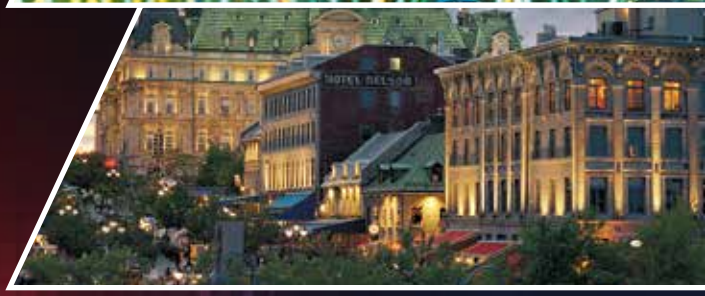
XXXII[nd] International Union of Radio Science
XXXII[e] Union Radio-Scientifique Internationale

URSI 2017 GASS
XXXII[nd] URSI GENERAL ASSEMBLY
& SCIENTIFIC SYMPOSIUM

General Assembly and Scientific Symposium

Assemblée générale et symposium scientifique

Palais des congrès, Montréal, Canada
August 19 – 26 août 2017



Program / Programme

www.ursi2017.org

U.R.S.I.

Table of Contents

Saturday, August 19, 2017

Saturday, August 19, 2017	08:00-17:00	513CD

URSI Summer School

Saturday, August 19, 2017	08:00-09:20	514BC

EFGHJ0 One-Day Workshop on RFI Mitigation and Characterization (1)

Session Chairs: Richard Bradley, Terence Bullett, Virginie Deniau, Jacob Gavan, Frank Gronwald, Motti Haridim, David Le Vine, Paolo de Matthaeis, Hanna Rothkaehl, Amit MIshra

08:00 EFGHJ0-1 (Invited) ELECTROMAGNETIC TOPOLOGICAL CONCEPTS FOR MITIGATION OF EMI/RFI EFFECTS WITH ILLUSTRATIVE EXAMPLES

D. V. Giri, *Pro-Tech, United States*

08:20 EFGHJ0-2 (Invited) EVALUATION OF AN IEEE 802.11N COMMUNICATION SYSTEM IN PRESENCE OF TRANSIENT ELECTROMAGNETIC INTERFERENCES FROM THE PANTOGRAPH-CATENARY CONTACT

G. Romero, E. P. Simon, *university of Lille1, France*; V. Deniau, C. Gransart, R. Kousri, *IFSTTAR, France*

08:40 EFGHJ0-3 MACHINE LEARNING FOR AUTOMATED DISCRIMINATION OF SETI SIGNALS FROM RADIO FREQUENCY INTERFERENCE

G. R. Harp, *SETI Institute, United States*; J. D. Scargle, C. E. Henze, *NASA Ames Research Center, United States*; B. C. Nelson, *CSRA Inc., United States*

09:00 EFGHJ0-4 (Invited) THE DATABASE OF OBSERVED RADIO FREQUENCY INTERFERENCE AND FREQUENCY ALLOCATIONS OF THE IEEE GEOSCIENCE AND REMOTE SENSING SOCIETY

P. de Matthaeis[1,2], S. Misra[2], L. Pierce[3]

[1]NASA Goddard Space Flight Center, United States; [2]IEEE GRSS, United States; [3]University of Michigan, United States

Saturday, August 19, 2017	09:40-11:40	514BC

EFGHJ1 One-Day Workshop on RFI Mitigation and Characterization (2)

Session Chairs: Richard Bradley, Terence Bullett, Virginie Deniau, Jacob Gavan, Frank Gronwald, Motti Haridim, David Le Vine, Paolo de Matthaeis, Hanna Rothkaehl, Amit MIshra

09:40 EFGHJ1-1 ANALYSIS OF RADIO FREQUENCY INTERFERENCE SIGNATURES IN UAVSAR POLARIMETRIC DATA

M. Tao, *Northwestern Polytechnical University, China (CIE)*; F. Zhou, *Xidian University, China (CIE)*

10:00 EFGHJ1-2 CORRECTION OF ULTRA WIDE-BAND RADIO FREQUENCY INTERFERENCE IN SAR DATA USING NONNEGATIVE MATRIX FACTORIZATION

