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International Union of Radio Science/Union Radio Scientifique Internationale

Founded in 1919, the International Union of Radio Science (URSI) coordinates studies, research, applications, scientific exchange, and communication in all fields of radio science from telecommunications and radio astronomy to medicine (www.ursi.org).

Both the Union and the U.S. National Committee are organized into ten commissions:

Electromagnetic Metrology (Commission A)
Fields and Waves (Commission B)
Radiocommunication Systems and Signal Processing (Commission C)
Electronics and Photonics (Commission D)
Electromagnetic Environment and Interference (Commission E)
Wave Propagation and Remote Sensing (Commission F)
Ionospheric Radio Propagation (Commission G)
Waves in Plasmas (Commission H)
Radio Astronomy (Commission J)
Electromagnetics in Biology and Medicine (Commission K)

About the USNC-URSI

The U.S. National Committee of URSI (USNC-URSI) is appointed by the National Research Council of the National Academies and represents U.S. radio scientists in URSI. It encourages studies in radio science, provides a forum for the dissemination of research findings, and provides an organizational infrastructure for the radio science community in the United States.

The USNC-URSI hosts the National Radio Science Meeting each January in Boulder, Colorado. The IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting, co-sponsored by the USNC-URSI and the Antennas and Propagation Society of the Institute of Electrical and Electronics Engineers (IEEE/AP-S), is held each summer. Every five to seven years, a North American Radio Science Meeting (NARSM) is organized, co-sponsored by the U.S. and Canadian National Committees to URSI. Ottawa, Canada hosted the most recent NARSM meeting in July 2007.

The international URSI General Assembly and Scientific Symposium is held every three years in locations around the world. The 30th URSI General Assembly and Scientific Symposium was held in Istanbul, Turkey on August 13-20, 2011. Over 1,000 U.S. and international scientists, including 264 students and Young Scientists, participated in sessions covering all ten commissions. The USNC-URSI is also proud to have hosted the 29th General Assembly in Chicago, Illinois August 7-16, 2008. The USNC-URSI helped to support meeting expenses for approximately 200 U.S. and international students and Young Scientists to attend that meeting. The 31st URSI General Assembly and Scientific Symposium will be held in Beijing, China, in 2014. For further information on USNC-URSI, please visit www.usnc-ursi.org.

U.S. National Committee Leadership and Commission Chairs (2012-2014)

(In addition to the individuals below, the USNC-URSI includes Members at Large, Society Representatives, and scientists serving in executive roles in international URSI.)

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UNITED STATES NATIONAL COMMITTEE
INTERNATIONAL UNION OF RADIO SCIENCE

TECHNICAL PROGRAM

National Radio Science Meeting
4-7 January 2012
University of Colorado at Boulder
Sponsored by USNC-URSI

Tuesday Evening **3 January 2011**

19:00 – 23:00 USNC-URSI Committee, Millennium Hotel

Wednesday Morning **4 January 2012**

Session A1: Electromagnetic Metrology and Applications
Room 105

Co-Chairs: William Coburn, *US Army Research Laboratory*
William Young, *NIST*

08:20 A1-1 INTEGRATED MICRO-FLUIDIC CHANNEL ON RF CIRCUIT TOWARD LAB-ON-A-CHIP APPLICATION

Pouya Talebbeydokhti*[1], Mingguang Tuo[1], Qi Tang[1], Pak Wong[2], Hao Xin[1]
[1]*Electrical and Computer Engineering, University of Arizona, Tucson, AZ*
[2]*Aerospace and Mechanical Engineering, University of Arizona, Tucson, AZ*

08:40 A1-2 COMPLEX PERMITTIVITY PHANTOM TISSUE MEASUREMENTS USING A TRL CALIBRATION FIXTURE

Xavier Palomer Ripoll*[1], Ved Topkar[2], Zoya Popovic[1]
[1]*University of Colorado, Boulder, CO*
[2]*Fairview High School, Boulder, CO*

09:00 A1-3 ELECTROMAGNETIC METROLOGY ON CONSTRUCTION MATERIAL AND CORROSION: CONCRETE AND IRON OXIDES

Sung Kim*[1], Jack Surek[1], James Baker-Jarvis[1], Dat Duthinh[2], Paul Stutzman[2], Shuangzhen Wang[2], Edward Garboczi[2]
[1]*NIST, Boulder, CO*
[2]*NIST, Gaithersburg, MD*

09:20 A1-4 A 50-W 71%-EFFICIENT CW GAN AMPLIFIER FOR TISSUE ABLATION

Jennifer Imperial*, Michael Roberg, Zoya Popovic
Covidien and the University of Colorado at Boulder, Boulder, CO

09:40 A1-5 ANALYTICAL MODEL OF A HELMET-MOUNTED CONFORMAL PATCH ANTENNAS FOR AN ASSORTMENT OF CANONICAL SHAPES

Boliong Amang*
Morgan State University, Baltimore Maryland

10:00 Break

10:20 A1-6 AUTOMATED AIRBORNE COMMUNICATION TEST SYSTEM

Michael Breckenridge*, Henry Suoto, Brian Higa
Antenna & Spectrum Analysis Div., US Army CERDEC S&TCD, Aberdeen Proving Ground, MD

10:40 A1-7 RF PROPAGATION MEASUREMENTS IN MOUNTAINOUS TERRAIN

William O. Coburn*, Mark D. Berry, Neal Tesny, Brian R. Gollsneider
RDRL-SER-M, US Army Research Laboratory, Adelphi MD

11:00 A1-8 ACOUSTICAL MODULATION SENSOR MEASUREMENTS

William A. Davis*[1], Taeyoung Yang[1], John Coggin[2], Russell May[2]
[1]*Elec. & Comp. Engr, Virginia Tech, Blacksburg, VA*
[2]*Prime Photonics, Blacksburg, VA*

11:20 A1-9 SMAP RADIOMETER FRONT END INTEGRATED MICROWAVE ASSEMBLY

Negar Ehsan*[1], Joseph Knuble[1], Kevin Horgan[1], Fred Sacks[2], Dale Bankus[3], Jeffrey Piepmeier[1]
[1]*NASA Goddard Space Flight Center, Greenbelt, MD*
[2]*Base2 Engineering, LLC, Annapolis, MD*
[3]*Orbital Sciences Corporation, Greenbelt, MD*

Session B1: Antenna Arrays
Room 155

Co-Chairs: John Volakis, *The Ohio State University*
Gregory Huff, *Texas A&M University*

08:20 B1-1 SUPERSTRATE-ENHANCED ULTRAWIDEBAND TIGHTLY COUPLED ARRAY WITH RESISTIVE FSS

William F. Moulder*, Kubilay Sertel, John L. Volakis
The Ohio State University, Columbus, OH

08:40 B1-2 EFFICIENT EVALUATION OF RADIATION PATTERN FOR PERIODIC STRUCTURE USING RECIPROCITY IN PERIODIC FDTD METHOD

Minshen Wang*, Ji Chen, David R. Jackson, Donald R. Wilton
ECE, University of Houston, Houston TX

09:00 B1-3 UNIT CELL AUTONOMY VIA WIRELESS CONTROL OF A SPACE-FED PHASED ARRAY ANTENNA

Matthew Stoneback*, Yasuo Kuga
Electrical Engineering, University of Washington, Seattle, WA

09:20 B1-4 RADIATION CHARACTERISTICS OF TRIANGULARLY-BOUND RANDOM ARRAYS

Kris R. Buchanan*, Gregory H. Huff
Electrical Engineering, Texas A&M University, College Station, Texas

09:40 B1-5 SMART PHONE ENABLED COGNITIVE CONTROL OF A PHASED ARRAY

Jeffrey S. Jensen*, Jean-Francois Chamberland, Gregory Huff
Texas A & M University, College Station, TX

10:00 Break

10:20 B1-6 COMPENSATING FOR ANTENNA ARRAY TRACKING MEASUREMENT ERRORS

Randy L. Haupt*, Aaron Lyons, Brian Thrall, Martin Huisjen
Ball Aerospace, Westminster, CO

10:40 B1-7 AN UWB 7X7 SINGLE-POLARIZED TIGHTLY COUPLED DIPOLE ARRAY WITH INTEGRATED FEED AND TERMINATIONS

Ioannis Tzanidis*, Kubilay Sertel, John L. Volakis
The Ohio State University, Columbus Ohio

11:00 B1-8 MICROWAVE LENS MODELING FOR MM-WAVE COMMUNICATIONS

John H. Brady*, Nader Behdad, Akbar Sayeed
Electrical and Computer Engineering, University of Wisconsin - Madison, Madison, WI

11:20 B1-9 DESIGN DIRECTIONS FOR WIDE-ANGLE ARRAY SCANNING

Nicholas Host*
The ElectroScience Laboratory, Ohio State University, Columbus, OH

Session B2: Metamaterials I
Room 1B40

Co-Chairs: Piergiorgio Uslenghi, *University of Illinois at Chicago*
Christopher Holloway, *NIST*

08:20 B2-1 CYLINDRICAL RESONATOR SECTORALLY FILLED WITH DNG METAMATERIAL AND EXCITED BY A LINE SOURCE

Piergiorgio L. E. Uslenghi*[1], Vito G. Daniele[2], Roberto D. Graglia[2], Guido Lombardi[2]
[1]*Dept. of ECE, University of Illinois at Chicago, Chicago, Illinois*
[2]*Dip. di Elettronica, Politecnico di Torino, Torino, Italy*

08:40 B2-2 EXISTENCE OF SURFACE WAVES AND COMPLEX MODES ON METASURFACES

Christopher L. Holloway*[1], Derik C. Love[1,2], Edward F. Kuester[3], Josh A. Gordon[1], David A. Hill[1]
[1]*NIST, Boulder, CO*
[2]*USFA, Dayton, OH*
[3]*Univeristy of Colorado, Boulder, co*

09:00 B2-3 A PHASE-RECONFIGURABLE REFLECTARRAY ELEMENT USING FLUIDIC NETWORKS

Stephen A. Long*, Gregory H. Huff
Texas A&M University, College Station, TX

09:20 B2-4 ABSORBING BOUNDARY CONDITIONS AND THE HOMOGENIZATION MODEL FOR MULTILAYERED WIRE MEDIA

Yashwanth Reddy Padooru*[1], Alexander B. Yakovlev[1], Chandra S. R. Kaipa[1], George W. Hanson[2], Francisco Medina[3], Francisco Mesa[4], Allen W. Glisson[1]
[1]*Electrical Engineering, University of Mississippi, University, MS*
[2]*Electrical Engineering and Computer Science, University of Wisconsin-Milwaukee, Milwaukee, WI*
[3]*Electronics and Electromagnetism, University of Seville, Seville, Spain*
[4]*Applied Physics I, ETS de Ingeniera Informtica, University of Seville, Seville, Spain*

09:40 B2-5 ALL-ANGLE NEGATIVE REFRACTION BY AN INDUCTIVELY LOADED UNIAXIAL WIRE MEDIUM TERMINATED WITH PATCH ARRAYS

Chandra S. R. Kaipa*[1], Alexander B. Yakovlev[1], Mario G. Silveirinha[2], Stanislav I. Maslovski[2]
[1]*Department of Electrical Engineering, University of Mississippi, University, MS*
[2]*Departamento de Engenharia Electrotcnica, Universidade de Coimbra, Polo, Coimbra, Portugal*

10:00 Break

10:20 B2-6 ISOIMPEDANCE ANISOTROPIC SUBSTRATES FOR PLANAR ANTENNA PROFILE REDUCTION

Hayrettin Odabasi*, Fernando L. Teixeira
Electrical and Computer Engineering, The Ohio State University, Columbus/Ohio

10:40 B2-7 FABRICATION SENSITIVITY OF DOUBLE-SIDED SPLIT-RING RESONATOR ARRAYS

Frank Trang*, Edward F. Kuester, Horst Rogalla, Zoya Popovic
Dept. of Electrical, Computer, and Energy Engineering, University of Colorado, Boulder, Bouder, Colorado

11:00 B2-8 WIDEBAND, OPTICALLY TRANSPARENT, BAND-SELECTIVE GROUND PLANES FOR ANTENNA APPLICATIONS

Mani Kashanianfard*, Kamal Sarabandi
EECS, University of Michigan, Ann Arbor

11:20 B2-9 OMNIDIRECTIONAL SMALL ANTENNAS BASED ON ε-NEAR-ZERO METAMATERIAL CHANNELS

Jason C. Soric*, Andrea Alu
Electrical and Computer Engineering, The University of Texas at Austin, Austin, Texas

11:40 B2-10 ULTRA-BROADBAND MANTLE CLOAK USING NON-FOSTER NEGATIVE-IMPEDANCE METASURFACES

Pai-Yen Chen*, Andrea Alu
Electrical and Computer Engineering, University of Texas at Austin, Austin

Session F1: Passive Remote Sensing of the Earth's Environment: Radiometer Calibration and Radiative Transfer
Room 150

Co-Chairs: Steven Reising, *Colorado State University*
Albin Gasiewski, *University of Colorado at Boulder*

08:20 F1-1 CHARACTERIZATION OF AUTOEMISSION REFLECTION FOR PRECISE RADIOMETER CALIBRATION

Albin J. Gasiewski*, David Kraft, Vladimir Leuski
Center for Environmental Technology, University of Colorado at Boulder, Boulder, CO

08:40 F1-2 BEAM-EFFICIENCY EXTRACTION METHOD FOR BRIGHTNESS-TEMPERATURE MEASUREMENT

Dazhen Gu*, Derek Houtz, James Randa, David K. Walker
Electromagnetic, National Institute of Standards and Technology, Boulder, CO

09:00 F1-3 WIDEBAND ELECTROMAGNETIC ANALYSIS OF PYRAMIDAL RADIOMETER CALIBRATION TARGETS USING FDTD

Srikumar Sandeep*, Albin J. Gasiewski
University of Colorado at Boulder, Boulder, CO

09:20 F1-4 OPTIMAL CALIBRATION OF PASSIVE MICROWAVE RADIOMETERS FOR THE 2008 ARCTIC MECHANISIMS OF INTERACTIONS BETWEEN THE SURFACE AND ATMOSPHERE (AMISA) MISSION

Michael Zucker*, Albin J. Gasiewski
University of Colorado at Boulder, Boulder, CO

10:00 Break

10:20 F1-5 IMPROVED JACOBIAN FORMULATION FOR A SCATTERING-BASED DISCRETE ORDINATE RADIATIVE TRANSFER MODEL

Miao Tian*, Albin J. Gasiewski
ECEE, University of Colorado, Boulder, Boulder, Colorado

10:40 F1-6 AN OVERLAND WET PATH DELAY RETRIEVAL ALGORITHM FOR NADIR-VIEWING MICROWAVE RADIOMETERS

Kyle L. Gilliam*[1], Xavier Bosch-Lluis[1], Steven C. Reising[1], Alan B. Tanner[2]
[1]*Microwave Systems Laboratory, Colorado State University, Fort Collins CO*
[2]*Jet Propulsion Laboratory, California Institute of Technology, Pasadena CA*

11:00 F1-7 REMOTE SENSING OF TROPOSPHERIC HUMIDITY USING A GROUND-BASED NETWORK OF SCANNING COMPACT MICROWAVE RADIOMETERS

Swaroop Sahoo*[1], Xavier Bosch-Lluis[1], Steven C. Reising[1], Jothiram Vivekanandan[2]
[1]*Electrical and Computer Engineering, Colorado State University, Fort Collins, CO*
[2]*Earth Observing Laboratory, National Center for Atmospheric Research, Boulder, CO*

11:20 F1-8 AN ANISOTROPIC OCEAN SURFACE EMISSIVITY MODEL BASED ON WINDSAT POLARIMETRIC BRIGHTNESS OBSERVATIONS

Dean F. Smith*[1], Albin J. Gasiewski[1], Srikumar Sandeep[1], Bob L. Weber[2]
[1]*ECEE, University of Colorado at Boulder, Boulder, CO*
[2]*DeTect, Inc., Longmont, CO*

Session H1: Waves in Space and Laboratory Plasmas I
Room 245

Co-Chairs: Anatoly Streltsov, *Embry-Riddle Aeronautical University*
Stephen Vincena, *University of California at Los Angeles*

10:20 H1-1 OUTSTANDING ISSUES IN UNDERSTANDING THE ROLE OF VLF WAVES IN THE INNER MAGNETOSPHERE

Michael J. Starks*[1], Jonah J. Colman[1], Jay M. Albert[1], Richard S. Selesnick[1], Christopher E. Sillence[1], Richard A. Quinn[2]
[1]*Space Vehicles Directorate, Air Force Research Laboratory, Kirtland AFB, NM*
[2]*AER, Inc., Lexington, MA*

10:40 H1-2 SAID/SAPS-RELATED VLF WAVES AND THE OUTER RADIATION BELT BOUNDARY

Evgeny Mishin*[1], Jay Albert[1], Ondrej Santolik[2]
[1]*RVBX, Air Force Research Laboratory, Albuquerque, New Mexico*
[2]*Department of Space Physics, Institute of Atmospheric Physics, Praha, Czech Republic*

11:00 H1-3 HIGH-POWER RADIO WAVE HEATING OF THE D-REGION IONOSPHERE ABOVE HAARP

Robert C. Moore*
Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL

11:20 H1-4 ALFVEN WAVES, CURRENT SHEETS AND THE EVOLUTION OF AURORAL FORMS

Christopher C. Chaston*
Space Sciences Laboratory, University of California Berkeley, Berkeley, CA

11:40 H1-5 ULF WAVES GENERATED BY THE IONOSPHERIC FEEDBACK INSTABILITY NEAR DISCRETE AURORA

Anatoly V. Streltsov*[1], Nan Jia[2], Eric D. Donovan[3], Harald U. Frey[4], Todd R. Pedersen[5]
[1]*Department of Physical Sciences, Embry-Riddle Aeronautical University, Daytona Beach, FL*
[2]*Thayer School of Engineering, Dartmouth Colege, Hanover, NH*
[3]*Physics Department, University of Calgary, Calgary, Canada*
[4]*Space Science Laboratory, University of California, Berkeley*
[5]*Space Vehicles Directorate, AFRL, Albuquerque*

Session HG1: Lightning and its Interaction with the Ionosphere I
Room 200

Co-Chairs: Ningyu Liu, *Florida Institute of Technology*
Morris Cohen, *Stanford University*

08:20 HG1-1 PHOCAL 2011: FIRST RESULTS

Walter A. Lyons*[1], Steven A. Cummer[2], Steven A. Rutledge[3], Timothy J. Lang[3], Tiffany Meyer[3], Tom A. Warner[4]
[1]*Yucca Ridge Field Station, FMA Research, Inc., Fort Collins, CO*
[2]*Electrical & Computer Engineering, Duke University, Durham, NC*
[3]*Dept. of Atmospheric Sciences, Colorado State University, Fort Collins, CO*
[4]*Inst.of Atmospheric Sciences, SD School of Mines & Technology, Rapid City, SD*

