THIRTY-FIFTH ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS, AND COMPUTERS

November 4 - 7, 2001
Asilomar Hotel
Conference Grounds

In cooperation with the Signal Processing Society of the Institute of Electrical and Electronics Engineering

THIRTY-FIFTH ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS, AND COMPUTERS

ORGANIZED IN COOPERATION WITH

NAVAL POSTGRADUATE SCHOOL
MONTEREY, CALIFORNIA

MONTEREY BAY AQUARIUM RESEARCH INSTITUTE
MOSS LANDING, CALIFORNIA

AND

IEEE SIGNAL PROCESSING SOCIETY

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Welcome from the General Chairman

Michael A. Soderstrand, Oklahoma State University

Welcome to the Thirty-Fifth Asilomar Conference on Signals, Systems, and Computers. Those of us who have been associated with this conference in the past appreciate the special nature of the workshop-like atmosphere that prevails despite the large number of attendees that come each year. This conference has always attracted the top researchers in our field. For many of us the Asilomar Conference holds a special place in our hearts for the outstanding technical program, the beautiful location and the opportunity to meet the best in our field in both the formal atmosphere of a lecture session, the less formal poster presentations and the yet less formal meals and coffee breaks that are somehow more important at this conference than at any other.

This year's organizing committee has been very careful to preserve the traditions of this conference. However, we are pleased to announce the introduction of the first Asilomar Conference on Signals and Systems Student Paper Contest. This year we received over 30 papers for the student paper contest and culled them down to 12 semi-finalists from which ten finalists will be presenting their papers in a special session on Monday afternoon. Three of these papers will be selected for prizes to be awarded at the Conference Reception.

The dedicated efforts of many people have come together to bring you this conference. Special thanks are extended to the Technical Program Chair, Dr. Keith Teague, and to his technical committee, and to Dr. Kenneth Jenkins who chairs the first ever Asilomar Student Paper contest. For the opening Sydney Parker Memorial Lecture, we are fortunate to have a keynote address by Dr. Delores M. Etter, Former Deputy Under Secretary of Defense for Science and Technology. She will discuss the issues, evolution, and future of science in this country. The social program for the conference includes two receptions, the Welcome Reception on Sunday night, and the Conference Reception the following evening at the Naval Postgraduate School.

We look forward to seeing you this year at Asilomar 2001!

Michael A. Soderstrand
General Chairman

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2001 Asilomar Conference

Sunday Afternoon, November 4

3:00 - 6:00	Registration
7:30 - 9:00	Welcoming Reception at Asilomar

Monday Morning, November 5

7:30 - 9:00	Breakfast is available
8:00 - 6:00	Registration
8:15 - 9:45	(MA1a) Conference Opening and Plenary Session - in the Chapel
9:45 -10:15	Coffee Social - in front of the Chapel

10:15 - 12:00 Morning Sessions:

MA1b	Optical Communications	Maite Brandt-Pearce
MA2b	Applications of Adaptive Signal Processing	Majid Ahmadi
MA3b	Field Porgrammable DSP Arrays	Chris Dick
MA4b	Automatic Target Recognition and Tracking	William Sander
MA5b	Synthetic Aperture Radar	Charles Jakowatz
MA6b	Design for Low Power	David Martinaz
MA7b	Arthmetic for DSP	Graham Julien
MA8b	Video Coding and Compression (Poster Session)	Moon Gi Kang

12:00-1:00 Lunch

Monday Afternoon, November 5

1:30-5:10 1 Break - 3:10-3:30

MP1	Space-Time Coding	Mahesh K. Varanasi
MP2	Concatenated Codes and Iterative Decoding	Richard D. Wesel
MP3	Adaptive Techniques in Image Processing	Marios S. Pattichis
MP4	Image Reconstruction and Enhancement	Yibin Zheng
MP5	Methods for CDMA	Michael Zoltowski
MP6	DSP Models of Computations to Programmable and Reconfigurable Devices	Ed Deprettere
MP7	STUDENT PAPER CONTEST	Ken Jenkins
MP8a	Filter Design, Filterbanks, and Wavelets (Poster Session)	Todd McWhorter
MP8b	Adaptive Communications and Arrays (Poster Session)	Robert Ives

6:00-7:00 Dinner

Monday Evening, November 5

6:30 - 8:30 Conference Reception at the Naval Postgraduate School Officers' Club Ballroom

Tuesday Morning, November 6

7:30-9:00	Breakfast	
8:00-5:00	Registration	
8:30-12:10	1 Break - 10:10 -10:30	
TA1	Challenges in Broadband Wireless Communications	Mohsen Kavehrad
TA2	Signal Representations and Spectral Analysis Techniques	Ralph Hippenstiel
TA3	Adaptive Signal Processing in Communications I	Howard Fan
TA4	Image Coding and Transmission	Amy E. Bell
TA5	Biomedical Signal Processing	Neeraj Magotra
TA6	Computer Arithmetic	Earl Swartzlander
TA7	Cyclostationary Signal Processing	Antonio Napolitano
TA8a	Wireless Communication & Signal Processing (Poster Session)	Venkatesh Vadde
TA8b	Algorithms for MIMO Links (Poster Session)	Xiang-Gen Xia
12:00-1:00	Lunch	

Tuesday Afternoon, November 6

1:30-5:10	1 Break - 3:10-3:30	
TP1	Modulation and Detection Techniques	Keith M. Chugg
TP2	Signal Detection and Classification	Bart F. Rice
TP3	Adaptive Communications and Arrays	Michael Zatman
TP4	Image Segmentation and Frequency Domain Processing	Joseph P. Havlicek
TP5	Multiple User/Multiple Access Techniques	Mahesh K. Varanasi
TP6	DSP Architectures	Keshab K. Parhi
TP7	Hyperspectral Processing & Multisensor or Data Fusion	Peter Soliz
TP8a	Computer Arithmetic Implementations and FPGA Designs (Poster Session)	Edwin de Angel

TP8b	Radar & Sonar Processing (Poster Session)	Benjamin C. Flores

Wednesday Morning, November 7

7:30-9:00	Breakfast	
8:00-12:00	Registration — Papers must be turned in before the registration closes at 12:00 noon	
8:30-12:10	1 Break - 10:10 -10:30	
WA1	Equalization and Synchronization Techniques	Jian Li
WA2	Higher-Order Statistical Signal Processing for Communications	Max Martone
WA3	Adaptive Signal Processing in Communications II	Ronald Iltis and John Shynk
WA4	Speech Coding and Processing	Walter Andrews
WA5	Wireless Systems	Giridhar Mandyam
WA6	Special Arithmetic Techniques	Neil Burgess
WA7	Biomedical Imaging	Jack Knight-Scott
WA8a	Advanced Modulation and Channel Estimation (Poster)	Scott Beaver

12:00-1:00 Lunch

2001 ASILOMAR CONFERENCE SESSION SCHEDULE

Coffee breaks will be at 10:10 am and 3:10 pm.
(Except Monday morning when refreshments will be served outside the Chapel from 9:45-10:15.)

Monday, November 5

8:15- 9:45 Conference Opening and Plenary Session

1. Welcome from the General Chairperson:

Michael A. Soderstrand
Oklahoma State University, Stillwater, Oklahoma

2. Session MA1a : Distinguished Lecture for the 2001 Asilomar Conference

Dr. Delores Etter

ONR Distinguished Chair in Science and Technology
Electrical Engineering Department
United States Naval Academy
Annapolis, MD
and
Former Deputy Under Secretary of Defense
for Science and Technology

A Vision of the Future - Smaller and Smarter Systems

Technology has given us the capabilities to develop systems that continue to get smaller and smarter. Examples of these smaller and smarter systems include microrobots, micro air vehicles, and micro satellites. Signal processing has allowed us to also expand the capabilities of these systems to interact with their environment through new sensing systems and faster computers. But one of the most exciting new capabilities for these smaller and smarter systems is the possibility to work together collaboratively. Collective behavior opens up many new possibilities. Consider the opportunities for swarms of micro air vehicles, or clusters of microsatellites, or groups of underwater autonomous vehicles. Learning algorithms and adaptive signal processing becomes a key element of the development of these new systems. This presentation will consider some of the new technologies and algorithms for this vision of the future.

Professional Biography

Dr. Etter has held the positions of Deputy Under Secretary of Defense for Science and Technology, and Deputy Director of Defense Research and Engineering, since June 1998. She is responsible for Defense Science and Technology strategic planning, budget allocation, and program execution and evaluation. Additionally she ensures that the National Defense objectives are met by the $9 billion per year DoD Science and Technology

Program. Dr. Etter coordinates NATO science and technology collaborative efforts and is the Principal U.S. Representative to the NATO Research and Technology Board and to The Technical Cooperation Program between Australia, Canada, New Zealand, United Kingdom and the U.S. She is also responsible for the DoD High Performance Computing Modernization Program, the Defense Modeling and Simulation Office, management oversight of the Software Engineering Institute (SEI), and executive agent for software intensive systems.

From 1990-1998, Dr. Delores Etter was a Professor of Electrical and Computer Engineering at the University of Colorado, Boulder. Her research interests are in adaptive signal processing, speech and speaker recognition, digital filter design, and software engineering. She has also written a number of textbooks on computer languages. Her educational interests include the development of collaborative experiments in virtual teaming of students using the Internet and the development of distance learning technologies.

During 1979-1989, Dr. Etter was a faculty member in the Department of Electrical and Computer Engineering at the University of New Mexico (UNM). She served as Associate Chair of the Department from 1987-1989. During 1989, she also served as Associate Vice President for Academic Affairs at UNM. Dr. Etter spent two summers at Sandia National Laboratories working in the area of seismic signal processing. During the 1983-1984 academic year she was a National Science Foundation Visiting Professor in the Electrical Engineering Department at Stanford University.

Dr. Etter attended Oklahoma State University and the University of Texas at Arlington, and received B.S. and M.S. degrees in mathematics in 1970 and 1972 from Wright State University in Dayton, Ohio. She received her Ph.D. in electrical engineering from the University of New Mexico in 1979.

She and her husband, Jerry, reside in Northern Virginia.

Program of 2001 Asilomar Conference on Signals, Systems, and Computers

Technical Program Chairman

Dr. Keith Teague

Oklahoma State University

Session MA1b — Optical Communications

Session Chair: Maite Brandt-Pearce - University of Virginia

MA1b-1 **High Capacity Metropolitan Area Networks for the Next Generation Internet** — **10:15 AM**
Leonid G. Kazovsky, Stanford University

MA1b-2 **Limits on the Power and Spectra Efficiency of Direct Detection Systems with Optical Amplifiers** — **10:40 AM**
Ira Jacobs, Virginia Polytechnic Institute and State University

MA1b-3 **Conversion of NRZ Signals to RZ by Phase Modulation and Filtering** — **11:05 AM**
Ira Jacobs, J.K. Shaw, and V. Wongpaibool,
Virginia Polytechnic Institute and State University

MA1b-4 **Free-Space Heterochronous Imaging Reception of Multiple Optical Signals** — **11:30 AM**
Wei Mao and Joseph M. Kahn, University of California - Berkeley

MA1b-5 **Modified Volterra Series Transfer Function Method** — **11:55 AM**
Bo Xu and Maite Brandt-Pearce, University of Virginia

Session MA2b — Applications of Adaptive Signal Processing

SessionChair: Majid Ahmadi - University of Windsor

MA2b-1 **An Overview of Discrete Multitone Modulation/Demodulation Systems in xDSL Applications** — **10:15 AM**
B. Nowrouzian, W. Agha, and W. Wang, University of Alberta

MA2b-2 **Blind Adaptive Multiuser Detection Using a Vector Constant-Modulus Approach** — **10:40 AM**
X. M. Wang, W.S. Lu, and A. Antoniou, University of Victoria

Continued on next page...

