## **Session TA8b1 Sampling, Sensing and Detection**

Chair: *James Ritcey, University of Washington*

10:15 AM–11:55 AM

- TA8b1-1 On the Convergence Between Natural Sampling and Uniform Sampling  
*Noyan Sevuhtekin, Andrew Singer, University of Illinois at Urbana-Champaign, United States*
- TA8b1-2 Bayesian Interpretation of the Partial Area under the ROC with Applications to Spectrum Sensing  
*James Ritcey, University of Washington, United States*
- TA8b1-3 Order Recognition of Continuous-Phase FSK  
*Mohammad Bari, Milos Doroslovacki, George Washington University, United States*
- TA8b1-4 Separation of Signals Consisting of Amplitude and Instantaneous Frequency RRC Pulses using SNR Uniform Training  
*Mohammad Bari, Milos Doroslovacki, George Washington University, United States*

## **Session TA8b2 Biomedical Signal Processing II**

Chair: *Jun Jason Zhang, University of Denver*

10:15 AM–11:55 AM

- TA8b2-1 Causality Graph Learning on Cortical Information Flow in Parkinson's Disease Patients During Behaviour Tests  
*Abdulaziz Almalaq, Xiaoxiao Dai, Jun Jason Zhang, University of Denver, United States; Sara Hanrahan, Joshua Nedrud, Adam Hebb, Colorado Neurological Institute, United States*
- TA8b2-2 A Cortical Activity Localization Approach for Decoding Finger Movements from Human Electrocorticogram Signal  
*Seyede Mahya Safavi, Alireza S. Behbahani, Ahmed M. Eltawil, Zoran Nenadic, An H. Do, University of California, Irvine, United States*
- TA8b2-3 Momentum Measure for Quantifying Dendritic Cell Movement  
*Caroline Crockett, Elizabeth Orrico, University of Virginia, United States; Sara McArdle, University of California, United States; Klaus Ley, La Jolla Institute for Allergy and Immunology, United States; Scott Acton, University of Virginia, United States*
- TA8b2-4 Neurostimulation using Improved Focusing of Ultrasound  
*Ana Cruz, Pulkit Grover, Carnegie Mellon University, United States*
- TA8b2-5 Towards Achieving the Shannon-Capacity of EEG-Based Brain-Computer Interfaces  
*Pulkit Grover, Carnegie Mellon University, United States*
- TA8b2-6 Intra-Body Communication Model Based on Variable Biological Parameters  
*Ahmed Khorshid, Ahmed M. Eltawil, Fadi Kurdahi, University of California, Irvine, United States*
- TA8b2-7 Controller Structure for Optimized Region of Attraction of Polynomial Systems  
*Zohaib Khalid Qazi, Cranos Williams, North Carolina State University, United States*

## **Session TA8b3 Relayed Communications II**

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

10:15 AM–11:55 AM

- TA8b3-1 Jointly Optimal Distributed Beamforming and Power Control in Asynchronous Two-Way Relay Networks  
*Sahar Bastanirad, Shahram ShahbazPanahi, Ali Grami, University of Ontario Institute of Technology, Canada*
- TA8b3-2 Sum-Rate Maximization for Asynchronous Two-Way Relay Networks  
*Mina Askari, Shahram ShahbazPanahi, University of Ontario Institute of Technology, Canada*

- TA8b3-3 Achievable Degrees of Freedom on K-user MIMO Multi-Way Relay Channel with Common and Private Messages  
*Mohamed Salah, Amr El-Keyi, Nile University, Egypt; Yahya Mohasseb, The Military Technical College, Egypt; Mohammed Nafie, Cairo University, Egypt*
- TA8b3-4 Rate Maximization in Dense Interference Networks using Non-Cooperative Passively Loaded Relays  
*Yahia Hassan, Bernhard Gahr, Armin Wittneben, ETH Zurich, Switzerland*
- TA8b3-5 Multi-User Beamforming-Aided AF Relaying: A Low-Complexity Adaptive Design Approach  
*Jiaxin Yang, McGill University, Canada; Yunlong Cai, Zhejiang University, China; Benoit Champagne, McGill University, Canada; Lajos Hanzo, University of Southampton, United Kingdom*

## Session TP1 Coherent Optical Communications

Chair: *Shiva Kumar, McMaster University*

- TP1-1 Group Delay Statistics and Management in Mode-Division Multiplexing 1:30 PM  
*Sercan Arik, Stanford University, United States; Keang-Po Ho, SiBEAM and Silicon Image, United States; Joseph Kahn, Stanford University, United States*
- TP1-2 Reduction of the Performance Effects of Kerr Nonlinearity in Single Mode Optical Coherent Transmission Systems 1:55 PM  
*Maurice O'Sullivan, Michael Reimer, Qunbi Zhuge, Andrew Shiner, Andrzej Borowiec, Charles Laperle, Ciena incorporated, Canada*
- TP1-3 On the Nonlinear Shannon Limit of Optical Fibers in Networks with Reconfigurable Optical Add-Drop Multiplexers 2:20 PM  
*René-Jean Essiambre, Bell Labs, Alacatel-Lucent, United States*
- TP1-4 100G DWDM Upgrades of Legacy Undersea and Terrestrial Fiber-Optic Systems 2:45 PM  
*Sergey Burtsev, Do-il Chang, Wayne Pelouch, Xtera Communications, Inc., United States*
- BREAK 3:10 PM
- TP1-5 Flexible Transceiver Design for High Capacity Elastic Coherent Transport Systems 3:30 PM  
*David Plant, McGill University, Canada*
- TP1-6 LDPC-Coded Orbital Angular Momentum Modulation Enabling Ultra-High-Speed Transmission over Free-Space Optical Links 3:55 PM  
*Ivan B. Djordjevic, Zhen Qu, University of Arizona, United States*
- TP1-7 Approaches for Nonlinear Interference Mitigation in Fiber-Optic Communication Systems 4:20 PM  
*Ronen Dar, Bell Laboratories, Alcatel-Lucent, United States*

- TP1-8 Mitigation of Fiber Linear and Nonlinear Effects in Coherent Optical Communication Systems 4:45 PM  
*Xiaojun Liang, Shiva Kumar, Jing Shao, McMaster University, Canada*
- TP1-9 QAM Quantum Noise Stream Cipher using Digital Coherent Optical Transmission 5:10 PM  
*Masato Yoshida, Toshihiko Hirooka, Keisuke Kasai, Masataka Nakazawa, Tohoku University, Japan*

## Session TP2 Enabling Technologies for Future Wireless Networks

Chair: *Lingjia Liu, University of Kansas*

- TP2-1 Hardware Implementation of ADMM-Based LP Decoding 1:30 PM  
*Mitch Wasson, Stark Draper, University of Toronto, Canada*
- TP2-2 Directional Neighbor Discovery in Dual-Band Systems 1:55 PM  
*Daoud Burghal, Arash Saber Tehrani, Andreas Molisch, University of Southern California, United States*
- TP2-3 SINR and Throughput Scaling Laws in Ultra Dense Urban Cellular Networks 2:20 PM  
*Abhishek Gupta, University of Texas at Austin, United States; Xinchen Zhang, Qualcomm Inc., United States; Jeffrey Andrews, University of Texas at Austin, United States*
- TP2-4 Overview and Evaluation of Device-To-Device and Licensed Assisted Access for LTE-Advanced 2:45 PM  
*Thomas Novlan, Boon Ng, Jianzhong (Charlie) Zhang, Samsung, United States*
- BREAK 3:10 PM
- TP2-5 Next Generation TDD for Future Wireless Systems 3:30 PM  
*Yongxing Zhou, Huawei Technologies Co., Ltd., China*
- TP2-6 Spectrum Management in 5G: A Tale of Two Timescales 3:55 PM  
*Fei Teng, Dongning Guo, Northwestern University, United States*
- TP2-7 A Minimax Distortion View of Differentially Private Query Release 4:20 PM  
*Weina Wang, Lei Ying, Junshan Zhang, Arizona State University, United States*
- TP2-8 Database- and Sensing-Based Distributed Spectrum Sharing 4:45 PM  
*Mingming Cai, J Nicholas Laneman, University of Notre Dame, United States*
- TP2-9 Resource Allocation for Sensing-Based D2D Networks 5:10 PM  
*Hao Chen, Lingjia Liu, University of Kansas, United States*

## **Session TP3a Social Networks**

Chair: *Vijay Subramanian, University of Michigan*

- TP3a-1 On Rate of Learning in Social Networks 1:30 PM  
*Anusha Lalitha, Tara Javidi, University of California, San Diego, United States; Anand Sarwate, Rutgers University, United States*
- TP3a-2 Achieving Exact Cluster Recovery Threshold 1:55 PM  
via Semidefinite Programming under the Stochastic Block Model  
*Bruce Hajek, Yihong Wu, University of Illinois at Urbana-Champaign, United States; Jiaming Xu, University of Pennsylvania, United States*
- TP3a-3 Generalized Hegselman-Krause Opinion 2:20 PM  
Dynamics from Optimization Rules  
*Avhishek Chatterjee, University of Texas at Austin, United States; Anand Sarwate, Rutgers University, United States; Sriram Viswanath, University of Texas at Austin, United States*
- TP3a-4 Incentive Design for Learning in 2:45 PM  
User-Recommendation Systems  
*Deepanshu Vasal, Achilleas Anastasopoulos, Vijay Subramanian, University of Michigan, United States*

## **Session TP3b Caching in Wireless Networks**

Chair: *Edmund Yeh, Northeastern University*

- TP3b-1 Caching in Combination Networks 3:30 PM  
*Mingyue Ji, University of Southern California, United States; Antonia Tulino, Alcatel Lucent Bell Labs, United States; Giuseppe Caire, Technische Universität Berlin, Germany*
- TP3b-2 Physical Layer Caching for MIMO Relay 3:55 PM  
Channels  
*Wei Han, An Liu, Vincent Lau, HKUST, Hong Kong SAR of China*
- TP3b-3 Throughput-Delay Tradeoffs in 4:20 PM  
Content-Centric Ad Hoc and Heterogeneous  
Wireless Networks  
*Milad Mahdian, Edmund Yeh, Northeastern University, United States*
- TP3b-4 Distributed Caching in Device-To-Device 4:45 PM  
Networks: A Stochastic Geometry Perspective  
*Shankar Krishnan, Harpreet Dhillon, Virginia Tech, United States*

## **Session TP5a Interference Channels**

Chair: *Rasmus Brandt, KTH - Royal Institute of Technology*

- TP5a-1 Interference Alignment-Aided Base Station 1:30 PM  
Clustering using Coalition Formation  
*Rasmus Brandt, Rami Mochaourab, Mats Bengtsson, KTH Royal Institute of Technology, Sweden*

TP5a-2	Interference Alignment using Alignment Matrix <i>Jhanak Parajuli, Giuseppe Abreu, Jacobs University Bremen, Germany</i>	1:55 PM
TP5a-3	Degrees of Freedom for K-user SISO Interference Channels with Blind Interference Alignment <i>Heecheol Yang, Wonjae Shin, Jungwoo Lee, Seoul National University, Republic of Korea</i>	2:20 PM
TP5a-4	Interference-Floor Shaping for Liquid Coverage Zones in Coordinated 5G Networks <i>Lars Thiele, Martin Kurras, Stephan Jaeckel, Fraunhofer HHI, Germany; Wolfgang Zirwas, Nokia, Germany</i>	2:45 PM