08:40 HG1-2 THEORETICAL ANALYSIS OF ELVES GENERATED BY ROCKET-TRIGGERED LIGHTNING

Christopher J. Biagi*, Robert C. Moore
Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL

09:00 HG1-3 UNDERSTANDING SPRITE MORPHOLOGY

Jianqi Qin*, Sebastien Celestin, Victor P. Pasko
Electrical Engineering, The Pennsylvania State University, University Park

09:20 HG1-4 INVESTIGATION OF LUMINOSITY AND PROPAGATION CHARACTERISTICS OF SPRITE STREAMERS INITIATED FROM SMALL IONOSPHERIC DISTURBANCES IN LIGHTNING ELECTRIC FIELD BELOW BREAKDOWN THRESHOLD FIELD

Burcu Kosar*, Ningyu Y. Liu, Hamid K. Rassoul
Department of Physics and Space Sciences, Florida Institute of Technology, Melbourne,FL

09:40 HG1-5 LIGHTNING INDUCED SFERICS CORRELATED WITH WHISTLER PROPAGATION

Andrew J. Compston*[1], Ryan Said[1], Ivan Linscott[1], Morris Cohen[1], Umran Inan[1,2], Nikolai Lehtinen[1], Michel Parrot[3]
[1]*Electrical Engineering, Stanford University, Stanford, CA*
[2]*Koc University, Istanbul, Turkey*
[3]*LPC2E, CNRS, Orleans, France*

10:00 Break

10:20 HG1-6 IONOSPHERIC EFFECTS OF WHISTLER WAVES LAUNCHED BY ROCKET-TRIGGERED LIGHTNING

Christopher J. Biagi*[1], Robert C. Moore[1], Mark Golkowski[2]
[1]*Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL*
[2]*Department of Electrical Engineering, University of Colorado Denver, Denver, CO*

10:40 HG1-7 THE METHOD OF STUDY IN THE IONOSPHERE OF THE PHYSICAL PROCESSES OCCURRING IN HIGH-ALTITUDE ATMOSPHERIC THUNDERSTORMS

Stanislav I. Klimov*[1], Gali K. Garipov[2], Vladimir M. Gotlib[1], Alexander V. Gurevich[3], Jean-Louis Pincon[4], Sergei I. Svertilov[2], Lev M. Zelenyi[1]
[1]*Space Plasma Physics Department, Space Research Institute of the Russian Academy of Sciences, Moscow, Russian Federation*
[2]*Cosmic Rays Department, Institute of Nuclear Physics of the MSU, Moscow, Russian Federation*

[3]*Department of Theory, P.N.Lebedev Physical Institute (FIAN) of RAS, Moscow, Russian Federation*
[4]*Plasma Physics Department, Centre dEtude Spatiale des Rayonnements, Toulouse, France*

11:00 HG1-8 LIGHTNING MORPHOLOGY AND IMPULSE CHARGE MOMENT CHANGE OF HIGH PEAK CURRENT NEGATIVE STROKES

Gaopeng Lu*[1], Steven A. Cummer[1], Richard J. Blakeslee[2], William H. Beasley[3], Stephanie A. Weiss[3]
[1]*Electrical and Computer Engineering Department, Duke University, Durham, North Carolina*
[2]*Earth Science Office, NASA Marshall Space Flight Center, Huntsville, Alabama*
[3]*School of Meteorology, University of Oklahoma, Norman, Oklahoma, Earth Science Office*

11:20 HG1-9 NUMERICAL MODELING OF INITIATION OF LIGHTNING LEADERS FROM TALL STRUCTURES BY SPRITE-PRODUCING LIGHTNING DISCHARGES

Victor P. Pasko*
Communications and Space Sciences Laboratory, Penn State University, University Park, Pennsylvania

11:40 HG1-10 A WAVEGUIDE MODEL OF THE RETURN STROKE CHANNEL WITH A METAMATERIAL CORONA

Nikolai G. Lehtinen*
Stanford University, Stanford, CA

Session J1: Radio Astronomy Teaching Labs and Educational Instruments
Room 265

Co-Chairs: Steven Ellingson, *Virginia Polytechnic Institute & State University*
Geoffrey Bower, *UC Berkeley*

08:20 J1-1 THE UC BERKELEY UNDERGRADUATE RADIO ASTRONOMY LABORATORY

Geoffrey C. Bower*, Carl Heiles, Aaron Parsons, Andrew Siemion
Astronomy Department & Radio Astronomy Laboratory, UC Berkeley, Berkeley, CA

08:40 J1-2 AN INEXPENSIVE, TABLE-TOP INTERFEROMETER AND UNDERGRADUATE LABS TO TEACH THE BASICS OF APERTURE SYNTHESIS

Jonathan M. Marr*[1], Alan E. E. Rogers[2], Vincent L. Fish[2], Arndt B. Martina[3]
[1]*Dept. of Physics and Astronomy, Union College, Schenectady, NY*
[2]*MIT Haystack Observatory, Westford, MA*
[3]*Bridgewater State College, Bridgewater, MA*

09:00 J1-3 MEASURING CMB TEMPERATURE WITH AN INEXPENSIVE, STUDENT-BUILT LAB EXPERIMENT

Meredith A. MacGregor*[1], John M. Kovac[1], Robert Wilson[2], Robert Kimberk[2], Students of Harvard Astro. 191[1]
[1]*Astronomy, Harvard University, Cambridge, MA*
[2]*Smithsonian Astrophysical Observatory, Cambridge, MA*

09:20 J1-4 THE ARECIBO REMOTE COMMAND CENTER: HIGH SCHOOL AND UNDERGRADUATE STUDENTS SEARCH THE GALAXY FOR RADIO PULSARS

Fredrick A. Jenet*
University of Texas at Brownsville, Brownsville, TX

09:40 J1-5 GASE INTERFEROMETRY AND COSMOLOGY ON THE ROOF

Miguel F. Morales*
University of Washington, Seattle, Seattle

10:00 Break

10:20 J1-6 THE LONG WAVELENGTH ARRAY: A DYNAMIC OBSERVATORY FOR RADIO ASTRONOMY EDUCATION

Jacob M. Hartman*[1], Gregory B. Taylor[2], Steven W. Ellingson[3]
[1]JPL, Pasadena, CA
[2]UNM, Albuquerque, NM
[3]VT, Blacksburg, VA

10:40 J1-7 SETI OPEN SOURCE DATA AND ANALYSIS TOOLS

Jon Richards*
The SETI Institute, Mountain View, CA

11:00 J1-8 SOFTWARE DEFINED RADIO: A LOW COST INTRODUCTION TO RADIO ASTRONOMY FOR MEXICAN UNIVERSITIES AND HIGH SCHOOLS

Stan E. Kurtz*[1], David E. Fields[2], Marcus D. Leech[3]
[1]Centro de Radioastronomia y Astrofisica, UNAM, Morelia, Michoacan, Mexico
[2]Tamke-Allan Observatory, Harriman, Tenn
[3]Shirleys Bay Radio Astronomy Consortium, Ottawa, Ontario, Canada

Session KB1: Emerging Diagnostic and Therapeutic Applications of Electromagnetics
Room 151

Co-Chairs: Mahta Moghaddam, *University of Michigan*
Susan Hagness, *University of Wisconsin-Madison*

08:20 KB1-1 MICROWAVE-INDUCED THERMOACOUSTIC IMAGING HYBRID FDTD MODELING AND EXPERIMENTAL STUDY

Ryan T. Jacobs*, Yiming Deng, Mark Golkowski
electrical engineering, University of Colorado Denver, Englewood, CO

08:40 KB1-2 THERMAL ACOUSTIC SIGNALS WITH DIFFERENT MICROWAVE PULSES AND DETECTION TARGETS

Xiong Wang*[1], Daniel Bauer[2], Russell Witte[2], Hao Xin[1]
[1]Electrical and Computer Engineering, the University of Arizona, Tucson, AZ
[2]Radiology, the University of Arizona, Tucson, AZ

09:00 KB1-3 SNR-ENHANCED INVERSE SCATTERING FOR MICROWAVE BREAST IMAGING

Matthew J. Burfeindt*, Susan C. Hagness, Barry D. Van Veen
Department of Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin

09:20 KB1-4 EVALUATION OF A FULL-CAVITY NUMERICAL CHARACTERIZATION APPROACH FOR AN EXPERIMENTAL MICROWAVE BREAST IMAGING SYSTEM

Mark Haynes*, John Stang, Mahta Moghaddam
University of Michigan, Ann Arbor, Michigan

09:40 KB1-5 VIRTUAL ELECTRODES: INCREASING SPATIAL RESOLUTION OF NEURAL INTERFACES BEYOND THE ACTUAL ELECTRODE COUNT

Carlos J. Cela*, Kyle Loizos, Gianluca Lazzi
Electrical and Computer Engineering, University of Utah, Salt Lake City, UT

10:00 Break

10:20 KB1-6 A TRANSCUTANEOUS MICROWAVE THERMAL THERAPY SYSTEM PROTOTYPE FOR BREAST CANCER TREATMENT USING IMAGE BASED TIME-REVERSAL FOCUSING

John Stang*, Mark Haynes, Mahta Moghaddam
University of Michigan, Ann Arbor, MI

10:40 KB1-7 OPTIMIZATION APPROACH FOR MICROSTRIP SPIRAL ANTENNAS USED IN DEEP TISSUE RADIOMETRY

Sara Salahi*[1], Paolo Maccarini[2], Alina Boico[2], Paul Stauffer[2]
[1]*Biomedical Engineering, Duke University, Durham, NC*
[2]*Radiation Oncology, Duke University, Durham, NC*

11:00 KB1-8 MICROWAVE RADIOMETRY FOR NON-INVASIVE DETECTION OF VESICOURETERAL REFLUX (VUR)

Paul R. Stauffer*[1], Paolo F. Maccarini[1], Sara Salahi[1], Kavitha Arunachalam[2], Brent W. Snow[3]
[1]*Radiation Oncology, Duke University, Durham NC*
[2]*Engineering Design, Indian Institute of Technology, Madras, Chennai, India*
[3]*3Primary Childrens Medical Center, University of Utah, Salt Lake City, Utah*

11:20 KB1-9 MICROWAVE PROBE ARRAY FOR DIELECTRIC SURGICAL MARGIN TESTING

Paul M. Meaney*[1], Tian Zhou[2], Neil Epstein[1], Keith D. Paulsen[1]
[1]*Thayer School of Engineering, Dartmouth College, Hanover, NH*
[2]*Kuang-Chi Institute of Advanced Technology, Guangdong, China*

11:40 KB1-10 SENSOR DEVELOPMENT FOR IN VIVO DIELECTRIC PROPERTY MEASUREMENT

Camerin C. Hahn*, Sima Noghanian
University of North Dakota, North Dakota

Session AB1: Measurement and Numerical Uncertainties
Room 200

Co-Chairs: Amir Zaghloul, *Virginia Tech*
Roger Lang, *George Washington Uniiversity*

15:20 AB1-1 A METROLOGY INFRASTRUCTURE FOR SCIENTIFIC COMPUTING

Andrew M. Dienstfrey*
Information Tedchnology Laboratory, National Institute of Standards and Technology, Boulder, CO

15:40 AB1-2 METHODS OF ESTIMATING MEASUREMENT UNCERTAINTIES

Michael H. Francis*
Electromagnetics, National Institute of Standards and Technology, Boulder, Colorado

16:00 AB1-3 CHARACTERIZATION OF PARALLEL PLATE WAVEGUIDES FOR MATERIAL MEASUREMENTS

Youn M. Lee*[1], Amir I. Zaghloul[1,2]
[1]*SEDD, US Army Research Laboratory, Adelphi, MD*
[2]*Electrical and Computer Engineering, Virginia Tech, Falls Church, Virginia*

16:20 AB1-4 INCREASED ACCURACY IN THE MEASUREMENT OF THE DIELECTRIC CONSTANT OF SEAWATER AT 1.413 GHZ

Yiwen Zhou*, Roger Lang
Electrical and Computer Engineering, The George Washington University, Washington, DC

16:40 AB1-5 UNCERTAINTIES ASSOCIATED WITH POINT SOURCE MODELING IN FDTD

Gregory M. Noetscher*, Sergey N. Makarov
Electrical and Computer Engineering, Worcester Polytechnic Institute, Worcester, MA

Session B3: Guided Waves and Waveguiding Structures
Room 155

Co-Chairs: Leo Kempel, *Michigan State University*
Aly Fathy, *U. Tennessee*

13:20 B3-1 2.5D MICROMACHINED 240 GHZ CAVITY-BACKED COPLANAR WAVEGUIDE TO RECTANGULAR WAVEGUIDE TRANSITION

Mehrnoosh Vahidpour*, Kamal Sarabandi
University of Michigan, Ann Arbor, MI

13:40 B3-2 SMOOTHED SIGMOID AND STEPPED CIRCULARLY POLARIZED SEPTUM DESIGNS USING PARTICLE SWARM OPTIMIZATION

Ilkyu Kim*, Joshua Kovitz, Yahya Rahmat-Samii
Electrical Engineering Department, UCLA, Los Angeles and California

14:00 B3-3 ANALYSIS OF LAYERED ISOTROPIC AND GYROMAGNETIC MATERIALS IN A RECTANGULAR WAVEGUIDE

Benjamin R. Crowgey*, Ozgur Tuncer, Edward J. Rothwell, Leo C. Kempel, B Shanker
Electrical and Computer Engineering, Michigan State University, East Lansing, Michigan

14:20 B3-4 SURFACE WAVE PROPAGATION ALONG A ONE-DIMENSIONAL METAL CUT-WIRE ARRAY

Yang Li*[1], Hao Ling[2]
[1]*Electrical and Computer Engineering, Baylor University, Waco, Tx*
[2]*Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX*

Session B4: Reflectarray antennas
Room 155

Co-Chairs: Sembiam Rengarajan, *California State University*
Kamal Sarabandi, *The University of Michigan*

15:20 B4-1 A NOVEL REFLECTARRAY ANTENNA BASED ON GROUNDED LOOP-WIRE MINIATURIZED ELEMENT

Arezou Edalati*, Kamal Sarabandi
EECS department, University of Michigan, Ann Arbor, MI

15:40 B4-2 ELECTRONICALLY-SCANNED REFLECTARRAY IMPACT ON MILLIMETER-WAVE IMAGING SYSTEM PERFORMANCE

Charles R. Dietlein*, Abigail S. Hedden, David A. Wikner
US Army Research Laboratory, Adelphi, MD

16:00 B4-3 EXPERIMENTAL VALIDATION OF SUB-REFLECTARRAY DISTORTION COMPENSATION TECHNIQUE FOR REFLECTOR ANTENNAS

Yahya Rahmat-Samii*, Harish Rajagopalan
Electrical Engineering, University of California Los Angeles (UCLA), Los Angeles, CA

16:20 B4-4 A STUDY OF PIECEWISE-PLANAR PARABOLIC REFLECTARRAYS

Sembiam R. Rengarajan*
Department of Electrical and Computer Engineering, California State University, Northridge, CA

16:40 B4-5 RADIATION ANALYSIS OF REFLECTARRAY ANTENNAS: NUMERICAL APPROACHES VERSUS FULL-WAVE SIMULATIONS

Payam Nayeri*, Fan Yang, Atef Z. Elsherbeni
Electrical Engineering, The University of Mississippi, University, MS

Session B5: Cognitive Radio and Radar
Room 1B40

Co-Chairs: Christos Christodoulou, *University of New Mexico*
Joel Johnson, *The Ohio State University*

13:20 B5-1 COGNITION AND RADAR SENSING

Chris J. Baker*, Graeme E. Smith
ECE, Ohio State University, Columbus, Ohio

13:40 B5-2 SOFTWARE DEFINED RADAR FOR COGNITIVE APPLICATIONS

Kyle B. Stewart*, Mark T. Frankford, Ninoslav Majurec, Joel T. Johnson
ElectroScience Lab, The Ohio State University, Columbus, OH

14:00 B5-3 A GREEDY APPROACH FOR SENSOR SELECTION AND POWER ALLOCATION IN A COGNITIVE RADAR NETWORK

Phani Chavali*, Arye Nehorai
Preston M Green Department of Electrical and Systems Engineering, Washington University in St Louis, St Louis, Missouri

14:20 B5-4 THE USE OF RECONFIGURABLE ANTENNAS IN A COGNITIVE RADIO ENVIRONMENT

Youssef Tawk[1], Joseph Costantine[2], Christos Christodoulou*[1]
[1]*Electrical and Computer Engineering Department, University of New Mexico, Albuquerque NM*
[2]*Electrical Engineering, California State University Fullerton, Fullerton CA*

14:40 B5-5 A FREQUENCY-TUNABLE PATTERN DIVERSITY ANTENNA FOR COGNITIVE RADIO APPLICATIONS

Ali Ramadan[1], Mohammed Al-Husseini[1], Youssef Tawk[2], Joseph Costantine[3], Christos Christodoulou*[2], Karim Kabalan[1], Ali El-Hajj[1]
[1]*Electrical and Computer Engineering Department, American University of Beirut, Beirut, Lebanon*
[2]*Electrical and Computer Engineering Department, University of New Mexico, Albuquerque, NM*
[3]*Electrical Engineering Department, California State University Fullerton, Fullerton, USA*

15:00 Break

15:20 B5-6 COUPLING ANALYSIS OF A NULL RECONFIGURABLE ELEMENT FOR SMALL ADAPTIVE PHASED ARRAYS

Matthew W. Young*, Jennifer T. Bernhard
Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL

15:40 B5-7 A FREQUENCY RECONFIGURABLE SLOT ANTENNA USING MICROVASCULAR DELIVERY OF CONDUCTIVE LIQUID

Aaron J. King*[1], Jason F. Patrick[2], Nancy R. Sottos[3], Scott R. White[4], Gregory H. Huff[5], Jennifer T. Bernhard[1]
[1]*Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL*
[2]*Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, IL*
[3]*Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL*
[4]*Department of Aerospace Engineering, University of Illinois at Urbana-Champaign, Urbana, IL*
[5]*Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX*

16:00 B5-8 A COGNITIVE RADIO PLANAR ANTENNA SYSTEM WITH A RECONFIGURABLE SUBSTRATE HEIGHT

Joseph Costantine[1], Youssef Tawk[2], Joe Himmelheber[1], Mostafa Shiva[1], Christos G. Christodoulou*[2]
[1]*Electrical Engineering, California State University Fullerton, Fullerton, CA*
[2]*Electrical and Computer Engineering, University of New Mexico, Albuquerque,NM*