MA2b-3 **Nonlinear Adaptive IIR Digital Filters** **11:05 AM**
H. K. Kwan, University of Windsor

MA2b-4 **A Reduced Order Point Spread Function Model for Physical Optical Systems** **11:30 AM**
Thomas P. Costello, Mesh Networks, Inc.
Wasfy B. Mikael, University of Central Florida

MA2b-5 **Airborne Phased Array Radar Detection Based on the Two Dimensional Frequency Domain Least Squares Algorithm** **11:55 AM**
Qingwen Zhang and Wasfy B. Mikael, University of Central Florida

Session MA3b — Field Programmable DSP Arrays

Session Chair: Chris Dick - Xilinx, Inc.

MA3b-1 **Designing Soft Radios for High Data Rate Systems and Integrated Global Services** **10:15 AM**
Srikathyayani Srikanteswara, James Neel, Jeffrey H. Reed, and P.M.Athanas, Virginia Polytechnic Institute and State University

MA3b-2 **Configurable Architectures for Wireless Protocol Stacks** **10:40 AM**
Jan Rabaey and Tim Tuan, University of California - Berkeley

MA3b-3 **Configurable Computing and Sonar Processing-Architectures and Implementations** **11:05 AM**
Brent E. Nelson, Brigham Young University

MA3b-4 **FPGA Implementation of a 3GPP Turbo Codec** **11:30 AM**
Johannes Steensma, Frontier Design Inc.; Chris Dick, Xilinx, Inc.

MA3b-5 **A Dynamically Reconfigurable Viterbi Decoder Architecture** **11:55 AM**
Kanu Chadha and Joseph Cavallaro, Rice University

Session MA4b — Automatic Target Recognition and Tracking

Session Chair: William A. Sander - Army Research Office

MA4b-1 **Monte Carlo Simulation Techniques for Probabilistic Tracking** **10:15 AM**
Baoxin Li, Sharp Labs of AmericaRama Chellappa and Hankyu Moon, University of Maryland

MA4b-2 **Development of Imagery Sets and Performance Evaluation Methods for MTI using Ground-Based Thermal Imagers** **10:40 AM**
Clarence P. Walters, Night Vision and Electronic Sensors Directorate

MA4b-3 **Biomedical Application of Target Tracking in Clutter** **11:05 AM**
A. Goobic, M. Welser, Scott Acton, and K. Ley, University of Virginia

MA4b-4 **Object Detection and Localization in Compressed Video** **11:30 AM**
Charles D. Creusere and Ghassan Dahman, New Mexico State University

MA4b-5 **Space-Time Adaptive Processing for the Detection of Ground Moving Targets: Performance Analysis and Experimental Results** **11:55 AM**
Stephen M. Kogon, Massachusetts Institute of Technology

Session MA5b — Synthetic Aperture Radar

Session Chair: Charles Jakowatz - Sandia National Labs

MA5b-1 **MultiResolution Imaging with Quadtree BackProjection** **10:15 AM**
Seung-mok Oh and James H. McClellan, Georgia Institute of Technology

MA5b-2 **Backward Propagation Image Reconstruction Techniques for Bistatic Synthetic-Aperture Radar Imaging Systems with Circular-Aperture Configurations** **10:40 AM**
Stephanie Lockwood, Andrew Brown, and Hua Lee, University of California - Santa Barbara

Continued on next page...

MA5b-3 A Superresolution Algorithm for ISAR Imaging Using 2-D Complex Quarter Plane Lattice Predictors **11:05 AM**
I. Erer, M. Kartal, and A. H. Kayran, Istanbul Technical University

MA5b-4 A Computational Kronecker-core Array Algebra SAR Raw Data Generation Modeling System **11:30 AM**
Domingo Rodriquez, University of Puerto Rico - Mayaguez Campus

MA5b-5 Three-Dimensional Tomographic Imaging for Foliage Penetration Using Multiple-Pass Spotlight-Mode SAR **11:55 AM**
Charles V. Jakowatz and Daniel E. Wahl, Sandia National Laboratories

Session MA6b — Design for Low Power

Session Chair: David Martinez - Massachusetts Institute of Technology Lincoln Laboratory

MA6b-1 Low-Power 4-2 and 5-2 Compressors **10:15 AM**
Karuna Prasad, Morphics Technology Inc,.
Keshab K. Parhi, University of Minnesota

MA6b-2 Sign Extension Reduction by Look-Ahead Carry **10:40 AM**
Jin-Gyun Chung, Chonbuk National University
Sang-Min Kim and Keshab K. Parhi, University of Minnesota

MA6b-3 Energy-Efficient Communication Protocols for Ad-hoc Wireless Sensor Networks **11:05 AM**
Rex Min, Hesky Fisher, Daniel Willenson, and
Anatha Chandrakasan, Massachusetts Institute of Technology

Continued on next page...

MA6b-4 High-Performance Low-Power Bit-Level Systolic Array Signal Processor with Low-Threshold Dynamic Logic Circuits **11:30 AM**
William Song, Michael M. Vai, and Huy T. Nguyen,
Massachusetts Institute of Technology

MA6b-5 Reduced Precision Redundancy for Low-Power Digital Filtering **11:55 AM**
Byonghyo Shim and Naresh R. Shanbhag,
University of Illinois at Urbana-Champaign

Session MA7b — Arithmetic for DSP Applications

Session Chair: Graham Jullien - University of Windsor

MA7b-1 The European Logarithmic Microprocessor - A QRD-RLS Application **10:15 AM**
J. Nick Coleman, C.I. Softley, J. Kadlec,
University of Newcastle upon Tyne

MA7b-2 On the Design of an On-line Complex Givens Rotation **10:40 AM**
Robert McIlhenny, California State University - Northridge
Milos Ercegovac, University of California - Los Angeles

MA7b-3 Re-Evaluation of Complexity and Delay of Arithmetic Circuits as CMOS Realizations **11:05 AM**
Thomas B. Preusser and Earl E. Swartzlander, Jr., The University of Texas at Austin

MA7b-4 Digit-Serial Online Arithmetic for High-Speed Digital Signal Processing Applications **11:30 AM**
William G. Natter and B. Nowrouzian, University of Alberta

MA7b-5 A Unified Adder Design **11:55 AM**
Yuke Wang, The University of Texas-Dallas
Keshab K. Parhi, University of Minnesota

Session MA8b — Video Coding and Compression
(Poster Session)
10:15 - 12:00

Session Chair: Moon Gi Kang - Yonsei Unviersity

MA8b-1 Joint Source Channel Coding for Efficient Energy Utilization in Wireless Video Communications
Carlos Luna, Yiftach Eisenberg, Thrasyvoulos N. Pappas, Randall Berry, and Aggelos K. Katsaggelos, Northwestern University

MA8b-2 Distortion Modeling for Error Concealment Based on Motion Vector Recovery
Jae-Won Suh and Yo-Sung Ho, Kwangju Institute of Science and Technology

MA8b-3 Wireless Multimedia Deployment - Challenges and Solutions in the Cellular Infrastructure
Mark R. Banham, PacketVideo Inc.

MA8b-4 Bit Allocation for Variable Frame Rated Joint Source-Channel Coding Scheme
Yuri Hong and Yoonsik Choe, Yonsei University

MA8b-5 A Survey of UDP Packet Loss Characteristics
Robin Braun and Suk Kim Chin, University of Technology

MA8b-6 Region Boundary Generation and Compression
Bryan Mealy, University of California - Santa Cruz

MA8b-7 End-to-End Distortion Estimation for RD-Based Robust Delivery of Pre-compressed Video
Rui Zhang, Shankar L. Regunathan, and Kenneth Rose, University of California-Santa Barbara

MA8b-8 Rate Control Using Embedded Adaptive Vector Quantization
Hyun Mun Kim, Hyung-Suk Kim, and Tinku Acharya, Intel Corporation

MA8b-9 Spatio-Temporal Correlation Based Fast Motion Estimation Algorithm for MPEG-2
K. Ramkishor and S. Krishna, Emuzed India Private Limited

MA8b-10 The Video Coder with Filterbank and Subband Motions Estimation and Compensation
Yusuke Indoh, Wataru sano, and Masaki Ikehara, Keio University

Session MP1 — Space-Time Coding

Session Chair: Mahesh K. Varanasi, University of Colorado - Boulder

MP1-1 Group Decision Feedback Detector for Space-Time and Narrow-Band Multiuser Communications in Rayleigh Fading Channels — **1:30 PM**
Narayan Prasad and Mahesh K. Varanasi, University of Colorado - Boulder

MP1-2 Generalized Space-Time Layering for Auto-Coding — **1:55 PM**
Hesham El Gamal, Ohio State University

MP1-3 Optimal Diversity-Multiplexing Tradeoff in Multiple Antenna Fading Channels — **2:20 PM**
Lizhong Zheng and David Tse, University of California - Berkeley

MP1-4 Cayley Codes for Multiple-Antenna Differential Modulation — **2:45 PM**
Babak Hassibi, California Institute of Technology
Bertrand Hochwald, Lucent Bell Labs

BREAK — **3:10 PM**

MP1-5 Differential Space-Time Modulation Based on Amicable Orthogonal Designs — **3:30 PM**
Gieish Ganesan and Petre Stoica, Uppsala University

MP1-6 A New Orthogonal Transmit Waveform with Space-Time Diversity (OTW/STD) for Wireless CDMA Downlink Systems — **3:55 PM**
Jiann-An Tsai and Brian D. Woerner, Virginia Polytechnic Institute and State University

MP1-7 Linear Precoding for Space-Time Coded Systems with known Transmit Antenna Correlations — **4:20 PM**
Hemanth Sampath and Arogyaswami J. Paulraj, Stanford University

MP1-8 Space-Time Block Coding for Channels with Intersymbol Interference — **4:45 PM**
Petre Stoica, Uppsala University;Erik Lindskog, ARRAYCOMM, INC.

MP1-9 Further Results on Interference Cancellation and Space-Time Block Codes — **5:10 PM**
Anastasios Stamoulis, Naofal Al-Dhahir, and A.R. Calderbank, AT&T Labs

Session MP2 — Concatenated Codes and Iterative Decoding

Session Chair: Richard D. Wesel,
University of California - Los Angeles

MP2-1 **On Punctured Serially Concatenated Turbo Codes** — **1:30 PM**
Steven S. Pietrobon, Small World Communications

MP2-2 **Convergence of Multi-Dimensional Iterative Decoding Schemes** — **1:55 PM**
Stephan ten Brink, Lucent Technologies, Bell Labs

MP2-3 **Constrained Iterative Decoding: Performance and Convergence Analysis** — **2:20 PM**
Jun Heo and Keith M. Chugg, University of Southern California

MP2-4 **Optimal Weight Assignment Algebraic List Decoding** — **2:45 PM**
Ralf Koetter, University of Illinois

BREAK — **3:10 PM**

MP2-5 **Reduced Complexity Iterative Demodulation and Decoding of Serial Concatenated CPM** — **3:30 PM**
Mark R. Shane, The Aerospace Corporation
Richard D. Wesel, University of California - Los Angeles

MP2-6 **Reduced Complexity Turbo Equalization by Means of Hard Output Channel Decoding for Wireless Communication Systems** — **3:55 PM**
Fabian Vogelbruch and Sven Haar, Institute for Integrated Circuits

MP2-7 **Turbo Equalization for EDGE System with DDF-SOVA** — **4:20 PM**
Xiang-guo Tang and Zhi Ding, University of California - Davis

MP2-8 **Embedding Unequal Error Protection into Turbo Codes** — **4:45 PM**
Marco Grangetto, Enrico MagliI, and Gabriella Olmo,
Politecnico di Torino

MP2-9 **Turbo-Coded Trellis-Based Constructions for Data Embedding: Channel Coding with Side Information** — **5:10 PM**
Jim Chou and Kannan Ramchandran, University of California - Berkeley