M. Tao, *Northwestern Polytechnical University, China (CIE)*; F. Zhou, *Xidian University, China (CIE)*

10:20 EFGHJ1-3 (Invited) RADIO FREQUENCY INTERFERENCE IN ALOS-2 PALSAR-2 INTERFEROGRAM

R. Natsuaki, T. Motohka, S. Suzuki, T. Tadono, *Japan Aerospace Exploration Agency, Japan*

10:40 EFGHJ1-4 (Invited) A NEW METHOD OF SAR RADIO FREQUENCY INTERFERENCE MITIGATION BASED ON MAXIMUM A POSTERIOR ESTIMATION

F. Zhou, *Xidian University, China (CIE)*

11:20 EFGHJ1-6 THE MITIGATION OF RFI IN SPACE BORNE AND GROUND BASED RADIO DIAGNOSTICS

H. Rothkaehl, B. Matyjasiak, D. Przepiórka, M. Pozoga, M. Morawski, *Space Research Center Polish Academy of Sciences, Poland*; J. Yan, L. Wu, *National Space Science Centre (NSSC), China*

Saturday, August 19, 2017 **13:40-15:40** **514BC**

EFGHJ2 One-Day Workshop on RFI Mitigation and Characterization (3)

Session Chairs: Richard Bradley, Terence Bullett, Virginie Deniau, Jacob Gavan, Frank Gronwald, Motti Haridim, David Le Vine, Paolo de Matthaeis, Hanna Rothkaehl, Amit MIshra

13:40 EFGHJ2-1 RFI MITIGATION ON MOBILE BASE STATIONS AROUND FAST

H. Zhang[1,2]

[1]National Astronomical Observatories of CAS, China; [2]Key Laboratory of Radio Astronomy of CAS, China

14:00 EFGHJ2-2 REAL-TIME RFI MITIGATION FOR THE BEAMFORMER MODE OF THE UPGRADED GMRT

A. Chowdhury, Y. Gupta, *National Centre for Radio Astrophysics - TIFR, Pune, India, India*

14:20 EFGHJ2-3 RADIO ENVIRONMENT OF NSRT AND RFI MITIGATION

Q. Liu[1,2,3], Y. Liu[1], Y. Wang[1,3], L. Yuan[1,2], F. Liu[1,3]

[1]Xinjiang Astronomical Observatory, Chinese Academy of Science, China (CIE); [2]University of Chinese Academy of Sciences, China (CIE); [3]Key Laboratory of Radio Astronomy, Chinese Academy of Sciences, China (CIE)

14:40 EFGHJ2-4 AERONAUTICAL RADIO FREQUENCY INTERFERENCE CHARACTERISATION FOR THE SQUARE KILOMETRE ARRAY

A. J. Otto, R. P. Millenaar, C. Van Der Merwe, T. Abbott, S. Tshongweni, *Square Kilometre Array South Africa, South Africa*; A. R. Botha, *MESA Product Solutions, South Africa*

15:00 EFGHJ2-5 RFI MITIGATION THROUGH PREDICTION AND AVOIDANCE

B. Indermuehle, L. Harvey-Smith, *CSIRO Astronomy and Space Science, Australia*

15:20 EFGHJ2-6 TOOLS FOR AVOIDING SATELLITE INTERFERENCE AT THE UPGRADED GMRT

S. N. Katore, P. A. Raybole, S. K. Rai, S. Nayak, S. Kumar, *GMRT-NCRA-TIFR, India*

EFGHJ3 One-Day Workshop on RFI Mitigation and Characterization (4)

Session Chairs: Richard Bradley, Terence Bullett, Virginie Deniau, Jacob Gavan, Frank Gronwald, Motti Haridim, David Le Vine, Paolo de Matthaeis, Hanna Rothkaehl, Amit MIshra

16:20 EFGHJ3-1 COMPUTATIONALLY EFFICIENT NEAR-FIELD RADIO FREQUENCY SOURCE LOCALISATION

J.-W. W. Steeb[1], D. B. Davidson[1], S. J. Wijnholds[1,2]

[1]Stellenbosch University, South Africa; [2]Netherlands Institute for Radio Astronomy, Netherlands

16:40 EFGHJ3-2 METTING RADIO FREQUENCY INTERFERENCE (RFI) CHALLENGES FOR THE UPGRADED GMRT.