16:20 B5-9 A RECONFIGURABLE FILTER FOR COGNITIVE RADIO APPLICATIONS

Youssef Y. Tawk[1], Joseph Costantine[2], Christos Christodoulou*[1]
[1]*Electrical and Computer Engineering Department, University of New Mexico, Albuquerque NM*
[2]*Electrical Engineering, California State University Fullerton, Fullerton CA*

Session E1: High-Power Electromagnetics
Room 1B51

Co-Chairs: Everett Farr, *Farr Fields, LC*
Dave Giri, *Pro-Tech*

13:20 E1-1 A STANDARD FOR CHARACTERIZING ANTENNAS IN THE TIME DOMAIN

Everett G. Farr*
Farr Fields, LC, Albuquerque, NM

13:40 E1-2 THE EFFECT OF A LOCAL GROUNDPLANE ON THE RADIATION CHARACTERISTICS OF THE IMPULSE RADIATING ANTENNA (IRA)

D V. Giri*[1], F M. Tesche[2]
[1]*Pro-Tech, Alamo, CA*
[2]*EMConsultant, Saluda,NC*

14:00 E1-3 PHOTOIONIZATION PROCESSES IN LIGHTNING RETURN STROKE INITIATION CONDITIONS

Robert L. Gardner*
Consultant, Alexandria, VA

14:20 E1-4 X-RAYS PRODUCED BY FIRST AND SUBSEQUENT STROKES IN NATURAL LIGHTNING

Shreeharsh Mallick*[1], Vladimir A. Rakov[1], Joseph R. Dwyer[2], John A. Cramer[3]
[1]*Department of Electrical and Computer Engineering, University of Florida, Gainesville, Florida*
[2]*Department of Physics and Space Sciences, Florida Institute of Technology, Melbourne, Florida*
[3]*Vaisala Inc., Tucson, Arizona*

15:00 Break

15:20 E1-5 TIME DOMAIN FRACTAL LIGHTNING MODELING STUDY OF FIELD CHANGE ARRAY DATA

Can Liang*[1], Brant E. Carlson[1,2], Phillip M. Bitzer[3], Hugh J. Christian[3], Nikolai G. Lehtinen[1], Umran S. Inan[1,4]
[1]*electrical engineering, stanford university, stanford CA*
[2]*University of Bergen, Bergen, Norway*
[3]*University of Alabama, Huntsville,AL*
[4]*Electrical Engineering, Ko University, Rumelifeneri Yolu, Turkey*

15:40 E1-6 AUTOMATED AND ADAPTIVE RF EFFECTS TESTING

Everett G. Farr*[1], Leland H. Bowen[1], W. Scott Bigelow[1], Robert L. Gardner[2], Peter Finlay[3]
[1]*Farr Fields, LC, Albuquerque, NM*
[2]*Consultant, Alexandria, VA*
[3]*RDHA, Air Force Research Laboratory, Kirtland AFB, NM*

16:00 E1-7 RANDOM NON-DIRECTED AND DIRECTED GRAPH MODELS FOR MOBILE RESILIENT SENSOR AND INFORMATION SYSTEMS

Ira Kohlberg*
Kohlberg Assoicates, Inc., Reston, VA

Session F2: Passive Remote Sensing of the Earth's Environment: Sensors and Missions
Room 150

Co-Chairs: Albin Gasiewski, *University of Colorado at Boulder*
Steven Reising, *Colorado State University*

13:20 F2-1 NANOSATELLITES FOR EARTH ENVIRONMENTAL MONITORING: THE MICROMAS PROJECT

William J. Blackwell*[1], Gregory Allen[1], Mark Bury[1], Ronald Efromson[1], Christopher Galbraith[1], Timothy Hancock[1], R V. Leslie[1], Idahosa Osaretin[1], Larry Retherford[1], Michael Scarito[1], Michael Shields[1], David Toher[1], Kurt Wight[1], David W. Miller[2]
[1]*MIT Lincoln Laboratory, Lexington, MA*
[2]*MIT Space Systems Laboratory, Cambridge, MA*

13:40 F2-2 APPLICATION OF WIDEBAND SINGLE SIDEBAND THZ RECEIVERS TO SPACEBORNE MEASUREMENT OF CLOUD ICE

Albin J. Gasiewski*[1], William Deal[2], Michael McGrath[3], Frank Evans[4], Aaron Swanson[2], David Walker[5], Stefan Buehler[6], Ginger Drake[3], Neil White[3]
[1]*ECEE, University of Colorado at Boulder, Boulder, CO*
[2]*Northrop Grumman Corporation, Redondo Beach, CA*
[3]*Laboratory for Space Physics, University of Colorado at Boulder, Boulder, CO*
[4]*ATOC, University of Colorado at Boulder, Boulder, CO*
[5]*National Instutute of Standards and Technology, Boulder, CO*
[6]*Lulea Institute of Technology, Kiruna, Sweden*

14:00 F2-3 THE GEOSTAR ASIC DIGITAL CORRELATOR

Christopher Ruf*[1], Bruce Block[1], Michael Flynn[2], Phil Knag[2], Aaron Rocca[2], Zhangya Zhang[2], Todd Gaier[3], Bjorn Lambrigtsen[3], Alan Tanner[3]
[1]*Space Physics Research Laboratory, University of Michigan, Ann Arbor, MI*
[2]*Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI*
[3]*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA*

14:20 F2-4 DESIGN AND ANALYSIS OF A HYPERSPECTRAL MICROWAVE RECEIVER SUBSYSTEM

William J. Blackwell*[1], Christopher Galbraith[1], Timothy Hancock[1], R. V. Leslie[1], Idahosa Osaretin[1], Michael Shields[1], Paul E. Racette[2], Lawrence M. Hilliard[2]
[1]*MIT Lincoln Laboratory, Lexington, MA*
[2]*NASA Godddard Space Flight Center, Greenbelt MA*

14:40 F2-5 RFI-MITIGATING MULTICHANNEL DUAL POLARIZATION AIRBORNE L-BAND RADIOMETER

Fredrick S. Solheim*
Radiometrics Corporation, Boulder, CO

15:00 Break

15:20 F2-6 SIMULTANEOUS RETRIEVAL OF OCEAN SURFACE SALINITY AND WIND USING AQUARIUS COMBINED ACTIVE-PASSIVE L-BAND DATA

Simon Yueh*, Wenqing Tang, Alexander Fore
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA

15:40 F2-7 THE GLOBAL PRECIPITATION MEASUREMENT (GPM) MISSION AND FALLING SNOW ALGORITHM DEVELOPMENT

Gail Skofronick-Jackson*, Arthur Y. Hou
Code 613.1, NASA Goddard Space Flight Center, Greenbelt, MD

16:00 F2-8 DEVELOPMENT AND DEMONSTRATION OF 92, 130, AND 166 GHZ RADIOMETERS FOR IMPROVED COASTAL WET-TROPOSPHERIC CORRECTION ON SWOT

Darrin Albers*[1], Alexander Lee[1], Steven C. Reising[1], Shannon T. Brown[2], Pekka Kangashlahti[2], Douglas E. Dawason[2], Todd C. Gaier[2], Oliver Montes[2], Daniel J. Hoppe[2], Behrouz Khayatian[2]
[1]*Microwave Systems Laboratory, Colorado State University, Fort Collins, CO*
[2]*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, Uniteds States*

16:20 F2-9 STABILITY OF MILLIMETER-WAVE RADIOMETERS USING INTERNAL CALIBRATION SOURCES

Chaitali R. Parashare*[1], Pekka P. Kangaslahti[1], Shannon T. Brown[1], Douglas E. Dawson[1], Todd C. Gaier[1], Sharmila Padmanabhan[1], Steven C. Reising[2], Oliver Montes[1], James S. Shell[1], Dennis Harding[1], Daniel Higley[1], Stephen Pomes[1]
[1]*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA*
[2]*Electrical and Computer Engineering, Colorado State University, Fort Collins, CO*

16:40 F2-10 AIRBORNE AND FUTURE GEOSTATIONARY ATMOSPHERIC HUMIDITY MEASUREMENTS APPLYING THE LATEST LNA MMIC TECHNOLOGY

Pekka Kangaslahti*[1], Boon Lim[1], Todd C. Gaier[1], Alan Tanner[1], Mikko Varonen[1], Lorene Samoska[1], Shannon Brown[1], Bjorn Lambrigtsen[1], Steven C. Reising[2], Jordan Tanabe[1], Oliver Montes[1], Douglas E. Dawson[1], Chaitali Parashare[1]
[1]*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA*
[2]*Microwave Systems Laboratory, Colorado State University, Fort Collins, CO*

Session G1: Radar and Radio Techniques
Room 105

Co-Chairs: Thomas Gaussiran, *Applied Research Laboratories, The University of Texas at Austin*
Terence Bullett, *CIRES, University of Colroado Boulder*

13:20 G1-1 LOW EARTH ORBIT SPECTRUM ANALYZER FOR IONOSPHERIC DISTURBANCES

Mario I. Ortega*, Anthony J. Bentley, Nicholas R. Clegg, Brian M. Hare, Michael J. Thomas, Rosemary R. Williams, Scott C. Wilson
Electrical and Computer Engineering, University of New Mexico, Albuquerque, New Mexico

13:40 G1-2 THE VARY-CHAP TOPSIDE ELECTRON DENSITY PROFILE FOR IRI AND GIRO

Bodo Reinisch*[1,2], Patrick Nsumei[1], Xueqin Huang[1], Dieter Bilitza[3]
[1]*University of Massachusetts Lowell, Lowell, MA*
[2]*Lowell Digisonde International, Lowell, MA*
[3]*George Mason University, Fairfax, VA*

14:00 G1-3 ASSIMILATION OF GIRO DATA IN THE REAL-TIME IRI

Ivan A. Galkin*[1], Bodo W. Reinisch[1,2], Xueqin Huang[1], Dieter Bilitza[3]
[1]*University of Massachusetts Lowell, Center for Atmospheric Research, Lowell, MA*
[2]*Lowell Digisonde International, LLC, Lowell, MA*
[3]*Space Weather Laboratory, George Mason University, Fairfax, VI*

14:20 G1-4 INITIAL ASSESSMENT OF THE NEW-GENERATION METEOR RADARS TO MEASURE GRAVITY WAVES MOMENTUM FLUXES

Diego Janches*[1], David C. Fritts[2], Wayne Hocking[3]
[1]*GSFC/Space Weather Lab, NASA, Greenbelt, MD*
[2]*CoRA Div, NorthWest Research Asociates, Boulder, CO*
[3]*Dept. of Physics, University of Western Ontario, London, ON, Canada*

14:40 G1-5 ELECTRIC FIELD AND CONDUCTIVITY VARIATIONS NEAR SUBSTORM ONSET TIMES

Krishna Prasad Gudivada*[1,2], Brenton.J Watkins[1]
[1]*Geophysical Institute, University of Alaska,Fairbanks, Fairbanks,Alaska*
[2]*Electrical Engineering, University of Alaska,Fairbanks, Fairbanks,Alaska*

15:00 Break

15:20 G1-6 INCOHERENT SCATTER RADAR ANALYSIS IN A FLEXIBLE SOFTWARE RADAR FRAMEWORK

Philip J. Erickson*, William C. Rideout, Frank D. Lind
Atmospheric Sciences Group, MIT Haystack Observatory, Westford, MA

15:40 G1-7 DIGITAL ARRAY RADAR FOR A GLOBAL GEOSPACE ARRAY

Frank D. Lind*, Philip J. Erickson, James R. Marchese
MIT Haystack Observatory, Westford, MA

16:00 G1-8 SEARCH FOR IONOSPHERIC EFFECTS AT 150 MHZ WITH PAPER

Nicole Gugliucci*[1], Richard Bradley[2]
[1]Astronomy, University of Virginia, Charlottesville, VA
[2]National Radio Astronomy Observatory, Charlottesville, VA

Session H2: Waves in Space and Laboratory Plasmas II
Room 245

Co-Chairs: Stephen Vincena, *University of California at Los Angeles*
Anatoly Streltsov, *Embry-Riddle Aeronautical University*

13:20 H2-1 EFFECT OF HALL CONDUCTIVITY ON FEEDBACK-UNSTABLE ULF WAVES AT HIGH LATITUDES

Nan Jia*, Anatoly Streltsov
Thayer School of Engineering, Hanover,NH

13:40 H2-2 OBSERVATION OF WHISTLER WAVE RESONANCES IN LABORATORY PLASMA

Bill Amatucci*[1], Dave Blackwell[1], Erik Tejero[1], Chris Cothran[2], Leonid Rudakov[3], Guru Ganguli[1], Dave Walker[2]
[1]Plasma Physics Division, Naval Research Laboratory, Washington, DC
[2]Global Strategies North America, Inc, Crofton, MD
[3]Icarus Research, Bethesda, MD

14:00 H2-3 LABORATORY STUDIES OF ELECTROMAGNETIC VELOCITY SHEAR-DRIVEN INSTABILITIES

Erik M. Tejero*[1], William E. Amatucci[1], Christopher Crabtree[1], Gurudas Ganguli[1], Christopher D. Cothran[2]
[1]Plasma Physics Divsion, Naval Research Laboratory, Washington, DC
[2]Sotera Defense Solutions, Crofton, MD

14:20 H2-4 USING LASER-PRODUCED ENERGETIC ELECTRONS TO MODEL IONOSPHERIC PHENOMENA IN THE LABORATORY

Stephen Vincena*
Department of Physics and Astronomy, University of California at Los Angeles, Los Angeles, CA

14:40 H2-5 SCATTERING OF LOWER HYBRID WAVES INTO WHISTLERS THROUGH DENSITY PERTURBATIONS

David D. Blackwell*[1], William E. Amatucci[1], Erik M. Tejero[1], Christoper D. Cothran[2]
[1]US Naval Research Laboratory, Washington DC
[2]Global Strategies Group North America Inc., Crofton, MD

15:00 Break

15:20 H2-6 THE EFFECTS OF KINETIC ALFVEN AND WHISTLER WAVE TURBULENCE AND THE EVOLUTION OF ELECTRON DISTRIBUTION IN SOLAR WIND PLASMA

Manish Mithaiwala*[1], Leonid Rudakov[2], Gurudas Ganguli[1], Chris Crabtree[1]
[1]Naval Research Laboratory, Washington DC
[2]Icarus Research Inc., Bethesda MD, US

15:40 H2-7 METHODOLOGY FOR INVESTIGATION OF IONOSPHERE PLASMA-WAVE PROCESSES IN THE NEAR SURFACE REGION OF SUPER-LARGE SPACE OBJECTS.

Stanislav I. Klimov*, Valery A. Grushin, Denis I. Novikov
Space Research Institute of the RAS, Moscow, Russian Federation

16:00 H2-8 ARBITRARY AMPLITUDE ION-ACOUSTIC SOLITONS IN DUSTY PLASMAS

Tatiana V. Losseva*, Sergey I. Popel, Anatoly P. Golub'
Russian Academy of Sciences, Institute of Geospheres Dynamics, Moscow,MO, Russian Federation

16:20 H2-9 DESIGN AND MULTIPACTING SIMULATION OF DOUBLE-GAP BUNCHER CAVITY

Ki R. Shin*[1], Yoon W. Kang[2], Aly E. Fathy[1]
[1]University of Tennessee, Knoxville, TN
[2]ORNL, Oak Ridge, TN

16:40 H2-10 SPACECRAFT CHARGING IN A DUST-RICH ENVIRONMENT

Hsiang-Wen Hsu*[1], Mihaly Horanyi[1], Sascha Kempf[1], Eberhard Gruen[1,2]
[1]LASP, University of Colorado at Boulder, Boulder, CO
[2]MPI fuer Kernphysik, Heidelberg, Germany

Session HG2: Lightning and its Interaction with the Ionosphere II
Room 200

Co-Chairs: Morris Cohen, *Stanford University*
Ningyu Liu, *Florida Institute of Technology*

13:20 HG2-1 REMOTE SENSING OF ELECTRIC FIELDS ABOVE THUNDERSTORMS VIA THE KERR EFFECT: INSTRUMENT STATUS

David Lauben*[1], Morris Cohen[1], Brant Carlson[2], Robert Marshall[1], Umran Inan[3]
[1]Stanford University, Stanford
[2]University of Bergen, Bergen, Norway
[3]Koc University, Instanbul, Turkey

13:40 HG2-2 HIGH ENERGY OBSERVATIONS OF TERRESTRIAL GAMMA-RAY FLASHES BY AGILE

Marco Tavani*[1], Martino Marisaldi[2], Fabio Fuschino[2], Claudio Labanti[2], Andrea Argan[3]
[1]INAF-IASF Roma, Rome, Italy
[2]INAF-IASF Bologna, Bologna, Italy
[3]INAF Headquarters, Rome, Italy

14:00 HG2-3 SPECTRAL AND TEMPORAL CHARACTERISTICS OF TERRESTRIAL GAMMA-RAY FLASHES PRODUCED BY ENERGETIC ELECTRONS DURING THE STEPPING OF LIGHTNING LEADERS

Sebastien J. Celestin*, Victor P. Pasko
Pennsylvania State University, University Park, Pennsylvania

Session J2: New Telescopes, Techniques, and Observations I
Room 265

Co-Chairs: Richard Prestage, *NRAO - Green Bank*
Richard Bradley, *National Radio Astronomy Observatory*

13:20 J2-1 THE ATACAMA LARGE MILLIMETER/SUBMILLIMETER ARRAY: AN UPDATE

Jeff Mangum*
National Radio Astronomy Observatory, Charlottesville, VA

13:40 J2-2 ALMA SYSTEM VERIFICATION

Richard A. Sramek*
National Radio Astronomy Observatory, Longmont, CO

14:00 J2-3 COMMISSIONING, OPERATIONS, AND EARLY RESULTS FOR THE LONG WAVELENGTH ARRAY

Joe Craig*
Physics and Astronomy, University of New Mexico, Albuquerque, Nm

14:20 J2-4 RESULTS FROM LWA1 COMMISSIONING: SENSITIVITY, BEAM CHARACTERISTICS, AND CALIBRATION

Steve Ellingson*
Virginia Tech, Blacksburg VA

14:40 J2-5 CURRENT OPTICS DESIGN FOR THE U.S. SKA TECHNOLOGY DEVELOPMENT PROJECT

William A. Imbriale*[1], Lynn Baker[2], German Cortes-Medellin[2]
[1]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA
[2]Cornell University, Ithaca, NY