## Session TP5b Interference in Networks

Chair: *Motjaba Vaezi, Princeton University*

TP5b-1	Nearly Optimal Non-Gaussian Codes for the Gaussian Interference Channel <i>Alex Dytso, Daniela Tuninetti, Natasha Devroye, University of Illinois at Chicago, United States</i>	3:30 PM
TP5b-2	On Limiting Expressions for the Capacity Regions of Gaussian Interference Channels <i>Motjaba Vaezi, H. Vincent Poor, Princeton University, United States</i>	3:55 PM
TP5b-3	How Large Portion of $K/2$ DoF Can We Achieve at Finite SNR for the Gaussian Interference Channel? <i>Junyoung Nam, Young-Jo Ko, Electronics and Telecommunications Research Institute (ETRI), Republic of Korea</i>	4:20 PM
TP5b-4	A Coordinated Uplink Scheduling and Power Control Algorithm for Multicell Networks <i>Kaiming Shen, Wei Yu, University of Toronto, Canada</i>	4:45 PM
TP5b-5	ITLinQ+: An Improved Spectrum Sharing Mechanism for Device-to-Device Communications <i>Xinping Yi, Giuseppe Caire, Technische Universität Berlin, Germany</i>	5:10 PM

## Session TP6a Multi-Agent Systems and Optimization

Co-Chairs: *Alec Koppel, University of Pennsylvania and Alejandro Ribeiro, University of Pennsylvania*

TP6a-1	Sparsity Aware Dynamic Distributed Compressive Spectrum Sensing and Scheduling <i>Nicolo Michelusi, Urbashi Mitra, University of Southern California, United States</i>	1:30 PM
TP6a-2	A Stochastic Primal-Dual Algorithm for Task-Driven Dictionary Learning in Networks <i>Alec Koppel, University of Pennsylvania, United States; Garrett Warnell, Ethan Stump, U.S. Army Research Laboratory, United States</i>	1:55 PM

TP6a-3 On Asynchronous Implementations of Fictitious Play for Distributed Learning 2:20 PM  
*Brian Swenson, Soumya Kar, Carnegie Mellon University, United States; Joao Xavier, Instituto Superior Tecnico, Portugal*

TP6a-4 Intermittent Connectivity Control in Mobile Robot Networks 2:45 PM  
*Yiannis Kantaros, Michael M. Zavlanos, Duke University, United States*

## **Session TP6b Epidemic Control in Networks**

Co-Chairs: *Victor Preciado, University of Pennsylvania and Cameron Nowzari, University of Pennsylvania*

TP6b-1 Numerical Investigation of Metrics for Epidemic Processes on Graphs 3:30 PM  
*Max Goering, Faryad Darabi Sahneh, Nathan Albin, Caterina Scoglio, Pietro Poggi-Corradini, Kansas State University, United States*

TP6b-2 Sufficient Condition for Survival of the Fittest in a Bi-virus Epidemics 3:55 PM  
*Augusto Santos, José M.F. Moura, Carnegie Mellon University, United States; Joao Xavier, Instituto Superior Tecnico, Portugal*

TP6b-3 Distributed stopping criteria for the Power Iteration applied to virus mitigation 4:20 PM  
*Eduardo Ramirez-Llanos, Sonia Martinez, University of California, San Diego, United States*

TP6b-4 Optimal Resource Allocation for Containing Epidemics on Time-Varying Networks 4:45 PM  
*Cameron Nowzari, University of Pennsylvania, United States*

## **Session TP7a Algorithm and Hardware Aspects for 5G Wireless Systems**

Chair: *Christoph Studer, Cornell University*

TP7a-1 Energy-Proportional Single-Carrier Frequency Domain Equalization for mmWave Wireless Communication 1:30 PM  
*Nicholas Preyss, Sara Rodriguez Egea, Andreas Burg, École Polytechnique Fédérale de Lausanne, Switzerland*

TP7a-2 Low Resolution Adaptive Compressed Sensing with Oversampling for Low Power mmWave MIMO Receivers 1:55 PM  
*Cristian Rusu, Nuria Gonzalez-Prelcic, University of Vigo, Spain; Robert W. Heath Jr., University of Texas at Austin, United States*

TP7a-3 Algorithm and Hardware Aspects on Pre-Coding in Massive MIMO Systems 2:20 PM  
*Hemanth Prabhu, Joachim Neves Rodrigues, Liang Liu, Ove Edfors, Lund University, Sweden*

TP7a-4 Large-Scale MIMO Detection for 5g Multi-Carrier Waveform Candidates 2:45 PM  
*Michael Wu, Engin Tunali, Chris Dick, Xilinx Incorporated, United States; Christoph Studer, Cornell University, United States*

## **Session TP7b VLSI Signal Processing**

Chair: *Keshab Parhi, University of Minnesota*

TP7b-1 Mixed-Signal Circuits for Machine Learning Applications 3:30 PM  
*Boris Murmann, Stanford University, United States*

TP7b-2 Cross-Layer Resilience 3:55 PM  
*Yanjing Li, Intel, United States; Eric Cheng, Hyungmin Cho, Subhasish Mitra, Stanford University, United States*

TP7b-3 List Sphere Decoding of Polar Codes 4:20 PM  
*Seyyed Ali Hashemi, Carlo Condo, Warren J. Gross, McGill University, Canada*

TP7b-4 Architectures for Stochastic Normalized and Modified Lattice IIR Filters 4:45 PM  
*Yin Liu, Keshab Parhi, University of Minnesota, Twin Cities, United States*

## **Session TP8a1 Multicarrier and DFE**

Chair: *fred harris, San Diego State University*

1:30 PM–3:10 PM

TP8a1-1 A Low Complexity Algorithm for Successive Interference Cancellation in Large-Scale MIMO OFDM using Quadratic Programming Formulation  
*Ali Elghariani, Michael Zoltowski, Purdue University, United States*

TP8a1-2 CFO Mitigation using Adaptive Frequency-Domain Decision Feedback Equalization for Uplink SC-FDMA  
*Naveed Iqbal, Azzedine Zerguine, KFUPM, Saudi Arabia; Naofal Al-Dhahir, University of Texas at Dallas, United States*

TP8a1-3 OFDM Channel Estimation via Phase Retrieval  
*Philipp Walk, Henning Becker, Technische Universität München, Germany; Peter Jung, Technische Universität Berlin, Germany*

TP8a1-4 Estimation of the Clipping Level in OFDM Systems  
*Ehsan Olfat, Mats Bengtsson, KTH Royal Institute of Technology, Sweden*

TP8a1-5 A Novel M-FSK Modem Architecture Based on Perfect Reconstruction NMDFBs  
*fred harris, Elettra Venosa, Xiaofei Chaen, San Diego State University, United States*



- TP8a1-6 Sub-Band Digital Predistortion for Noncontiguous Transmissions: Algorithm Development and Real-Time Prototype Implementation  
*Mahmoud Abdelaziz, Tampere University of Technology, Finland; Chance Tarver, Kaipeng Li, Rice University, United States; Lauri Anttila, Mikko Valkama, Tampere University of Technology, Finland; Joseph R. Cavallaro, Rice University, United States*

## **Session TP8a2 Speech and Image Processing**

Chair: *Peter Tay, Western Carolina University*

1:30 PM–3:10 PM

- TP8a2-1 Estimating Speaking Rate in Spontaneous Discourse  
*Yishan Jiao, Visar Berisha, Ming Tu, Julie Liss, Arizona State University, United States*
- TP8a2-2 Image Interpolation Based on Weighting Function of Gaussian  
*Takuro Yamaguchi, Masaaki Ikehara, Yasuhiro Nakajima, Keio University, Japan*
- TP8a2-3 Conjointly Well Localized Modulated Lapped Orthogonal Transforms  
*Peter Tay, Yanjun Yan, Western Carolina University, United States*
- TP8a2-4 Screen Content Image Segmentation using Sparse-Smooth Decomposition  
*Shervin Minaee, Amirali Abdolrashidi, Yao Wang, New York University, United States*

## **Session TP8a3 Communication Techniques for the Downlink**

Chair: *Markku Juntti, University of Oulu*

1:30 PM–3:10 PM

- TP8a3-1 Successive Convex Approximation for Simultaneous Linear TX/RX Design in MIMO BC  
*Jarkko Kaleva, Antti Tölli, Markku Juntti, University of Oulu, Finland*
- TP8a3-2 Per-User Outage-Constrained Power Loading Technique for Robust MISO Downlink  
*Mostafa Medra, Timothy Davidson, McMaster University, Canada*
- TP8a3-3 Pilot Length Optimization for Spatially Correlated Multi-User MIMO Channel Estimation  
*Beatrice Tomasi, Maxime Guillaud, Huawei Technologies Co., Ltd., France*
- TP8a3-4 Overcoming Conjugate Beamforming Limitations with Side-Channel Cooperative Decoders  
*Andrew Kwong, Ashutosh Sabharwal, Rice University, United States*
- TP8a3-5 Minimum Probability of Error Multiuser Transmit Beamforming  
*Majid Bavand, Steven Blostein, Queen's University, Canada*

- TP8a3-6 MIMO Power Minimization with Imperfect CSIT and Prescribed Outage  
*Samip Malla, Giuseppe Abreu, Jacobs University Bremen, Germany*
- TP8a3-7 Downlink Transceiver Beamforming and Admission Control for Massive MIMO Cognitive Radio Networks  
*Shailesh Chaudhari, Danijela Cabric, University of California, Los Angeles, United States*
- TP8a3-8 Optimal Feedback Rate Selection for Energy Harvesting with Distributed Transmit Beamforming  
*Rui Wang, D. Richard Brown III, Worcester Polytechnic Institute, United States*

## **Session TP8a4 Estimation and Learning**

Chair: *Andrew Klein, Western Washington University*

1:30 PM–3:10 PM

- TP8a4-1 Causal Graph Inference  
*Simona Poilinca, Giuseppe Abreu, Jacobs University Bremen, Germany*
- TP8a4-2 A Real-Time Implementation of Precise Timestamp-Free Network Synchronization  
*Stefan Gvozdenovic, Alexander Ryan, Max Li, Radu David, D. Richard Brown III, Worcester Polytechnic Institute, United States; Andrew Klein, Western Washington University, United States*
- TP8a4-3 Diffusion Distance for Signals Supported on Networks  
*Weiyu Huang, Santiago Segarra, Alejandro Ribeiro, University of Pennsylvania, United States*

## **Session TP8b1 Radar Co-existence and Satellite Communications**

Chair: *Daniel Bliss, Arizona State University*

3:30 PM–5:10 PM

- TP8b1-1 Digital Full-Band Linearization of Wideband Direct-Conversion Receiver for Radar and Communications Applications  
*Markus Allén, Jaakko Marttila, Mikko Valkama, Tampere University of Technology, Finland; Simran Singh, Michael Epp, Wolfgang Schlecker, Airbus Group, Germany*
- TP8b1-2 Performance of Joint Radar-Communication System in Doubly-Selective Channels  
*Andrew D. Harper, Georgia Institute of Technology, United States; Jeremy T. Reed, Jonathan L. Odom, Georgia Tech Research Institute, United States; Aaron D. Lanterman, Georgia Institute of Technology, United States*
- TP8b1-4 Constant Information Radar for Dynamic Shared Spectrum Access  
*Bryan Paul, Daniel Bliss, Arizona State University, United States*

TP8b1-5 Effect of Clutter on Joint Radar-Communications System Performance Inner Bounds  
*Alex Chiriyath, Daniel Bliss, Arizona State University, United States*

## **Session TP8b2 Video Processing**

Chair: *Timothy Davidson, McMaster University*

3:30 PM–5:10 PM

- TP8b2-1 Object Recognition in Complex Video Scenes for Advertising Applications  
*Edward Ratner, Lyrical Labs, United States; Schuyler Cullen, Samsung, United States; James Quigley, Gener8 Inc., United States*
- TP8b2-2 Fractal-Based Analysis for Foreground Detection  
*Daniel Raburn, Edward Ratner, Lyrical Labs, United States*
- TP8b2-3 Unsupervised Uncertainty Analysis for Video Saliency Detection  
*Tariq Alshawi, Zhiling Long, Ghassan AlRegib, Georgia Institute of Technology, United States*
- TP8b2-4 Jitter Invariant Incremental Principal Component Pursuit for Video Background Modeling on the TK1  
*Paul Rodriguez, Pontifical Catholic University of Rio de Janeiro, Peru*
- TP8b2-5 Robust and Reliable Counting of Footsteps by Mobile Phone Cameras  
*Koray Ozcan, Anvith Mahabalagiri, Senem Velipasalar, Syracuse University, United States*