P. A. Raybole, S. Sureshkumar, S. Rai, A. Ankur, *GMRT, NCRA-TIFR, India*

17:00 EFGHJ3-3 NEW STRATEGIES FOR STATISTICAL RFI DETECTION

L. Waldrop, G. Cucho-Padin, F. Kamalabadi, *University of Illinois, United States*; Z. Tian, *George Mason University, United States*; P. Perillat, M. Sulzer, N. Aponte, *Arecibo Observatory, United States*; P. Erickson, *MIT Haystack Observatory, United States*; J. Vierinen, *The Arctic University of Norway, Norway*

17:20 EFGHJ3-4 NEW CHALLENGES IN RFI MITIGATION FOR WIDEFIELD LOW FREQUENCY APERTURE ARRAYS

R. Monroe, G. Hallinan, M. Eastwood, M. Anderson, *California Institute of Technology, United States*

17:40 EFGHJ3-5 AN RFI MITIGATION PROJECT AT THE ITALIAN RADIO TELESCOPES

A. Zanichelli[1], K.-H. Mack[1], M. B. Bartolini[1], S. Poppi[2], G. Serra[2], F. Gaudiomonte[2], M. De Biaggi[1], F. Cantini[3], E. Favero[1], G. Nicotra[1], L. Nicotra[1], S. Righini[1], P. Bolli[4], C. Bortolotti[1], M. Roma[1], A. Orlati[1], F. Bedosti[1]

[1]INAF - Istituto di Radioastronomia, Italy; [2]INAF - Astronomical Observatory of Cagliari, Italy; [3]EFPL - Space Engineering Center, Switzerland; [4]INAF - Astrophysical Observatory of Arcetri, Italy

18:00 EFGHJ3-6 RESULTS OF THE NSF ENHANCING ACCESS TO THE RADIO SPECTRUM SOLICITATION

G. I. Langston, *National Science Foundation, United States*

Sunday, August 20, 2017

Sunday, August 20, 2017 **08:00-09:00** **513CD**

E4 Short Course on IEMI and Cyber threats for Wireless Communications (1)

Session Chair: Dave Giri

08:00 E4-1 "SMART IEMI" THREATS, CONSIDERED AS CYBER THREATS, FOR WIRELESS COMMUNICATIONS – PART 1

C. Kasmi, *FNISA, France*; V. Deniau, *IFSTTAR, France*

Sunday, August 20, 2017 **08:00-09:00** **514BC**

T1 ECR Tutorial 1: Pedro Cruz - Mixed-Signal Multi-Domain Characterization Setup for Design and Test of 5G Systems

Session Chair: Stefan Wijnholds

08:00 T1-1 (Invited) MIXED-SIGNAL MULTI-DOMAIN CHARACTERIZATION SETUP FOR DESIGN AND TEST OF 5G SYSTEMS

P. M. Cruz[1,2]

[1]*CONTROLAR - Innovating Industry, Portugal;* [2]*Instituto de Telecomunicações - Aveiro, Portugal*

Sunday, August 20, 2017 **09:20-10:20** **513CD**

E5 Short Course on IEMI and Cyber threats for Wireless Communications (2)

Session Chair: Dave Giri

09:20 E5-1 "SMART IEMI" THREATS, CONSIDERED AS CYBER THREATS, FOR WIRELESS COMMUNICATIONS –PART 2 3 SLOTS BY VIRGINIE DENIAU

V. Deniau, *IFSTTAR, France*; C. Kasmi, *FNISA, France*

Sunday, August 20, 2017 **09:20-10:20** **514BC**

T2 ECR Tutorial 2: Gabriele Gradoni - Wave Chaos and Complexity in Electromagnetic Environments

Session Chair: Stefan Wijnholds

09:20 T2-1 WAVE CHAOS AND COMPLEXITY IN ELECTROMAGNETIC ENVIRONMENTS

G. Gradoni, *University of Nottingham, United Kingdom*

Sunday, August 20, 2017 **10:40-11:40** **513CD**

E6 Short Course on IEMI and Cyber threats for Wireless Communications (3)