Session MP3 — Adaptive Techniques in Image Processing

Session Chair: Marios S. Pattichis - University of New Mexico

MP3-1 **Adaptive Neural Network Imaging in Medical Systems** — **1:30 PM**
Constantinos S. Pattichis and Marios S. Pattichis,
University of New Mexico

MP3-2 **Blind Image Separation through Kurtosis Maximization** — **1:55 PM**
Ning Chen and Phillip De Leon, New Mexico State University

MP3-3 **Adaptive Sampling and Processing of Ultrasound Images** — **2:20 PM**
Paul Rodriguez and Marios S. Pattichis, University of New Mexico

MP3-4 **Performance of the Multilayer Perceptron-Based DFE with Lattice Structure in Linear and Non-Linear Channels** — **2:45 PM**
Ahmar Shafi and Azzedine Zerguine,
King Fahd University of Petroleum & Minerals

BREAK — **3:10 PM**

MP3-5 **Adaptive Fuzzy Model for Image Processing** — **3:30 PM**
Madjid Fathi and Jens Hiltner, University of New Mexico

MP3-6 **A Fast Full-Search Adaptive Vector Quantizer for Video Coding** — **3:55 PM**
Scott E. Budge, Utah State University
Christian B. Peel, Brigham Young University

MP3-7 **Adaptive Image Processing via Snake Filters** — **4:20 PM**
Nilanjan Ray and Scott Acton, University of Virginia

MP3-8 **Comparison of Robust Estimation and Kalman Filtering Applied to Fingertip Tracking in Human-Machine Interfaces** — **4:45 PM**
Sylvia M. Dominguez, Univ. of Calif.-LA & HRL Lab.
Trish Keaton, HRL Laboratories
Ali H. Sayed, University of California - Los Angeles

MP3-9 **An Improved FOCUSS-Based Learning Algorithm for Solving Sparse Linear Inverse Problems** — **5:10 PM**
Joseph F. Murray and Kenneth Kreutz-Delgado, University of California - San Diego

Session MP4 — Image Reconstruction and Enhancement

Session Chair: Yibin Zheng - University of Virginia

MP4-1 **Spatially Adaptive Denoising Algorithm Based on Nonstationary Correlation Assumption** — **1:30 PM**
Sung Cheol Park and Moon Gi Kang, Yonsei Unviersity

MP4-2 **Cramer-Rao Bounds for Parametric Boundary Estimation in Linear Inverse Problems** — **1:55 PM**
Jong Chul Ye, Yoram Bresler, and Pierre Moulin,
University of Illinois at Urbana-Champaign

MP4-3 **Convergence of the Simultaneous Algebraic Reconstruction Technique (SART)** — **2:20 PM**
Ming Jiang and Ge Wang, University of Iowa

MP4-4 **Speckle Reduction In SAR Imagery by Lp Normed Filtering** — **2:45 PM**
Jim Schroeder, University of South Australia
Tamal Bose, Utah State University

BREAK — **3:10 PM**

MP4-5 **Fast Wavelet-Based Image Deconvolution Using the EM Algorithm** — **3:30 PM**
Robert D. Nowak, Rice University
Mario A.T. Figueiredo, Instituto Superior Tecnico

MP4-6 **Three Dimensional Reconstruction from Low Textured Stereo Image Pairs** — **3:55 PM**
Hsueh-Ban Lan and Sally L. Wood, Santa Clara University

MP4-7 **Closed Form Solutions for Two-Target Direction of Arrival Using Four-Channel Monopulse** — **4:20 PM**
Yibin Zheng, University of Virginia

MP4-8 **Time Reversal Imaging—Based on the Use of the SVD** — **4:45 PM**
Anthony Devaney, Northeastern University

MP4-9 **A New Data Extrapolation Approach for High Resolution Radar Imaging** — **5:10 PM**
I. Erer, M. Kartal, and A.H. Kayran, Istanbul Technical University

Session MP5 — Methods for CDMA

Session Chair: Michael Zoltowski - Purdue University

MP5-1 **Combined MMSE Equalization and Multi-User Detection for High-Speed CDMA Forward Link with Sparse Multipath Channels** — **1:30 PM**
Samina Chowdhury and Michael Zoltowski, Purdue University

MP5-2 **Joint Constrained Data Detection and Channel Estimation Algorithms for QS-CDMA Signals** — **1:55 PM**
KyeongJin Kim, Nokia Research Center,
Ronald Iltis, University of California-Santa Barbara

MP5-3 **Adaptive Beamforming of Uniform Circular Arrays (UCA) for Wireless CDMA System** — **2:20 PM**
Jiann-An Tsai and Brian D. Woerner,
Virginia Polytechnic Institute & State University

MP5-4 **A Low Complexity MMSE Multiuser Detector for DS-CDMA** — **2:45 PM**
Seema Sud, Wilbur Myrick, Paula Cifuentes, and J. Scott Goldstein, Science Applications International Corporation; Michael Zoltowski, Purdue University

BREAK — **3:10 PM**

MP5-5 **A RAKE Structured SINR Maximizing Mobile Receiver for the WCDMA Downlink** — **3:30 PM**
Massimiliano Lenardi and Dirk T.M. Slock, EURECOM Institute

MP5-6 **Optimal Sequences for Asynchronous CDMA Channels with Different SIR Requirements** — **3:55 PM**
Slawomir Stanczak and Holger Boche,
Heinrich-Hertz Institute for Comm.Technology

MP5-7 **An MMSE Receiver for Asynchronous DS/CDMA in Multipath Fading Channels - Exact Analytical Evaluation** — **4:20 PM**
Kunjie Wang, New Jersey Institute of Technology
Yeheskel Bar-Ness, Stanford University

MP5-8 **Mitigating Error Propagation in CDMA Multiuser DFE** — **4:45 PM**
Zhi Tian, Michigan Technological University

MP5-9 **Synchronization Sensitivity of Enhanced CDMA Array-Receivers to Fast Channel Time-Variations and to Shaping-Pulse Design** — **5:10 PM**
Karim Cheikhrouhou, Ecole Nationale d'Ingenieurs de Tunis
Sofiene Affes and Paul Mermelstein, Universite du Quebec

Session MP6 — DSP Models of Computation to Programmable and Reconfigurable Devices

Session Chair: Ed Deprettere - Leiden University

MP6-1 **Mapping DSP Applications onto Self-Timed Multiprocessors** — **1:30 PM**
Shuvra S. Bhattacharyya, Neal Bambha, Mukul Khandelia, and Vida Kianzad, University of Maryland at College Park

MP6-2 **A Reconfiguration Hierarchy for Elliptic Curve Cryptography** — **1:55 PM**
P. Schaumont and Ingrid Verbauwhede, University of California - Los Angeles

MP6-3 **Accelerating Intellectual Property Design Flow Using Simulink** — **2:20 PM**
Philippe Molson, Altera Corporation

MP6-4 **Compilation from Matlab to Process Networks Realised in FPGA** — **2:45 PM**
Tim Harriss and Richard Walke, Defence, Evaluation & Research Est.
Ed Deprettere and Bart Kienhuis, Leiden University

BREAK — **3:10 PM**

MP6-5 **Design of a Secure, Intelligent, and Reconfigurable Web Cam Using a C Based System Design Flow** — **3:30 PM**
Diederik Verkest, Prabhat Avasare, Paul Coene, Stijin Decneut, Dirk Desmet, Filip Hendrickx, Theo Marescaux, Jean-Yves Mignolet, Patrick Schaumont, and Robert Pasko, IMEC

MP6-6 **Boundary Control: A New Distributed Control Architecture for Space-Time Transformed VLSI Processor Arrays** — **3:55 PM**
Marcus Bednara and Juergen Teich, University of Paderborn

MP6-7 **Automated Design Flow for Low Power, High Throughput Dedicated Signal Processing Systems** — **4:10 PM**
W. Rhett Davis, Ning Zhang, Kevin Camera, Fred Chen, Dejan Markovic, Nathan Chan, and Borivoje Nikolic, University of California - Berkeley, Robert Brodersen, Berkeley Wireless Research Center

Continued on next page...

MP6-8 **Reconfigurable Instruction Set Processors: An Implementation Platform for Interactive Multimedia Applications** — **4:45 PM**
Murali Jayapala, Francisco Barat, Pieter Op de Beek, and Rudy Lauwereins, K.U. Leuven

MP6-9 **Reprogrammable Platforms for High-Speed Data Acquisition** — **5:10 PM**
Edward A. Lee, Hin Liu, and Stephen Neuendorffer, University of California - Berkeley, Jozsef Ludwig, Sonia R. Sachs, Berkeley National Laboratory, James G. McCarthy, Agile Design

Session MP7 — Student Paper Contest

Session Chair: Ken Jenkins - The Pennsylvania State University

MP7-1 **Pathwise Polynomial Expansion Interference Cancellation for DS-CDMA** — **1:30 PM**
Christian Fischer and Dirk Slock, Eurecom Institute

MP7-2 **A New Method for PAR Reduction in Baseband DMT Systems** — **1:50 PM**
Brian S. Krongold Douglas L. Jones, University of Illinois at Urbana-Champaign

MP7-3 **Ergodic Capacity of Multi-Antenna Gaussian Multiple Access Channels** — **2:10 PM**
Wonjong Rhee and John M. Cioffi, Stanford University

MP7-4 **Filter Banks for Optimum Subband Coding of Cyclostationary Signals with Dynamic Bit Allocation** — **2:30 PM**
Ashish Pandharipande, Soura Dasgupta, and Dan Kula, The University of Iowa

BREAK — **2:40 PM**

Continued on next page...

MP7-5 **Analysis of MPLS vs. MPLambdaS Next Generation Networking Technologies** — **2:50 PM**
Grace Y. Cho and Jong-Moon Chung, Oklahoma State University

MP7-6 **Improving Perceptual Quality for Internet Video Streaming** — **3:20 PM**
Suk Kim Chin and Robin Braun, University of Technology

MP7-7 **Cordic Implementation of Digital Heterodyne Filter in VLSI** — **3:40 PM**
Sameer Kadam, Louis G. Johnson, and Michael A. Soderstrand, Oklahoma State University

MP7-8 **Adaptive Linear Prediction with Power-of-Two Coefficients** — **4:00 PM**
Anand Venkatachalan and Tamal Bose, Utah State University
Ratchaneekorn Thamvichai, University of Colorado

MP7-9 **Speech Enhancement Based on Truncated and Constrained Minimum Variance Estimator and Undecimated Wavelet Packet Non-Uniform Filterbanks** — **4:20 PM**
Min-sung Koh and Margaret Mortz,
Washington State University at Spokane

MP7-10 **Efficiency and Accuracy Tradeoffs in Using Projections for Motion Estimation** — **4:40 PM**
Dirk Robinson and Peyman Milanfar,
University of California - Santa Cruz

Session MP8 — Filter Design, Filterbanks, and Wavelets
(Poster Session)
1:30 - 3:00

Session Chair: Todd McWhorter - Mission Research Corporation

MP8a-1 **Least Squares Signal Approximation Using Multirate Systems: Multichannel Nonuniform Case**
Bojan Vrcelj and P.P. Vaidyanathan, California Institute of Technology

MP8a-2 **New Sampling Expansions for Band Limited Signals Based on Chromatic Derivatives**
P.P. Vaidyanathan, California Institute of Technology
Aleksandar Ignjatovic, Kromos Technology, Inc.
M.J. Narasimha, Stanford University & Comstellar Technologies

MP8a-3 **Target Enhancement Using Steerable Pyramid Decomposition and Multi-Channel Filtering**
Q. Jiang and S. Kadambe, HRL Laboratories

MP8a-4 **Generalized Linear-Phase Paraunitary Nonuniform Filter Banks (GENLPPUNUFB)**
Yuhiro Kobayashi, Masahiro Kawada, and Masaki Ikehara, Keio University

MP8a-5 **Local Signal Reconstruction via Chromatic Differentiation Filter Banks**
John Byrnes, Kromos Technology, Inc.