## **Session TP8b3 MIMO Links and Uplink**

Chair: *Timothy Davidson, McMaster University*

3:30 PM–5:10 PM

- TP8b3-1 Performance of MIMO Enhanced Spatial Modulation under Imperfect Channel Information  
*Michael Carosino, James Ritcey, University of Washington, United States*
- TP8b3-2 Distributed Uplink CoMP for Small-Cell Networks  
*Shirish Nagaraj, M. R. Raghavendra, Chris Schmidt, Phil Rasky, Deepak Nayak, Xiaoyong Yu, Deepak Pengoria, Nokia, United States; Michael Honig, Northwestern University, United States*

## **Session WA1a    Communications with Low-Precision Analog-to-Digital Converters**

Chair: *Philip Schniter, The Ohio State University*

- WA1a-1    Hardware-Constrained Signal Processing for mm-wave LoS MIMO Links    8:15 AM  
*Babak Mamandipoor, University of California, Santa Barbara, United States; Mahmoud Sawaby, Amin Arbabian, Stanford University, United States; Upamanyu Madhow, University of California, Santa Barbara, United States*
- WA1a-2    Limited Feedback in Multiple-Antenna Systems with One-Bit Quantization    8:40 AM  
*Jianhua Mo, Robert W. Heath Jr., University of Texas at Austin, United States*
- WA1a-3    Spectral Shaping with Low Resolution Signals    9:05 AM  
*Amine Mezghani, Hela Jemma, Josef A. Nossek, Technische Universität München, Germany*
- WA1a-4    Detection of Communication Signals using Stochastic Quantization    9:30 AM  
*Ryan Corey, Andrew Singer, University of Illinois at Urbana-Champaign, United States*

## **Session WA1b    Broadband Access Evolution**

Chair: *George Ginis, ASSIA, Inc.*

- WA1b-1    Improved Polling Strategies for Efficient Flow Control for Buffer Reduction in PON/xDSL Hybrid Access Networks    10:15 AM  
*Anu Mercian, Arizona State University, United States; Elliott Gurrola, Michael McGarry, University of Texas, El Paso, United States; Martin Reisslein, Arizona State University, United States*
- WA1b-2    Signal Processing for G.fast+    10:40 AM  
*Mehdi Mohseni, Ken Kerpez, ASSIA, Inc., United States*
- WA1b-3    A New Approach to Traffic-Aware Real-Time Dynamic Spectrum Management    11:05 AM  
*Chano Gomez, Marvell Semiconductor Inc, United States*
- WA1b-4    Maintaining Harmony in the Vectoring xDSL Family by Spectral Coordination    11:30 AM  
*Martin Wolkerstorfer, Driton Statovci, Sanda Drakulic, The Telecommunications Research Center Vienna, Austria*

## **Session WA2a    Cooperative Communications**

Co-Chairs: *Tony Quek, Singapore University of Technology and Design and Shi Jin, Southeast University*

- WA2a-1    Massive MIMO Feedback Methods under Limited CSI with User Cooperation    8:15 AM  
*Haifan Yin, Laura Cottatellucci, David Gesbert, Eurecom, France*

- WA2a-2 Coordinated Multicell Multiuser Precoding for Maximizing Resource Efficiency 8:40 AM  
*Shiwen He, Ying Lu, Yongming Huang, Shi Jin, Wei Xu, Haiming Wang, Southeast University, China*
- WA2a-3 Can Interference Alignment Impact Network Utility Maximization? 9:05 AM  
*Gokul Sridharan, Wei Yu, University of Toronto, Canada*
- WA2a-4 Towards System Cost Minimization in Cloud Radio Access Network 9:30 AM  
*Jianhua Tang, Wee Peng Tay, Nanyang Technological University, Singapore; Tony Q. S. Quek, Singapore University of Technology and Design, Singapore; Ben Liang, University of Toronto, Canada*

## Session WA2b 5G and mmWave

Chair: *Elisabeth De Carvalho, Aalborg University*

- WA2b-1 A Comparison of Waveform Candidates for 5G Millimeter Wave Systems 10:15 AM  
*Christian Ibars, Utsav Kumar, Huaning Niu, Hyejung Jung, Sameer Pawar, INTEL Corporation, United States*
- WA2b-2 Ping-Pong Beam Training for Reciprocal Channels with Delay Spread 10:40 AM  
*Elisabeth De Carvalho, Jørgen Bach Andersen, Aalborg University, Denmark*
- WA2b-3 On Detection of Pilot Contamination Attack in Multiple Antenna Systems 11:05 AM  
*Jitendra Tugnait, Auburn University, United States*
- WA2b-4 Cell Detection in High Frequency Band Small Cell Networks 11:30 AM  
*Hyejung Jung, Qinghua Li, Pingping Zong, Intel Corporation, United States*

## Session WA3 Sparsity in Signal Processing

Co-Chairs: *Aleksandar Dogandzic, Iowa State University and Piya Pal, University of Maryland*

- WA3-1 Fundamental Limits of Singular Value Based Signal Detection from Randomly Compressed Signal-Plus-Noise Matrices 8:15 AM  
*Nicholas Asendorf, Raj Rao Nadakuditi, University of Michigan, United States*
- WA3-2 Joint Sparsity Pattern Recovery with 1-bit Compressive Sensing in Sensor Networks 8:40 AM  
*Vipul Gupta, Indian Institute of Technology Kanpur, India; Bhavya Kailkhura, Thakshila Wimalajeewa, Pramod Varshney, Syracuse University, United States*
- WA3-3 A Mismatched Greedy Pursuit Algorithm for Sparse Spike Deconvolution 9:05 AM  
*Abdur Rahman Maud, Mark Bell, Purdue University, United States*
- WA3-4 Joint Dictionary Learning and Recovery Algorithms in a Jointly Sparse Framework 9:30 AM  
*Yacong Ding, Bhaskar D. Rao, University of California, San Diego, United States*

- BREAK 9:55 AM
- WA3-5 Distribution of the Fisher Information Loss Due to Random Compressed Sensing 10:15 AM  
*Pooria Pakrooh, Ali Pezeshki, Louis Scharf, Colorado State University, United States; Douglas Cochran, Arizona State University, United States; Stephen D. Howard, Defence Science and Technology Organisation, Australia*
- WA3-6 Nesterov's Proximal-Gradient Signal Recovery from Compressive Poisson Measurements 10:40 AM  
*Renliang Gu, Aleksandar Dogandžic, Iowa State University, United States*
- WA3-7 Exact Bayesian Test for a Common Rank-One Component in White Noise 11:05 AM  
*Songsri Sirianunpiboon, Stephen D. Howard, Defence Science and Technology Organisation, Australia; Douglas Cochran, Arizona State University, United States*
- WA3-8 Rank Deficiency and Sparsity in Partially Observed Multiple Measurement Vector Models 11:30 AM  
*Ali Koochakzadeh, Piya Pal, University of Maryland, College Park, United States*

## **Session WA4 Statistical Signal Processing for Social and Information Networks**

Co-Chairs: *Nadya Bliss, Arizona State University and Benjamin Miller, MIT Lincoln Laboratory*

- WA4-1 Counting Triangles in Real-World Graph Streams: Dealing with Repeated Edges and Time Windows 8:15 AM  
*Madhav Jha, Zenefits, United States; C. Seshadhri, University of California, Santa Cruz, United States; Ali Pinar, Sandia National Laboratories, United States*
- WA4-2 Inside the Atoms: Mining a Network of Networks and Beyond 8:40 AM  
*Hanghang Tong, Arizona State University, United States*
- WA4-3 Sampling and Filtering Operations on Big Data 9:05 AM  
*Vijay Gadepally, Lauren Edwards, Luke Johnson, Maja Milosavljevic, Benjamin Miller, Massachusetts Institute of Technology, United States*
- WA4-4 Improved Hidden Clique Detection by Optimal Linear Fusion of Multiple Adjacency Matrices 9:30 AM  
*Himanshu Nayar, University of Michigan, United States; Rajmonda Caceres, Kelly Geyer, Benjamin Miller, Steven Smith, MIT Lincoln Laboratory, United States; Raj Rao Nadakuditi, University of Michigan, United States*

	BREAK	9:55 AM
WA4-5	Robust Kriged Kalman Filtering <i>Brian Baingana, University of Minnesota, United States; Emiliano Dall'Anese, National Renewable Energy Laboratory, United States; Gonzalo Mateos, University of Rochester, United States; Georgios B. Giannakis, University of Minnesota, United States</i>	10:15 AM
WA4-6	Residuals-Based Subgraph Detection with Cue Vertices <i>Benjamin Miller, Stephen Kelley, Rajmonda Caceres, Steven Smith, Massachusetts Institute of Technology, United States</i>	10:40 AM
WA4-7	Defining and Detecting Signatures of Innovation in Collaboration Networks <i>Nadya Bliss, Manfred Laubichler, Arizona State University, United States</i>	11:05 AM
WA4-8	Diffusion Dynamics in Social Networks of Arbitrary Structure <i>June Zhang, José M.F. Moura, Carnegie Mellon University, United States</i>	11:30 AM

## Session WA5a Sparse Estimation

Chair: *Vitor Nascimento, University of Sao Paulo*

WA5a-1	Convex Cardinal Shape Composition and Object Recognition in Computer Vision <i>Alireza Aghasi, Justin Romberg, Georgia Institute of Technology, United States</i>	8:15 AM
WA5a-2	An Optimized Proportionate Adaptive Algorithm for Sparse System Identification <i>Silviu Ciochina, Constantin Paleologu, University Politehnica of Bucharest, Romania; Jacob Benesty, University of Quebec, Canada; Steven Grant, Missouri University of Science and Technology, United States</i>	8:40 AM
WA5a-3	Adaptive Sparse Logistic Regression with Application to Neuronal Plasticity Analysis <i>Alireza Sheikhattar, Jonathan Fritz, Shihab Shamma, Behdash Babadi, University of Maryland, United States</i>	9:05 AM
WA5a-4	Distributed Sparsity-Aware Diffusion Conjugate Gradient Algorithms for Sensor Networks <i>Tamara Miller, Rodrigo de Lamare, Pontifical Catholic University of Rio de Janeiro, Brazil; Vitor Nascimento, University of São Paulo, Brazil; Yuriy Zakharov, University of York, United Kingdom</i>	9:30 AM

## Session WA5b Compressive Beamforming and Sparsity-Based Techniques

Chair: *Yuejie Chi, The Ohio State University*

- WA5b-1 Adaptive Measurement Matrix Design for Compressed DoA Estimation with Sensor Arrays 10:15 AM  
*Berk Özer, Bilkent University, Turkey; Anastasia Lavrenko, Technische Universität Ilmenau, Germany; Sinan Gezici, Bilkent University, Turkey; Florian Römer, Giovanni Del Galdo, Technische Universität Ilmenau, Germany; Orhan Arıkan, Bilkent University, Turkey*
- WA5b-2 Multiple Snapshot Compressive Beamforming 10:40 AM  
*Peter Gerstoft, Angeliki Xenaki, University of California, San Diego, United States; Christoph Mecklenbrauker, Erich Zöchmann, Technische Universität Wien, Austria*
- WA5b-3 Blind Super-Resolution of Sparse Spike Signals 11:05 AM  
*Yuejie Chi, The Ohio State University, United States*
- WA5b-4 Tensor MUSIC in Multidimensional Sparse Arrays 11:30 AM  
*Chun-Lin Liu, P. P. Vaidyanathan, California Institute of Technology, United States*