Session Chair: Dave Giri

10:40 E6-1 IEMI THREATS FOR WIRELESS COMMUNICATIONS, DETECTIONS AND PROTECTIONS

V. Deniau, *IFSTTAR, France*; C. Kasmi, *FNISA, France*

Sunday, August 20, 2017 **10:40-11:40** **514BC**

T3 ECR Tutorial 3: Puyan Mojabi - Electromagnetic Inverse Scattering and Inverse Source Problems

Session Chair: Stefan Wijnholds

10:40 T3-1 (Invited) A TUTORIAL ON ELECTROMAGNETIC INVERSE SCATTERING AND INVERSE SOURCE PROBLEMS

P. Mojabi, *University of Manitoba, Canada*

Sunday, August 20, 2017 **12:00-12:20** **514BC**

T4 ECR Tutorial 4: Mehmet Kurum - Modelling of microwave propagation through sparse media

Session Chair: Stefan Wijnholds

12:00 T4-1 (Invited) MODELLING OF MICROWAVE PROPAGATION THROUGH SPARSE MEDIA

M. Kurum, *Mississippi State University, MS*

Monday, August 21, 2017

Monday, August 21, 2017	08:00-08:20	511AD

A0 Commission A Essential Information

Session Chairs: Yasuhiro Koyama, Patrizia Tavella

Monday, August 21, 2017	08:00-08:20	510AC

B0 Commission B Essential Information

Session Chairs: Ari Sihvola, Kazuya Kobayashi

Monday, August 21, 2017	08:00-08:20	513A

C0 Commission C Essential Information

Session Chairs: Sana Salous, Amir Zaghloul

Monday, August 21, 2017	08:00-08:20	513B

D0 Commission D Essential Information

Session Chairs: Günter Steinmeyer, Apostolos Georgiadis

Monday, August 21, 2017	08:00-08:20	513EF

E7 Commission E Essential Information

Session Chairs: Dave Giri, Frank Gronwald

Monday, August 21, 2017	08:00-08:20	510BD

F0 Commission F Essential Information

Session Chairs: Simonetta Paloscia, Chandrasekar V Chandra

Monday, August 21, 2017	08:00-08:20	511BE

G0 Commission G Essential Information

Session Chairs: Iwona Stanislawska, Patricia Doherty

Monday, August 21, 2017 **08:00-08:20** **511CF**

H0 Commission H Essential Information

Session Chairs: O. Santolik, János Lichtenberger

Monday, August 21, 2017 **08:00-09:20** **516DE**

J1 Receivers and Radiometers: Design & Calibration (1) Plus Essential Information

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth, Richard Bradley, Miroslav Pantaleev

08:00 J1-1 THE MPIFR S-BAND RECEIVER SYSTEM FOR THE SKA PRECURSOR OBSERVATORY MEERKAT: CURRENT STATUS AND OUTLOOK

G. Wieching, C. Kasemann, O. Wucknitz, M. Kramer, *Max-Planck Institut für Radioastronomie, Germany*

08:20 J1-2 (Invited) COMPACT CM-WAVE AND MM-WAVE INTEGRATED RECEIVERS

M. A. Morgan, S. D. Wunduke, J. J. Castro, T. A. Boyd, W. M. Groves III, *National Radio Astronomy Observatory, United States*

08:40 J1-3 (Invited) AN ULTRA-WIDEBAND CRYOGENIC RECEIVER FOR THE PARKES RADIO TELESCOPE

A. R. Dunning, N. Carter, S. Castillo, Y. Chung, P. Doherty, D. B. Hayman, K. Jeganathan, H. Kanoniuk, S. Mackay, L. Reilly, P. Roberts, P. Roush, S. Severs, R. D. Shaw, S. L. Smith, T. Tzioumis, *CSIRO, Australia*

09:00 J1-4 (Invited) THE COSMIC TWILIGHT POLARIMETER – AN OVERVIEW

R. F. Bradley, *National Radio Astronomy Observatory, United States*; B. D. Nhan, J. O. Burns, *University of Colorado, United States*