MP8a-6 **Issues in Multirate Statistical Signal Processing**
Charles W. Therrien, Naval Postgraduate School

MP8a-7 **Design of Maximally Decimated Near-Perfect-Reconstruction DFT Filter Banks with Allpass-Based Analysis Filters**
Enisa Galijasevic and Jorg Kliewer, University of Kiel

MP8a-8 **Stability of Periodic Digital Filters Under Quantization**
Tamal Bose and Ratchaneekorn Thamvichai, University of Colorado
Jim Schroeder, University of South Australia

MP8a-9 Design of 2-D Multiplierless Filters Using the Genetic Algorithm
Ratchaneekorn Thamvichai, University of Colorado
Tamal Bose and Randy L. Haupt, Utah State University

MP8a-10 On the Structure, Performance, and Applications of Recursive All-Pass Filters with Adjustable and Linear Group Delay
Fred Harris, San Diego State University

MP8a-11 Low-Rank Approximation of Complex Random Vectors
Peter J. Schreier, University of Colorado - Boulder
Louis Scharf, Colorado State University

MP8a-12 The New Direct Approach to Designing PCLS Transmit-Receive Filters
John W. Adams and James L. Sullivan,
California State University - Northridge

MP8a-13 Using Wavelet Multi-Resolution in the Remote Sensing of Air Pollution
Victor DeBrunner, Alrumani Chinnaswamy, Amir Zia, and
Linda S. DeBrunner, The University of Oklahoma

MP8a-14 On the Efficient Implementation of Comb Filters Using Block Processing
Claude S. Lindquist and Alexia Massalin,
MicroUnity Systems Engineering, Inc

MP8a-15 Simulated Performance of 1000BASE-T Receiver with Different Analog Front End Designs
Jingyu Huang and Richard R. Spencer, University of California - Davis

MP8a-16 A Method for FIR Filter Design from Joint Amplitude and Group Delay Characteristics
Ioannis Fotinopoulos, Tania Stathaki, and Anthony Constantinides,
Imperial College of Science

Session MP8 — (Poster Session) 3:30 - 5:00 Adaptive Communications and Arrays

Session Chair: Robert Ives - Naval Postgraduate School

MP8b-1 Performance Evaluation of Power Control Bit Detection for an Adaptive SIC Receiver and the IS-95 Downlink
Richard Cagley and John J. Shynk, University of California-Santa Barbara

MP8b-2 Adaptive Array Processing for Distributed Sources
Benjamin Friedlander, University of California-Santa Cruz

MP8b-3 Adaptive Power-Managed FMCW Emitter Detection Performance Against Low-RCS Ships
Phillip Pace, Naval Postgraduate School

MP8b-4 Orthogonal Polynomial-Based Nonlinear Adaptive Filters
W. Kenneth Jenkins, The Pennsylvania State University
Charles W. Therrien, Naval Postgraduate School
Xiaohui Li, Texas Instruments, Inc.

MP8b-5 Mean Square Performance Analyses of Adaptive Multichannel Blind Deconvolution Algorithms
Xiaoan Sun and Scott C. Douglas, Southern Methodist University

MP8b-6 Optimum Invariant Detection of Multidimensional Signals in Partially-Homogeneous Environment
Ernesto Conte and Antonio De Maio, Universita degli Studi di Napoli "Federico II"

MP8b-7 Blind ISI Mitigation for Mobile Communications
Yasamin Mostofi and Donald C. Cox, Stanford University

MP8b-8 Superimposed Periodic Pilots for Blind Channel Estimation
G. Tong Zhou, Georgia Institute of Techonolgy
Mats Viberg, Chalmers University of Technology

MP8b-9 New Distortion Measures for Data Compression for Emitter Location
Mark L. Fowler, State University of New York at Binghamton

MP8b-10 Near Lossless Compression of SAR Imagery Using Gradient Adaptive Lattice Filters
Robert Ives, Naval Postgraduate School

MP8b-11 Chirp Transform in the Nonlinear Tracking Performance Analysis of the LMS Adaptive Predictors
Jun Han, Walter Ku, University of California - San Diego
James Zeidler, SPAWAR

MP8b-12 A Stochastic Technique for On-line Prediction and Tracking of Wireless Packet Networks
R. Chandramouli, Stevens Institute of Technology

Session TA1 — Challenges in Broadband Wireless Communications

Session Chair: Mohsen Kavehrad - The Pennsylvania State University

TA1-1 Wireless Multi-Protocol Label Switching (WMPLS) — **8:30 AM**
Jong-Moon Chung, Oklahoma State University

TA1-2 Error-Resilient H.263 Video Coding for Wideband CDMA Systems — **8:55 AM**
H. Liu, A. Ravindran, D. J. Miller, M. Kavehrad, J. F. Doherty,
I. Agoren, A. Lackpoor, University of Washington

TA1-3 Amplifier Linearization with Memory for Broadband Wireless Applications — **9:20 AM**
Kathleen Muhonen, RF Micro Devices
Mohsen Kavehrad, The Pennsylvania State University

TA1-4 Dynamic-TDD and Optimum Slot-Allocation in Fixed Cellular Systems — **9:45 AM**
Wun Cheol Jeong and Mohsen Kavehrad,
The Pennsylvania State University

BREAK — **10:10 AM**

TA1-5 The Convergence and Performance of LEGO Wireless Networks — **10:30 AM**
Matthew Bromberg, Worcester Polytechnic Institute

TA1-6 Exploitation of MIMO Network Diversity in Multipoint Communication Systems — **10:55 AM**
Brian G. Agee, Consultant

TA1-7 Adaptive Power Allocation in Mixed-QoS CDMA Systems — **11:20 AM**
Giridhar D. Mandyam, Nokia Research Center

Session TA2 — Signal Representations and Spectral Analysis Techniques

Session Chair: Ralph Hippenstiel - Naval Postgraduate School

TA2-1 **Heuristic Introduction of Quadratic Time-Frequency Distributions** — **8:30 AM**
Boualem Boashash, Queensland University of Technology

TA2-2 **1-D and 2-D Minimum Variance Spectral Estimation Fast Algorithms Based on 1-D and 2-D Covariance Methods of Linear Prediction** — **8:55 AM**
Larry Marple, Orincon Corporation

TA2-3 **Matching Pursuit Classification for Time-Varying Acoustic Emissions** — **9:20 AM**
Samuel Pon Varma, Antonia Papandreou-Suppappola, and Seth B. Suppappola, Arizona State University

TA2-4 **The Hilbert Space Geometry of the Rihaczek Time-Frequency Distribution** — **9:45 AM**
Louis Scharf, Colorado State University
Benjamin Friedlander, University of California-Santa Cruz
Patrick Flandrin, L'Ecole Normal Superieure de Lyon

BREAK — **10:10 AM**

TA2-5 **Using Wavelet-Based Indices for Detecting Abrupt Changes in Signals** — **10:30 AM**
Mohammed Allali, Chapman University
Victor DeBrunner, The University of Oklahoma

TA2-6 **Predictive Modeling of Multispectral Data Fusion** — **10:55 AM**
Sunanda Mitra, Zhanyu Ge, Shuyu Yang, Vikram Venkatesaran, Kathleen Gilliam, and Jim Dunyak, Texas Tech University

TA2-7 **Characterization of Linear Scale Invariant System Input/Output Relationships and Synthesis of Network Traffic Traces** — **11:20 AM**
Seungsin Lee, Raghuveer Rao, and Rajesh Narasimha, Rochester Institute of Technology

TA2-8 **A Representation Theorem for Linear Discrete-Space Systems with Stochastic Inputs** — **11:45 AM**
Irwin W. Sandberg, The University of Texas at Austin

Session TA3 — Adaptive Signal Processing in Communications I

Session Chair: Howard Fan - University of Cincinnati

TA3-1 **Adaptive Combining Scheme for CDMA Blind Receivers** — **8:30 AM**
Peerapol Yuvapoositanon and Jonathon A. Chambers, Mahanakorn University of Technology

TA3-2 **A Decision Directed Channel Estimator for MLSE Receiver Employing Long Range Predictor** — **8:55 AM**
Chan-Soo Hwang, Samsung Advanced Institute of Technology
Sungkwon Jo, Media Lab. Samsung Electronics

TA3-3 **Blind Maximum Likelihood Sequence Estimation without Channel Estimation** — **9:20 AM**
Xiaohua Li, State University of New York at Binghamton

TA3-4 **Generalized Kurtosis and Applications in Blind Equalization of MIMO Channels** — **9:45 AM**
Andre Tkacenko and P.P. Vaidyanathan, California Institute of Technology

BREAK — **10:10 AM**

TA3-5 **On Blind Identification of SIMO Time-Varying Channels Using Second-Order Statistics** — **10:30 AM**
Jitendra Tugnait and Weilin Luo, Auburn University

TA3-6 **Estimating Noise Statistics in Adaptive Semi-Blind Equalization** — **10:55 AM**
Marius Sirbu, Mihai Enescu, and Visa Koivunen, Helsinki University of Technology

TA3-7 **Delayed-Pilot Sampling for Mixture Kalman Filter with Application in Fading Channels** — **11:20 AM**
R. Wang and Xiaodong Wang, Texas A&M University

TA3-8 **Semi-Blind Channel Estimation for Block Transmission with Known Symbol Padding** — **11:45 AM**
Geert Leus, Katholieke Universiteit Leuven
Marc Moonen, K.U. Leuven - ESAT

Session TA4 — Image Coding and Transmission

Session Chair: Amy E. Bell - Virginia Polytechnic Institute and State University

TA4-1 **Group Testing for Block Transform Image Compression** — **8:30 AM**
Ed Hong, Richard Ladner, and Eve Riskin, University of Washington

TA4-2 **Improving Image Compression Performance with Balanced Multiwavelets** — **8:55 AM**
Lakshmi R. Iyer and Amy E. Bell,
Virginia Polytechnic Institute and State University

TA4-3 **Very Low Bit-Rate Target-Based Image Coding** — **9:20 AM**
David Giguet, Arizona State UniversityGlen P. Abousleman, Motorola SSG
Lina J. Karam, Arizona State University

TA4-4 **Progressive Image Transmission by Hybrid ARQ with Code Combining** — **9:45 AM**
Minyi Zhao andAli N. Akansu, New Jersey Institute of Technology

BREAK — **10:10 AM**

TA4-5 **Image Coding with Channel-Optimized Trellis-Coded Quantization for Channels with Memory** — **10:30 AM**
David Giguet and Lina J. Karam, Arizona State University
Glen P. Abousleman, Motorola SSG

TA4-6 **Encoding Multidimensional Wavelet Coefficients Using the Generalized Zerotree** — **10:55 AM**
Andreas Dehmel, Technical University of Munich

TA4-7 **LDPC Codes for Robust Transmission of Images Over Wireless Channels** — **11:20 AM**
C. Zhong and Joseph P. Havlicek, University of Oklahoma

TA4-8 **Speedup Techniques for Text Image Compression with JBIG2** — **11:45 AM**
Yan Ye and Pamela Cosman, University of California - San Diego

Session TA5 — Biomedical Signal Processing

Session Chair: Neeraj Magotra - Texas Instruments, Inc.