## Session WA6a Tracking

Chair: *Yao Xie, Georgia Institute of Technology*

- WA6a-1 Supervised Online Subspace Tracking 8:15 AM  
*Yao Xie, Qingbin Li, Sebastian Pokutta, Georgia Institute of Technology, United States*
- WA6a-2 Algorithms for Tracking with a Foveal Sensor 8:40 AM  
*Gregory Spell, Douglas Cochran, Arizona State University, United States*
- WA6a-3 Period Estimation and Tracking: Filter Bank Design using Truth Tables of Logic 9:05 AM  
*Srikanth V. Tenneti, P. P. Vaidyanathan, California Institute of Technology, United States*
- WA6a-4 Vehicle Track Detection in CCD Imagery via Conditional Random Field 9:30 AM  
*Rebecca Malinas, Tu-Thach Quach, Mark Koch, Sandia National Laboratories, United States*

## Session WA6b Structure in Adaptive Signal Processing Algorithms

Chair: *Timothy Davidson, McMaster University*

- WA6b-1 Fundamentals of Multirate Graph Signal Processing 10:15 AM  
*Oguzhan Teke, P. P. Vaidyanathan, California Institute of Technology, United States*
- WA6b-2 Randomized Subspace Learning Approach for High Dimensional Low Rank Plus Sparse Matrix Decomposition 10:40 AM  
*Mostafa Rahmani, George Atia, University of Central Florida, United States*



- WA6b-3 Social Media Data Assisted Inference with Application to Stock Prediction 11:05 AM  
*Hao He, Arun Subramanian, Sora Choi, Pramod Varshney, Syracuse University, United States; Thyagaraju Damarla, US Army Research Lab, United States*
- WA6b-4 Improved Estimation of Canonical Vectors in Canonical Correlation Analysis 11:30 AM  
*Nicholas Asendorf, Raj Rao Nadakuditi, University of Michigan, United States*

## Session WA7a Image Processing

Chair: *Debarati Kundu, The University of Texas at Austin*

- WA7a-1 No-Reference Synthetic Image Quality Assessment using Scene Statistics 8:15 AM  
*Debarati Kundu, Brian Evans, University of Texas at Austin, United States*
- WA7a-2 Speckle Removal by Statistically-Driven Anisotropic Diffusion of SAR Temporal Stacks 8:40 AM  
*Nazia Tabassum, Andrea Vaccari, Scott Acton, University of Virginia, United States*
- WA7a-3 Oil-Spill Forensics using Two-Dimensional Gas Chromatography: Differentiating Highly Correlated Petroleum Sources using Peak Manifold Clusters 9:05 AM  
*Hamidreza Ghasemi Damavandi, Ananya Sen Gupta, University of Iowa, United States; Christopher Reddy, Robert Nelson, Woods Hole Oceanographic Institution, United States*
- WA7a-4 On the Power of Joint Wavelet-DCT Features for Multispectral Palmprint Recognition 9:30 AM  
*Shervin Minaee, Amirali Abdolrashidi, New York University, United States*

## Session WA7b Graph Signal Processing

Chair: *Antonio Marques, Universidad Rey Juan Carlos*

- WA7b-1 Uncertainty Principle and Sampling of Signals Defined on Graphs 10:15 AM  
*Mikhail Tsitsvero, Sergio Barbarossa, Paolo Di Lorenzo, Sapienza University of Rome, Italy*
- WA7b-2 Sampling of Graph Signals: Successive Local Aggregations at a Single Node 10:40 AM  
*Santiago Segarra, University of Pennsylvania, United States; Antonio Marques, King Juan Carlos University, Spain; Geert Leus, Delft University of Technology, Netherlands; Alejandro Ribeiro, University of Pennsylvania, United States*
- WA7b-3 Joint Filtering of Graph and Graph-Signals 11:05 AM  
*Nicolas Tremblay, Pierre Borgnat, Ecole normale supérieure de Lyon, CNRS, France*
- WA7b-4 Taxi Data in New York City: A Network Perspective 11:30 AM  
*Joya A. Deri, Carnegie Mellon University, United States; José M.F. Moura, Carnegie Mellon University; New York University (Visiting), United States*

## Session WA8a1 Coding and Decoding

Chair: *Alexios Balatsoukas-Stimming, École Polytechnique Fédérale de Lausanne*

8:15 AM–9:55 AM

- WA8a1-1 Trapping Sets in Stochastic LDPC Decoders  
*Kuo-Lun Huang, Northeastern University, United States; Vincent Gaudet, University of Waterloo, Canada; Masoud Salehi, Northeastern University, United States*
- WA8a1-2 Quantized Message Passing for LDPC Codes  
*Michael Meidlinger, Vienna University of Technology, Austria; Alexios Balatsoukas-Stimming, Andreas Burg, EPFL, Switzerland; Gerald Matz, Vienna University of Technology, Austria*
- WA8a1-3 Partial Parallel Belief Propagation for Memory Reduction in Polar Code Decoding  
*Jingwei Xu, Tiben Che, Gwan Choi, Texas A&M University, United States*
- WA8a1-4 Reduced Complexity Detection for Network-Coded Slotted ALOHA using Sphere Decoding  
*Terry Ferrett, Matthew Valenti, West Virginia University, United States*

## Session WA8a2 Implementation of Communication Systems

Chair: *Joseph Cavallaro, Rice University*

8:15 AM–9:55 AM

- WA8a2-1 Parallel Processing Intensive Digital Front-End for IEEE 802.11ac Receiver  
*Mona AghababaeTafreshi, Juha Yli-Kaakinen, Toni Levanen, Ville Korhonen, Pekka Jääskelainen, Markku Renfors, Mikko Valkama, Jarmo Takala, Tampere University of Technology, Finland*
- WA8a2-2 The Impact of Faulty Memory Bit Cells on the Decoding of Spatially-Coupled LDPC Codes  
*Jiandong Mu, Aida Vosoughi, Rice University, United States; Joao Andrade, University of Coimbra, Portugal; Alexios Balatsoukas-Stimming, École Polytechnique Fédérale de Lausanne, Switzerland; Georgios Karakonstantis, Queen's University, United Kingdom; Andreas Burg, École Polytechnique Fédérale de Lausanne, Switzerland; Gabriel Falcao, Vitor Silva, University of Coimbra, Portugal; Joseph R. Cavallaro, Rice University, United States*
- WA8a2-3 ASIC Implementation and Performance Comparison of Adaptive Detection for MIMO-OFDM System  
*Essi Suikkanen, Markku Juntti, University of Oulu, Finland*
- WA8a2-4 Implementation of MU-MIMO Schedulers on SoC  
*Ganesh Venkatraman, Janne Janhunen, Markku Juntti, University of Oulu, Finland*

## Session WA8a3 Array Signal Processing

Chair: *Hongya Ge, New Jersey Institute of Technology*

8:15 AM–9:55 AM

- WA8a3-1 Multi-Frequency Array Self-Calibration  
*Benjamin Friedlander, University of California, Santa Cruz, United States*
- WA8a3-2 Iterative Thresholding for Blind Block Partitioned Tensor Decomposition  
*Christopher Mueller-Smith, Predrag Spasojevic, Rutgers University, United States*
- WA8a3-3 Passive Localization and Synchronization in the Presence of Affine Clocks  
*Bernhard Eitzlinger, Christoph Pimminger, Stefan Fischereeder, Andreas Springer, Johannes Kepler University, Linz, Austria, Austria*
- WA8a3-4 Lucky Ranging in Underwater Acoustic Environments Subject to Spatial Coherence Loss  
*Hongya Ge, New Jersey Institute of Technology, United States; Ivars P. Kirsteins, Naval Undersea Warfare Center, United States*
- WA8a3-5 Unmanned Aerial Vehicle Based Passive Radar Agile Sensing for Computerized Ionospheric Tomography  
*Yishi Lee, Jun Jason Zhang, University of Denver, United States; Matthew Zettergren, Embry-Riddle Aeronautical University, United States; Kimon P. Valavanis, University of Denver, United States*
- WA8a3-6 Clutter Suppression in Synthetic Aperture Radar Targets using the DFRFT and Subspace Methods with Rank Reduction  
*Balu Santhanam, Jelili Adebello, University of New Mexico, United States*
- 
- WA8a3-7 Multipath ~~Efficient Sparse Array~~ Processing  
*Peter Vouras, Naval Research Lab, United States*
- 
- WA8a3-8 Joint Frequency and DOA Estimation using Fourier Coefficient Interpolation  
*Songsri Sirianunpiboon, Stephen D. Elton, Stephen D. Howard, Defence Science and Technology Organisation, Australia*

## Session WA8a4 Parameter and Waveform Estimation

Chair: *Richard Vaccaro, University of Rhode Island*

8:15 AM–9:55 AM

- WA8a4-1 PRIME: Phase Retrieval via Majorization-Minimization Technique  
*Tianyu Qiu, Prabhu Babu, Daniel Palomar, Hong Kong University of Science and Technology, Hong Kong SAR of China*
- WA8a4-2 Fast Sparse Compressive Phase Retrieval  
*Aditya Viswanathan, Mark Iwen, Michigan State University, United States*

- WA8a4-3 Asymptotically Efficient Estimators for Multidimensional Harmonic Retrieval Based on the Geometry of the Stiefel Manifold  
*Thomas Palka, Richard Vaccaro, University of Rhode Island, United States*
- WA8a4-4 Waveform Extraction from Reference Channels of Passive Multistatic Radar Systems  
*Pawan Setlur, Sandeep Gogineni, Wright State Research Institute, United States; Muralidhar Rangaswamy, Air Force Research Laboratory, United States*
- WA8a4-5 Methods and Bounds for Waveform Parameter Estimation with a Misspecified Model  
*Peter Parker, Los Alamos National Laboratory, United States*

## **Session WA8a5 Adaptive Signal Processing Techniques**

Chair: *Jacob Gunther, Utah State University*

8:15 AM–9:55 AM

- WA8a5-1 On Sample Generation and Weight Calculation in Importance Sampling  
*Victor Elvira, Universidad Carlos III de Madrid, Spain; Luca Martino, University of Helsinki, Finland; David Luengo, Universidad Politecnica de Madrid, Spain; Monica Bugallo, Stony Brook University, United States*
- WA8a5-2 Multichannel Spectral Factorization Algorithm using Polynomial Matrix Eigenvalue Decomposition  
*Zeliang Wang, John G. McWhirter, Cardiff University, United Kingdom; Stephan Weiss, University of Strathclyde, United Kingdom*
- WA8a5-3 Excision of a Discontinuous-Frequency Interference Signal with Harmonic Structure  
*Todd K. Moon, Jacob H. Gunther, McKay Bonham, Utah State University, United States; Gus William, Brigham Young University, United States*
- WA8a5-4 Characterization of Sonar Target Data using Gabor Wavelet Features  
*Daniel Schupp, Ananya Sen Gupta, University of Iowa, United States; Ivars Kirsteins, Naval Undersea Warfare Center, United States*