Monday, August 21, 2017 **08:00-09:20** **514A**

J2 Digital Signal Processing Hardware (1) Plus Essential Information

Session Chairs: Albert Boonstra, Dan Werthimer

08:00 J2-1 UPGRADE TO THE 64-ANTENNA ALMA CORRELATOR

R. J. Lacasse[1], R. P. Escoffier[1], J. H. Greenberg[1], A. F. Saez[2], O. Y. Ojeda[1], A. Baudry[3], J. C. Webber[1]

[1]NRAO, United States; [2]Associated Universities, Inc., Chile; [3]Laboratoire d'Astrophysique de Bordeaux (OASU), France

08:20 J2-2 HIGH-PERFORMANCE HARDWARE PLATFORM FOR THE SQUARE KILOMTRE ARRAY MID CORRELATOR & BEAMFORMER

M. Pleasance, H. Zhang, B. Carlson, R. Webber, D. Chalmers, T. Gunaratne, *National Research Council Canada, Canada*

08:40 J2-3 GEMINI FPGA HARDWARE PLATFORM FOR THE SKA LOW CORRELATOR AND BEAMFORMER

E. Kooistra[1], G. Hampson[2], A. Gunst[1], J. Bunton[2], G. Schoonderbeek[1], A. Brown[2]

[1]*ASTRON, Netherlands;* [2]*CSIRO, Australia*

09:00 J2-4 DIGITIZATION AND DIGITAL FILTERING FOR 16 GHZ ON-SKY BANDWIDTH ANALYSIS WITH ALMA

B. Quertier, A. Randriamanantena, A. Baudry, S. Gauffre, *Univ. Bordeaux, CNRS, France*

Monday, August 21, 2017 **08:00-08:20** **516AB**

K0 Commission K Essential Information

Session Chairs: Joe Wiart, Samyoung Chung

Monday, August 21, 2017 **08:20-09:20** **511AD**

A1 Measurements of Isotropic and Anisotropic Magnetodielectrics (1)

Session Chairs: Steven Weiss, Amir Zaghloul

08:20 A1-1 THE IMPORTANCE AND NEED FOR MEASUREMENTS OF ISOTROPIC AND ANISOTROPIC MAGNETODIELECTRICS

S. Weiss, *US Army Research Lab, United States*

08:40 A1-2 MODELING AND MEASUREMENT OF A MULTI-FIN METAMATERIAL-LOADED MONOPOLE WITH METAL CAP

T. K. Anthony, A. I. Zaghloul, *US Army Research Lab, United States*

09:00 A1-3 FREE-SPACE MEASUREMENT OF 3D PERIODIC METAMATERIAL

C. E. Kintner[1], T. K. Anthony[2], A. I. Zaghloul[2], M. O. El-Shenawee[1], S. J. Weiss[2]

[1]*University of Arkansas, USA;* [2]*US Army Research Laboratory, USA*

Monday, August 21, 2017 **08:20-09:20** **510AC**

B1 Electromagnetic Theory (1)

Session Chairs: Daniel Sjöberg, Ben Steinberg

08:20 B1-1 (Invited) ELIMINATION OF THE ILL-POSEDNESS IN THE INVERSE PROBLEM THROUGH USE OF FOCUSING PROPERTIES OF MAXWELL FISH EYE LENS

J. Feroj, L. Shafai, V. Okhmatovski, *University of Manitoba, Canada*

08:40 B1-2 ON THE ANALYSIS OF THE EXTERIOR CALDERÓN OPERATOR FOR A NON-SPHERICAL GEOMETRY

G. Kristensson[1], I. Stratis[2], N. Wellander[3,1], A. Yannacopoulos[4]

[1]*Lund University, Sweden;* [2]*National and Kapodistrian University of Athens, Greece;* [3]*Swedish Defence Research Agency, Sweden;* [4]*Athens University Economics and Business, Greece*

09:00 B1-3 (Invited) POWER, ENERGY DENSITY, AND GROUP/ENERGY-TRANSPORT VELOCITIES IN SPATIALLY DISPERSIVE MEDIA

A. D. Yaghjian, *Electromagnetics Research Consultant, United States*

Monday, August 21, 2017 **08:20-09:20** **513A**

C1 Communications for the Smart Grid (1)

