

**Workshop on
Short-Range Ultra-Wideband Radio Systems
Santa Monica, California, USA
April 11-12, 2006**

Note: Each half day of the workshop will consist of (a) an initial panel when selected panel members will state their vision of the field, its problems, and its future, (b) a mid-session break to view posters and demos, and (c) a question and answer session with all the panelists.

Schedule of Events

Monday April 10, 2006 – *Gallery South/Jazz Loft*

3:00 PM-8:00 PM Registration, poster preparation, demo check-in.

Tuesday April 11, 2006 – *Marquee Ballroom*

8:00 AM Registration and Continental Breakfast

9:00 AM Welcome – Bob Scholtz

9:15 AM **Session 1:**

UWB Radio: Military Interests (Brian Sadler, chair)

Panel Statements

Steve Gunderson, NFESC

Bob Johnk, NIST

Paul Richardson, U. of Michigan (Dearborn)

Brian Sadler, ARL

Posters

Mike Buehrer Jihad Ibrahim and Swaroop Venkatesh, Virginia Tech, The Design and Analysis of UWB-based Position Location Networks (PoLo Nets). Ziba Ebrahimian, USC, Source Localization using Reflection Omission in the Near-Field.

Lili Huang, Zhengyuan Xu, UC Riverside, Brian M. Sadler, Army Research Laboratory, Simplified Ziv-Zakai Time Delay Estimation Bound for Ultra-Wideband signals.

Majid Nemati-Anaraki, USC, Diffusion Model for Indoor UWB Channels.

Jurgen Sachs and Rudolf Zetik, Ilmenau University of Technology, UWB-M-Sequence Electronics/Approaches.

Jurgen Sachs and Rudolf Zetik, Ilmenau University of Technology, Application of M-Sequence Electronics for Real Time Channel Sounding, Localisation and Imaging.

Jens Schroeder and Stefan Galler, U. of Hannover, Analysis of UWB Localization Errors.

Christiane Senger and Thomas Kaiser, U. of Duisburg, The Impact of Snells Law on the BeamLoc Approach for NLoS Indoor Localization.

Rahul Singh and E. R. Brown, UC Santa Barbara, Ultra-wideband, Multifunctional Communications/RADAR System.

Demos

Anatoliy Boryssenko and Dan Schaubert, U. of Massachusetts, UWB Radar Prototype for Though-Matter Vision.

UWB Radio: Military Interests (Brian Sadler, chair)

Question and Answer Session

Steve Gunderson, NFESC

Bob Johnk, NIST

Brian Sadler, ARL

Paul Richardson, U. of Michigan (Dearborn)

Bob Ulman, ARO

Noon: Lunch (provided) – *Jazz Loft*

1:30 PM **Session 2**

UWB Hardware (Dan Schaubert, chair)

Panel Statements:

Bob Brodersen, UC Berkeley

Larry Larson, UCSD

Won Namgoong, USC

David Pozar, U. Massachusetts

Posters

SangHyun Chang, USC, Transmitting and Receiving Antenna Orientation Optimization.

Zhi Ning Chen, Institute for Infocomm Research, UWB Antenna R&D @ I²R.

Lawrence Larson and Mohammad Farazian, UC San Diego, Circuit Architectures for Wideband UWB Frequency Synthesis.

Jongrit Lerdworatawee and Won Namgoong, USC, Wideband Circuits for UWB.

Eric Marklein, U. Massachusetts, Parameter Study of Ultra Wideband Loop Antenna.

Ali Medi and Won Namgoong, USC, CMOS Implementation of Channelized UWB Transceivers.

Jonathan Roderick, Harish Krishnaswamy, Kenneth Newton, Ta-Shun Chu, and Hossein Hashemi, USC, Silicon-Based Ultra Wideband Beam-Forming.

Won Namgoong, USC. Frequency Channelized UWB Receivers.

David Wenzloff, Fred Lee, Vivienne Sze, Manish Bhardwaj, MIT, A 3.1-10.6GHz 100Mb/s Chipset for Pulsed-UWB.

David Wenzloff, Fred Lee, Vivienne Sze, Manish Bhardwaj, MIT, A Modular Prototyping Platform for Pulsed-UWB.

Christopher Yafrate, U. Massachusetts, Wideband Active Integrated Antenna for RF Tag Applications.

Demos

Anatoliy Boryssenko and Dan Schaubert, U. of Massachusetts, Massachusetts EletroMagnetic Analyzer (MEMA) Code for UWB Link Simulations.

Jurgen Sachs and Rudolph Zetik, Ilmenau University of Technology, m-Sequence Approach to UWB Channel Sounding.