## Author List

NAME	SESSION	NAME	SESSION
Aazhang, Behnaam.....	MA3b-3	Ashikhmin, Alexei.....	TA6-1
Abboud, Feriel.....	MP6-4	Askari, Mina.....	TA8b3-2
Abdelaziz, Mahmoud.....	TP8a1-6	Atia, George.....	WA6b-2
Abdi, Ali.....	MA7b-3	Avrachenkov, Konstantin.....	TA2b-4
Abdolrashidi, Amirali.....	TP8a2-4	Azari, Mahdi.....	MP8a4-3
Abdolrashidi, Amirali.....	WA7a-4	Baas, Bevan.....	MA8b2-4
Abreu, Giuseppe.....	TA8a2-6	Baas, Bevan.....	TA7-4
Abreu, Giuseppe.....	TP5a-2	Babadi, Behtash.....	WA5a-3
Abreu, Giuseppe.....	TP8a3-6	Babu, Prabhu.....	MP6-2
Abreu, Giuseppe.....	TP8a4-1	Babu, Prabhu.....	WA8a4-1
Acton, Scott.....	TA8b2-3	Bahadori, Niloofar.....	MP8a4-2
Acton, Scott.....	WA7a-2	Baingana, Brian.....	WA4-5
Adebello, Jelili.....	WA8a3-6	Balatsoukas-Stimming, Alexios.....	WA8a1-2
Afghah, Fatemeh.....	MP8a4-2	Balatsoukas-Stimming, Alexios.....	WA8a2-2
Afshang, Mehrnaz.....	MP3-3	Banavar, Mahesh.....	MP4a-4
Aghababae Tafreshi, Mona ...	WA8a2-1	Banawan, Karim.....	MA2b-4
Aghasi, Alireza.....	WA5a-1	Bandi, Chaithanya.....	TA5a-4
Ahmad, Fauzia.....	MA5b-2	Baraniuk, Richard.....	MA4b-3
Ahmadi, Majid.....	MP8a1-2	Baraniuk, Richard.....	TA8a1-2
Albin, Nathan.....	TP6b-1	Barati, C. Nicolas.....	MP3-1
Aldayel, Omar.....	MA5b-3	Barbarossa, Sergio.....	WA7b-1
Al-Dhahir, Naofal.....	TP8a1-2	Bari, Mohammad.....	MA8b1-6
Alexander, Frank.....	MP7a-2	Bari, Mohammad.....	TA8b1-3
Alizadeh, Mahnoosh.....	TA5a-1	Bari, Mohammad.....	TA8b1-4
Alkhateeb, Ahmed.....	MP3-5	Bash, Boulat.....	TA1a-1
Allén, Markus.....	TP8b1-1	Bashir, Murwan.....	MA8b3-1
Almalaq, Abdulaziz.....	TA8b2-1	Bastanirad, Sahar.....	TA8b3-1
Alonso, Miguel Angel.....	TA8a1-3	Bavand, Majid.....	TP8a3-5
Alotaibi, Faisal.....	MP3-7	Bazrafshan, Mohammadhafez ..	TA5b-1
AlRegib, Ghassan.....	TP8b2-3	Bean, Andrew.....	MP1a-3
Alshawi, Tariq.....	TP8b2-3	Becker, Henning.....	TP8a1-3
Amin, Moeness.....	MA5b-2	Behbahani, Alireza S.....	TA8b2-2
Amir-Eliasi, Parisa.....	MP3-1	Bell, Kristine.....	MP5b-1
Amirnavaei, Fatemeh.....	TA8a2-5	Bell, Mark.....	MA3b-4
Anastasopoulos, Achilleas.....	TP3a-4	Bell, Mark.....	MP8a2-3
Andersen, Jørgen Bach.....	WA2b-2	Bell, Mark.....	WA3-3
Andrade, Joao.....	WA8a2-2	Benesty, Jacob.....	WA5a-2
Andreev, Sergey.....	TA3b-1	Bengtsson, Mats.....	TP5a-1
Andrews, Jeffrey.....	MP3-5	Bengtsson, Mats.....	TP8a1-4
Andrews, Jeffrey.....	TP2-3	Berberidis, Dimitris.....	MP4a-1
Anttila, Lauri.....	MA8b2-3	Berisha, Visar.....	TP8a2-1
Anttila, Lauri.....	TP8a1-6	Berry, Randall.....	TA2a-2
Arbaban, Amin.....	WA1a-1	Beygi, Sajjad.....	MP1a-4
Arik, Sercan.....	TP1-1	Bhaskar, Sonia.....	MP8a3-3
Arikan, Orhan.....	WA5b-1	Bidigare, Patrick.....	MP2-3
Arikan, Toros.....	MP1a-3	Bitar, Eilyan.....	TA5a-3
Ascott, Robert.....	MA8b2-2	Bliss, Daniel.....	MP2-5
Asendorf, Nicholas.....	MA6b-4	Bliss, Daniel.....	TP8b1-4
Asendorf, Nicholas.....	WA3-1	Bliss, Daniel.....	TP8b1-5
Asendorf, Nicholas.....	WA6b-4		
Ashikhmin, Alexei.....	MP3-8		

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Bliss, Nadya .....	WA4-7	Chen, Jia .....	MP4b-3
Blostein, Steven .....	TP8a3-5	Cheng, Eric.....	TP7b-2
Bockelmann, Carsten .....	MA1b-4	Cheng, Qi .....	MA8b1-1
Bockelmann, Carsten .....	MP8a2-1	Chenot, Jean-Hugues.....	MP6-4
Boedicker, James .....	MA7b-4	Chepuri, Sundeep Prabhakar...	MA6b-1
Bohnenstiehl, Brent.....	MA8b2-4	Chepuri, Sundeep Prabhakar...	MP4b-4
Bohnenstiehl, Brent.....	TA7-4	Chi, Yuejie .....	MA6b-2
Bonham, McKay.....	WA8a5-3	Chi, Yuejie .....	WA5b-3
Borgnat, Pierre.....	TA2b-2	Chiriyath, Alex.....	TP8b1-5
Borgnat, Pierre.....	WA7b-3	Chiu, Wah .....	TA8a1-2
Borowiec, Andrzej.....	TP1-2	Cho, Hyungmin .....	TP7b-2
Boutellier, Jani.....	MA8b2-3	Choi, Gwan.....	WA8a1-3
Braga-Neto, Ulisses .....	MP7a-4	Choi, Sora .....	WA6b-3
Brandt, Rasmus .....	TP5a-1	Chouzenoux, Emilie.....	MP6-4
Brown III, D. Richard .....	MP2-3	Chowdhury, Mainak .....	MP3-2
Brown III, D. Richard .....	TA8a2-4	Chung, Sae-Young .....	MA2b-2
Brown III, D. Richard .....	TP8a3-8	Ciblat, Philippe .....	TA1a-2
Brown III, D. Richard .....	TP8a4-2	Ciochina, Silviu .....	WA5a-2
Buck, John .....	MP5a-2	Clancy, Charles.....	MA8b1-6
Buck, John .....	MP5a-3	Cochran, Douglas.....	WA3-5
Bugallo, Monica .....	WA8a5-1	Cochran, Douglas.....	WA3-7
Burg, Andreas .....	TP7a-1	Cochran, Douglas.....	WA6a-2
Burg, Andreas .....	WA8a1-2	Comite, Davide.....	MA5b-2
Burg, Andreas .....	WA8a2-2	Condo, Carlo .....	TP7b-3
Burghal, Daoud .....	TP2-2	Corey, Ryan.....	WA1a-4
Burtsev, Sergey.....	TP1-4	Cottatellucci, Laura .....	TA2b-4
Cabric, Danijela .....	MA8b1-2	Cottatellucci, Laura .....	WA2a-1
Cabric, Danijela .....	MA8b1-3	Cotton, Simon.....	TA3b-4
Cabric, Danijela .....	MA8b1-4	Craciunescu, Razvan.....	MP8a4-1
Cabric, Danijela .....	TP8a3-7	Crockett, Caroline.....	TA8b2-3
Caceres, Rajmonda .....	WA4-4	Cruz, Ana .....	TA8b2-4
Caceres, Rajmonda .....	WA4-6	Cullen, Schuyler .....	TP8b2-1
Cai, Mingming.....	TP2-8	Dai, Xiaoxiao .....	TA8b2-1
Cai, Yunlong.....	TA8b3-5	Dall'Anese, Emiliano.....	WA4-5
Caire, Giuseppe.....	MP2-6	Dalton, Lori .....	MP7a-1
Caire, Giuseppe.....	TA6-2	Dalton, Lori .....	MP7a-2
Caire, Giuseppe.....	TP3b-1	Damarla, Thyagaraju .....	WA6b-3
Caire, Giuseppe.....	TP5b-5	Dar, Ronen .....	TP1-7
Calderbank, Robert .....	MP1b-1	Darabi Sahneh, Faryad .....	TP6b-1
Carosino, Michael .....	TP8b3-1	Dasgupta, Soura .....	MP2-1
Cavallaro, Joseph R. ....	TP8a1-6	Dasgupta, Soura .....	MP2-3
Cavallaro, Joseph R. ....	WA8a2-2	David, Radu .....	TP8a4-2
Chaen, Xiaofei .....	TP8a1-5	Davidson, Timothy .....	TP8a3-2
Chakraborti, Mahasweta.....	MP7b-3	Davila, Carlos .....	MP7b-2
Champagne, Benoit.....	TA8b3-5	De Carvalho, Elisabeth .....	WA2b-2
Chang, Do-il .....	TP1-4	de Lamare, Rodrigo .....	WA5a-4
Chang, Nicholas .....	MP2-2	DeBrunner, Linda .....	MP8a1-4
Chapman, Christian.....	MP2-5	DeBrunner, Victor.....	MP8a1-4
Chatterjee, Anwasha.....	MP7b-3	DeBrunner, Victor.....	MP8a2-8
Chatterjee, Avhishek.....	TP3a-3	Dekorsy, Armin .....	MA1b-4
Chatzinotas, Symeon .....	TA1a-2	Dekorsy, Armin .....	MP8a2-1
Chaudhari, Shailesh .....	TP8a3-7	Del Galdo, Giovanni.....	MA8b4-2
Che, Tiben .....	WA8a1-3	Del Galdo, Giovanni.....	WA5b-1
Chen, Hao .....	TP2-9	Deri, Joya A.....	WA7b-4

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Devroye, Natasha	TP5b-1	Fardad, Makan	MP4b-1
Dhillon, Harpreet	MP3-3	Ferrett, Terry	WA8a1-4
Dhillon, Harpreet	TP3b-4	Fischereder, Stefan	WA8a3-3
Dhingra, Neil	MP4b-2	Fontenla, Ernesto	TA8a1-2
Di Dio, Mario	MP2-6	Forenza, Antonio	MP2-6
Di Lorenzo, Paolo	MP6-8	Franke, Norbert	MA8b4-2
Di Lorenzo, Paolo	WA7b-1	Friedlander, Benjamin	WA8a3-1
Dick, Chris	TP7a-4	Friedlander, Michael	MP6-6
Ding, Yacong	WA3-4	Fritz, Jonathan	WA5a-3
Divsalar, Dariush	TA1b-4	Gadepally, Vijay	WA4-3
Djordjevic, Ivan B.	TP1-6	Gahr, Bernhard	TA8b3-4
Do, An H.	TA8b2-2	Galinina, Olga	TA3b-1
Dogandžić, Aleksandar	WA3-6	Gatsis, Nikolaos	TA5b-1
Dogaru, Traian	MA5b-2	Gaudet, Vincent	WA8a1-1
Dolecek, Lara	TA1b-4	Ge, Hongya	WA8a3-4
Dominguez-Garcia, Alejandro	TA5a-2	Gencel, Muhammed Faruk	MP2-4
Dong, Min	TA8a2-5	Gentz, Reinhard	MP4a-2
Dong, Yuqing	TA8a1-4	Gerges, Ramez L.	TA3a-1
Doroslovacki, Milos	MA8b1-6	Gerstoft, Peter	WA5b-2
Doroslovacki, Milos	TA3a-3	Gesbert, David	WA2a-1
Doroslovacki, Milos	TA8b1-3	Geyer, Kelly	WA4-4
Doroslovacki, Milos	TA8b1-4	Gezici, Sinan	WA5b-1
Dougherty, Edward	MP7a-2	Ghasemi Damavandi, Hamidreza	WA7a-3
Drakulic, Sanda	WA1b-4	Ghazi, Amanullah	MA8b2-3
Draper, Stark	TP2-1	Gherekhloo, Soheil	MA2b-3
Dsouza, Sandeep	MP7b-3	Ghuman, Kirandeep	MP8a2-8
Du, Liping	MA8b1-4	Giannakis, Georgios B.	MA6b-1
Duarte, Marco	MA8b1-7	Giannakis, Georgios B.	MA6b-3
Dytso, Alex	TP5b-1	Giannakis, Georgios B.	MP4a-1
Eckford, Andrew	MA7b-1	Giannakis, Georgios B.	WA4-5
Edfors, Ove	TP7a-3	Giri, Ritwik	MA4b-1
Edwards, Lauren	WA4-3	Goeckel, Dennis	TA1a-1
El Gamal, Hesham	MP3-7	Goering, Max	TP6b-1
El Rouayheb, Salim	MP1b-1	Gogineni, Sandeep	WA8a4-4
Elghariani, Ali	TP8a1-1	Goguri, Sairam	MP2-1
El-Keyi, Amr	TA8b3-3	Goh, Gabriel	MP6-6
El-Naggar, Moh	MA7b-4	Goldenbaum, Mario	MP1b-4
Eltawil, Ahmed M.	TA8b2-2	Goldsmith, Andrea	MP3-2
Eltawil, Ahmed M.	TA8b2-6	Goldsmith, Andrea	TA5a-1
Elton, Stephen D.	WA8a3-8	Gomez, Chano	WA1b-3
Elvira, Victor	WA8a5-1	Gonçalves, Paulo	TA2b-2
Emamian, Effat	MA7b-3	Gong, Xitao	MA1b-1
Epp, Michael	TP8b1-1	Gonzalez-Prelcic, Nuria	TP7a-2
Ercegovic, Milos	TA7-7	Goparaju, Sreechakra	MP1b-1
Eryilmaz, Atilla	MP3-7	Grami, Ali	TA8b3-1
Eshaghian Dorcheh, Farzaneh	TA8a2-1	Grant, Steven	WA5a-2
Essiambre, René-Jean	TP1-3	Gross, Warren J.	TP7b-3
Etzlinger, Bernhard	MA8b4-3	Grover, Pulkit	TA8b2-4
Etzlinger, Bernhard	WA8a3-3	Grover, Pulkit	TA8b2-5
Evans, Brian	WA7a-1	Gu, Renliang	WA3-6
Everett, Evan	TA6-3	Gu, Yi	TA5b-3
Ewaisha, Ahmed	MA8b1-8	Guha, Saikat	TA1a-1
Falcao, Gabriel	WA8a2-2	Guillaud, Maxime	TP8a3-3
Farazi, Shahab	TA8a2-4		