15:00 Break

15:20 J2-6 WIDEBAND 3-MM RECEIVER DEVELOPMENT FOR CARMA

James W. Lamb*
Radio Astronomy, California Institute of Technology, Big Pine, CA

15:40 J2-7 W-BAND HETERODYNE MODULE DEVELOPMENT FOR LARGE ARRAYS

Rohit S. Gawande*[1], Kieran Cleary[1], Anthony C. S. Readhead[1], Rodrigo Reeves[1], Todd C. Gaier[2], Pekka Kangaslahti[2], Lorene Samoska[2], Sarah Church[3], Matt Sieth[3], Patricia Voll[3], Andrew Harris[4]
[1]Astronomy, California Institute of Technology, Pasadena, CA
[2]Jet Propulsion Laboratory, Pasadena, CA
[3]Physics, Stanford University, Stanford, CA
[4]Astronomy, University of Maryland, College Park, MD

16:00 J2-8 A CRYOGENIC PROBE STATION FOR W-BAND MMIC LOW NOISE AMPLIFIERS

Rodrigo A. Reeves*[1], Kieran Cleary[1], Rohit Gawande[1], Anthony Readhead[1], Damon Russell[2], Sander Weinreb[2], Todd Gaier[3], Pekka Kangaslahti[3], Lorene Samoska[3], Mikko Varonen[3]
[1]Astronomy dept., Caltech, Pasadena, CA
[2]Electrical Engineering dept., Caltech, Pasadena,CA
[3]Jet Propulsion Lab, Pasadena, CA

16:20 J2-9 EFFICIENT SNAPSHOT CALIBRATION FOR POLARIMETRIC PHASED ARRAY RADIOMETERS

Taylor D. Webb*, Karl F. Warnick
Electrical and Computer Engineering, Brigham Young University, Provo, Utah

16:40 J2-10 THE IMPROVED C-BAND SYSTEM ON THE VLBA

Steven J. Durand*, Robert H. Hayward
National Radio Astronomy Observatory, Socorro, New mexico,

Session K1: Telemetry for Monitoring and Biosensing
Room 151

Co-Chairs: Erdem Topsakal, *Mississippi State University*
William Chappell, *Purdue University*

13:20 K1-1 PORCINE MODELS IN TELEMETRY: HYDRATION EFFECTS AND TISSUE STORAGE PROTOCOL

Robbin Bertucci*[1], Jun Liao[1], Erdem Topsakal[2]
[1]*Agricultural and Biological Engineering, Mississippi State University, Starkville, MS*
[2]*Electrical and Computer Engineering, Mississippi State University, Starkville, MS*

13:40 K1-2 SPECIFIC ABSORPTION RATIO (SAR) REDUCTION IN WIRELESS POWER TRANSFER SYSTEM USING MULTI-COIL APPROACH

Anil K. RamRakhyani*, Gianluca Lazzi
ECE, University of Utah, Salt lake City, Utah

14:00 K1-3 MINIATURIZED, PARYLENE-BASED, WIRELESS INTRAOCULAR PRESSURE SENSOR SYSTEM USING HARMONIC DETECTION TECHNIQUE

Tse-Yu Lin*[1], Byungguk Kim[1], Dohyuk Ha[1], Wilhelmine N. de Vries[2], Robin W. Irazoqui[3], Simon W. M. John[2], Pedro P. Irazoqui[1], William J. Chappell[1]
[1]*Purdue University, West Lafayette, IN*
[2]*The Jackson Laboratory, Bar Harbor, ME*
[3]*Universitat de Girona, Girona, Catalua, Spain*

14:20 K1-4 DETERMINING THE RELATIVE PERMITTIVITY OF HUMAN BODY MASSES

Safa Salman*, Dimitris Psychoudakis, John L. Volakis
The Electrosience Laboratory, The Ohio State University - The Electroscience Laboratory, COLUMBUS, Ohio

14:40 K1-5 A MINIATURIZED IMPLANTABLE ANTENNA FOR CONTINUOUS GLUCOSE MONITORING

Kristin Sharp*, Erdem Topsakal
Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS

15:00 Break

15:20 K1-6 INTEGRATION OF CELL PHONE IMAGING WITH MICROCHIP ELISA TO DETECT OVARIAN CANCER HE4 BIOMARKER IN URINE AT THE POINT-OF-CARE

ShuQi Wang[1], Xiaohu Zhao[1], Imran Khimji[1], Ragip Akbas[2], Weiliang Qiu[3], Dale Edwards[4], Daniel W. Cramer[4], Bin Ye[4], Utkan Demirci*[1,5]
[1]*Demirci Bio-Acoustic-MEMS in Medicine (BAMM) Laboratory, Harvard Medical School, Brigham and Women's Hospital,, Cambridge*
[2]*Autodesk, Inc., Manchester*
[3]*Channing Laboratory, Harvard Medical School, Brigham and Women's Hospital,, Boston*
[4]*Department of Obstetrics and Gynecology and Reproductive Biology, Harvard Medical School, Brigham and Women's Hospital,, Boston*
[5]*Harvard Medical School, Harvard-MIT Health Sciences & Technology, Cambridge*

15:40 K1-7 ROBUST AND EFFICIENT RECONFIGURABLE RF FRONT END FOR IMPLANTABLE BIOMEDICAL DEVICES

Anatoly A. Yakovlev*, Ada S. Y. Poon
Electrical Engineering, Stanford University, Stanford, CA

16:00 K1-8 A NON-INVASIVE TECHNIQUE FOR BLOOD GLUCOSE MONITORING

Erdem Topsakal, Mina Tahai*
Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS

16:20 K1-9 COMPACT NESTED DIPOLE PROBE FOR NEAR-FIELD RADIOMETRIC TEMPERATURE MEASUREMENT OF THE BODY

Rob Scheeler*, Xavier Palomer, Zoya Popovic
Dept. Electrical, Computer, and Energy Engineering, University of Colorado at Boulder, Boulder, Colorado

Business Meetings

17:00	Commission E	Room 1B51
17:00	Commission F	Room 150
17:00	Commission H	Room 245
18:00	Commission D	Room 155
18:00	Commission K	Room 151

Reception

Engineering Center Lobby 18:30-21:00
(Beer and Wine provided)

Plenary Session: Ernest K. Smith USNC-URSI Student Paper Competition
Mathematics Auditorium

Chair: Danilo Erricolo, University of Illinois at Chicago

8:20 Announcements

8:30 Rules and Guidelines of the Competition

8:40 Student Paper Presentations

9:40 Break

Session P2: Meeting Highlight: Global Navigation Satellite Systems and Radio Science
Mathematics Auditorium

Co-Chairs: Frank Lind, USNC Commission G Chair (2009-2011), *MIT Haystack Observatory*
Bill Amatucci, USNC Commission H Chair (2009-2011), *Naval Research Laboratory*

10:20 P2-1 OBSERVING GEOSPACE WITH GPS

Anthea J. Coster*
MIT Haystack Observatory, Westford, MA

10:40 P2-2 EVOLUTION OF THE GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

Christopher J. Hegarty*
The MITRE Corporation, Bedford, MA

11:40 Awards Ceremony for Student Paper Competition

12:00 Lunch for Student Travel Awardees, USNC Officers and Commission Chairs (Leeds Business School Atrium)

Session B6: Antenna Theory, Design and Measurement
Room 155

Co-Chairs: Donald Wilton, *University of Houston*
Edward Rothwell, *Michigan State University*

13:20 B6-1 ESTIMATES OF Q FOR PATCH ANTENNAS HAVING MAGNETODIELECTRIC SUBSTRATES

Steven Weiss*
SEDD, US Army Research Lab, Adelphi, MD

13:40 B6-2 BANDWIDTH LIMITS FOR LOW PROFILE SCANNING ARRAYS

Jonathan P. Doane*, Kubilay Sertel, John Volakis
ElectroScience Laboratory, Ohio State University, Columbus, OH

14:00 B6-3 SURFACE TOLERANT EBG-DIPOLE AND FAT-FOLDED-DIPOLE RFID TAG ANTENNAS: A COMPARATIVE STUDY

Harish Rajagopalan*, Yahya Rahmat-Samii
Electrical Engineering, UCLA, Los Angeles

14:20 B6-4 METHODS TO ACHIEVE CIRCULAR POLARIZATION AND BANDWIDTH ENHANCEMENT FOR MESHED PATCH ANTENNAS

Tursunjan Yasin*, Reyhan Baktur
ECE, Utah State University, Logan, Utah

14:40 B6-5 BROADBAND PROBE-FED AND APERTURE-COUPLED CYLINDRICAL DIELECTRIC RESONATOR ANTENNAS

Adam P. Huynh*, David R. Jackson, Stuart A. Long, Donald R. Wilton
Electrical and Computer Engineering, University of Houston, Houston TX

15:00 Break

15:20 B6-6 AN OPTICAL ALIGNMENT TOOL FOR SIMULTANEOUS IMAGING AND PRECISION ALIGNMENT OF TWO MM-WAVE ANTENNAS

Joshua A. Gordon*, David R. Novotny
PML, NIST, Boulder, CO

15:40 B6-7 MULTIPLE-BEAM CONTROL AND SWITCHING USING A LUNEBURG LENS ANTENNA

Rafael A. Sabory-Garcia*, Min Liang, Wei-Ren Ng, Michael E. Gehm, Hao Xin
Electrical and computer Engineering, University of Arizona, Tucson, Arizona

16:00 B6-8 ANALYSIS AND DESIGN PROCESS OF A STRIPLINE ARCHIMEDEAN SPIRAL ANTENNA

Teng-Kai Chen*, Gregory H. Huff
Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX

16:20 B6-9 UNDERSTANDING THE CROSS-POL GENERATION IN PATCH ANTENNAS: A NEAR-FIELD APPROACH

Shubhendu Bhardwaj*, Yahya Rahmat-Samii
University of California, Los Angeles, CA

Session B7: Metamaterials II
Room 1B40

Co-Chairs: Arthur Yaghjian, *Research Consultant*
Filippo Capolino, *University of California Irvine*

13:20 B7-1 ELECTROMAGNETIC WAVE TUNNELING THROUGH MULTIPLE EPSILON-NEGATIVE METAMATERIAL LAYERS: A MICROWAVE FILTER THEORY APPROACH

Chien-Hao Liu*, Nader Behdad
Electrical and Computer Engineering, University of Wisconsin-Madison, Madison

13:40 B7-2 WAVEGUIDE POWER DIVIDER BASED ON ENZ MATERIAL

Santosh Seran*, John P. Donohoe
Department of Electrical and Computer Engineering, Mississippi State University, Starkville,MS

14:00 B7-3 SUPERCOUPLING OF ELECTROMAGNETIC ENERGY FROM A WAVEGUIDE TO FREE SPACE USING ENZ MATERIALS

Santosh Seran*, John P. Donohoe
Department of Electrical and Computer Engineering, Mississippi State University, Starkville,MS

14:20 B7-4 EFFECT OF SCATTERER SIZE VARIATIONS ON THE REFLECTION AND TRANSMISSION PROPERTIES OF A METAFILM

Kendra Kumley*, Edward F. Kuester
Electrical, Computer and Energy Engineering, University of Colorado Boulder, Boulder, Colorado

14:40 B7-5 GENERALIZED RETRIEVAL PROCEDURE TO DETERMINE LOCAL EFFECTIVE PARAMETERS OF METAMATERIALS BASED ON FIRST-PRINCIPLE HOMOGENIZATION THEORY

Xing-Xiang Liu*, Andrea Alu
Electrical and Computer Engineering, The university of Texas at Austin, AUSTIN

15:00 Break

15:20 B7-6 EXACT REPRESENTATION OF 3D PERIODIC METAMATERIAL ARRAYS BY GENERALIZED ELECTRIC AND MAGNETIC POLARIZATION DENSITIES

Arthur D. Yaghjian*
Research Consultant, Concord, MA

15:40 B7-7 TRAVELING WAVES ON THREE-DIMENSIONAL SIMPLE-TETRAGONAL PERIODIC ARRAYS OF TWO DIFFERENT MAGNETODIELECTRIC SPHERES

Nicola Bowler*[1], Yang Li[2]
[1]*Materials Science and Engineering, Iowa State University, Ames, IA*
[2]*Electrical and Computer Engineering, Iowa State University, Ames, IA*

16:00 B7-8 COMPLEX MODES AND ARTIFICIAL MAGNETISM IN COMPOSITE MATERIALS MADE OF SPHERICAL PARTICLES ACCOUNTING FOR COUPLED ELECTRIC AND MAGNETIC DIPOLES

Salvatore Campione*, Filippo Capolino
University of California, Irvine, Irvine, CA

16:20 B7-9 MULTI-LAYER TENSOR IMPEDANCE SURFACE ANALYSIS

Amit M. Patel*, Anthony Grbic
Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, MI

16:40 B7-10 SMALL ANTI-JAM GPS ARRAYS LOADED WITH METAMATERIAL ISOLATORS FOR REDUCED MUTUAL COUPLING

Ahmad A. Gheethan*, Gokhan Mumcu
University of South Florida, Tampa, FL

Session C1: Radar Signal Processing, Target Detection, Localization, and Tracking
Room 1B51

Co-Chairs: Fernando Teixeira, *Ohio State University*
Eric Mokole, *Naval Research Laboratory*

15:20 C1-1 A PASSIVE BISTATIC RADAR FOR DETECTION OF AIRCRAFT USING NON-COOPERATING SPACEBORNE TRANSMITTERS

William C. Barott*, Brian Butka
Electrical, Computer, Software, and Systems Engineering Department, Embry-Riddle Aeronautical University, Daytona Beach, FL

15:40 C1-2 TIME-REVERSAL BASED CHANGE DETECTION ALGORITHM FOR GROUND PENETRATING RADAR APPLICATIONS

Mehmet E. Yavuz[1], Ahmed E. Fouda*[2], Fernando L. Teixeira[2]
[1]*Intel Corporation, Hillsboro, OR*
[2]*ElectroScience Lab., Dept. of Electrical and Computer Engineering, The Ohio State University, Columbus, OH*

16:00 C1-3 INTEGRATION OF SI/SIGE TRANSMITTER TOWARDS SUB-MILLIMETER ACCURACY FOR UWB SYSTEM

Essam A. Elkhouly*[1], Dayang Lin[2], Quanhua Liu[1], Aly Fathy[1], Hermann Schumacher[2], Mohamed Mahfouz[3]
[1]*EECS, University of Tennessee, Knoxville, TN*
[2]*Institut fr Elektronische Bauelemente und Schaltungen, Ulm University, Ulm, Germany*
[3]*MABE, University of Tennessee, Knoxville, TN*

16:20 C1-4 A SUB-WAVELENGTH RF SOURCE TRACKING DEVICE FOR GPS-DENIED ENVIRONMENTS

Fikadu T. Dagefu*, Kamal Sarabandi
Electrical Engineering and Computer Science, University of Michigan, Ann Arbor

16:40 C1-5 PARAMETRIC AND EXPERIMENTAL STUDY ON THE STATISTICAL STABILITY OF ULTRAWIDEBAND TIME-REVERSAL IMAGING IN RANDOM MEDIA

Ahmed E. Fouda*, Victor Lopez-Castellanos, Fernando L. Teixeira
ElectroScience Lab., Dept. of Electrical and Computer Engineering, The Ohio State University, Columbus, OH

Session D1: THz Devices and their Characterization I
Room 105

Co-Chairs: Zoya Popovic, *University of Colorado*
Erich Grossman, *NIST*

13:20 D1-1 DEVICE AND SYSTEM CHALLENGES FOR VIDEO-RATE THZ RADAR IMAGING

Ken B. Cooper*
Jet Propulsion Laboratory, Pasadena, CA

13:40 D1-2 MODULATED MULTIMODE MIXING ILLUMINATION FOR THE ELIMINATION OF SPECKLE AND TARGET ORIENTATION REQUIREMENTS IN ACTIVE IMAGING

Frank C. De Lucia[1], Mark A. Patrick*[1], Colin D. Joye[2]
[1]*Physics, Ohio State University, Columbus, OH*
[2]*U. S. Naval Research Laboratory, Washington, DC*

14:00 D1-3 APPLICATION OF PHOTONIC PROCESSING TO INTERFEROMETRIC PASSIVE MILLIMETER-WAVE IMAGING

Christopher A. Schuetz*[1], Richard D. Martin[1], Thomas E. Dillon[1], Julien Macario[2], Peng Yao[2], Dennis W. Prather[2]
[1]*Phase Sensitive Innovations, Inc., Newark, DE*
[2]*Electrical and Computer Engineering, University of Delaware, Newark, DE*

14:20 D1-4 TERAHERTZ CHARACTERIZATION OF BIOLOGICAL TISSUES

Woon-Gi Yeo*, Niru K. Nahar, Robert Lee, John L. Volakis, Charles L. Hitchcock
Ohio State University, Columbus

14:40 D1-5 IN VIVO THZ MEDICAL IMAGING

Zachary Taylor*[1], Jun Sung[1], Rahul Singh[1], Martin Culjat[1], Jean Pierre Hubschman[2], Neha Bajwa[1], Priyamvada Tewari[1], Elliott Brown[3], Warren Grundfest[1]
[1]*Bioengineering, UCLA, Los Angeles*
[2]*Jules Stein Eye Institute, UCLA, Los Angeles*
[3]*Physics, Wright State University, Dayton*

15:00 Break

15:20 D1-6 HETEROSTRUCTURE BACKWARD DIODE DETECTORS FOR MILLIMETER-WAVE THROUGH THZ DETECTION AND IMAGING

Patrick Fay*, Ze Zhang, Yi Xie, Md. Itrat Shams
Dept. of Electrical Engineering, Univ. of Notre Dame, Notre Dame, IN

15:40 D1-7 MEMS-BASED UNCOOLED THZ DETECTORS FOR STARING IMAGERS

J. A. Cox*, R. Higashi, F. Nusseibeh, C. Zins
Honeywell Sensors & Wireless Laboratory, Plymouth, MN

16:00 D1-8 CHARACTERIZATION OF THZ POWER DETECTORS AT 119UM AND 394UM WAVELENGTHS

Nina P. Basta*, John Lehman, Erich Grossman, Marla Dowell
National Institute of Standards and Technology, Boulder, CO

16:20 D1-9 WAVEGUIDE FLANGE MISALIGNMENT AND CALIBRATION AT SUBMILLIMETER WAVELENGTHS

Robert M. Weikle*[1], Huilin Li[1], Alexander I. Arsenovic[1], Jeffrey L. Hesler[2], Anthony R. Kerr[3]
[1]*Electrical Engineering, University of Virginia, Charlottesville, Virginia*
[2]*Virginia Diodes, Inc., Charlottesville, VA*
[3]*National Radio Astronomy Observatory, Charlottesville, VA*

16:40 D1-10 DEVELOPMENT OF A CALIBRATED FREQUENCY-DOMAIN SCATTEROMETER IN THE MMWAVE TO SUB-TERAHERTZ RANGE

David R. Novotny*, Joshua Gordon, Edwin Heilweil, Shu-Zee Lo, Erich Grossman, Brian Stillwell, Jeffrey Guerrieri
Physical Measurements Laboratory, National Institute of Standards and Technology, Boulder, CO