TA5-1 **Low-Power DSP ASIC Based Hearing Solution** — **8:30 AM**
R. Brennan and T. Schneider, DSP Factory

TA5-2 **Application of Cochlear Models to Hearing Enhancement** — **8:55 AM**
B. Edwards, Sound ID

TA5-3 **MASSIT - Multiresolution Analysis of Signal Subspace Invariance Technique: A Novel Algorithm for Blind Source Separation** — **9:20 AM**
Karim G. Oweiss and David J. Anderson, University of Michigan

TA5-4 **Wavelet Analysis of Transient Evoked Otoacoustic Emissions for Differential Diagnosis of Cochlear Hearing Loss** — **9:45 AM**
Ulrich Hoppe, University of Erlangen-Nurnberg; Stephan Weiss, University of Southampton, Marion Schabert, University of Erlangen-Nurnberg;
Heinrich Iro, University of the Saarland

BREAK — **10:10 AM**

TA5-5 **Summary of Time-Frequency Algorithms for Processing Auditory Evoked Potentials Yuying Song, Ameritec Corporation** — **10:30 AM**
Claude S. Lindquest, University of Miami

TA5-6 **A Continuous Wave (CW) Radar for Gait Analysis** — **10:55 AM**
Jonathan L. Geisheimer and Eugene F. Greneker,
Georgia Tech Research Institute

TA5-7 **Evaluating Functional Relation Amoung Biomechanical Variables Using Neural Networks** — **11:20 AM**
Zhihua Zou and Kayvan Najarian, University of North Carolina-Charlotte
Ge Wu, University of Vermont

TA5-8 **Fixed-Point DSP Solutions for the Hearing Impaired** — **11:45 AM**
Neeraj Magotra, S. Savadatti, and A. Mohammed, Texas Instruments, Inc.
L. Thibodeau, E. Tobey, and P. Dybala, University of Texas at Dallas

Session TA6 — Computer Arithmetic

Session Chair: Earl E. Swartzlander, Jr. - The University of Texas at Austin

TA6-1 **Division with Limited Precision Primitive Operations** — **8:30 AM**
Milos D. Ercegovac, University of California-Los Angeles
Tomas Lang, University of California-Irvine

TA6-2 **High Throughput 3D Rotations and Normalizations** — **8:55 AM**
Tomas Lang, University of California-Irvine
Elisardo Antelo, Univ. de Santiago de Compostela

TA6-3 **Packed Arithmetic on a Prefix Adder (PAPA)** — **9:20 AM**
Neil Burgess, Cardiff University

TA6-4 **Switching Activity in Parallel Multipliers Edwin de Angel, Cirrus Logic Inc.** — **9:45 AM**
Earl E. Swartzlander, Jr., The University of Texas at Austin

BREAK — **10:10 AM**

TA6-5 **Combined Unsigned and Two's Complement Hybrid Squarers** — **10:30 AM**
E. George Walters III, Jason Schlessman, and
Michael J. Schulte, Lehigh University

TA6-6 **On Clock-gated Scheme for Low-power Adders** — **10:55 AM**
Zhijun Huang and Milos D. Ercegovac,
University of California-Los Angeles

TA6-7 **Application of Logical Effort on Design of Arithmetic Blocks in VLSI CMOS Technology** — **11:20 AM**
Xiao-Yan Yu and Vojin Oklobdzija, University of California - Davis

TA6-8 **Improving the Effectiveness of Floating Point Arithmetic** — **11:45 AM**
Hossam A.H. Fahmy, Albert A. Liddicoat, and Michael J. Flynn,
Stanford University

Session TA7— Cyclostationary Signal Processing

Session Chair: Antonio Napolitano - Universita di Napoli Federico II

TA7-1 **Exploiting the Cyclic-Prefix for Blind Frequency-Offset Estimation in OFDM** — **8:30 AM**
Xiaoli Ma and Georgios B. Giannakis, University of Minnesota

TA7-2 **Empirical Determination of the Frequencies of an Almost Periodic Sequence in Gaussian White Noise** — **8:55 AM**
D. Dehay, University of RennesH.L. Hurd, University of North Carolina

TA7-3 **Making the Most of Spectral Redundancy in GSM: Cheap CCI Suppression** — **9:20 AM**
William A. Gardner, Statistical Signal Processing, Inc.

TA7-4 **On the Utility of Sixth-Order Cyclic Cumulants for RF Signal Classification** — **9:45 AM**
Chad Spooner, Mission Research Corporation

BREAK — **10:10 AM**

TA7-5 **On the Spectral Correlation Measurement of Nonstationary Stochastic Processes** — **10:30 AM**
Antonio Napolitano, Universita di Napoli Federico II

TA7-6 **Detection and Counting of Time and Spectrum Overlapping Signals in a NDA Context** — **10:55 AM**
Gael Craver and David Pietin, ENSIETA
Walter Akmouche, CELAR/TCOM/TR

Session TA8a — (Poster Session) 8:30 - 10:00

Wireless Communication & Signal Processing

Session Chair: Venkatesh Vadde - Nokia Research Center

TA8a-1 Enhanced User Authentication Through Typing Biometrics with Artificial Neural Networks and K-Nearest Neighbor Algorithm
Fadhli Wong, Mohd Hasan Wong, Ainil Sufreena Mohd Supian, and Ahmad Faris Ismail, International Islamic University Malaysia
Lai Weng Kin and Ong Cheng Soon, MIMOS Berhad

TA8a-2 Space-Time Block Codes: ML Detection for Unknown Channels and Unstructured Interferences
Erik G. Larsson, Jian Li, University of Florida; Petre Stoica, Uppsala University

TA8a-3 A Robust Algorithm for Adaptive Channel Identification in OFDM Transmission
Tareq Y.Al-Naffouri, D.A. Toumpakaris, S. Kandukuri, and Rogysawami Paulraj, Stanford University; A. Bahai, National Semiconductor Corporation

TA8a-4 A Flexible Model for the Angle of Arrival at the Mobile Station and the Associated Correlation Function and Power Spectrum
Ali Abdi and Mostafa Kaveh, University and of Minnesota;
H. Allen Barger, University of Texas at Tyler

TA8a-5 Token Ring Scheme to Improve the Performance of Routing Protocols in Ad Hoc Networks
Saeid Taheri and Anna Scaglione, The University of New Mexico

TA8a-6 Beamspace MODE
Zhi Tian, Michigan Technological University; Harry L. Van Trees, George Mason University

TA8a-7 Networks Traffic Estimation Using Neural Network
Yik C. Ng and Kayvan Najarian, University of North Carolina-Charlotte

TA8a-8 Wideband Signal Detection and Maximum-Likelihood Source Localization
Joe C. Chen and Kung Yao, University of California - Los Angeles

Continued on next page...

TA8a-9 Contravariant Adaptation on Structured Parameter Spaces
Todd K. Moon and Jacob H. Gunther, Utah State University

TA8a-10 On Sampling Planar Curves
Oleg V. Poliannikov and Hamid Krim, North Carolina State University

TA8a-11 Assessment of Noise Reduction Achieved by Adaptive Line Enhancement of a Noisy, Multiple Sinusoidal Input
Roy L. Campbell, Jr., U.S. Army Corps of Engineers
N.H. Younan, Mississippi State University

TA8a-12 Polarization Mode Dispersion Compensation for 10GE over Single Mode Fiber
Anthony G. Bessios, Agere Systems

Session TA8b — Algorithms for MIMO Links

Session Chair: Xiang-Gen Xia - University of Delaware

TA8b-1 Joint Equalization with LDPC Decoding under Hybride ARQ Scheme
Jing Liang, Zhi Ding, and Shu Lin, University of California - Davis

TA8b-2 Applications of Multi-Input Multi-Output Biorthogonal Partners
Bojan Vrcelj and P.P. Vaidyanathan, California Institute of Technology

TA8b-3 Challenges and Conquers in Identification of Blind MIMO Channels
Yingbo Hua, University of California - Riverside
Senjian An, University of Melbourne

TA8b-4 Equalization with Multiple Block Decision Feedback for Differential Space Time Codes
Genyuan Wang, Aijun Song, and Xiang-Gen Xia, University of Delaware

TA8b-5 MIMO Communication Capacity Using Infinite Dimension Random Matrix Eigenvalue Distributions
Daniel W. Bliss and Ali F. Yegulalp, Massachusetts Institute of Technology
Keith Forsythe, MIT - Lincoln Laboratory

TA8b-6 On MIMO Decoding Algorithms for UMTS
Markus Rupp, Suman Das, and Maxime Guillaud, Lucent Technologies

TA8b-7 Low Complexity Channel Sounding for Multiple Antenna Systems Achieving Cramer Rao Bounds
Markus Rupp and Eric Beck, Lucent Technologies

TA8b-8 Performance of Maximal Ratio Transmission with Two Receive Antennas
Bhaskar D. Rao and Ming Yan, University of California - San Diego

TA8b-9 Subspace-Based Channel Identification and Multiuser Detection for Space-Time Coded DS-CDMA Systems
Wei Sun and Hongbin Li, Stevens Institute of Technology

TA8b-10 Joint Channel Estimation and Co-Channel Interference Suppression for Space-Time
Ling Li, Hongbin Li, and Yu-Dong Yao, Stevens Institute of Technology

TA8b-11 Correlation Properties of MIMO Radio Channels for Indoor Scenarios
Persefoni Kyritsi and Donald C. Cox, Stanford University

TA8b-12 Design of Linear Precoding Filters for Spatial Multiplexing Systems
Abdelkader Medles and Dirk Slock, Eurecom Institute

TA8b-13 Layered MIMO Transceivers with Enhanced Capacities: A New Coding Strategy
Alexei Gorokhov, Philips Research National Lab

TA8b-14 Design of Multiple Antenna Coding Schemes with Channel Feedback
Behnaam Aazhang, Ashutosh Sabharwal, and Krishna Kiran Mukkavilli, Rice University

TA8b-15 Multiple-Symbol Differential Detection with Multiple Interference Sources Suppression
Debang Lao and Alexander M. Haimovich,
New Jersey Institute of Technology

Session TP1 — Modulation and Detection Techniques

Session Chair: Keith M. Chugg - University of Southern California

TP1-1 **Optimal Space-Time Block Codes for Reduced Complexity DS-CDMA Decoders** — **1:30 PM**
J. Geng and Urbashi Mitra, University of Southern California

TP1-2 **Per Survivor Based Detection of DPSK Modulated High Rate Turbo Codes over Rayleigh Fading Channels** — **1:55 PM**
Bin Zhao and Matthew C. Valenti, West Virginia University

TP1-3 **Outage in Adaptive Wireless Communication Systems** — **2:20 PM**
Krishnanand Kamath and Dennis L. Goeckel,
University of Massachusetts - Amherst

TP1-4 **Coding for Diagonally Layered Space Time Systems** — **2:45 PM**
Adina Matache and Richard D. Wesel,
University of California - Los Angeles

BREAK — **3:10 PM**

TP1-5 **Equalizer in Space-Time Coded Multiple Transmit Antenna System** — **3:30 PM**
Shengchao Li and Michael Fitz, Ohio State University

TP1-6 **Multiple User Maximum Likelihood Based Sequence Estimation for Unknown, Frequency Selective, Fast Time Varying Channels** — **3:55 PM**
Diane Pytel, Kevin Buckley, and Richard Perry, Villanova University

TP1-7 **On the Expected Complexity of Sphere Decoding** — **4:20 PM**
Babak Hassibi, California Institute of Technology
Haris Vikalo, Stanford University

TP1-8 **BER Analysis of Arbitrary Rectangular QAM** — **4:45 PM**
Kyongkuk Cho, Mobil Comm. Technology Gr.
Dongweon Yoon, Taejon UniversityWun Cheol Jeong and
Mohsen Kavehrad, The Pennsylvania State University

TP1-9 **The Effect of Imperfect CSI on QAM** — **5:10 PM**
Yuheng Huang and James A. Ritcey, University of Washington

Session TP2 — Signal Detection and Classification

Session Chair: Bart F. Rice - Lockheed Martin Space Systems

TP2-1 **Application of Local Discriminant Bases to HRR-Based ATR** — **1:30 PM**
Chad Spooner, Mission Research Corporation

TP2-2 **Four Orders of Magnitude Cost Reduction in the Viterbi Algorithm for GSM MIMO Demodulation** — **1:55 PM**
William A. Gardner, David A. Burgess, and Chris W. Reed,
Statistical Signal Processing, Inc.