<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Gunther, Jacob H.	MA8b3-2	Ibars, Christian	WA2b-1
Gunther, Jacob H.	MP8a2-6	Ibrahim, Abdelrahman	TA5b-2
Gunther, Jacob H.	MP8a3-2	Ibrahim, Mohamed	MA8b4-2
Gunther, Jacob H.	WA8a5-3	Ikehara, Masaaki	TP8a2-2
Guo, Dongning	TP2-6	Imani, Mahdi	MP7a-4
Gupta, Abhishek	TP2-3	Iqbal, Naveed	TP8a1-2
Gupta, Vipul	WA3-2	Ishibashi, Koji	MA3b-1
Gürbüz, Sevgi Zübeyde	MP8a1-5	Iwen, Mark	WA8a4-2
Gurrola, Elliott	WA1b-1	Jääskeläinen, Pekka	WA8a2-1
Gvozdenovic, Stefan	TP8a4-2	Jaeckel, Stephan	TP5a-4
Habibi, Iman	MA7b-3	Janhunnen, Janne	WA8a2-4
Hadaschik, Niels	MA8b4-2	Janneck, Jorn W.	MA8b2-1
Hajek, Bruce	TP3a-2	Jar, Siddharth	MP7b-3
Halunga, Simona	MP8a4-1	Javidi, Tara	TP3a-1
Han, Wei	TP3b-2	Jedda, Hela	WA1a-3
Han, Yonghee	TA6-4	Jenkins, William	MA8b3-3
Hanrahan, Sara	TA8a1-6	Jenkins, William	TA8a1-4
Hanrahan, Sara	TA8b2-1	Jeon, Wonseok	MA2b-2
Hanzo, Lajos	TA8b3-5	Jha, Madhav	WA4-1
Hao, Jun	TA5b-3	Ji, Mingyue	TP3b-1
Hareedy, Ahmed	TA1b-4	Jiang, Jiewei	MP7b-1
Harper, Andrew D.	TP8b1-2	Jiao, Yishan	TP8a2-1
harris, fred	TP8a1-5	Jin, Shi	WA2a-2
Hashemi, Seyyed Ali	TP7b-3	Johnson, Luke	WA4-3
Hassan, Yahia	TA8b3-4	Johnsson, Kerstin	TA3b-1
He, Fulin	TA5b-3	Jorswieck, Eduard A.	MP8a4-4
He, Hao	WA6b-3	Jovanovic, Mihailo	MP4b-2
He, Shiwen	WA2a-2	Jung, Hyejung	WA2b-1
Heath Jr., Robert W.	MP3-4	Jung, Hyejung	WA2b-4
Heath Jr., Robert W.	TA3b-3	Jung, Peter	MA8b1-5
Heath Jr., Robert W.	TP7a-2	Jung, Peter	TP8a1-3
Heath Jr., Robert W.	WA1a-2	Juntti, Markku	MA8b2-3
Hebb, Adam	TA8a1-6	Juntti, Markku	TP8a3-1
Hebb, Adam	TA8b2-1	Juntti, Markku	WA8a2-3
Hegde, Rajesh	MA8b4-1	Juntti, Markku	WA8a2-4
Henry, Thomas	TA8a1-5	Kadavankandy, Arun	TA2b-4
Hilaire, Thibault	TA7-5	Kahn, Joseph	TP1-1
Himed, Braham	MA5b-4	Kailkhura, Bhavya	WA3-2
Hirooka, Toshihiko	TP1-9	Kaleva, Jarkko	TP8a3-1
Ho, Keang-Po	TP1-1	Kalogerias, Dionysios	MP2-8
Honig, Michael	TP8b3-2	Kamali, Jalil	TA1a-3
Hosny, Sameh	MP3-7	Kanatsoulis, Charilaos	MP6-5
Hosseini, S. Amir	MP3-1	Kantaros, Yiannis	TP6a-4
Hosseinzadeh Namin, Parham	MP8a1-2	Kapetanovic, Dzevdan	TA1a-2
Howard, Stephen D.	WA3-5	Kar, Soummya	TP6a-3
Howard, Stephen D.	WA3-7	Kar, Swarnendu	MP4b-1
Howard, Stephen D.	WA8a3-8	Karakonstantis, Georgios	WA8a2-2
Hsu, Wei-Kang	MA3b-4	Kasai, Keisuke	TP1-9
Huang, Kuo-Lun	WA8a1-1	Kelley, Stephen	WA4-6
Huang, Suk-Seung	TA3a-1	Kerpez, Ken	WA1b-2
Huang, Weiyu	TP8a4-3	Khawar, Awais	MA8b1-6
Huang, Yongming	WA2a-2	Khezeli, Kia	TA5a-3
Ibarra, Roilhi Frajo	TA8a1-3	Khorshid, Ahmed	TA8b2-6
		Kim, Jinsoon	TA6-4

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Kirsteins, Ivars .....	WA8a5-4	Li, Hongbin .....	MA5b-4
Kirsteins, Ivars P. ....	WA8a3-4	Li, Kaipeng .....	TP8a1-6
Klein, Andrew .....	TP8a4-2	Li, Max .....	TP8a4-2
Klein, Andrew G. ....	TA8a2-4	Li, Qingbin .....	WA6a-1
Kliewer, Joerg .....	MA7b-2	Li, Qinghua .....	WA2b-4
Ko, Young-Jo .....	TP5b-3	Li, Xiaofeng .....	TA8a2-3
Koch, Mark .....	WA6a-4	Li, Yanjing .....	TP7b-2
Koirala, Remun .....	TA8a2-6	Liang, Ben .....	WA2a-4
Konar, Aritra .....	MP8a2-7	Liang, Haoyi .....	TA8a1-1
Koochakzadeh, Ali .....	WA3-8	Liang, Xiaojun .....	TP1-8
Koppel, Alec .....	TA3a-2	Liberti, Joseph .....	MP2-2
Koppel, Alec .....	TP6a-2	Lin, Xiaojun .....	MA3b-4
Korakis, Thanasis .....	MP3-1	Lin, Xuehong .....	MP5a-4
Korhonen, Ville .....	WA8a2-1	Linström, Jerry .....	MA8b2-1
Koucheryavy, Yevgeni .....	TA3b-1	Liss, Julie .....	TP8a2-1
Krishnan, Shankar .....	TP3b-4	Liu, An .....	TP3b-2
Krogmeier, James .....	MP2-7	Liu, Chang .....	TA2a-2
Kulkarni, Mandar .....	MP3-5	Liu, Chun-Hao .....	MA8b1-4
Kumar, Amy .....	MP2-3	Liu, Chun-Lin .....	WA5b-4
Kumar, Shiva .....	TP1-8	Liu, Jialing .....	TA2a-4
Kumar, Sudhir .....	MA8b4-1	Liu, Liang .....	TP7a-3
Kumar, Utsaw .....	WA2b-1	Liu, Lingjia .....	TP2-9
Kundu, Debarati .....	WA7a-1	Liu, Sijia .....	MP4b-1
Kurdahi, Fadi .....	TA8b2-6	Liu, Yang .....	MP5a-2
Kurras, Martin .....	TA6-2	Liu, Yaqi .....	MP5b-3
Kurras, Martin .....	TP5a-4	Liu, Yin .....	TP7b-4
Kwong, Andrew .....	TP8a3-4	Long, Zhiling .....	TP8b2-3
Kyriazakos, Sofoklis .....	MP8a4-1	Love, David .....	MP2-7
Laborelli, Louis .....	MP6-4	Lozano, Angel .....	MA2b-1
Laghate, Mihir .....	MA8b1-3	Lu, Songtao .....	MP4a-3
Laghate, Mihir .....	MA8b1-4	Lu, Ying .....	WA2a-2
Lalitha, Anusha .....	TP3a-1	Lu, Yue .....	TA2b-3
Laneman, J Nicholas .....	TP2-8	Luengo, David .....	WA8a5-1
Lanterman, Aaron D. ....	TP8b1-2	Luo, Tianqiong .....	TA1b-3
Lao, Yingjie .....	MP8a1-3	Luo, Zhi-Quan .....	MP4b-2
Laperle, Charles .....	TP1-2	M Hegde, Rajesh .....	TA8a1-7
Larsson, Erik G. ....	MP3-8	Madhow, Upamanyu .....	MP2-3
Lau, Vincent .....	TP3b-2	Madhow, Upamanyu .....	MP2-4
Laubichler, Manfred .....	WA4-7	Madhow, Upamanyu .....	WA1a-1
Lauter, Christoph .....	TA7-5	Magli, Enrico .....	MP8a2-2
Lauter, Christoph .....	TA7-6	Magli, Enrico .....	TA3a-4
Lavrenko, Anastasia .....	WA5b-1	Mahabalagiri, Anvith .....	TP8b2-5
Lee, Ching-En .....	TA7-7	Mahdian, Milad .....	TP3b-3
Lee, Jungwoo .....	TA6-4	Majee, Soumendu .....	MA8b1-1
Lee, Jungwoo .....	TP5a-3	Maleki, Arian .....	MA4b-3
Lee, Yishi .....	WA8a3-5	Maleki, Sina .....	TA1a-2
Lenz, Andreas .....	MP8a2-5	Malhotra, Gaurav .....	TA1a-3
Leshem, Amir .....	MP4a-2	Malinas, Rebecca .....	WA6a-4
Leus, Geert .....	MA6b-1	Malla, Samip .....	TP8a3-6
Leus, Geert .....	MP4b-4	Mamandipoor, Babak .....	WA1a-1
Leus, Geert .....	TA3a-2	Manolakos, Alexandros .....	MP3-2
Leus, Geert .....	WA7b-2	Marcum, Andrew .....	MP2-7
Levanen, Toni .....	WA8a2-1	Margetts, Adam .....	MP2-5
Ley, Klaus .....	TA8b2-3	Marques, Antonio .....	WA7b-2