Session F3: Radar Remote Sensing of Precipitation
Room 150

Co-Chairs: Guifu Zhang, *University of Oklahoma*
Chandrasekar V Chandra, *Colorado State University*

13:20 F3-1 A BAYES ALGORITHM TO SEPARATE PRECIPITATION FROM GROUND CLUTTER USING SCAN-TO-SCAN CORRELATION TECHNIQUE

Yinguang Li*[1,2], Guifu Zhang[2,3], Richard Doviak[4], Darcy Saxion[5]
[1]*School of Electrical and Computer Engineering, The University of Oklahoma, Norman, OK*
[2]*Atmospheric Radar Research Center, The University of Oklahoma, Norman, OK*
[3]*School of Meteorology, The University of Oklahoma, Norman, OK*
[4]*National Severe Storms Laboratory, NOAA, Norman, OK*
[5]*Radar Operation Center, NOAA, Norman, OK*

13:40 F3-2 TWO-YEAR EVALUATION OF THE QUANTITATIVE PRECIPITATION ESTIMATION IN THE CASA IP5 WEATHER RADAR NETWORK TEST BED

V. Chandrasekar*, Haonan Chen
Department of Electrical and Computer Engineering, Colorado State University, Fort Collins, Colorado

14:00 F3-3 DROP SIZE DISTRIBUTION RETRIEVAL USING DUAL FREQUENCY AND DUAL POLARIZATION GROUND RADAR

Minda Le*[1], V. Chandrasekar[2]
[1]*Electrical and computer engineering, Colorado State University, fort collins,CO*
[2]*Colorado State University, fort collins,CO*

14:20 F3-4 A WINTER STORM TRANSITION REVEALED WITH POLARIMETRIC RADAR AND 2DVD OBSERVATIONS

Petar Bukovcic*[1,2,3,4], Dusan Zrnic[2], Guifu Zhang[3,4]
[1]*Cooperative Institute for Mesoscale Meteorological Studies, University of Oklahoma, Norman, Okalhoma*
[2]*National Severe storms Laboratory, NOAA, Norman, Okalhoma*
[3]*School of Meteorology, University of Oklahoma, Norman, Okalhoma*
[4]*Atmospheric Radar Research Center, University of Oklahoma, Norman, Okalhoma*

15:00 Break

15:20 F3-5 VERTICAL PROFILES STATISTICS OF POLARIMETRIC RADAR MEASUREMENTS IN THE MEDITERRANEAN REGION

Renzo Bechini[1], V. Chandrasekar*[2], Luca Baldini[3]
[1]*Arpa Piemonte, Torino, Italy*
[2]*Colorado State University, Fort Collins, CO*
[3]*ISAC-CNR, Roma, Italy*

15:40 F3-6 A NEW 449 MHZ WIND PROFILER RADAR WITH LOW COST 3 KW TRANSMITTER

Brad Lindseth*[1,2], William O. J. Brown[1], Jim Jordan[3], Daniel Law[3], Terry Hock[1], Stephen A. Cohn[1], Zoya Popovic[2]
[1]*Earth Observing Laboratory, National Center for Atmospheric Research, Boulder, CO*
[2]*Electrical and Computer Engineering, University of Colorado, Boulder, CO*
[3]*National Oceanic and Atmospheric Administration, Boulder, CO*

16:00 F3-7 CROSS-POLARIZATION REDUCTION OF THE PHASED ARRAY RADAR FOR PRECIPITATION MEASUREMENTS

Shaya Karimkashi*, Guifu Zhang
ARRC, University of Oklahoma, Norman, OK

Session G2: Ionospheric Space Weather Events and Models
Room 200

Co-Chairs: Anthea Coster, *MIT Haystack Observatory*
Attila Komjathy, *NASA JPL/Caltech*

13:20 G2-1 TOTAL ELECTRON CONTENT ANOMALY OVER MID-NORTH AMERICA

Alexander P. Davidson*[1], Anthea J. Coster[2], Shunrong Zhang[2], Evan Thomas[3]
[1]*Phillips Academy Andover, Andover, MA*
[2]*MIT Haystack Observatory, Westford, MA*
[3]*Bradley Department of Electrical and Computer Engineering, Virginia Tech, Blacksburg, VA*

13:40 G2-2 MODELING MSTID PROPAGATION WITH THE SAMI3 FRAMEWORK

Timothy Duly*[1], Jonathan J. Makela[1], Joe Huba[2], Jonathan Krall[2]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*
[2]*Naval Research Laboratory, Washington D.C.*

14:00 G2-3 GLOBAL OBSERVATIONS OF SUB-AURORAL POLARIZATION STREAM (SAPS) EVENTS FROM MID-LATITUDE SUPERDARN RADARS

Joseph B. H. Baker*[1], Lasse B. N. Clausen[2], Bharat S. R. Kunduri[1], J. Michael Ruohoniemi[1], Evan G. Thomas[1]
[1]*Center for Space Science and Engineering Research, Virginia Tech, Blacksburg, VA*
[2]*Institute for Geophysics and Extraterrestrial Physics, University of Braunschweig, Braunschweig, Germany*

14:20 G2-4 COMPARISONS OF THE NRL SAMI3 PHYSICS-BASED IONOSPHERIC MODEL WITH GLOBAL IONOSONDE, GPS, AND COSMIC ELECTRON DENSITY MEASUREMENTS

Carl L. Siefring*[1], Paul A. Bernhardt[1], Anish Tondwalkar[2], Joseph D. Huba[1], Jonathan F. Krall[1], Sarah E. McDonald[3], John T. Emmert[3], Douglas P. Drob[3], Judith L. Lean[3], Glenn Joyce[4]
[1]Plasma Physics Division, Naval Research Laboratory, Washington, DC
[2]ASEE Science and Engineering Appretice Program, Naval Research Laboratory, Washington, DC
[3]Space Sciences Division, Naval Research Laboratory, Washington, DC
[4]Icarus Research, Inc, Bethesda, MD

14:40 G2-5 SIMULTANEOUS OBSERVATIONS OF MID-LATITUDE IONOSPHERIC DENSITY STRUCTURES BY SUPERDARN RADARS AND THE GLOBAL GPS RECEIVER NETWORK

Evan G. Thomas*[1], Joseph B. H. Baker[1], J Michael Ruohoniemi[1], Lasse B. N. Clausen[2], Anthea J. Coster[3]
[1]Bradley Dept. of Electrical and Computer Engineering, Virginia Tech, Blacksburg, VA
[2]Institute for Geophysics and Extraterrestrial Physics, TU Braunschweig, Braunschweig, Lower Saxony, Germany
[3]Atmospheric Sciences Group, MIT Haystack Observatory, Westford, MA

15:00 Break

15:20 G2-6 THE EFFECTS OF 3D ERROR COVARIANCE AND BACKGROUND MODEL BIAS FOR AN IONOSPHERIC DATA ASSIMILATION MODEL

Chi-Yen Lin*[1,2,3], Tomoko Matsuo[1,2], Eduardo A. Araujo-Pradere[1,2], Jann-Yenq Liu[3]
[1]Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO.
[2]Space Weather Prediction Center, National Oceanic and Atmospheric Administration, Boulder, CO.
[3]Institute of space science, National Central University, Jhongli, TAIWAN, TAIWAN

15:40 G2-7 DATA ASSIMILATION OF FORMOSAT-3/COSMIC ELECTRON DENSITIES USING THE NCAR TIE-GCM

I-Te Lee*[1,2], Tomoko Matsuo[3], Arthur Richmond[2], Jann-Yenq Liu[2], Wenbin Wang[1], Ming-Quey Chen[2], Charles Lin[4]
[1]National Center for Atmospheric Research, High Altitude Observatory, Boulder,CO
[2]National Central University, Institute of Space Science, Taoyuan, Taiwan
[3]University of Colorado at Boulder, Boulder,CO
[4]National Cheng Kung University, Department of Earth Science, Tainan, Taiwan

16:00 G2-8 THE TAIWAN IONOSPHERIC MODEL (TWIM) AND ITS APPLICATIONS ON HF PROPAGATION AND GPS IONOSPHERIC CORRECTION

Lung-Chih Tsai*[1,2], Ernest P. Macalalad[2], G. H. Chen[3], M. H. Tian[4]
[1]Center for Space and Remote Sensing Research, National Central University, Professor, Chung-Li, Taiwan
[2]Institute of Space Science, National Central University, Chung-Li, Taiwan
[3]Multimedia and Game Science Department, Taipei College of Maritime Technology, Taipei, Taiwan
[4]Department of Marine Leisure and Tourism, Taipei College of Maritime Technology, Taipei, Taiwan

16:20 G2-9 TRIPL-DA- BACKGROUND ENSEMBLE MODELS AND DATA ERRORS

Thomas L. Gaussiran*, Roy S. Calfas, David Rainwater
Applied Research Laboratories, The University of Texas at Austin, Austin, TX

16:40 G2-10 A ROUTINE VALIDATION OF NEAR-REAL TIME GAIM ASSIMILATION OF GROUND AND SPACE-BORNE GPS TEC DATA USING INDEPENDENT DATA SOURCES

Attila Komjathy*, Philip Stephens, Mark Butala, Brian Wilson, Olga Verkhoglyadova, Anthony Mannucci
NASA JPL/Caltech, Pasadena, California

Session H3: Physics of the Radiation Belts
Room 245

Co-Chairs: Mark Golkowski, *University of Colorado Denver*
Chris Crabtree, *NRL*

13:20 H3-1 SIMULATIONS OF RADIATION BELT ELECTRON DYNAMICS IN HIGH-SPEED-STREAM STORMS

Anthony A. Chan*[1], Yen-fei Chen[1], Scot R. Elkington[2]
[1]*Physics and Astronomy, Rice University, Houston, Texas*
[2]*LASP, University of Colorado, Boulder, Colorado*

13:40 H3-2 WHISTLER MODE SIGNALS AT L=1.9 CONJUGATE TO A RUSSIAN ALPHA TRANSMITTER: STATISTICS AND MODELING

Morris B. Cohen*[1], Mark A. Golkowski[2], Nikolai G. Lehtinen[1], Umran S. Inan[1,3], Michel Parrot[4]
[1]*Electrical Engineering, Stanford University, Stanford, CA*
[2]*Electrical Engineering, University of Colorado at Denver, Denver, CO*
[3]*Electrical Engineering, Koc University, Sariyer Istanbul, Turkey*
[4]*LPC2E, CNRS, Orleans, France*

14:00 H3-3 NEW PROXY FOR THE ANALYSIS OF NON-LINEAR WAVE GROWTH IN CHORUS WAVES AND TRIGGERED EMISSIONS

Mark Golkowski*[1], Andrew Gibby[2]
[1]*Electrical Engineering, University of Colorado Denver, Denver, CO*
[2]*Arion Systems Inc., Chantilly, VA*

14:20 H3-4 KEY PARAMETERS CONTROLLING THE NONLINEAR CYCLOTRON INSTABILITY FOR WHISTLER MODE WAVES IN THE MAGNETOSPHERE

Vijay Harid*[1], Mark Golkowski[2], Morris Cohen[1], Timothy F. Bell[1], Umran S. Inan[1]
[1]*Electrical Engineering, Stanford University, Stanford, CA*
[2]*Electrical Engineering, University of Colorado, Denver, Denver, CO*

14:40 H3-5 OFF EQUATORIAL CHORUS WAVES OBSERVED BY THE POLAR PLASMA WAVE INSTRUMENT AND IMPLICATIONS FOR THE RADIATION BELTS

Nicholas L. Bunch*[1], Maria Spasojevic[1], Yuri Y. Shprits[1], Daniel I. Golden[2,3]
[1]*STAR Lab, Dept. of Electrical Engineering, Stanford University, Stanford*
[2]*Institute of Geophysics and Planetary Physics, University of California at Los Angeles, Los Angeles*
[3]*Department of Atmospheric Sciences, University of California at Los Angeles, Los Angeles*

15:00 Break

15:20 H3-6 WEAK TURBULENCE IN THE MAGNETOSPHERE: FORMATION OF WHISTLER WAVE CAVITY BY NONLINEAR SCATTERING

Chris E. Crabtree*[1], Leonid Rudakov[2], Gurudas Ganguli[1], Manish Mithaiwala[1], Vitaly Galinsky[3], Valentin Shevchenko[3]
[1]*Division of Plasma Physics, NRL, Washington*
[2]*Icarus Research Inc., Bethesda, MD*
[3]*University of California, San Diego, CA*

15:40 H3-7 MODELING QUASI-LINEAR AND NONLINEAR WAVE-PARTICLE INTERACTIONS IN THE RADIATION BELTS

Jay M. Albert*
Air Force Research Lab, Albuquerque, NM

16:00 H3-8 ENHANCED SCATTERING AT SELECTED ELECTRON ENERGIES BY DISPERSING LIGHTNING WHISTLERS

David S. Lauben*[1], Timothy F. Bell[1], Nikolai G. Lehtinen[1], Umran S. Inan[2]
[1]*Stanford University, Stanford*
[2]*Koc University, Istanbul, Turkey*

Session J3: Timely Technical Tutorials
Room 265

Co-Chairs: Richard Bradley, *National Radio Astronomy Observatory*
Tommy Thompson, *NASA*

13:20 J3-1 DELAY/DELAY-RATE FILTERS FOR LOW-FREQUENCY INTERFEROMETERS

Aaron R. Parsons*
University of California, Berkeley, Berkeley, CA

14:00 J3-2 MOFF CORRELATOR

Miguel F. Morales*
University of Washington, Seattle, Seattle

14:40 J3-3 THE MMIC FRONTIER FOR RADIO ASTRONOMY

Matthew A. Morgan*
National Radio Astronomy Observatory, Charlottesville, VA

15:00 Break

15:40 J3-4 GPUS IN RADIO ASTRONOMY

Paul Demorest*
National Radio Astronomy Observatory, Charlottesville, VA

16:20 J3-5 THE 36-FT MILLIMETER-WAVE RADIO TELESCOPE: HISTORICAL PERSPECTIVE

Mark A. Gordon*
National Radio Astronomy Observatory, Tucson, AZ

Session KB2: Computational Biophotonics and Nanophotonics
Room 151

Co-Chairs: Jamesina Simpson, *University of New Mexico*
Ilker Capoglu, *Northwestern University*

13:20 KB2-1 ANGORA: AN OPEN-SOURCE FINITE-DIFFERENCE TIME-DOMAIN SOFTWARE PACKAGE

Ilker R. Capoglu*[1], Allen Taflove[2], Vadim Backman[1]
[1]*Biomedical Engineering Department, Northwestern University, Evanston, IL*
[2]*Electrical Engineering and Computer Science Department, Northwestern University, Evanston, IL*

13:40 KB2-2 OPTIMIZATION OF SILICON PHOTONIC BIOSENSORS

Michael Gould*[1], Elijah Christensen[2], Daniel M. Ratner[2], Michael Hochberg[1]
[1]*Department of Electrical Engineering, University of Washington, Seattle, WA*
[2]*Department of Bioengineering, University of Washington, Seattle, WA*

14:00 KB2-3 NEAR-INFRARED NARROW-BAND IMAGING OF TUMORS USING PLASMONIC GOLD NANOPARTICLES

Priyaveena Puvanakrishnan*[1], Parmeshwaran Diagaradjane[2], Jon Schwartz[3], Sunil Krishnan[2], James Tunnell[1]
[1]*Biomedical Engineering, The University of Texas at Austin, Austin*
[2]*Radiation Oncology, UT MD Anderson Cancer Center, Houston, Unted States*
[3]*Nanospectra Biosciences, Houston*

14:20 KB2-4 SPATIAL LIGHT INTERFERENCE MICROSCOPY (SLIM)

Gabriel Popescu*
University of Illinois at Urbana-Champaign, Urbana, IL

14:40 KB2-5 MULTI-CHANNEL DIFFUSE OPTICAL SPECTROSCOPIC IMAGING

Hosain Haghany*
University of california, Irvine- Beckman Laser Institute, Irvine, CA

15:00 Break

15:20 KB2-6 JONES MATRIX MONTE CARLO SIMULATION OF COHERENT BACKSCATTERING IN BIOLOGICAL MEDIA

Andrew J. Radosevich*, Jeremy D. Rogers, Allen Taflove, Vadim Backman
biomedical engineering, Northwestern University, Northwestern, Il

15:40 KB2-7 NUMERICAL AND IN VITRO PHANTOMS FOR HYPERTHERMIC MONITORING OF BREAST CANCER

Erin Colebeck*[1], Erdem Topsakal[1], Lynn Dyess[2], Toi Spates[1]
[1]*Electrical and Computer Engineering, Mississippi State University, Starkville MS*
[2]*Department of Surgery, University of South Alabama, Mobile, AL*

16:00 KB2-8 POSSIBLE APPLICATION OF PHOTONIC NANOJETS TO ULTRA EARLY-STAGE CANCER DETECTION

Hamide Seidfaraji*, Cesar Mendez-Ruiz, Jamesina J. Simpson
Electrical Engineering Faculty, University of New Mexico, Albuquerque, NM

Business Meetings

17:00	Commission B	Room 1B40
17:00	Commission G	Room 200
17:00	Commission J	Room 265
18:00	Commission A	Room 155
18:00	Commission C	Room 1B51

Session B8: Microstrip and Printed Antennas; Flexible Electronics
Room 155

Co-Chairs: Yahya Rahmat-Samii, *University of California Los Angeles (UCLA)*
David Jackson, *University of Houston*

08:20 B8-1 A WIDE BAND CONFORMAL ANTENNA INSIDE COMPOSITE MATERIAL

Yun Seo Koo*[1], Richard Fink[2], Ahmad Hoorfar[3], Aly E. Fathy[1]
[1]*EECS, University of Tennessee, Knoxville, TN*
[2]*Applied Nanotech, Inc, Austin, TX*
[3]*ECE, Villanova University, Villanova, PA*

08:40 B8-2 SILICON CARBIDE (SIC) ANTENNAS FOR HIGH TEMPERATURE AND HIGH POWER APPLICATIONS

Tutku Karacolak*[1], Rooban Venkatesh K. G. Thirumalai[2], Joseph N. Merrett[3], Yaroslav Koshka[2], Erdem Topsakal[2]
[1]*School of Engineering and Computer Science, Washington State University Vancouver, Vancouver, WA*
[2]*Department of Electrical and Computer Engineering, Mississippi State University, Mississippi State, MS*
[3]*Air Force Research Laboratory, Wright-Patterson Air Force Base, OH*