TP2-3 **Efficient Channel Monitoring Using Running Lank-Reed-Pollon Frequency Estimates** — **2:20 PM**
Bart F. Rice, Lockheed Martin Space Systems

TP2-4 **Blind High Resolution Localization and Tracking of Multiple Frequency Hopped Signals** — **2:45 PM**
Xiangqian Liu and Nicholas D. Sidiropoulos, University of Minnesota
Ananthram Swami, Army Research Lab

BREAK — **3:10 PM**

TP2-5 **Optimal Estimation for Chaotic Sequences Using the Viterbi Algorithm** — **3:30 PM**
Mahmut Ciftci and Douglas B. Williams,
Georgia Institute of Technology

TP2-6 **A Level Crossing-Based Algorithm for the Identification of DSB and SSB Modulated Spherically Invariant Processes** — **3:55 PM**
Ali Abdi, University of Minnesota

TP2-7 **A Metric for Defining Low Probability of Detection Based on Gain Differences** — **4:20 PM**
George Dillard, SPAWAR Robin A. Dillard, Private Consultant

TP2-8 **Subband Transforms for Adaptive Direct Sequence Spread Spectrum Receivers** — **4:45 PM**
Stephan Berner, Rockwell International Corp.
Phillip De Leon, New Mexico State University

Session TP3 — Adaptive Communications and Arrays

Session Chair: Michael Zatman - MIT Lincoln Laboratory

TP3-1 **Influence of Array Imperfections on Adaptive Beamformer Design** — **1:30 PM**
Mark Mitchell, Georgia Tech Research Institute

TP3-2 **A Structured Least-Squares Approach to Blind Channel Identification and Equalization** — **1:55 PM**
Jacob H. Gunther and Todd K. Moon, Utah State University

TP3-3 **ABF Limitations when using either Toeplitz Covariance Matrix Estimators or the Parametric Vector AR Technique** — **2:20 PM**
Michael Zatman, Massachusetts Institute of Technology - Lincoln Laboratory

TP3-4 **Flat Fading Channel Envelope Prediction and Equalization** — **2:45 PM**
Pulakesh Roy, Virginia Polytechnic Institute and State University and ArrayComm, Inc.
A.A. (Louis) Beex, Virginia Polytechnic Institute and State University

BREAK — **3:10 PM**

TP3-5 **Adaptive Distortion Cancellation in Phased Arrays** — **3:30 PM**
Andrew Green, DERA

TP3-6 **Array Calibration and Modeling of Steering Vectors** — **3:55 PM**
Frank Robey, Daniel Fuhrmann, and Michael Koerber,
Massachusetts Institute of Technology - Lincoln Laboratory

TP3-7 **Locally Optimal Covariance Matrix Estimation Techniques for Array Signal Processing Applications** — **4:20 PM**
Y.I. Abramovich and N.K. Spencer, CSSIP
A.Y. Gorokhov, Philips Research Laboratory

TP3-8 **Simple Adaptive Algorithms for Cholesky, LKL^T, and Eigenvalue Decomposition of Autocorrelation Matrices for Sensor Array Data** — **4:45 PM**
Scott C. Douglas, Southern Methodist University

Session TP4 — Image Segmentation and Frequency Domain Processing

Session Chair: Joseph P. Havlicek - University of Oklahoma

TP4-1 **Image Segmentation Using PDE's and Flow Fields** — **1:30 PM**
Baris Sumengen and B.S. Manjunath,
University of California - Santa Barbara

TP4-2 **On Context-Based Bayesian Image Segmentation: Joint Multi-Context and Multiscale Approach and Wavelet-Domain Hidden Markov Models** — **1:55 PM**
Guoliang Fan and Xiang-Gen Xia, University of Delaware

TP4-3 **Segmentation of Ultrasound Imagery Using Anisotropic Diffusion** — **2:20 PM**
Yongjian Yu and Scott Acton, University of Virginia

TP4-4 **Multicomponent Image Modulation Models for Unsupervised Texture Segmentation** — **2:45 PM**
T.B. Yap, Joe Havlicek, and Victor DeBrunner,
The University of Oklahoma

BREAK — **3:10 PM**

TP4-5 **Circle Fitting By Iterative Inversion** — **3:30 PM**
Marius Tico, Corneliu Rusu, and Pauli Kuosmanen,
Tampere University of Technology; Edward J. Delp, Purdue University

TP4-6 **Summary of Efficient Integer Implementations for Faster Linear Transforms** — **3:55 PM**
Jennifer Q. Trelewicz, Michael T. Brady, and Joan L. Mitchell, IBM

TP4-7 **Summary of Fast DCT-Domain Image Shifting and Merging** — **4:20 PM**
Tim Trenary, Charles A. Micchelli, Jennifer Q. Trelewicz,
Marco Martens, and Joan L. Mitchell, IBM

TP4-8 **DCT-Based Image Watermarking Using Subsampling** — **4:45 PM**
Wai C. Chu, Intervideo Inc.

TP4-9 **Aliasing Effects in Thermal Images of Four-Bar Patterns Below and Above the Nyquist Limit** — **5:10 PM**
M. Celik, Y. Kenter, Alf Cooper, and Ron Pieper, Naval Postgraduate School

Session TP5 — Multiple User/Multiple Access Techniques

Session Chair: Mahesh K. Varanasi - University of Colorado - Boulder

TP5-1 **Asymptotic Eigenvalue Moments for Linear Multiuser Detection** — **1:30 PM**
Linbo Li, Antonia M. Tulino, and Sergio Verdu, Princeton University

TP5-2 **Design Considerations for the Uplink of Cellular Systems with Multiple Antennas** — **1:55 PM**
Ashok Mantravadi and Venugopal V. Veeravalli, University of Illinois at Urbana-Champaign; Harish Viswanathan, Lucent Technologies

TP5-3 **Throughput and Achievable Rates for the Multiple Antenna Two users Broadcast Channel** — **2:20 PM**
Giuseppe Caire, Institut Eurocom; Shlomo Shamai, Technion University

TP5-4 **Capacities of Time-Varying Multiple-Access Channels with Side Information** — **2:45 PM**
Arnab Das and Prakash Narayan, University of Maryland

BREAK — **3:10 PM**

TP5-5 **Multiuser Diversity for MIMO Wireless Systems with Linear Receivers** — **3:30 PM**
Manish Airy, Iospan Wireless Inc.Robert W. Heath, Jr., Stanford University

TP5-6 **Interference Avoidance and Multiaccess Dispersive Channels** — **3:55 PM**
Dimitrie C. Popescu and Christopher Rose, Rutgers University

TP5-7 **Optimal Space-Time Packet Scheduling for Reservation ALOHA Networks** — **4:20 PM**
Ruifeng Zhang, Drexel University

TP5-8 **A Generalized Multiuser Detector for Asynchronous Partial-Response PAM Signals** — **4:45 PM**
P.A. Murphy, Gary E. Ford, and M. Golanbari, University of California - Davis

Session TP6 — DSP Architectures

Session Chair: Keshab K. Parhi - University of Minnesota

TP6-1 **Adaptive Systems on a Chip (ASoC) for Low-Power Signal Processing** — **1:30 PM**
Wayne Burleson, Russell Tessier, Andrew Laffely, Jian Liang, and Ning Weng, University of Massachusetts

TP6-2 **Fault Tolerant FIR Filter Architectures Using a Symmetrical MRRNS** — **1:55 PM**
I. Imbert, University of Calgary
Graham Jullien and V.S. Dimitrov, University of Windsor

TP6-3 **Finite Wordlength Design for VLSI FFT Processors** — **2:20 PM**
Randall Perlow and Tracy C. Denk, Broadcom Corporation

TP6-4 **Joint Code and Decoder Design for Implementation-Oriented (3,k)-Regular LDPC Codes** — **2:45 PM**
Tong Zhang and Keshab K. Parhi, University of Minnesota

BREAK — **3:10 PM**

TP6-5 **A Reduced-Space Half-Band Filter Design on an Actel FPGA** — **3:30 PM**
Linda S. DeBrunner, Victor DeBrunner, Xiaojuan Hu, and Olivier Demuynck, The University of Oklahoma
Andi Swartztrauber, Actel Corporation

TP6-6 **Bit Stream Processor for Object Based MPEG-4 Profiles** — **3:55 PM**
Kilian A. Jacob, Munich University of Technology
Javier Hormigo, University of Malaga

TP6-7 **CDMA as a Multiprocessor VLSI Interconnect Strategy** — **4:20 PM**
Robert H. Bell, Jr., Chang Yong Kang, Lizy K. John, and Earl E. Swartzlander, Jr., The University of Texas at Austin

TP6-8 **A Efficient FFT Processor for ADSL Applications** — **4:45 PM**
Robert Grisamore, Giri NK Rangan, and Earl E. Swartzlander, Jr., The University of Texas at Austin

TP6-9 **Rapid Prototyping Design of a 4X4 BLAST-over-UMTS System** — **5:10 PM**
Maxime Guillaud, Suman Das, Andreas Burg, Markus Rupp, and Eric Beck, Lucent Technologies

Session TP7 — Hyperspectral Processing and Multisignals or Data Fusion

Session Chair: Peter Soliz - Kestrel Corporation

TP7-1 **Medical Imaging Fusion Applications: An Overview** — **1:30 PM**
Constantinos S. Pattichis and Marios S. Pattichis,
University of New Mexico

TP7-2 **Predictive Modeling of Multispectral Data Fusion** — **1:55 PM**
Sunanda Mitra, Zhanyu Ge, Shuyu Yang, Vikram Venkatesaran,
Kathleen Gilliam, andJim Dunyak, Texas Tech University

TP7-3 **Spectrally-Based Fundus Imaging: Implications for Image Enhancement and Diagnosis of Retinal Diseases** — **2:20 PM**
Peter Soliz, P.W. Truitt, and S.C. Nemeth, Kestrel Corporation

TP7-4 **Hyperspectral Data Processing for a Space-Based Sensor** — **2:45 PM**
L. John Otten and R. Lockwood, Kestrel Corporation;
P. Armstrong, Air Force Research Laboratory

BREAK — **3:10 PM**

TP7-5 **Array Mapping: Optimal Transformation Matrix Design** — **3:30 PM**
Per Hyberg, Swedish Defense Research Agency
Magnus Jansson and Bjorn Ottersten, Royal Institute of Technology

TP7-6 **Constrained Mutual Coupling Estimation for Array Calibration** — **3:55 PM**
Amin G. Jaffer, Raytheon Electronic Systems

TP7-7 **IMM-JVC and IMM-PDAF for Closely Maneuvering Targets** — **4:20 PM**
Melita Tasic andHannah Michalska, McGill University
Alexandre Jouan, Lockheed Martin Canada

TP7-8 **Computability Constraints in Space-Time Delta-Sigma Arrays** — **4:45 PM**
Dan P. Scholnik and Jeffrey O. Coleman, Naval Research Laboratory

TP7-9 **A Robust Frequency Domain Subspace Algorithm for Multi-Component Harmonic Retrieval** — **5:10 PM**
Tomas McKelvey and Mats Viberg, Chalmers University of Technology

Session TP8a — (Poster Session) 1:30 - 3:00 Computer Arithmetic Implementations and FPGA Designs

Session Chair: Edwin de Angel - Cirrus Logic Inc.

TP8a-1 **Reduction of Matrix Products and Their Error Bounds**
Celestino A.Corral, Motorola, Inc.