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Martinez, Sonia	TP6b-3	Moon, Todd K.	WA8a5-3
Martino, Luca	WA8a5-1	Moore, George	MP8a3-1
Marttila, Jaakko	TP8b1-1	Motwani, Ravi	TA1b-1
Marzetta, Thomas L.	MP3-8	Moura, José M.F.	MP6-1
Marzetta, Thomas L.	TA6-1	Moura, José M.F.	TP6b-2
Mateos, Gonzalo	WA4-5	Moura, José M.F.	WA4-8
Matthiesen, Bho	MP8a4-4	Moura, José M.F.	WA7b-4
Matz, Gerald	WA8a1-2	Mu, Jiandong	WA8a2-2
Maud, Abdur Rahman	MP8a2-3	Mudumbai, Raghuraman	MP2-3
Maud, Abdur Rahman	WA3-3	Mueller-Smith, Christopher	WA8a3-2
Maurer, Alexander	MP7b-1	Mukherjee, Pritam	MP1b-2
McArdle, Sara	TA8b2-3	Mungara, Ratheesh K.	MA2b-1
McGarry, Michael	WA1b-1	Murmann, Boris	TP7b-1
McWhirter, John G.	WA8a5-2	Muscedere, Roberto	MP8a1-2
Mecklenbrauker, Christoph	WA5b-2	Nadakuditi, Raj Rao	MA6b-4
Medra, Mostafa	TP8a3-2	Nadakuditi, Raj Rao	WA3-1
Mehta, Ketan	MA7b-2	Nadakuditi, Raj Rao	WA4-4
Mei, Jonathan	MP6-1	Nadakuditi, Raj Rao	WA6b-4
Meidlinger, Michael	WA8a1-2	Nafie, Mohammed	TA8b3-3
Mercian, Anu	WA1b-1	Nagaraj, Shirish	TP8b3-2
Metzler, Chris	TA8a1-2	Nakajima, Yasuhiro	TP8a2-2
Metzler, Christopher	MA4b-3	Nakazawa, Masataka	TP1-9
Mezghani, Amine	WA1a-3	Nam, Junyoung	TP5b-3
Mezzavilla, Marco	MP3-1	Namvar, Nima	MP8a4-2
Michelusi, Nicolo	MA7b-4	Nannesson, Stefan	MA8b2-1
Michelusi, Nicolo	TP6a-1	Nascimento, Vitor	WA5a-4
Mihaylov, Mihail	MP8a4-1	Nayak, Deepak	TP8b3-2
Mihovska, Albena	MP8a4-1	Nayar, Himanshu	WA4-4
Milenkovic, Olgica	TA1b-3	Nayebi, Elina	TA6-1
Miller, Benjamin	WA4-3	Neal, David	MP8a3-2
Miller, Benjamin	WA4-4	Nedrud, Joshua	TA8a1-6
Miller, Benjamin	WA4-6	Nedrud, Joshua	TA8b2-1
Miller, Tamara	WA5a-4	Nelson, Robert	WA7a-3
Milosavljevic, Maja	WA4-3	Nenadic, Zoran	TA8b2-2
Minaee, Shervin	TP8a2-4	Neto, Joao Carlos	MP8a1-1
Minaee, Shervin	WA7a-4	Neves Rodrigues, Joachim	TP7a-3
Mitra, Subhasish	TP7b-2	Newinger, Michael	TA2a-3
Mitra, Urbashi	MA7b-4	Ng, Boon	TP2-4
Mitra, Urbashi	MP1a-4	Ngo, Hien	MP3-8
Mitra, Urbashi	TP6a-1	Nieblas, Carlos Ivan	TA8a1-3
Mo, Dian	MA8b1-7	Nikopour, Hosein	MP3-4
Mo, Jianhua	WA1a-2	Niu, Huaning	WA2b-1
Mochaourab, Rami	TP5a-1	Nordenvaad, Magnus	MP1a-2
Mohasseb, Yahya	TA8b3-3	Nossek, Josef A.	MP8a2-5
Mohseni, Mehdi	WA1b-2	Nossek, Josef A.	WA1a-3
Mokhtari, Aryan	MP6-7	Novlan, Thomas	TP2-4
Mokhtari, Aryan	TA3a-2	Nowzari, Cameron	TP6b-4
Molisch, Andreas	TP2-2	O'Connor, Mike	TA7-2
Monga, Vishal	MA5b-3	Odom, Jonathan L.	TP8b1-2
Monsees, Fabian	MA1b-4	Oestges, Claude	TA3b-2
Mookherjee, Soumak	MP8a1-4	Ogata, Shun	MA3b-1
Moon, Todd K.	MA8b3-2	Olfat, Ehsan	TP8a1-4
Moon, Todd K.	MP8a2-6	Orrico, Elizabeth	TA8b2-3
Moon, Todd K.	MP8a3-2	O'Sullivan, Maurice	TP1-2

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Ottersten, Björn.....	TA1a-2	Qu, Zhen .....	TP1-6
Ozcan, Koray .....	TP8b2-5	Quach, Tu-Thach .....	WA6a-4
Özer, Berk.....	WA5b-1	Quek, Tony Q. S. ....	WA2a-4
P. Palomar, Daniel .....	MP6-2	Quigley, James.....	TP8b2-1
Pakrooh, Pooria .....	MP5a-1	Qureshi, Tariq.....	MP5b-1
Pakrooh, Pooria .....	WA3-5	Raburn, Daniel .....	TP8b2-2
Pal, Piya .....	MP8a2-4	Raghavendra, M. R. ....	TP8b3-2
Pal, Piya .....	WA3-8	Rahimi, Razgar.....	TA8a2-2
Palaoro, Nino .....	MA8b4-3	Rahmani, Mostafa.....	WA6b-2
Paleologu, Constantin .....	WA5a-2	Ramirez, David.....	MA3b-3
Palka, Thomas .....	WA8a4-3	Ramirez-Llanos, Eduardo.....	TP6b-3
Palomar, Daniel .....	WA8a4-1	Rangan, Sundeep.....	MP3-1
Panwar, Shivendra S. ....	MP3-1	Rangarajan, Sampath.....	MA3b-2
Papandreou-Suppappola, Antonia.....	MP7b-1	Rangaswamy, Muralidhar.....	MA5b-3
Parajuli, Jhanak.....	TP5a-2	Rangaswamy, Muralidhar.....	MP5b-1
Parhi, Keshab .....	MP8a1-3	Rangaswamy, Muralidhar.....	WA8a4-4
Parhi, Keshab .....	TA8a1-5	Rao, Bhaskar D. ....	MA4b-1
Parhi, Keshab .....	TP7b-4	Rao, Bhaskar D. ....	WA3-4
Parker, Peter .....	WA8a4-5	Rasekh, Maryam Eslami.....	MP2-4
Paul, Bryan .....	TP8b1-4	Rasky, Phil .....	TP8b3-2
Pawar, Sameer .....	WA2b-1	Ratner, Edward.....	TP8b2-1
Peiffer, Ben.....	MP2-3	Ratner, Edward.....	TP8b2-2
Peleato, Borja.....	TA1b-3	Ray, Priyadip .....	MA8b1-1
Pelouch, Wayne .....	TP1-4	Ray, Priyadip .....	MP7b-3
Pengoria, Deepak .....	TP8b3-2	Reddy, Christopher .....	WA7a-3
Perlman, Stephen.....	MP2-6	Reddy C, Sandeep.....	TA8a1-7
Pesquet, Jean-Christophe .....	MP6-4	Reed, Jeremy T. ....	TP8b1-2
Petropulu, Athina .....	MA5b-1	Reeves, Galen .....	MA4b-2
Petropulu, Athina .....	MP2-8	Reimer, Michael .....	TP1-2
Pezeshki, Ali.....	MP5a-1	Reisslein, Martin .....	WA1b-1
Pezeshki, Ali .....	WA3-5	Renfors, Markku .....	WA8a2-1
Pfister, Henry .....	MA4b-2	Ribeiro, Alejandro .....	MP6-7
Pfister, Henry .....	MA4b-4	Ribeiro, Alejandro .....	TA3a-2
Pimentel, Jon .....	TA7-4	Ribeiro, Alejandro .....	TP8a4-3
Pimminger, Christoph .....	WA8a3-3	Ribeiro, Alejandro .....	WA7b-2
Pinar, Ali.....	WA4-1	Richtarik, Peter .....	MP6-3
Plant, David.....	TP1-5	Riedl, Thomas.....	MP1a-3
Poggi-Corradini, Pietro .....	TP6b-1	Ritcey, James.....	TA8b1-2
Poilinca, Simona .....	TP8a4-1	Ritcey, James.....	TP8b3-1
Pokutta, Sebastian .....	WA6a-1	Roberson, Dennis .....	TA2a-1
Pollin, Sofie.....	MP8a4-3	Robert, Joerg .....	MA8b4-2
Poor, H. Vincent .....	MP1b-3	Rodriguez, Paul.....	TP8b2-4
Poor, H. Vincent .....	MP1b-4	Rodriguez Egea, Sara.....	TP7a-1
Poor, H. Vincent .....	TP5b-2	Roemer, Florian.....	MA8b4-2
Popovski, Petar .....	MA1b-3	Romberg, Justin .....	WA5a-1
Prabhu, Hemanth .....	TP7a-3	Römer, Florian.....	WA5b-1
Prasad, Narayan.....	MA3b-2	Rooney, Ian .....	MP5a-3
Prasad, Ramjee.....	MP8a4-1	Rosas, Fernando .....	MP8a4-3
Preisig, James .....	MP1a-1	Ruggiero, Wilson .....	MP8a1-1
Preyss, Nicholas .....	TP7a-1	Rusu, Cristian .....	TP7a-2
Pyattaev, Alexander.....	TA3b-1	Ryan, Alexander .....	TP8a4-2
Qazi, Zohaib Khalid .....	TA8b2-7	Sabharwal, Ashutosh .....	TA6-3
Qiu, Tianyu.....	WA8a4-1	Sabharwal, Ashutosh .....	TP8a3-4
		Sackenreuter, Benjamin.....	MA8b4-2