09:00 B8-3 C-SHAPED, E-SHAPED and U-SLOTTED PATCH ANTENNAS: A COMPREHENSIVE COMPARATIVE STUDY

Shubhendu Bhardwaj*, Yahya Rahmat-Samii
University of California, Los Angeles, CA

09:20 B8-4 NEXT GENERATION MEMS RECONFIGURABLE E-SHAPED PATCH ANTENNA DESIGN USING PARTICLE SWARM OPTIMIZATION

Joshua M. Kovitz*, Harish Rajagopalan, Yahya Rahmat-Samii
Electrical Engineering, University of California Los Angeles, Los Angeles, California

10:00 Break

10:20 B8-5 HIGHLY FLEXIBLE TEXTILE ANTENNAS ON ORGANZA AND POLYMER SUBSTRATES

Zheyu Wang*, Lanlin Zhang, Yakup Bayram, Dimitris Psychoudakis, John L. Volakis
ElectroScience Laboratory, Dept. of Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio

10:40 B8-6 PIXELATED DIELECTRIC COMPOSITE SUBSTRATES FOR MICROWAVE FREQUENCY APPLICATION

Lanlin Zhang*, Dimitris Psychoudakis, John L. Volakis
Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio

11:00 B8-7 INKJET-PRINTED FLEXIBLE SMART-SKIN WIRELESS SENSORS

Vasileios Lakafosis*, Rushi Vyas, Anya Traille, Hoseon Lee, Manos M. Tentzeris
ECE, Georgia Tech, Atlanta, GA

Session B9: Numerical Methods
Room 1B40

Co-Chairs: Gary Brown, *Virginia Tech*
Branislav Notaros, *Colorado State University*

08:20 B9-1 CONSIDERATIONS WITH NUMERIC STABILITY WHEN OPTIMIZING MOMI FOR LONG RANGE PROPAGATION COMPUTATIONS

Daniel E. Davis*, Benjamin A. Westin, Gary S. Brown
Virginia Polytechnic Institute and State University, Blacksburg

08:40 B9-2 DRIFT-DIFFUSION AND TRANSPORT MODELS FOR THE ANALYSIS OF NON-LOCAL PLASMAS AND METAMATERIALS

Ebrahim Forati*[1], George W. Hanson[1], Tao Shen[2], Thomas Wong[2]
[1]*Electrical Engineering and Computer Science, University of Wisconsin-Milwaukee, Milwaukee, Wisconsin*
[2]*Electrical and Computer Engineering, Illinois institute of technology, Chicago, Illinois*

09:00 B9-3 RULES FOR ADOPTION OF EXPANSION AND INTEGRATION ORDERS IN MOMENT-METHOD COMPUTATION OF ELECTROMAGNETIC SCATTERING AND RADIATION

Nada J. Sekeljic*[1], Elene Chobanyan[1], Milan M. Ilic[1,2], Branislav M. Notaros[1]
[1]*Electrical & Computer Engineering Department, Colorado State University, Fort Collins, Colorado*
[2]*School of Electrical Engineering, University of Belgrade, Belgrade, Serbia*

09:20 B9-4 EFFICIENT ELECTROMAGNETIC ANALYSIS USING ELECTRICALLY LARGE CURVED P-REFINED HIERARCHICAL ANISOTROPIC INHOMOGENEOUS FINITE ELEMENTS

Ana B. Manic*[1], Sanja B. Manic[1], Slobodan V. Savic[2], Milan M. Ilic[1,2], Branislav M. Notaros[1]
[1]*Electrical & Computer Engineering Department, Colorado State University, Fort Collins, Colorado*
[2]*School of Electrical Engineering, University of Belgrade, Belgrade, Serbia*

10:00 Break

10:20 B9-5 TIME-DOMAIN RESPONSE OF 3-D WAVEGUIDE AND SCATTERING STRUCTURES CALCULATED BY HIGHER ORDER FREQUENCY-DOMAIN FEM TECHNIQUE AND DFT

Sanja B. Manic*[1], Slobodan V. Savic[2], Milan M. Ilic[1,2], Branislav M. Notaros[1]
[1]*Electrical & Computer Engineering Department, Colorado State University, Fort Collins, Colorado*
[2]*School of Electrical Engineering, University of Belgrade, Belgrade, Serbia*

10:40 B9-6 MULTIPHYSICS MODELING OF OPTOELECTRONIC NANO-STRUCTURES TOWARDS OPTIMIZATION OF DIFFERENT SOLAR CELLS

Ahmadreza Ghahremani*, Aly E. Fathy
Electrical Engineering, University Of Tennessee Knoxville, Knoxville, TN

Session C2: Advances in MIMO and Signal Processing for Advanced Antenna Systems
Room 1B51

Co-Chairs: Amir Zaghloul, *Virginia Tech*
Gregory Huff, *Texas A&M University*

08:20 C2-1 COMPARISON OF MULTISTATIC RADAR AMBIGUITY FUNCTIONS

Tegan Webster*[1], Jerry Kim[1], Ivan Bradaric[2], Margaret Cheney[3]
[1]*Radar Division, Naval Research Laboratory, Washington, DC*
[2]*Capraro Technologies, Utica, NY*
[3]*Department of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, NY*

08:40 C2-2 TIME-REVERSAL TECHNIQUES FOR MISO AND MIMO WIRELESS COMMUNICATION SYSTEMS

Ahmed E. Fouda*, Fernando L. Teixeira
ElectroScience Laboratory, Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH

09:00 C2-3 USE OF EVOLUTIONARY ALGORITHMS FOR MULTIUSER MIMO-OFDM SYSTEMS

Mina Labib*[1], Amir I. Zaghloul[1,2]
[1]*Bradley Department of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virginia*
[2]*US Army Research Laboratory, Adelphi*

09:20 C2-4 RECONFIGURABLE ANTENNAS, PREEMPTIVE SWITCHING AND VIRTUAL CHANNEL MANAGEMENT

Jean-Francois Chamberland*, Gregory H. Huff, Srinivas Shakkottai
Texas A&M University, College Station, Texas

10:00 Break

10:20 C2-5 CRYSTALLOGRAPHIC-BASED ANTENNA CONFIGURATIONS FOR DIRECTION-OF-ARRIVAL ESTIMATION

Zhenchun Xia*[1,2], Gregory H. Huff[1], Jean-Francois Chamberland[1], Henry Pfister[1], Raktim Bhattacharya[2]
[1]*Electrical and Computer Engineering, Texas A&M University, College Station, TX*
[2]*Aerospace Engineering, Texas A&M University, College Station, TX*

10:40 C2-6 IMPROVING EFFICIENCY OF A LINEAR AMPLIFIER BY INJECTION OF SECOND HARMONIC POWER AT THE OUTPUT

Asmita Dani*, Michael Roberg, Zoya Popovic
Electrical Engineering, University of Colorado, Boulder

11:00 C2-7 CHANNEL-BASED WIRELESS ENCRYPTION USING RECONFIGURABLE ANTENNAS

David L. Rolando, Hung D. Ly, Tie Liu, Gregory H. Huff*, James P. Erskine, Joshua B. Yang, Jeremy A. Joachim
Texas A&M University, College Station, TX

Session D2: THz Devices and their Characterization II
Room 105

Co-Chairs: Erich Grossman, *NIST*
Zoya Popovic, *University of Colorado*

08:20 D2-1 POINT AND CHEMICAL SENSORS IN THE MILLIMETER AND SUBMILLIMETER SPECTRAL REGION

Frank C. De Lucia*
Physics, Ohio State University, Columbus, OH

08:40 D2-2 CW THZ PHOTOMIXER BEAM CHARACTERIZATION

Richard A. Chamberlin*[1,2], Erich N. Grossman[2]
[1]*University of Colorado, Boulder, CO*
[2]*National Institute of Standards and Technology, Boulder, CO*

09:00 D2-3 MICRO-FABRICATED W-BAND AND G-BAND FREQUENCY SCANNED ANTENNA ARRAYS

Leonardo M. Ranzani*[1], Evan D. Cullens[1], Kenneth J. Vanhille[2], Zoya Popovic[1]
[1]*ECEE, University of Colorado at Boulder, Boulder, CO*
[2]*Nuvotronics LLC, Blacksburg,VA*

09:20 D2-4 CONTACTLESS THZ PROBES FOR DEVICE CHARACTERIZATION

Georgios Trichopoulos*, Kagan Topalli, Kubilay Sertel
The Ohio State University, Columbus

Session F4: Waves in Random and Complex Media
Room 150

Co-Chairs: Saba Mudaliar, *Air Force Research Laboratory*
Akira Ishimaru, *University of Washington, Seattle*

08:20 F4-1 SHORT PULSE FOCUSED BEAM AND POWER TRANSFER THROUGH TURBULENCE AND DISCRETE SCATTERERS

Akira Ishimaru*, Matthew Stoneback, Yasuo Kuga
Electrical Engineering, University of Washington, Seattle, WA

08:40 F4-2 CONCEPT OF COHERENCE IN ADAPTIVE SYSTEMS AND ITS APPLICATIONS

Valerian I. Tatarskii*[1], Viatcheslav V. Tatarskii[2]
[1]*Radio-Hydro-Physics LLC, Boulder, CO*
[2]*Georgia Institute of Technology, Atlanta, GA*

09:00 F4-3 IMAGING THROUGH OBSCURING MEDIA BY SUPPRESSION OF DIFFUSION IN THE MUTUAL COHERENCE FUNCTION

Elizabeth H. Bleszynski*, Marek K. Bleszynski, Thomas Jaroszewicz
Monopole Research, Thousand Oaks, CA 91360

09:20 F4-4 SOME INSIGHT INTO LARGE AMPLITUDE SMALL PERIOD (LASP) SURFACE SCATTERING

Gary S. Brown*
Bradley Dept. of Electrical & Computer Engineering, Virginia Tech, Blacksburg, VA

09:40 F4-5 BOUNDARY CONDITIONS FOR RADIATIVE TRANSFER EQUATIONS FOR LAYERED RANDOM MEDIA

Saba Mudaliar*
Sensors Directorate, Air Force Research Laboratory, Wright-Patterson AFB, Ohio

10:00 Break

10:20 F4-6 A STUDY OF THE FOURTH ORDER SMALL PERTURBATION METHOD FOR SCATTERING FROM TWO-LAYER ROUGH SURFACES

Metin A. Demir[1], Joel T. Johnson*[2], Thomas J. Zajdel[2]
[1]Aselsan, Inc., Ankara, Turkey
[2]Electrical and Computer Engineering and ElectroScience Laboratory, The Ohio State University, Columbus, OH

10:40 F4-7 BISTATIC SCATTERING EFFECTS OF A FINITE-SUPPORT SURFACE ROUGHNESS SPECTRUM

Benjamin A. Westin*, Daniel E. Davis, Gary S. Brown
Virginia Polytechnic Institute and State University, Blacksburg, VA

11:00 F4-8 3D SCATTERING FROM LAYERED SUBSURFACES WITH BURIED ROOT-LIKE DISCRETE RANDOM MEDIA

Xueyang Duan*, Mahta Moghaddam
University of Michigan, Ann Arbor

11:20 F4-9 FAST COMPUTATION OF THE SECOND-ORDER SUCCESSIVE SCATTERING BY TWO SCATTERERS IN THE FRESNEL REGION OF EACH OTHER

Ronald J. Hooker*, Roger H. Lang
Department of Electrical and Computer Engineering, The George Washington University, Washington, DC

11:40 F4-10 POLARIMETRIC TECHNIQUES FOR THE IDENTIFICATION OF BIOLOGICAL AND CHEMICAL MATERIALS: COMPARISON OF METHODS BASED ON MEASUREMENTS OF MUELLER MATRICES, LATERAL AND SURFACE WAVES.

Ezekiel Bahar*
Electrical Engineering, University of Nebraska-Lincoln, Lincoln, Nebraska

Session F5: Mesoscale Numerical Weather Prediction in Support of Wave Propagation Modeling
Room 151

Co-Chairs: Tracy Haack, *NRL*
Robert Marshall, *Naval Surface Warfare Center, Dahlgren*

08:20 F5-1 A METHODOLOGY TO DERIVE FINE RESOLUTION RAIN ATTENUATION FIELDS STARTING FROM NWP DATA

Lorenzo Luini*, Carlo Capsoni
Dipartimento di Elettronica e Informazione (DEI), Politecnico di Milano, Milano, Italy

08:40 F5-2 WRF-MODEL ASSIMILATION OF ANGLE-OF-ARRIVAL EXCESS MEASUREMENTS FROM AN ANTENNA OF GPS RECEIVERS

Francois C. Vandenberghe*[1], Bonnie Valant-Spaight[2], Martin Hall[2]
[1]Research Applications Laboratory, National Center for Atmospheric Research, Boulder, CO
[2]Propagation Research Associates, Marietta, GA

09:00 F5-3 A COMPARISON OF MEASURED AND MODELED METEOROLOGY FOR A UNIQUE DATA SET

Victor R. Wiss*, Isha M. Renta, Katherine L. Horgan
Naval Surface Warfare Center Dahlgren Division, Dahlgren, VA

09:20 F5-4 HORIZONTAL RESOLUTION COMPARISON IN THE COUPLED OCEAN / ATMOSPHERE MESOSCALE PREDICTION SYSTEM (COAMPS) AND ITS EFFECT ON REFRACTIVITY DURING A SEA BREEZE EVENT

Katherine L. Horgan*[1], Robert E. Marshall[1], Tracy Haack[2]
[1]Naval Surface Warfare Center Dahlgren Division, Dahlgren, VA
[2]Naval Research Laboratory Monterey, Monterey, CA

09:40 F5-5 THE ROLE OF PLANETARY BOUNDARY LAYER PHYSICS IN MESOSCALE NWP MODEL-EM PROPAGATION PREDICTIONS

Tracy Haack*
NRL, Monterey CA

10:00 Break

10:20 F5-6 ANALYSIS OF SOUTHERN CALIFORNIA CLIMATOLOGY FOR MODELING AND SIMULATION APPLICATIONS

Ian C. Will*
Naval Research Lab, Washington, DC

10:40 F5-7 UNCERTAINTY PROJECTION BETWEEN REFRACTIVITY FROM CLUTTER AND NUMERICAL WEATHER PREDICTION

Caglar Yardim*[1], Ali Karimian[1], Peter Gerstoft[1], Ted Rogers[2]
[1]*UCSD, La Jolla, CA, US*
[2]*SSC Pacific, San Diego, CA, US*

11:00 F5-8 NUMERICAL WEATHER PREDICTION SUPPORTING ADVANCED RADAR TECHNOLOGY INTEGRATED SYSTEM TESTBED INTEGRATION AND TRIALS TEST EFFORT

Lonnie E. Carpenter*, Katherine L. Horgan, Isha M. Renta, Victor R. Wiss
Q32, Naval Surface Warfare Center Dahlgren Laboratory, Dahlgren, VA

11:20 F5-9 CHARACTERIZING NEAR-SURFACE REFRACTIVITY CONDITIONS WHEN USING NWP MODEL DATA FOR EM SYSTEM PERFORMANCE PREDICTIONS

Paul A. Frederickson*
Department of Meteorology, Naval Postgraduate School, Monterey, CA

11:40 F5-10 WORLDWIDE DUCTING PROBABILITIES FROM RADIOSONDE DATA: A COMPARISON OF HISTORICAL AND MODERN DATA

Thomas R. Hanley*, Jonathan Z. Gehman
Johns Hopkins University - Applied Physics Laboratory, Laurel, MD

Session GHF1: Global Navigation Satellite Systems and Radio Beacon Remote Sensing I
Room 200

Co-Chairs: Carl Siefring, *Naval Research Laboratory*
Charles Carrano, *Boston College*
Valery Zavorotny, *NOAA/Earth System Research Laboratory*

08:20 GHF1-1 THE USE OF SIMULATIONS FOR INTERPRETING BEACON SATELLITE DATA

Charles L. Rino*[1], Charles S. Carrano[2]
[1]*Rino Consulting, Menlo Park, CA*
[2]*Institute for Scientific Research, Boston College, Chesnut, Hill, MA*

08:40 GHF1-2 TURBULENCE DETECTION USING GNSS OCCULTATIONS

Larry Cornman*
Research Applications Laboratory, National Center for Atmospheric Research, Boulder, CO

09:00 GHF1-3 DEDUCING IONOSPHERIC TURBULENCE PARAMETERS FROM BEACON SATELLITE SCINTILLATION MEASUREMENTS

Charles S. Carrano*[1], Charles L. Rino[2], Ronald G. Caton[3], Keith M. Groves[1]
[1]*Institute for Scientific Reserach, Boston College, Chestnut Hill, MA*
[2]*Rino Consulting, Menlo Park, CA*
[3]*Kirtland AFB, Albuquerque, NM*

09:20 GHF1-4 REMOTE SENSING OF IONOSPHERIC IRREGULARITIES: CITRIS MEASUREMENTS OF TEC AND RADIO SCINTILLATION

Carl L. Siefring*, Paul A. Bernhardt
Plasma Physics Division, Naval Research Laboratory, Washington, DC

09:40 GHF1-5 TANDEM INSTRUMENTED CUBESATS IN LOW EARTH ORBIT FOR CONTINUOUS OCCULTATION OBSERVATIONS OF THE IONOSPHERE

Paul A. Bernhardt*[1], Carl L. Siefring[1], Joe D. Huba[1], John Abrams[2], Nestor Voronka[3]
[1]*Naval Research Laboratory, Washington, DC*
[2]*ARES Corporation, Torrence, CA*
[3]*Tethers Unlimited, Bothell, WA*

10:00 Break

10:20 GHF1-6 THE CONSTRUCTION OF THE GROUND-BASED GPS TEC MAP OVER US USING THE NON-STATIONARY WAVELET-BASED ERROR COVARIANCE

Yang-Yi Sun*[1,2,3], Tomoko Matsuo[1,2], Eduardo A. Araujo-Pradere[1,2], Jann-Yenq Liu[3]
[1]*Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder*
[2]*Space Environmental Center, NOAA, Boulder*
[3]*Institute of Space Science, National Central University, Jhongli, Taiwan*

10:40 GHF1-7 RECENT RESULTS FROM GNSS-REFLECTIONS REMOTE SENSING

Stephen T. Lowe*
Jet Propulsion Laboratory, La Canada, CA

11:00 GHF1-8 POLARIMETRIC BISTATIC SCATTERING PATTERNS OF CIRCULARLY POLARIZED WAVES FROM OCEAN-LIKE SURFACES

Jeffrey D. Ouellette*, Joel T. Johnson
Electrical and Computer Engineering, The Ohio State University, Columbus, OH