TP8a-2 **A Mechanically-Validated Technique for Extending the Available Precision**
Sylvie Boldo and Marc Daumas, Laboratoire de l'Informatique de Parallelisme

TP8a-3 **A Class of Stored-Transfer Representation for Redundant Number Systems**
G. Jaberipur, Sharif University of Technology
Behrooz Parhami, University of California-Santa Barbara
M. Ghodsi, Sharif University of Technology

TP8a-4 **Implementation of Digital Filters in Carry-Save Residue Number System**
Alberto Nannarelli, Marco Re, and Gian Carlo Cardarilli,
University of Rome "Tor Vergata"

TP8a-5 **Fast Prototyping Techniques Applied to the Hardware Simulation of Telecommunication Systems**
A. Del Re, Alberto Nannarelli, and Marco Re,
University of Rome "Tor Vergata"

TP8a-6 **An Improved Digital Quadrature Frequency Down-Converter Architecture**
Florean Curticapean and Jarkko Niittylahti,
Tampere University of Technology

TP8a-7 **64-Bit Carry-Lookahead Adder Delay Analysis Using Logical Effort**
Hoang Dao and Vojin Oklobdzija, University of California - Davis

TP8a-8 **FPGA Power Efficient Inverse Lifting Wavelet IP**
Maurizio Martina, Guido Masera, Gianluca Piccinini, Fabrizio Vacca, and Maurizio Zamboni, Politecnico di Torino

Continued on next page...

TP8a-9 Mixed DSP/FPGA Implementation of an Error-Resilient Image Transmission System Based on JPEG2000
Marco Grangetto, Enrico Magli, Maurizio Martina, and Fabrizio Vacca, Politecnico di Torino

TP8a-10 Decision Feedback Passive Phase Conjugation for Underwater Acoustic Communications with Results from a Shallow-Water Trial
J.A. Flynn, J.A. Ritcey, W.L.J. Fox, D.R. Jackson and D. Rouseff
University of Washington

TP8a-11 FPGA Hardware Implementation of an RNS FIR Digital Filter
Kadambari Kaluri, Wen Fung Leong, Kah-Howe Tan, Louis G. Johnson, and Michael A. Soderstrand, Oklahoma State University

TP8a-12 FPGA Resources for Simple Heterodyne Filters
Biju Mullul Veedu, Asad Azam, and Michael A. Soderstrand, Oklahoma State University

TP8a-13 FIR Filter Design Program that Matches Specifications Rather than Filter Coefficients Results in Large Savings in FPGA Resources
Kah-Howe Tan, Wen Fung Leong, Kadambari Kaluri, Louis G. Johnson, and Michael A. Soderstrand, Oklahoma State University

TP8a-14 High-Performance FFT Processing Using Reconfigurable Logic
Gabor Szedo, Vanessa Yang, and Chris Dick, Xilinx, Inc.

TP8a-15 Design of an FPGA-Based High-Speed Filter-Decimator for the GIFTS Imaging Interferometer
Scott E. Budge and Charles R. O'Brien, Utah State University

Session TP8b — Radar & Sonar Processing (Poster Session)
3:30 - 5:00

Session Chair: Benjamin C. Flores - The University of Texas El Paso

TP8b-1 Sidelobe Apodization in Fourier Imaging
Gabriel Thomas, University of Manitoba

TP8b-2 A New and Fast Frequency Response Estimation Technique for Noisy Systems
L. Cheded and S. Akhtas, King Fahd University of Petroleum & Minerals

TP8b-3 Maximum Likelihood Training of Adaptive Beamformers in Distributed Interference
Daniel J. Rabideau, MIT Lincoln Laboratory
Allan Steinhardt, DARPA

TP8b-4 Improved Wideband Time Delay Beam Steering
Daniel J. Rabideau, MIT Lincoln Laboratory

TP8b-5 Analysis of an Heuristics for Sensor Configuration in a Simple Target Localization Problem
Darryl Morrell, Arizona State University

TP8b-6 Adaptive CFAR Detection via Hierarchical Model Based Parameter Estimation
Biao Chen and Pramod K. Varshney, Syracuse University
Jim Michels, AFRL/SNRT

TP8b-7 Adaptive Beamforming Using the Multistage Wiener Filter with a Soft Stop
David C. Ricks, Paula Cifuentes, and J. Scott Goldstein, Science Applications International Corporation

TP8b-8 Optimal Sparse Representation Algorithms for Harmonic Retrieval
Alejandro Brito, Sergio D. Cabrera, and Cristina Villalobos, University of Texas at El Paso

TP8b-9 Comparison of High Range Resolution Signatures of Moving and Stationary Ground Vehicles
David Gross, Michael Oppenheimer, and Brett Keaffaber, Veridian Engineering

Continued on next page...

TP8b-10 Weight Functions for Two-Dimensional Arrays
James Alsup, AETC, Inc.Harper Whitehouse, Linear Measurements, Inc.

TP8b-11 Adaptive CFAR Detection in Compound-Gaussian Clutter via Recursive Estimation of the Covariance Matrix
Biao Chen and Pramod K. Varshney, Syracuse University;
Jim Michels, AFRL/SNRT

TP8b-12 Decision Feedback Passive Phase Conjugation for Underwater Acoustic Communications with Results from a Shallow-Water Trial
John A. Flynn, James A. Ritcey, Warren L.J. Fox, Darrel R. Jackson, and Daniel Rouseff, University of Washington

TP8b-13 Bearing-Only Tracking from a Stationary Platform
D. D. Sworder, University of California – San Diego;
J.E. Boyd, Cubic DefenseR. Gary Hutchins, Naval Postgraduate School;
R.J. Elliott, University of Alberta

Session WA1 — Equalization and Synchronization Techniques

Session Chair: Jian Li - University of Florida

WA1-1 Maximum Likelihood Detection and Decoding for Space-Time Coding Systems — **8:30 AM**
Erik G. Larsson and Petre Stoica, Uppsala University
Jian Li, University of Florida

WA1-2 Orthogonal Multi-User Transceivers in the Presence of Unknown Time- and Frequency-Selective Fading — **8:55 AM**
Geert Leus, Katholieke Universiteit Leuven
Shengli Zhou and Georgios B. Giannakis, University of Minnesota

WA1-3 Unitary Precoded OFDM with Maximum Multipath Diversity and Coding Gains — **9:20 AM**
Zhiqiang Liu, Yan Xin, and Georgios B. Giannakis,
University of Minnesota

WA1-4 Time-Reversal Decision Feedback Equalizer: Infinite Length Results — **9:45 AM**
Jaiganesh Balakrishnan and C. Richard Johnson, Jr.,
Cornell University

BREAK — **10:10 AM**

WA1-5 Code Constrained SMA-Based Multirate Multiuser Detection — **10:30 AM**
Zhengyuan Xu and Ping Liu, University of California - Riverside

WA1-6 A Fast Converging Fractionally Spaced Equaliser — **10:55 AM**
Hafizal Mohamad and Stephan Weiss, University of Southampton
Markus Rupp, Lucent Technologies;Lajos Hanzo, University of Southampton

WA1-7 Blind OFDM Frequency Offset Estimation via Oversampling — **11:20 AM**
Biao Chen and Hao Wang, Syracuse University

WA1-8 Modified High-Efficiency Carrier Estimator for OFDM Communications with Antenna Diversity — **11:45 AM**
Ufuk Tureli and Patrick J. Honan, Stevens Institute of Technology

Session WA2 — Higher-Order Statistical Signal Processing for Communications

Session Chair: Max Martone - WJ Communications, Inc.

WA2-1 **Blind Detection of Multi-Rate Asynchronous CDMA Signals in Multipath Channels** — **8:30 AM**
Jinghong Ma and Jitendra Tugnait, Auburn University

WA2-2 **The Normal Inverse Gaussian Distribution as a Model for MUI** — **8:55 AM**
Alfred Hanssen, Arnt Salberg and Tor Arne Olgard, University of Tromoso;
Ananthram Swami, Army Research Lab

WA2-3 **Blind Identification of Convolutive MIMO System with 3 Sources and 2 Sensors** — **9:20 AM**
Binning Chen, Lieven De Lathauwer, and
Athina Petropulu, Drexel University

WA2-4 **Optimal Super Exponential Blind Equalization Using Higher Order Cumulants and Second Order Cyclostationary Statistics** — **9:45 AM**
Gianpiero Panci, Stefania Colonnese, and Gaetano Scarano,
University of Rome "La Sapienza"

BREAK — **10:10 AM**

WA2-5 **Blind Turbo Channel Estimation in OFDM Systems** — **10:30 AM**
Dieter Boss, Ericsson Eurolab Germany;
Thorsten Petermann, Sven Vogeler, and Karl-Dirk Kammeyer,
Unviersity of Bremen

WA2-6 **A Hierarchical Approach to the Classification of Digital Modulation Types in Multipath Environments** — **10:55 AM**
G. Hatzichristos and Monique P. Fargues, Naval Postgraduate School

WA2-7 **Blind Open-Loop Carrier Frequency Offset Estimators for QAM and PSK Constellations** — **11:20 AM**
Y. Wang and Erchin Serpedin, Texas A&M University

WA2-8 **Signal Modulation Classification Based on Envelope and Phase Kurtosis Computations** — **11:45 AM**
Yifeng Zhou, Defence Research Est. Ottawa

Session WA3 — Adaptive Signal Processing in Communications II

Session Co-Chairs: Ronald Iltis and John Shynk -
University of California-Santa Barbara

WA3-1 **Adaptive Multipath Resolving for Wireless Location Systems** — **8:30 AM**
N.R. Yousef and A.H. Sayed, University of California - Los Angeles

WA3-2 **Robust Channel Estimation using the Hybrid Particle Filter** — **8:55 AM**
Ronald Iltis, University of California-Santa Barbara

WA3-3 **Implementation of Transmit Antenna Weight Adaptation through Stochastic Gradient Feedback** — **9:20 AM**
Brian C. Banister, University of California - San Diego;
James Zeidler, SPAWAR

WA3-4 **Adaptive Channel Estimation Algorithms for QS-CDMA Signals** — **9:45 AM**
Kyeong Jin Kim, Nokia Research Center

BREAK — **10:10 AM**

WA3-5 **A Proportional Weight Algorithm: The Bigger They Are, the Faster the Fall** — **10:30 AM**
Richard K. Martin and C. Richard Johnson, Jr., Cornell University

WA3-6 **Performance Comparison of Adaptive Subband Structures Applied to Acoustic Echo Cancelling** — **10:55 AM**
Mariane R. Petraglia, University of California - Los Angeles
Renata T.B. Vasconcellos, Federal University of Rio de Janeiro
Rogerio G. Alves, Clarity, LLC

WA3-7 **Use of the Genetic Algorithm to Improve Bit Error Rates in CDMA Wireless Communication Systems** — **11:45 AM**
A. Kitabi and W. Kenneth Jenkins,
The Pennsylvania State University

WA3-8 **Blind Detection of CDMA Signals Based on Kalman Filter** — **11:20 AM**
Zhengyuan Xu and Ting Wang, University of California - Riverside

Session WA4 — Speech Coding and Processing

Session Chair: Walter Andrews - Department of Defense

WA4-1 **Generalized Hierarchical Search in the ISIP ASR System** — **8:30 AM**
Bohumir Jelinek, Feng Zheng, Naveen Parihar, Jonathan Hamaker, and Joseph Picone, Mississippi State University

WA4-2 **Phonetic Speaker Recognition** — **8:55 AM**
Walter Andrews, Mary A. Kohler, and Joseph P. Campbell, U.S. Department of Defense

WA4-3 **Speaker Recognition from Coded Speech and the Effects of Score Normalization** — **9:20 AM**
Bob Dunn, T.F. Quatieri, and D.A. Reynolds, Massachusetts Institute of Technology - Lincoln Laboratory; Joseph P. Campbell, U.S. Department of Defense

WA4-4 **Performance of FNBDT and Low Rate Voice (MELP) Over Packet Networks** — **9:45 AM**
Edward J. Daniel and Keith A. Teague, Oklahoma State University

BREAK — **10:10 AM**

WA4-5 **A Wideband Speech Codec Based on Nonlinear Approximation** — **10:30 AM**
Mark Kokes and Jerry Gibson, Southern Methodist University
Gerald Schuller, Agere Systems

WA4-6 **Correlation and Spatial Sensitivity of Eigenfilters for Selective Signal Cancellation in Multiple-Listener Environments** — **10:55 AM**
Sunil Bharitkar and Chris Kyriakakis, University of Southern California

WA4-7 **Modeling Dynamics to Enhance the Relationship Between Facial Movements and Speech Acoustics** — **11:20 AM**
Jintao Jiang, Abeer Alwan, and Patricia A. Keating, University of California - Los Angeles; Lynne E. Bernstein and Edward T. Auer, House Ear Institute

WA4-8 **Acoustic Modeling of Reverberant Environments for Source Localizaton** — **11:45 AM**
Tony Gustafsson, Bhaskar D. Rao, and Mohan Trivedi, University of California - San Diego

Session WA5 — Wireless Systems

Session Chair: Giridhar D. Mandyam - Nokia Research Center

WA5-1 **Enhancements to the Bluetooth Specification** — **8:30 AM**
Mohammed Nafie, Alan Gatherer, Tim Schmidl, and Anand Dabak, Texas Instruments, Inc.