UWB Hardware (Dan Schaubert, chair)

Question and Answer Session

Anatoliy Boryssenko, U. Massachusetts

Bob Brodersen, UC Berkeley

Mike Chen, UC Berkeley

Hossein Hashemi, USC

Larry Larson, UCSD

Ali Medi, USC

Won Namgoong, USC

Ian O'Donnell, UC Berkeley

David Pozar, U. Massachusetts

6:00 PM **Reception and Dinner – Carousel Ballroom**

Special Speaker

“UWB: Fostering Innovation Through a Balanced Regulatory Framework”,

Ronald J. Chase, Chief, Technical Analysis Branch,

Office of Engineering and Technology, Federal Communications

Commission

Wednesday, April 12, 2006 – Marquee Ballroom

8:00 AM Continental Breakfast

8:30 AM **Session 3:**

UWB Systems (Moe Win, chair)

Panel Statements:

Thomas Kaiser, U. of Duisburg

Choi Look Law, Nanyang Technological University

Larry Milstein, UCSD

David Tse, UC Berkeley

Posters

Mike Buehrer, Jihad Ibrahim and Swaroop Venkatesh, Virginia Tech, The Design and Implementation of a Software-Defined UWB Transceiver.

Mike Buehrer, Jihad Ibrahim and Swaroop Venkatesh, Virginia Tech, Acquisition and Tracking for Pilot-Based UWB Receivers.

Cecilia Carbonelli, USC, Channel Parameter Estimation for UWB Single and Multiple Antenna Receiver.

Yenming Chen, USC, A Theoretical Model of a Voltage Controlled Oscillator.

Mohamed El-Hadidy, Emil Dimitrov, and Thomas Kaiser, U. Duisburg, Impact of Antenna Arrays on UWB MIMO Systems Exploiting Spatial Multiplexing.

Stefan Franz, USC, Quantized UWB systems.

Tom Halford, USC, Random Redundant Decoding.

Urbashi Mitra, USC, Timing Acquisition in the Limit of Large Bandwidth.
Mike Sablatash, Communications Research Centre (Canada), Wavelet Methods for Decomposition of Pulses into Subband Components and Reconstruction for Interference Mitigation of Interference into UWB Communications.

Brian M. Sadler, Army Research Laboratory, Jin Tang, Zhengyuan Xu, UC Riverside, Unified Performance Analysis for Ultra-Wideband Receivers with Timing Jitter.

Robert Wilson, Sequoia Communications, Channel Identification: Common Information in UWB channels.

On Wa Yeung, USC, A Low Complexity Iterative Algorithm and Hardware Architecture for Fast Acquisition of Long PN Codes in UWB Systems.

Jonathan Tsao, UC Berkeley, Ultra-Wideband Channel Modeling and Estimation.

Demo

Dennis Goeckel and Justin Burkhart, U. of Massachusetts, Implementation of Frequency-Shifted Reference UWB.

UWB Systems (Moe Win, chair)

Question and Answer Session

Chia-Chin Chong, NTT DoCoMo USA Labs

Michael Buehrer, Virginia Tech

Keith Chugg, USC

Dennis Goeckel, U. Massachusetts

Thomas Kaiser, U. of Duisburg

Choi Look Law, Nanyang Technological University

Larry Milstein, UCSD

Robert Qiu, Tennessee Tech

David Tse, UC Berkeley

Daniel Xu, UC Riverside

Noon: Lunch (provided) – *Jazz Loft*

1:30 PM **Session 4:**

UWB Opportunities and Issues (Reinaldo Valenzuela, chair)

Panel Statements:

Roberto Aiello, Staccato Communications

Jeff Foerster, Intel

Jim Lansford, Alereon

Andy Molisch, Mitsubishi Electric Research Labs

Mike Sablatash, Communications Research Centre (Canada)

Shuusaku Shimada, Yokogawa Co.

Reinaldo Valenzuela, Lucent Technologies

Matt Wellborn, Freescale Semiconductor

Posters:

Meng-Hsuan Chung, USC, Design of Suboptimal Receivers for UWB Systems.

Ziba Ebrahimian, USC, Receiver Sites for Accurate Indoor Position Location Systems.

Sinan Gezici, Hisashi Kobayashi, A. F. Molisch, and H. Vincent Poor, Princeton U, Effects of Polarity Randomization in Impulse Radio UWB Systems.

Lawrence Larson and Joe Jamp, UC San Diego, Spectral Encoding for Interference Suppression in Pulse-position modulated UWB.

Terry Lewis and Bob Scholtz, USC, Finite Time UWB Signal Design with PSD Constraints.

Fernando Ramirez-Mireles, and Angel Almada, Instituto Tecnológico Autónomo de México, Statistical Characterization of UWB TH-PPM MUI at the Output of a Single-user Detector.

Mike Sablatash, Communications Research Centre (Canada), Issues Associated with the Introduction of UWB Communications: Detection of UWB Signals for Spectrum Monitoring, Propagation Models, Interference Problems and Their Mitigation.

Qu Zhang and Dennis Goeckel, U. Massachusetts, Frequency-shifted Reference UWB Communications.

Demo

Jim Lansford, Alereon, Alereon's WiMedia (MB-OFDM) UWB Chipset, Featuring CogniPHY™ Technology.

UWB Opportunities and Issues (Reinaldo Valenzuela, chair)

Question and Answer Session

Roberto Aiello, Staccato Communications

Jeff Foerster, Intel

Ronald Chase, FCC

Jim Lansford, Alereon

Andy Molisch, Mitsubishi Electric Research Labs

Shuusaku Shimada, Yokogawa Co.

Reinaldo Valenzuela, Lucent Technologies

Matt Wellborn, Freescale Semiconductor

4:30 PM **Closing Remarks**