11:20 GHF1-9 THE CYCLONE GLOBAL NAVIGATION SATELLITE SYSTEM (CYGNSS) MISSION

Christopher Ruf*[1], Scott Gleason[2], Zorana Jelenak[3], Stephen Katzberg[4], Aaron Ridley[1], Randall Rose[5], John Scherrer[5], Valery Zavorotny[6]
[1]*University of Michigan, Ann Arbor, MI*
[2]*Concordia University, Montreal, QC, Canada*
[3]*NESDIS/StAR-UCAR, National Oceanic and Atmospheric Administration, Silver Spring, MD*
[4]*South Carolina State University, Orangeburg, SC*
[5]*Southwest Research Institute, San Antonio, TX*
[6]*Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder, CO*

Session HG3: Meteors, Impacts and Dusty Plasmas I
Room 245

Co-Chairs: Jonathan Fentzke, *NWRA, CoRA Division | Arecibo Observatory, SAS Dept.*
Mihaly Horanyi, *LASP, University of Colorado*

08:20 HG3-1 THE CHAMPS (CHARGE AND MASS OF METEORITIC SMOKE PARTICLES) ROCKET CAMPAIGN

Shannon Dickson*[1], Mihaly Horanyi[1], Scott Knappmiller[1], Devin Konecny[1], Scott Robertson[1], Zoltan Sternovsky[1], Biff Williams[2], Diego Janches[3], Martin Friedrich[4], Michael Gausa[5], Jorg Gumbel[6]
[1]*Univ. of Colorado - Boulder, Boulder, CO*
[2]*Northwest Research Associates, Boulder, CO*
[3]*Goddard Space Flight Center, Greenbelt, MD*
[4]*Graz University of Technology, Graz, Austria*
[5]*Andoya Rocket Range, Andenes, Norway*
[6]*Stockholm University, Stockholm, Sweden*

08:40 HG3-2 FIRST DETECTION OF METEORIC SMOKE USING THE POKER FLAT INCOHERENT SCATTER RADAR (PFISR)

Vicki W. Hsu*[1], Jonathan T. Fentzke[2], Christiano M. G. Brum[3]
[1]*Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL*
[2]*Applied Physics Laboratory, Johns Hopkins University, Laurel, MD*
[3]*SAS Department, Arecibo Observatory, Arecibo, Puerto Rico*

09:00 HG3-3 ELECTRIC POTENTIAL DISTRIBUTIONS ABOVE A SURFACE IN A MAGNETIC DIPOLE FIELD

Xu Wang*[1,2], Scott Robertson[3,2], Mihaly Horanyi[1,3,2]
[1]*LASP, University of Colorado, Boulder,CO*
[2]*CCLDAS, University of Colorado, Boulder,CO*
[3]*Physics, University of Colorado, Boulder,CO*

09:20 HG3-4 MODELING DUST CLOUDS ON THE MOON

Jamey Szalay*[1,2], Mihaly Horanyi[1,2]
[1]*Physics, University of Colorado at Boulder, Boulder, CO*
[2]*Laboratory for Atmospheric and Space Physics, Boulder, CO*

09:40 HG3-5 THE ELECTROSTATIC LUNAR DUST ANALYZER (ELDA): DATA ANALYSIS

Jianfeng Xie*[1,2], Zoltan Sternovsky[1,3], Eberhard Grn[1], Siegfried Auer[4], Mihaly Horanyi[1,2], Huy Le[1], Keith Drake[1]
[1]*Laboratory for Atmospheric and Space Physics, University of Colorado at Boulder, Boulder,Colorado*
[2]*Department of Physics, University of Colorado at Boulder, Boulder,Colorado*
[3]*Department of Aerospace Engineering Sciences, University of Colorado at Boulder, Boulder,Colorado*
[4]*A&M Associates, Basye, Virginia*

10:00 Break

10:20 HG3-6 UNDERSTANDING SPACECRAFT FAILURES BY CHARACTERIZING HYPERVELOCITY IMPACT PLASMAS

Nicolas Lee*, Sigrid Close
Stanford University, Stanford

10:40 HG3-7 DETECTION OF RADIO FREQUENCY EMISSIONS FROM HYPERVELOCITY IMPACTS

David Strauss*[1], Ivan Linscott[1], Theresa Johnson[2], Nicolas Lee[2], Ashish Goel[2], Sigrid Close[2]
[1]*Electrical Engineering, Stanford University, Stanford, CA*
[2]*Aeronautics and Astronomics, Stanford University, Stanford, CA*

11:00 HG3-8 ELECTRIC FIELD CHARACTERISTICS FROM HYPERVELOCITY PARTICLE IMPACT PLASMA

Theresa L. Johnson*[1], David Strauss[2], Ivan Linscott[2], Sigrid Close[1], Richard Adamo[3]
[1]*Aeronautics and Astronautics, Stanford University, Stanford, CA*
[2]*Electrical Engineering, Stanford University, Stanford, CA*
[3]*Space Technology and Integration Program, SRI International, Menlo Park, CA*

11:20 HG3-9 DISCRIMINATING ESD VS EMP EFFECTS IN HYPERVELOCITY IMPACT EXPERIMENTS

David S. Lauben*, Sigrid Close, Theresa L. Johnson, Nicolas Lee, Ivan R. Linscott, David A. Strauss
Stanford University, Stanford

11:40 HG3-10 MODELING PLASMA FORMATION FROM HYPERVELOCITY METEOROID IMPACTS

Alex Fletcher*, Sigrid Close, Robert W. MacCormack
Aeronautics & Astronautics, Stanford University, Stanford, CA

Session J4: EoR and Dark Ages: Observations and Instrumentation
Room 265

Co-Chairs: Jacqueline Hewitt, *Massachusetts Institute of Technology*
Judd Bowman, *Arizona State University*

08:20 J4-1 RECENT ADVANCES WITH EDGES AND THE STATUS OF GLOBAL 21 CM EXPERIMENTS

Alan E. E. Rogers*[1], Judd D. Bowman[2]
[1]*MIT Haystack Observatory, Westford, MA*
[2]*Arizona State University, Tempe, AZ*

08:40 J4-2 EOR FOREGROUND SUBTRACTION AND THE LATEST MWA RESULTS

Miguel F. Morales*, Bryna Hazelton
Physics, University of Washington, Seattle, Seattle

09:00 J4-3 PAPER-64: MINIMUM- AND MAXIMUM-REDUNDANCY OBSERVATIONS

Aaron R. Parsons*[1], Team Paper[2]
[1]*University of California, Berkeley, Berkeley, CA*
[2]*NRAO, U. Virginia, U. Pennsylvania, SKA South Africa, ..., US/SA*

09:20 J4-4 UPDATES ON THE GMRT-EOR PROJECT

Tzu-Ching Chang*
ASIAA, Taipei, Taiwan

09:40 J4-5 DEEP LOFAR OBSERVATIONS OF POTENTIAL EOR FIELDS

Michiel A. Brentjens*
Radio Observatory, ASTRON, Dwingeloo, Netherlands

10:00 Break

10:20 J4-6 OBSERVING COSMIC DAWN WITH THE LONG WAVELENGTH ARRAY

Jacob M. Hartman*
JPL, Pasadena, CA

10:40 J4-7 DETECTING THE UNIVERSE BEYOND REDSHIFT 20

Lincoln J. Greenhill*
harvard / smithsonian, Cambridge, MA

11:00 J4-8 A CONSTRAINT ON THE 21-CM SIGNAL AT Z=20 FROM VLA OBSERVATIONS

Katie M. Chynoweth*[1], Joseph Lazio[2], Joseph Helmboldt[3]
[1]*Remote Sensing, NRC Fellow at Naval Research Laboratory, Washington, DC*
[2]*JPL, California Institute of Technology, and NLSI, Pasadena, CA*
[3]*Remote Sensing, Naval Research Laboratory, Washington, DC*

11:20 J4-9 A PAPER SOUTHERN SKY CATALOG

Danny Jacobs*
SESE, Arizona State University, Tempe, AZ

11:40 J4-10 THE DARK AGES RADIO EXPLORER (DARE)

Jack O. Burns*
CASA, University of Colorado at Boulder, Boulder, CO

Session K2: Biomedical Applications
Room 105

Co-Chairs: Utkan Demirci, *Harvard Medical School*
Erdem Topsakal, *Mississippi State University*

10:20 K2-1 TOWARDS A MINIMALLY-INVASIVE APPLICATOR FOR CANCER ABLATION

Kyle M. Loizos*, Carlos J. Cela, Erik S. Gamez, Darin Furgeson, Gianluca Lazzi
University of Utah, Salt Lake City, UT

10:40 K2-2 COMPUTATIONAL STUDY OF EXTERNAL FIXATION DEVICES SURFACE HEATING IN 1.5T AND 3T MRI SYSTEMS

Yan Liu*[1], Jianxiang Shen[1], Ji Chen[1], Wolfgang Kainz[2]
[1]*Electrical and Computer Engineering, University of Houston, Houston, TX*
[2]*Center for Devices and Radiological Health, U.S. Food and Drug Administration, Rockville, MD*

11:00 K2-3 MAGNETIC NANOPARTICLE AND MAGNETIC FIELD BASED ASSEMBLY FOR MICROSCALE HYDROGELS

Feng Xu, Dylan Finley, Yuree Sung, Banu Sridharan, Umut A. Gurkan, Utkan Demirci*
Harvard Medical School, Harvard-MIT Health Sciences & Technology, Cambridge

Session A2: Reverberation Chamber Measurements and Techniques
Room 1B40

Co-Chairs: Christopher Holloway, *NIST*
John Ladbury, *National Institute of Standards and Technology*

13:20 A2-1 A FIRST-ORDER ANTENNA MODEL WITH APPLICATIONS TO REVERBERATION CHAMBER MEASUREMENTS

John M. Ladbury*, Jason B. Coder, Ryan Pirkl
National Institute of Standards and Technology, Boulder

13:40 A2-2 PRACTICAL CONSIDERATIONS FOR MEASURING ANTENNA EFFICIENCY IN A REVERBERATION CHAMBER

Jason B. Coder*[1], John M. Ladbury[1], Mark Golkowski[2]
[1]*RF Fields Group, National Institute of Standards and Technology, Boulder, CO*
[2]*Electrical Engineering, University of Colorado Denver, Denver, CO*

14:00 A2-3 A ONE-ANTENNA REVERBERATION-CHAMBER TECHNIQUE FOR ESTIMATING THE TOTAL AND RADIATION EFFICIENCY

Christopher L. Holloway*, Haider A. Shah, Ryan Pirkl, John Ladbury, William F. Young, David A. Hill
NIST, Boulder, CO

14:20 A2-4 MEASURING TOTAL RADIATED POWER OF WIRELESS DEVICES IN A REVERBERATION CHAMBER

Colton Dunlap*, William F. Young, John Ladbury, Erik Engvall, Christopher L. Holloway
Electromagnetics Division, The National Institute of Standards and Technology, Boulder, CO

14:40 A2-5 COMPARISON OF VARIOUS ANTENNA EFFICIENCY DETERMINATION METHODS

Rick Smith*
ITT Corporation, Fredericksburg, VA

15:00 Break

15:20 A2-6 VERIFICATION OF K-FACTOR BASED FORMULA FOR MEASUREMENT UNCERTAINTY IN REVERBERATION CHAMBER

Xiaoming Chen[1], Erik Engvall*[2], Per-Simon Kildal[1]
[1]*Signals and Systems, Chalmers University of Technology, Gothenburg, Sweden*
[2]*National Institute of Standards and Technology, Boulder*

15:40 A2-7 IMPROVING THE ACCURACY OF REVERBERATION CHAMBER MEASUREMENTS: OPTIMAL STIRRING PROCEDURES

Ryan J. Pirkl*[1], Kate A. Remley[1], Christian S. Lotback Patane[2]
[1]*National Institute of Standards and Technology, Boulder, CO*
[2]*Bluetest AB, Gothenburg, Sweden*

16:00 A2-8 UTILIZING REVERBERATION CHAMBERS AS A VERSATILE TEST ENVIRONMENT FOR ASSESSING THE PERFORMANCE OF COMPONENTS AND SYSTEMS

Dennis Lewis*
Metrology, Boeing, Seattle, Washington

16:20 A2-9 RESPONSE OF CAVITIES WITH BOTH REGULAR AND CHAOTIC RAY TRAJECTORIES

Ming-Jer Lee*, Thomas Antonsen Jr, Edward Ott
Institute for Research in Electronics and Applied Physics (IREAP), University of Maryland, College Park, Maryland

16:40 A2-10 RANDOM COUPLING MODEL FOR APERTURE EXCITATION OF WAVE CHAOTIC ENCLOSURES

Gabriele Gradoni*, Thomas Antonsen, Steven Anlage, Edward Ott
Institute for Research in Electronics and Applied Physics, University of Maryland, College Park, Maryland

Session B10: Electromagnetic Interaction and Coupling
Room 155

Co-Chairs: Edward Rothwell, *Michigan State University*
David Jackson, *University of Houston*

13:20 B10-1 A NEW PARADIGM IN SOLAR ENERGY HARVESTING: CHARACTERIZATION OF HIGH ABSORPTION NANOPILLAR ARRAY PHOTOVOLTAICS

Timothy J. Brockett*, Harish Rajagopalan, Yahya Rahmat-Samii
Electrical Engineering, University of California, Los Angeles, Los Angeles, CA

13:40 B10-2 EFFECTS OF BEAM WIDTH AND SURFACE CURVATURE ON THE REFLECTION COEFFICIENT FOR A CONDUCTOR COATED WITH MAGRAM

Edward J. Rothwell*
Electrical and Computer Engineering, Michigan State University, East Lansing, MI

14:00 B10-3 WIRELESS POWER TRANSMISSION FOR GEOPHYSICAL APPLICATIONS

Xiyao Xin*[1], Ji Chen[1], David R. Jackson[1], Paul Tubel[2]
[1]*Dept. of Electrical and Computer Engineering, University of Houston, Houston, TX*
[2]*Tubel Energy, Inc., The Woodlands, TX*

14:20 B10-4 SIMPLIFIED TEST AND MODELING FOR PASSIVE RFID TAG BACKSCATTER LINK ANALYSIS

Daniel G. Kuester*[1,2], David R. Novotny[1], Jeffrey R. Guerrieri[1], Zoya Popovic[2]
[1]*RF Fields Group, NIST, Boulder, CO*
[2]*Electrical, Computer, and Energy Engineering, University of Colorado at Boulder, Boulder, CO*

15:00 Break

15:20 B10-5 GREEN'S FUNCTIONS FOR LAYERED MEDIA HAVING ANISOTROPIC PROPERTIES

Gregory Mitchell*, Steven Weiss
SEDD, US Army Research Lab, Adelphi, MD

15:40 B10-6 PARTICLE BEAM DRIVEN NONLINEAR DIELECTRIC STRUCTURES: SIMULATION AND PROPOSED EXPERIMENTS

Paul Schoessow*[1], Alexei Kanareykin[1], Stanislav Baturin[2]
[1]*Euclid Techlabs, Solon OH*
[2]*LETI, St Petersburg, Russia*

Session F6: Radio Frequency Interference Identification and Mitigation
Room 150

Co-Chairs: David Kunkee, *The Aerospace Corporation*
Jennifer Bernhard, *University of Illinois at Urbana-Champaign*

13:20 F6-1 RADIO SCIENCE AT THE 2012 WORLD RADIOCOMMUNICATION CONFERENCE

Andrew W. Clegg*
National Science Foundation, Arlington, Virginia

13:40 F6-2 REVISING ITU-R RECOMMENDATION P.528 TO SUPPORT SATELLITE FREQUENCY SHARING

Teresa Rusyn*
Institute for Telecommunication Sciences, Boulder, CO

14:00 F6-3 2011 SPECTRUM SURVEY OCCUPANCY MEASUREMENTS IN DENVER, CO

Chriss A. Hammerschmidt*, Heather Ottke, Randy Hoffman
ITS.M, National Telecommunications and Information Administration, Boulder, Colorado

14:20 F6-4 SPECTRUM CHALLENGES IN RADAR DESIGN

Lawrence Cohen*, Eric L. Mokole
Radar Div, Naval Research Laboratory, Washington DC

14:40 F6-5 THIRD-ORDER INTERMODULATION PRODUCTS, WHAT THEY MEAN AND HOW THEY ARE MEASURED

Eric L. Mokole*[1], Lawrence Cohen[1], Tegan Webster[1,2]
[1]*Radar Div, Naval Research Laboratory, Washington DC*
[2]*Dept of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy NY*

15:00 Break

15:20 F6-6 RADIO FREQUENCY INTERFERENCE ANALYSIS OF L-BAND MICROWAVE RADIOMETRY MISSIONS

Mustafa Aksoy*, Joel T. Johnson
Dept. of Electrical and Computer Engineering and ElectroScience Lab, The Ohio State University, Columbus, OH

15:40 F6-7 RFI ANALYSIS AND ALGORITHM DEVELOPMENT USING DIRECT-SAMPLED DATA MEASURED DURING THE CARVE FLIGHT MISSION

Sidharth Misra*, Sharmila Padmanabhan, Ian O'Dwyer, Steven Dinardo, Todd Gaier
Jet Propulsion Laboratory, Pasadena, CA

16:00 F6-8 MITIGATING WIND TURBINE INTERFERENCE TO RADAR BY ADAPTIVE PROCESSING BASED ON TELEMETRY

Fanxing Kong*[1,2], Yan Zhang[1,2], Robert D. Palmer[1,3], Ying Bai[1,2]
[1]*Atmospheric Radar Research Center, University of Oklahoma, Norman, OK*
[2]*School of Electrical and Computer, University of Oklahoma, Norman, OK*
[3]*School of Meteorology, Universit of Oklahoma, Norman, OK*

16:20 F6-9 INTERFERENCE SUPPRESSION STUDIES WITH THE PHASED ARRAY ANTENNA AT THE NATIONAL WEATHER RADAR TESTBED

Mark Yeary*[1], Jerry Crain[1], Chris Curtis[2]
[1]*ECE/ARRC, University of Oklahoma, Norman, OK*
[2]*National Severe Storms Laboratory, Norman, OK*

16:40 F6-10 RADAR POWER AMPLIFIER SPECTRUM OPTIMIZATION FOR CHIRP WAVEFORMS USING ACPR LOAD-PULL MEASUREMENTS

Josh Martin*, Matthew Moldovan, Charles Baylis, Robert Marks
Electrical and Computer Engineering, Baylor University, Waco

Session F7: Active Remote Sensing and Propagation Measurements and Models
Room 151

Co-Chairs: Chandrasekar V Chandra, *Colorado State University*
Valery Zavorotny, *NOAA/Earth System Research Laboratory*

13:20 F7-1 WAVE SHADOWING AND MODULATION OF MICROWAVE BACKSCATTER FROM THE OCEAN

William J. Plant*, Gordon Farquharson
Applied Physics Laboratory, University of Washington, Seattle WA