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Safavi, Seyede Mahya .....	TA8b2-2	Sidiropoulos, Nicholas .....	MP8a2-7
Saibi, Fadi .....	MP2-6	Silva, Vitor .....	WA8a2-2
Sala, Frederic .....	TA1b-4	Simonetto, Andrea .....	TA3a-2
Salah, Mohamed .....	TA8b3-3	Singer, Andrew .....	MP1a-3
Salehi, Masoud .....	WA8a1-1	Singer, Andrew .....	TA8a1-8
Santhanam, Balu .....	WA8a3-6	Singer, Andrew .....	TA8b1-1
Santos, Augusto .....	TP6b-2	Singer, Andrew .....	WA1a-4
Sarwate, Anand .....	TP3a-1	Singh, Simran .....	TP8b1-1
Sarwate, Anand .....	TP3a-3	Singh, Vaibhav .....	MA3b-2
Saur, Stephan .....	MA1b-2	Sirianunpiboon, Songsri .....	WA3-7
Sawaby, Mahmoud .....	WA1a-1	Sirianunpiboon, Songsri .....	WA8a3-8
Scaglione, Anna .....	MP4a-2	Skoglund, Mikael .....	MP1b-3
Scaglione, Anna .....	TA5a-1	Slavakis, Konstantinos .....	MA6b-3
Schaefer, Rafael F. ....	MP1b-3	Slottke, Eric .....	MA8b4-4
Schaefer, Rafael F. ....	MP1b-4	Smith, Steven .....	WA4-4
Scharf, Louis .....	MP5a-1	Smith, Steven .....	WA4-6
Scharf, Louis .....	WA3-5	Sobers, Tamara .....	TA1a-1
Schellmann, Malte .....	MA1b-1	Sofotasios, Paschalis .....	TA3b-4
Schizas, Ioannis .....	MP4b-3	Solis, Francisco .....	MP7b-1
Schlecker, Wolfgang .....	TP8b1-1	Souza, Richard Demo .....	MP8a4-3
Schmidt, Chris .....	TP8b3-2	Spanias, Andreas .....	MP4a-4
Schnier, Tobias .....	MP8a2-1	Spasojevic, Predrag .....	WA8a3-2
Schniter, Philip .....	MA4b-4	Spell, Gregory .....	WA6a-2
Schoeny, Clayton .....	TA1b-4	Springer, Andreas .....	MA8b4-3
Schreiber, Gerhard .....	MA1b-2	Springer, Andreas .....	WA8a3-3
Schubert, Martin .....	MA1b-1	Sridharan, Gokul .....	WA2a-3
Schupp, Daniel .....	WA8a5-4	Statovci, Driton .....	WA1b-4
Scoglio, Caterina .....	TP6b-1	Stefanovic, Cedimir .....	MA1b-3
Scutari, Gesualdo .....	MP6-8	Stein, Manuel .....	MP8a2-5
Segarra, Santiago .....	TP8a4-3	Stillmaker, Aaron .....	TA7-4
Segarra, Santiago .....	WA7b-2	Studer, Christoph .....	TP7a-4
Seidel, Peter-Michael .....	TA7-3	Stump, Ethan .....	TP6a-2
Sen Gupta, Ananya .....	WA7a-3	Subramanian, Arun .....	WA6b-3
Sen Gupta, Ananya .....	WA8a5-4	Subramanian, Vijay .....	TP3a-4
Seshadhri, C. ....	WA4-1	Suikkanen, Essi .....	WA8a2-3
Setlur, Pawan .....	WA8a4-4	Sümer, Halil Ibrahim .....	MP8a1-5
Severi, Stefano .....	TA8a2-6	Sun, Guoxin .....	MA8b3-3
Sevuktekin, Noyan .....	TA8b1-1	Sun, Shunqiao .....	MA5b-1
Sezgin, Aydin .....	MA2b-3	Swartzlander, Jr., Earl E. ....	MA8b2-2
ShahbazPanahi, Shahram .....	TA8a2-1	Swartzlander, Jr., Earl E. ....	TA7-2
ShahbazPanahi, Shahram .....	TA8a2-2	Swenson, Brian .....	TP6a-3
ShahbazPanahi, Shahram .....	TA8b3-1	Tabak, Gizem .....	TA8a1-8
ShahbazPanahi, Shahram .....	TA8b3-2	Tabassum, Nazia .....	WA7a-2
Shamma, Shihab .....	WA5a-3	Tadrous, John .....	TA6-3
Shao, Jing .....	TP1-8	Takac, Martin .....	MP6-3
Shao, Xin .....	MA8b3-3	Takala, Jarmo .....	WA8a2-1
Sheikhhattar, Alireza .....	WA5a-3	Talarico, Salvatore .....	MP3-6
Shekaramiz, Mohammad .....	MP8a2-6	Tang, Jianhua .....	WA2a-4
Shen, Kaiming .....	TP5b-4	Tang, Jun .....	MP5b-3
Shin, Wonjae .....	TA6-4	Tarver, Chance .....	TP8a1-6
Shin, Wonjae .....	TP5a-3	Tay, Peter .....	TP8a2-3
Shiner, Andrew .....	TP1-2	Tay, Wee Peng .....	WA2a-4
Shynk, John J. ....	TA3a-1	Tehrani, Arash Saber .....	TP2-2
Sidiropoulos, Nicholas .....	MP6-5	Teke, Oguzhan .....	WA6b-1

<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Tenca, Alexandre	MP8a1-1	Vasal, Deepanshu	TP3a-4
Teng, Fei	TP2-6	Velipasalar, Senem	TP8b2-5
Tenneti, Srikanth V.	MP8a2-9	Venkatraman, Ganesh	WA8a2-4
Tenneti, Srikanth V.	WA6a-3	Venosa, Elettra	TP8a1-5
Tepedelenlioglu, Cihan	MA8b1-8	Venugopal, Kiran	TA3b-3
Tepedelenlioglu, Cihan	MP4a-4	Verhelst, Marian	MP8a4-3
Tepedelenlioglu, Cihan	TA8a2-3	Villarreal, Salvador	TA8a1-3
Testa, Matteo	MP8a2-2	Viswanath, Sriram	TP3a-3
Testa, Matteo	TA3a-4	Viswanathan, Aditya	WA8a4-2
Thiele, Lars	TA6-2	Volkova, Anastasia	TA7-5
Thiele, Lars	TP5a-4	Vosoughi, Aida	WA8a2-2
Thomas, Peter	MA7b-1	Vouras, Peter	WA8a3-7
Tiwari, Shriman	MA8b4-1	Wagner, Kevin	TA3a-3
Tölli, Antti	TP8a3-1	Wai, Hoi-To	MP4a-2
Tomasi, Beatrice	TP8a3-3	Walk, Philipp	TP8a1-3
Tong, Hanghang	WA4-2	Walters III, E. George	TA7-1
Towsley, Don	TA1a-1	Wang, Chuang	TA2b-3
Traganitis, Panagiotis	MA6b-3	Wang, Haiming	WA2a-2
Tremblay, Nicolas	TA2b-2	Wang, Haobo	TA1b-2
Tremblay, Nicolas	WA7b-3	Wang, Qi	MA1b-1
Triolo, Anthony	MP2-2	Wang, Rui	TP8a3-8
Tröger, Hans-Martin	MA8b4-2	Wang, Weina	TP2-7
Truong, Kien	MP3-4	Wang, Xiaomeng	MP5a-4
Tse, David	TA5a-2	Wang, Xin	MP5a-4
Tsitsvero, Mikhail	WA7b-1	Wang, Yao	TP8a2-4
Tu, Ming	TP8a2-1	Wang, Zeliang	WA8a5-2
Tugnait, Jitendra	WA2b-3	Wang, Zhao	MP1b-3
Tulino, Antonia	TP3b-1	Wang, Zhe	MA5b-4
Tunali, Engin	TP7a-4	Wang, Zhengdao	MP4a-3
Tuninetti, Daniela	TP5b-1	Warnell, Garrett	TP6a-2
Ulukus, Sennur	MA2b-4	Wasson, Mitch	TP2-1
Ulukus, Sennur	MP1b-2	Weber, Andreas	MA1b-2
Utschick, Wolfgang	MP5b-2	Wei, Ermin	TA5a-4
Utschick, Wolfgang	TA2a-3	Wei, Jiaolong	TA5b-3
Vaccari, Andrea	WA7a-2	Weiland, Lorenz	MP5b-2
Vaccaro, Richard	WA8a4-3	Weiss, Stephan	WA8a5-2
Vaezi, Mojtaba	TP5b-2	Weller, Daniel	TA8a1-1
Vaidyanathan, P. P.	MP8a2-9	Wesel, Richard	TA1b-2
Vaidyanathan, P. P.	WA5b-4	Wieruch, Dennis	MA8b1-5
Vaidyanathan, P. P.	WA6a-3	Wiese, Thomas	MP5b-2
Vaidyanathan, P. P.	WA6b-1	William, Gus	WA8a5-3
Valavanis, Kimon P.	WA8a3-5	Williams, Cranos	TA8b2-7
Valenti, Matthew	MP3-6	Williams, Gustavious	MP8a3-2
Valenti, Matthew	TA3b-3	Wimalajeewa, Thakshila	WA3-2
Valenti, Matthew	WA8a1-4	Wirth, Thomas	MA8b1-5
Valkama, Mikko	MA8b2-3	Wittneben, Armin	MA8b4-4
Valkama, Mikko	TP8a1-6	Wittneben, Armin	TA8b3-4
Valkama, Mikko	TP8b1-1	Wolkerstorfer, Martin	WA1b-4
Valkama, Mikko	WA8a2-1	Woltering, Matthias	MA1b-4
Van den Bergh, Bertold	MP8a4-3	Wong, Nathan	TA1b-2
Van Der Laan, Roger	MP2-6	Wood, Sally	TA8a1-2
Varshney, Pramod	MP4b-1	Wu, Michael	TP7a-4
Varshney, Pramod	WA3-2	Wu, Yihong	MA6b-2
Varshney, Pramod	WA6b-3	Wu, Yihong	TP3a-2

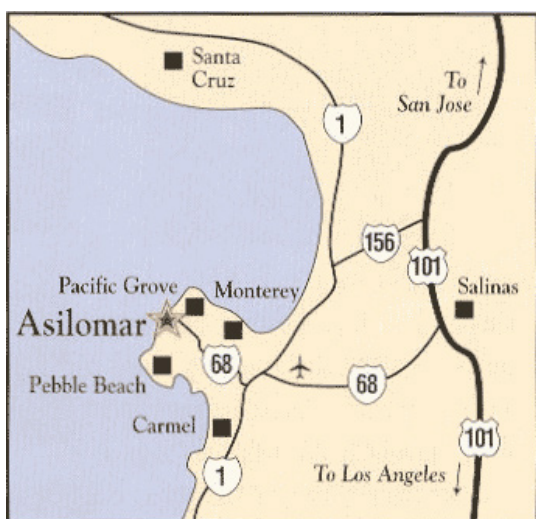
<b>NAME</b>	<b>SESSION</b>	<b>NAME</b>	<b>SESSION</b>
Wunder, Gerhard	MA1b-3	Zhang, Zisheng	TA8a1-5
Xavier, Joao	TP6a-3	Zhao, Licheng	MP6-2
Xavier, Joao	TP6b-2	Zhao, Zhao	MA1b-1
Xenaki, Angeliki	WA5b-2	Zhou, Mingyuan	MP7a-3
Xiao, Ming	MP1b-3	Zhou, Yongxing	TP2-5
Xiao, Weimin	TA2a-4	Zhu, Wei	MP5b-3
Xiao, Yuanzhang	TA5a-4	Zhuang, Yong	TA2b-1
Xie, Yao	WA6a-1	Zhuge, Qunbi	TP1-2
Xu, Jiaming	TP3a-2	Zirwas, Wolfgang	TP5a-4
Xu, Jingwei	WA8a1-3	Zoehmman, Erich	WA5b-2
Xu, Wei	WA2a-2	Zoltowski, Michael	TP8a1-1
Xue, Feng	TA6-3	Zong, Pingping	WA2b-4
Yagan, Osman	TA2b-1	Zorzi, Michele	MP3-1
Yamaguchi, Takuro	TP8a2-2		
Yan, Han	MA8b1-2		
Yan, Yanjun	TP8a2-3		
Yang, Heecheol	TP5a-3		
Yang, Hong	MP3-8		
Yang, Hong	TA6-1		
Yang, Jiaxin	TA8b3-5		
Yao, Ziyang	TA8a1-4		
Yeh, Edmund	TP3b-3		
Yener, Aylin	TA5b-2		
Yi, Xinping	TP5b-5		
Yin, Haifan	WA2a-1		
Ying, Lei	TP2-7		
Yli-Kaakinen, Juha	WA8a2-1		
Yoo, Seong Ki	TA3b-4		
Yoshida, Masato	TP1-9		
Younce, James	MP1a-3		
Yu, Wei	TP5b-4		
Yu, Wei	WA2a-3		
Yu, Xiaoyong	TP8b3-2		
Zaker, Nazanin	TA8a1-6		
Zakharov, Yuriy	WA5a-4		
Zavlanos, Michael M.	TP6a-4		
Zerguine, Azzedine	MA8b3-1		
Zerguine, Azzedine	TP8a1-2		
Zettergren, Matthew	WA8a3-5		
Zewail, Ahmed	TA5b-2		
Zhang, Baosen	TA5a-2		
Zhang, Jianzhong (Charlie)	TP2-4		
Zhang, Jun Jason	TA5b-3		
Zhang, Jun Jason	TA8a1-6		
Zhang, Jun Jason	TA8b2-1		
Zhang, Jun Jason	WA8a3-5		
Zhang, June	WA4-8		
Zhang, Junshan	TP2-7		
Zhang, Ning	MP5b-3		
Zhang, Sai	MP4a-4		
Zhang, Xinchun	TP2-3		
Zhang, Xing	TA6-3		
Zhang, Yingchen	TA5b-3		
Zhang, Yu	MA6b-1		

# Notes



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