WA5-2 **Energy and Delay Constrained Power Control for File Transfers over Fading Channels** — **8:55 AM**
Henry Wang and Narayan Mandayam, Rutgers Unviersity

WA5-3 **Partial Response Signaling Versus Equalization for OFDM Systems in Long Multipath Channels: A Comparative Study** — **9:20 AM**
Venkatesh Vadde, Nokia Research Center

WA5-4 **Optimum Space-Time Signal Processing in the Uplink CDMA Systems** — **9:45 AM**
Mohammed Saquib and Md. Habibul Islam, University of Texas at Dallas; Giridhar D. Mandyam, Nokia Research Center

BREAK — **10:10 AM**

WA5-5 **Antenna Array Interference Cancellation for OFDM Based on Parametric Modeling of the Weights** — **10:30 AM**
Alexandr M. Kuzminskiy, Lucent Technologies

WA5-6 **A Channel Subspace Filtering Approach to Adaptive Equalization of Highly Dynamic Realistic Channels** — **10:55 AM**
Raj Nadakuditi and James C. Preisig, Woods Hole Oceanographic Institute

WA5-7 **Space-Time Interference Cancellation and Turbo Equalization of TCM for Broadband Wireless Channels** — **11:20 AM**
Mutlu Koca and Bernard C. Levy, University of California-Davis

WA5-8 **The Expected Capacity Region per Unit Cost with Application to Protocols for Sensor Networks** — **11:45 AM**
Daniela Tuninetti and Giuseppe Caire, Institut Eurocom

Session WA6 — Special Arithmetic Techniques

Session Chair: Neil Burgess - Cardiff University

WA6-1 **Architectures for Accelerating Long Wordlength Modular Multiplication** — **8:30 AM**
Braden Phillips, Cardiff University

WA6-2 **A Powering Unit for an OpenGL Lighting Engine** — **8:55 AM**
David Harris, Harvey Mudd College

WA6-3 **The ARM VFP Family of Floating-Point Coprocessor Macrocells** — **9:20 AM**
Chris Hinds, ARM

WA6-4 **RNS Representations with Redundant Residues** — **9:45 AM**
Behrooz Parhami, University of California-Santa Barbara

BREAK — **10:10 AM**

WA6-5 **A New Range Reduction Algorithm for Trigonometric Functions** — **10:30 AM**
David Defour, Ecole Normale Supurieure de Lyon
Peter Kornerup, Odense UniversityJean-Michel Muller, CNRS-Laboratoire LIP
Nathalie Revol, Ecole Normale Supurieure de Lyon

WA6-6 **Efficient Integer Multiplication Overflow Detection Circuits** — **10:55 AM**
Mustafa Gok, Michael J. Schulte, and Pablo I. Balzola,
Lehigh University

WA6-7 **Comparative Delay Analysis of Representative Adders Using Logical Effort Technique** — **11:20 AM**
Hoang Dao and Vojin Oklobdzija, University of California - Davis

WA6-8 **Precision Requirements for Quotient Digit Selection in High-Radix Division** — **11:45 AM**
Behrooz Parhami, University of California-Santa Barbara

Session WA7 — Biomedical Imaging

Session Chair: Jack Knight-Scott - University of Virginia

WA7-1 **Analysis of the Instantaneous Phase Signal of a FMRI Time Series Via the Hilbert Transform** — **8:30 AM**
M. Elizabeth Meyerand, Angela Laird, and John Carew,
University of Wisconsin

WA7-2 **Basic T1-Dependent Segmentation Acquisition Paradigms for Enhancing Contrast in 1H Magnetic Resonance Pulmonary Imaging** — **8:55 AM**
Vu M. Mai, Evanston Northwestern Healthcare
Jack Knight-Scott, Shella Keilholz-George, and Jennifer Mifflin,
University of Virginia

WA7-3 **High-Resolution Optical Imaging for Analysis of Displacement and Deformation Fields in Cell Biology** — **9:20 AM**
Brian P. Helmke, University of Virginia

WA7-4 **Design of Speckle Denoising Filter Using Wavelet-Based Methods for Medical Imaging Application** — **9:45 AM**
Su Cheol Kang, INCOM I&C

BREAK — **10:10 AM**

WA7-5 **Blind Deblurring of Spiral CT Images** — **10:30 AM**
Ming Jiang and Ge Wang, University of Iowa
Margaret W. Skinner, Washington University
Jay T. Rubinstein and Michael W. Vannier, University of Iowa

WA7-6 **Axiomatic Measures of Image Resolution** — **10:55 AM**
Ming Jiang and Ge Wang, University of Iowa
Xiao-ming Ma, Peking University

WA7-7 **Recursive Least Squares Image Reconstruction** — **11:20 AM**
Yibin Zheng, University of Virginia

Session WA8 — (Poster Session) 8:30 - 10:00

Advanced Modulation and Channel Estimation

Session Chair: Scott Beaver - University of California - Davis

WA8a-1 A Simple Algorithm for the Reduction of the Peak Power in a Many Carrier AM-OFDM Signal
Anirudha Walambe, Michael Caggiano, James Evans, and Zoran Gajic, Rutgers University

WA8a-2 Pilot Signal Cancellation for an IS-95 Downlink SIC Receiver
Richard Cagley and John J. Shynk, University of California-Santa Barbara

WA8a-3 Rate Adaptation for Bursty Data Transmission in DS-CDMA Networks
Ming Hu and Junshan Zhang, Arizona State University

WA8a-4 Near-Far Resistance Under Multipath: Optimum and Suboptimum Detectors
Xiaodong Yue and Howard Fan, University of Cincinnati

WA8a-5 Subspace Based Channel Estimation for CDMA Downlink with Aperiodic Spreading Codes and Multiple Subchannels
Zhengyuan Xu and Daniel Reitz, Unviersity of California - Riverside

WA8a-6 Perturbation Study on MOE-Based Multiuser Detection
Zhengyuan Xu, University of California - Riverside

WA8a-7 Performance of Likelihood Ratio Tests Under Incorrect Models
Cenk Kose and Richard D. Wesel, University of California - Los Angeles

WA8a-8 Transmitter Optimization for Broadcast ISI Channels
Jibing Wang and Kung Yao, University of California - Los Angeles

WA8a-9 Performance Analysis of MQAM Modulation Schemes with Diversity in Nakagami Fading Channels
F. Al-Shalan, Saudi TelecomA. Adinoyi and M. Kousa, King Fahd University of Petroleum & Minerals

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WA8a-10 Linear Multiuser Receivers in Random Spreading with Rake Combining: Turbo-Coded System Performance
Seokhyun Yoon, New Jersey Institute of Technology; Yeheskel Bar-Ness, Stanford University

WA8a-11 Multiuser Correlation-Based Channel Estimation for SCMA Systems
E.K. Bartsch, I.J. Wassell, and A.J. Cable, University of Cambridge

WA8a-12 A Mixed Analog-Digital Modulation Technique
Benjamin Friedlander, University of California-Santa Cruz; Eli Pasternak, Bridgewave Communications, Inc.

WA8a-13 Optimal OFDM Pulse and Lattice Design for Doubly Dispersive Channels
Scott Beaver and Thomas Strohmer, University of California - Davis

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Pappas, Thrasyvoulos	MA8b-1
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Parhi, Keshab K.	MA6b-2
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Parhi, Keshab K.	TP6-4
Parihar, Naveen	WA4-1
Park, Sung Cheol	MP4-1
Pasko, Robert	MP6-5
Pasternak, Eli	WA8a-1
Pattichis, Constantinos	MP3-1
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Paulraj, Arogyaswami J.	MP1-7
Paulraj, Arogysawami	TA8a-3
Peel, Christian B.	MP3-6
Perlow, Randall	TP6-3
Perry, Richard	TP1-6
Petermann, Thorsten	WA2-5
Petraglia, Mariane R.	WA3-6
Petropulu, Athina	WA2-3
Phillips, Braden	WA6-1
Piccinini, Gianluca	TP8a-8
Picone, Joseph	WA4-1
Pieper, Ron	TP4-9
Pietin, David	TA7-6
Pietrobon, Steven S.	MP2-1
Poliannikov, Oleg V.	TA8a-11
Pon Varma, Samuel	TA2-3
Popescu, Dimitrie C.	TP5-6
Prasad, Karuna	MA6b-1
Prasad, Narayan	MP1-1
Preisig, James C.	WA5-6
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Pytel, Diane	TP1-6
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Rabaey, Jan	MA3b-2
Rabideau, Daniel J.	TP8b-3
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Ramchandran, Kannan	MP2-9
Ramkishor, K.	MA8b-9
Rangan, Giri NK	TP6-8
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Re, Marco	TP8a-4
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Reed, Chris W.	TP2-2
Reed, Jeffrey H.	MA3b-1
Regunathan, Shankar	MA8b-7
Reitz, Daniel	WA8a-5
Revol, Nathalie	WA6-5
Reynolds, D.A.	WA4-3
Rhee, Wonjong	MP7-3
Rice, Bart F.	TP2-3
Ricks, David C.	TP8b-7
Riskin, Eve	TA4-1
Ritcey, James A.	TP1-9
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Rodriquez, Domingo	MA5b-4
Rose, Christopher	TP5-6
Rose, Kenneth	MA8b-7
Rouseff, D.	TP8a-10
Roy, Pulakesh	TP3-4
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Sachs, Sonia R.	MP6-9
Salberg, Arnt	WA2-2
Sampath, Hemanth	MP1-7
Sandberg, Irwin W.	TA2-8
Saquib, Mohammed	WA5-4
Savadatti, S.	TA5-8
Sayed, A.H.	WA3-1
Sayed, Ali H.	MP3-8
Scaglione, Anna	TA8a-6
Scarano, Gaetano	WA2-4
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Schmidl, Tim	WA5-1
Schneider, T.	TA5-1
Scholnik, Dan P.	TP7-8
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Shafi, Ahmar	MP3-4
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Shanbhag, Naresh R.	MA6b-5
Shane, Mark R.	MP2-5
Shaw, J.K.	MA1b-3
Shim, Byonghyo	MA6b-5
Shynk, John J.	MP8b-1
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Sidiropoulos, Nicholas .	TP2-4
Sirbu, Marius	TA3-6
Skinner, Margaret W.	WA7-5
Slock, Dirk	MP5-5
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Soderstrand, Michael	MP7-7
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Softley, C.I.	MA7b-1
Soliz, Peter	TP7-3
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Song, Yuying	TA5-5
Soon, Ong Cheng	TA8a-1
Spencer, N.K.	TP3-7
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Stamoulis, Anastasios	MP1-9
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Sullivan, James L.	MP8a-12
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Sun, Wei	TA8b-9
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Notes. . .

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