13:40 F7-2 BACKSCATTERING FROM THE SEA SURFACE UNDER THE SMALL SLOPE APPROXIMATION

Jimmy Alatishe*[1], Wasyl Wasylkiwskyj[2]
[1]*Radar Division, US Naval Research Laboratory, Washington DC*
[2]*Electrical and Computer Engineering, The George Washington University, Washington, DC*

14:00 F7-3 MULTIPLE GRAZING ANGLE SEA CLUTTER MODELING

Ali Karimian*[1], Caglar Yardim[1], Peter Gerstoft[1], William Hodgkiss[1], Amalia Barrios[2]
[1]*University of California, San Diego, San Diego, CA*
[2]*SPAWAR, San Diego*

14:20 F7-4 EXPERIMENTS FOR RF TOMOGRAPHY

Vittorio Picco*[1], Tadahiro Negishi[1], Marcus Stephens[1], Shingo Nishikata[2], Danilo Erricolo[1]
[1]*ECE, University of Illinois at Chicago, Chicago, IL*
[2]*Nagoya Guidance & Propulsion Systems Works, Mitsubishi Heavy Industries, LTD., Komaki, Aichi Prefecture, Japan*

14:40 F7-5 A SEMI-EMPIRICAL MODEL FOR PREDICTING SIGNAL STRENGTH AT VHF AND UHF BAND USING SURFACE REFRACTIVITY MEASUREMENT AT NSUKKA, SOUTH-EASTERN NIGERIA

Benjamin G. Ayantunji*
Centre for Basic Space Science,, Nsukka, Enugu State, Nigeria

15:00 Break

15:20 F7-6 A COUPLED FDTD/SAMI3 MODEL FOR ELECTROMAGNETIC WAVE PROPAGATION IN THE EARTH-IONOSPHERE SYSTEM

Jiajun Niu*, Jamesina J. Simpson
Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM

15:40 F7-7 EVALUATING RAYLEIGH DISTRIBUTION ASSUMPTIONS IN FADING CHANNEL MODELS

Timothy J. Riley*, Christopher J. Behm
NTIA/ITS.E, US Department of Commerce, Boulder, CO

16:00 F7-8 FREE-FIELD MEASUREMENTS OF THE ELECTRICAL PROPERTIES OF SOIL USING THE SURFACE WAVE PROPAGATION BETWEEN TWO MONOPOLE ANTENNAS

Nicholas N. DeMinco*, Robert T. Johnk, Paul M. McKenna, Chriss A. Hammerschmidt, Wayde Allen
Institute for Telecommunication Sciences, Boulder, Colorado

16:20 F7-9 IMPACT OF METEOROLOGICAL PARAMETERS ON THE VLF-LF PROPAGATION AT MIDLATITUDES

Andrey N. Lyakhov*, Andrey A. Egoshin, Vladimir Ermak, Stanislav I. Kozlov, Vladimir P. Kudryavtsev, Yuri V. Poklad, Ekaterina N. Yakimenko, Yuli I. Zetzer
Institute of Geospheres Dynamics, Moscow, Russian Federation

Session GH1: Ionospheric Modification
Room 105

Co-Chairs: Michael Sulzer, *Arecibo observatory*
Stanley Briczinski, *Naval Research Laboratory, Plasma Physics Division*

13:20 GH1-1 FREQUENCY RESPONSE AND POLARIZATION OF ELF/VLF SIGNALS GENERATED AT THE HAARP FACILITY

Jason R. Carpenter*, Ryan T. Jacobs, Mark Golkowski
Electrical Engineering, University of Colorado Denver, Denver, CO

13:40 GH1-2 SATURATION EFFECTS IN THE VLF SCATTERING OFF HF HEATED IONOSPHERE

Nikolai G. Lehtinen*[1], Timothy F. Bell[1], Umran S. Inan[1,2]
[1]*Stanford University, Stanford, CA*
[2]*Koc University, Istanbul, Turkey*

14:00 GH1-3 HIGH FREQUENCY RESOLUTION AND HIGH SPATIAL RESOLUTION TOA ANALYSIS FOR ELF/VLF WAVE GENERATION EXPERIMENTS AT HAARP

Shuji Fujimaru*, Robert C. Moore
Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL

14:20 GH1-4 APPROXIMATING D-REGION ELECTRON DENSITIES USING ELF/VLF WAVE GENERATION EXPERIMENTS AT HAARP

Divya Agrawal*, Robert C. Moore
Department of Electrical and Computer Engineering, University of Florida, Gainesville, FL

14:40 GH1-5 INVESTIGATION OF DUSTY SPACE PLASMAS IN THE NEAR-EARTH SPACE ENVIRONMENT USING THE ACTIVE MODIFICATION OF POLAR MESOSPHERIC SUMMER ECHOES

Alireza Mahmoudian*, Wayne Scales
ECE department, Virginia Tech, Blacksburg,VA

15:00 Break

15:20 GH1-6 TWISTED BEAM SEE OBSERVATIONS OF IONOSPHERIC HEATING FROM HAARP

Stanley J. Briczinski*[1], Paul A. Bernhardt[1], Todd R. Pedersen[2], Serafin P. Rodriguez[3], Geoffrey S. San Antonio[3]
[1]*Plasma Physics Division, Naval Research Laboratory, Washington, DC*
[2]*Air Force Research Laboratory, Kirtland AFB, NM*
[3]*Radar Division, Naval Research Laboratory, Washington, DC*

15:40 GH1-7 WAVE DISTURBANCES IN THE IONOSPHERE ACCOMPANYING THE PLASMA MODIFICATION BY SURA FACILITY RADIATION

Leonid F. Chernogor[1,2], Igor F. Domnin[2], Sergii V. Panasenko*[2], Valery P. Uryadov[3]
[1]*Dept. of Space Radio Physics, Kharkiv V. N. Karazin National University, Kharkiv, Ukraine*
[2]*Institute of Ionosphere, Kharkiv, Ukraine*
[3]*Radiophysical Research Institute, N. Novgorod, Russia*

16:00 GH1-8 INVESTIGATING THE THRESHOLD AND STRENGTH OF EMISSION LINES GENERATED BY MAGNETIZED STIMULATED BRILLOUIN SCATTER (MSBS) USING HAARP FACILITIES

Alireza Mahmoudian*[1], Wayne Scales[1], Paul Bernhardt[2], Stan Briczinski[2]
[1]*ECE department, Virginia Tech, Blacksburg,VA*
[2]*Plasma Physics, Naval Research Labratory, Washington D.C*

16:20 GH1-9 ON DEMAND SPACE PLASMA GENERATION: THE METAL OXIDE SPACE CLOUD EXPERIMENT

Ronald G. Caton*[1], Keith M. Groves[2], Theodore L. Beach[3], Paul A. Bernhardt[4]
[1]*Space Vehicles Directorate, Air Force Research Laboratory, Kirtland AFB, NM*
[2]*Institute for Scientific Research, Boston College, Chestnut Hill, MA*
[3]*Creare Inc, Hanover, NH*
[4]*Plasma Physics Division, Naval Research Laboratory, Washington DC*

16:40 GH1-10 THE FUTURE OF ROCKET EXHAUST INTERACTIONS IN THE IONOSPHERE AFTER THE SPACE SHUTTLE

Paul A. Bernhardt*[1], Wayne A. Scales[2], Haiyang Fu[2], Alireza Mahmoudian[2], Maitrayee Bordikar[2]
[1]*Naval Research Laboratory, Washington, DC*
[2]*Department of EE, Virginia Tech, Blacksburg, VA*

17:00 GH1-11 ANTENNA MEASUREMENT AND OTHER COMMISSIONING TASKS FOR COMPLETION OF THE NEW ARECIBO HF FACILITY

Michael P. Sulzer*
Space and Atmospheric Sciences, Arecibo observatory, Arecibo, PR

Session GHF2: Global Navigation Satellite Systems and Radio Beacon Remote Sensing II
Room 200

Co-Chairs: Valery Zavorotny, *NOAA/Earth System Research Laboratory*
Carl Siefring, *Naval Research Laboratory*
Charles Carrano, *Boston College*

13:20 GHF2-1 GNSS AND RADIO BEACONS REFLECTED WAVEFORMS MODELED WITH SMALL SLOPE APPROXIMATION

Alexander G. Voronovich*, Valery U. Zavorotny
Physical Sciences Division, NOAA/Earth System Research Laboratory, Boulder CO, Boulder CO

13:40 GHF2-2 OCEAN SURFACE WIND SPEED MEASUREMENTS FROM HIGH-ALTITUDE AIRCRAFT USING GPS DELAY-DOPPLER MAPS

Valery U. Zavorotny*[1], Nereida Rodriguez-Alvarez[1,2], Dennis M. Akos[3]
[1]*Physical Sciences Division, NOAA/Earth System Research Laboratory, Boulder CO*
[2]*Remote Sensing Laboratory, Universitat Politcnica de Catalunya and IEEC CRAE/UPC, Barcelona, Spain*
[3]*Department of Aerospace Engineering Sciences, University of Colorado at Boulder, Boulder CO*

14:00 GHF2-3 SNOW MONITORING AT NIWOT RIDGE USING GPS INTERFEROMETRIC REFLECTOMETRY

Felipe G. Nievinski*, Kristine M. Larson
University of Colorado at Boulder, Boulder, CO

14:20 GHF2-4 GNSS-R ADVANCES AT THE REMOTE SENSING LAB UPC

Adriano Camps[1], Nereida Rodriguez-Alvarez[1], Enric Valencia[1], Hyuk Park[1], Juan Fernando Marchan-Hernandez[2], Albert Aguasca[1], Merce Vall-llosera[1], Isaac Ramos-Perez[1], Giuseppe Forte[1], Xavier Bosch-Lluis*[3]
[1]*TSC, RSLab, Universtitat Politecnia de Catalunya, Barcelona, Spain*
[2]*Institut Cartogrfic de Catalunya, Barcelona, Spain*
[3]*ECE, MSL, Colorado State University, Fort Collins, Colorado*

Session HG4: Meteors, Impacts and Dusty Plasmas II
Room 245

Co-Chairs: Mihaly Horanyi, *LASP, University of Colorado*
Jonathan Fentzke, *NWRA, CoRA Division | Arecibo Observatory, SAS Dept.*

13:20 HG4-1 COLORADO SOFTWARE DEFINED RADAR: HARDWARE, RESULTS, RECONFIGURABITY AND DEPLOYMENT

Cody Vaudrin*, Scott Palo
University of Colorado, Boulder, CO

13:40 HG4-2 PRELIMINARY RADAR OBSERVATIONS FROM THE PENN STATE METEOR RADAR

Julio V. Urbina*[1], Lars P. Dyrud[2], Jonathan Fentzke[2], Ryan Seal[1], Robert Sorbello[1]
[1]*The Pennsylvania State University, University Park, PA*
[2]*Applied Physics Laboratory, John Hopkins University, Columbia, MD*

14:00 HG4-3 WAVEFORM EFFECTS ON HPLA RADAR METEOR MEASUREMENTS

Ryan Volz*, Sigrid Close
Aeronautics and Astronautics, Stanford University, Stanford, CA

14:20 HG4-4 TRANSMITTER POWER INFLUENCE ON METEOR RADAR HEAD ECHO RETURNS

Stanley J. Briczinski*[1], John D. Mathews[2], Philip J. Erickson[3]
[1]*Plasma Physics Division, Naval Research Laboratory, Washington, DC*
[2]*Electrical Engineering, Penn State, State College, PA*
[3]*MIT Haystack Observatory, Westford, MA*

14:40 HG4-5 ON THE EFFECT OF TURBULENCE ON SPECULAR METEOR ECHOES

Freddy Galindo[1], Julio Urbina*[1], Lars Dyrud[2], Jonathan Fentzke[2]
[1]*Pennsylvania State University, University Park, Pennsylvania*
[2]*Applied Physics Laboratory, John Hopkins University, Columbia, Maryland*

15:00 Break

15:20 HG4-6 NON-SPECULAR MODELING WITH DISCRETE POWER INTERVALS

Heather Jiles*[1], Lars Dyrud[1], Jonathan Fentzke[1], Freddie Galindo[2], Julio Urbina[2]
[1]*Johns Hopkins Applied Physics Laboratory, Washington DC*
[2]*Department of Electrical Engineering, Pennsylvania State University, University Park, PA*

15:40 HG4-7 RESULTS FROM ARECIBO METEOR OBSERVATIONS SHOWING MULTI-PIECE METEOR DETECTION

Emily Logan[1], Michael Sulzer*[2]
[1]*University of Colorado at Boulder, Boulder, CO*
[2]*Arecibo Observatory, Arecibo, PR, US*

16:00 HG4-8 INFLUENCE OF IONOSPHERIC ELECTROJETS ON METEOR TRAIL EVOLUTION

Lars P. Dyrud*[1], Jonathan T. Fentzke1[1], Julio Urbina[2]
[1]*Johns Hopkins Applied Physics Laboratory, Laurel, MD*
[2]*Penn State Univeristy, State College, UNited States*

16:20 HG4-9 A PROBABILISTIC APPROACH TO ESTIMATING METEOROID PRESENCE IN EARTH ORBIT FROM GROUND-BASED RADAR OBSERVATIONS

Steven Pifko*[1], Diego Janches[2], Sigrid Close[1]
[1]*Aeronautics & Astronautics, Stanford University, Stanford, CA*
[2]*Space Weather Lab, NASA Goddard Space Flight Center, Greenbelt, MD*

16:40 HG4-10 CHARACTERIZING METEOROID BULK DENSITIES

Sigrid Close*[1], Alex Macdonell[2], Steven Pifko[1], Ryan Volz[1], Meers Oppenheim[2]
[1]*Stanford University, CA*
[2]*Boston University, Boston, MA*

Session J5: New Telescopes, Techniques, and Observations II
Room 265

Co-Chairs: Richard Prestage, *NRAO - Green Bank*
Richard Bradley, *National Radio Astronomy Observatory*

13:20 J5-1 A NEW TECHNIQUE FOR PRIMARY BEAM CALIBRATION OF DRIFT-SCANNING, WIDE-FIELD ANTENNA ELEMENTS

Jonathan C. Pober*, Aaron R. Parsons
UC Berkeley, Berkeley, CA

13:40 J5-2 NEXT GENERATION POLARIMETER MODULES FOR THE QUIET EXPERIMENT

Kieran Cleary*[1], Rodrigo Reeves[1], Rohit Gawande[1], Anthony C. S. Readhead[1], Todd Gaier[2], Pekka Kangaslahti[2], Lorene Samoska[2], Mikko Varonen[2], Hogan Nguyen[3], Fritz DeJong[3], Donna Kubik[3], Osamu Tajima[4], Masaya Hasegawa[4], Makoto Nagai[4], Koji Ishidoshiro[4], Sarah Church[5], Patricia Voll[5], Mark McCulloch[6], Lucio Piccirillo[6]
[1]*California Institute of Technology, Pasadena, CA*
[2]*Jet Propulsion Laboratory, Pasadena, CA*
[3]*Fermi National Accelerator Laboratory, Batavia, IL*
[4]*High Energy Accelerator Research Organization (KEK), Tsukuba, Ibaraki, Japan*
[5]*Stanford University and Kavli Institute for Particle Astrophysics, Stanford, CA*
[6]*University of Manchester, Manchester, Cheshire, UK*

14:00 J5-3 ULTRA-WIDEBAND SAMPLER (10 TO 20GSPS) ANALYSIS AND TEST RESULTS

David W. Hawkins*[1], David P. Woody[1], Kevin P. Rauch[2]
[1]*PMA-OVRO, California Institute of Technology, Big Pine, CA*
[2]*Astronomy, University of Maryland, College Park, MD*

14:20 J5-4 GPU ACCELERATED PROCESSING FOR VLBI DIGITAL BACKENDS

Mark D. McCurry*[1], Christopher Beaudoin[2], Geoffrey B. Crew[2]
[1]*ECE Department, Clarkson University, Potsdam, NY*
[2]*MIT Haystack, Westford, MA*

14:40 J5-5 INSTRUMENTATION FOR REAL-TIME CYCLIC SPECTROSCOPY OF PULSAR SIGNALS

Glenn Jones*[1], Paul B. Demorest[2]
[1]*Caltech, Pasadena, CA*
[2]*NRAO, Charlottesville, VA*

15:00 Break

15:20 J5-6 FAST RADIO TRANSIENT DETECTION AS A BIG DATA CHALLENGE

Dayton L. Jones*, Kiri L. Wagstaff, David R. Thompson, Larry R. D'Addario, Robert Navarro, Chris A. Mattmann, Walid A. Majid, Joseph Lazio, Robert A. Preston, Umaa D. Rebbapragada
Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA

15:40 J5-7 SIGNAL EXTRACTION FOR SKY-AVERAGED 21-CM EXPERIMENTS

Geraint J. Harker*[1], Jonathan R. Pritchard[2], Jack O. Burns[1], Judd D. Bowman[3]
[1]*Center for Astrophysics and Space Astronomy, University of Colorado, Boulder, CO*
[2]*Physics Department, Imperial College London, London, United Kingdom*
[3]*School of Earth and Space Exploration, Arizona State University, Tempe, AZ*

16:00 J5-8 A RADIO SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE IN THE KEPLER FIELD

Andrew P. V. Siemion*[1], Paul Demorest[2], Abhimat Gautam[1], Eric Korpela[1], Ron Maddalena[2], Dan Werthimer[1], Jeff Cobb[1], John Ford[2], Andrew Howard[1], Glen Langston[2], Matt Lebofsky[1], Geoff Marcy[1], Jill Tarter[3]
[1]*University of California, Berkeley, Berkeley, California*
[2]*National Radio Astronomy Observatory, Green Bank, West Virginia*
[3]*SETI Institute, Mountain View, California*

16:20 J5-9 MEASURING THE SMALL-SCALE CMB POLARIZATION WITH ACTPOL

Michael D. Niemack*
NIST, Boulder, CO

16:40 J5-10 MODELING OF RADAR SCATTER FROM ICY AND YOUNG ROUGH LUNAR CRATERS

Thomas W. Thompson*[1], Eugene A. Ustinov[1], Paul D. Spudis[2], Brian W. Fessler[2]
[1]*Caltech / Jet Propulsion Laboratory, Pasadena, CA*
[2]*Lunar and Planetary Institute, Houston, TX*

17:00 J5-11 KA-BAND SOLAR FLUX STUDY FOR G/T MEASUREMENTS

Arthur C. Densmore*[1,2], Gerry Seck[1], Yahya Rahmat-Samii[2]
[1]*Datron Advanced Technologies, L-3 Communications, Simi Valley, CA*
[2]*EE, UCLA, Los Angeles, CA*

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