Session Chair: Jacque Palicot

08:20 C1-1 (Invited) FRAMEWORK FOR HIERARCHICAL AND DISTRIBUTED SMART GRID MANAGEMENT

R. Bonnefoi, C. Moy, J. Palicot, *CentraleSupélec/IETR, France*

08:40 C1-2 (Invited) COMMUNICATION NETWORK ASSESSMENT FOR DISTRIBUTED SMART GRID APPLICATIONS

A. De Domenico[1], C. Gavriluta[2], M. Mendil[1,2], V. Heiries[1], R. Caire[2], N. Hadjsaid[2]

[1]CEA LETI, France; [2]G2ELab, France

09:00 C1-3 (Invited) COMMUNICATION COSTS VERSUS SMART GRID SYSTEM PERFORMANCE FOR ENERGY PROSUMERS' PARTICIPATION IN LIBERALIZED ELECTRICITY MARKETS: A TRADE-OFF ANALYSIS

I. Mamounakis[1], D. J. Vergados[1], P. Makris[1,2], E. Varvarigos[1,2]

[1]Computer Technology Institute & Press "Diophantus", Greece; [2]Institute of Communication and Computer Systems, National Technical University of Athens, Greece

Monday, August 21, 2017 **08:20-09:20** **513B**

D1 Microwave Photonics (1)

Session Chairs: Stavros Iezekiel, Jianping Yao

08:20 D1-1 (Invited) PHOTONICS FOR BROADBAND MICROWAVE MEASUREMENT

S. Pan, X. Wang, *Nanjing University of Aeronautics and Astronautics, China (CIE)*

08:40 D1-2 (Invited) PRECISE CHARACTERIZATION OF OPTO-ELECTRIC DEVICES FOR MICROWAVE PHOTONICS

T. Kawanishi[1,2], A. Uno[1], K. Inagaki[1,2], A. Kanno[2], N. Yamamoto[2]

[1]Waseda University, Japan; [2]National Institute of Information and Communications Technology, Japan

09:00 D1-3 (Invited) PLASMONIC ORGANIC HYBRID MACH-ZEHNDER MODULATORS: EXPERIMENTAL CHARACTERIZATION OF INTERMODULATION DISTORTIONS

M. Burla[1], C. Hoessbacher[1], W. Heni[1], C. Haffner[1], Y. Fedoryshyn[1], D. L. Elder[2], L. R. Dalton[2], J. Leuthold[1]

[1]Institute of Electromagnetic Fields, ETH Zurich, Switzerland; [2]University of Washington, United States

Monday, August 21, 2017 **08:20-09:20** **513C**

DB2 Microwave and Millimeter Wave Identification and Sensing (1)

Session Chairs: Ville Viikari, Smail Tedjini, Arnaud Vena

08:20 DB2-1 (Invited) INTELLIGENT ANTENNA SENSING SYSTEM FOR INTERNET OF THINGS

H. Huang, J. Hung, D. Loomis, *Maxim Integrated, United States*

08:40 DB2-2 EXPLOITATION OF CHIPLESS RFID TECHNOLOGY FOR HUMIDITY MONITORING

M. Borgese, F. A. Dicandia, F. Costa, S. Genovesi, G. Manara, *Università di Pisa, Italy*

09:00 DB2-3 A BIOPOLYMER-BASED UHF RFID SENSOR FOR HUMIDITY MONITORING

Y. Belaizi, A. Vena, B. Sorli, F. Bibi, *Institut d'Électronique et des Systèmes (IES) Université de Montpellier, France*

Monday, August 21, 2017 **08:20-09:20** **513EF**

E8 EMC in Complex Systems (1)

Session Chairs: Pierre Degauque, Ferran Silva

08:20 E8-1 INCREASING EMC AWARENESS IN MASS URBAN TRANSPORT SYSTEMS: CASE STUDY METRO LISBON

E. H. W. M. Smulders, *Movares, Netherlands*; P. P. G. G. Goncalves, *Infraestruturas de Portugal, Portugal*

08:40 E8-2 EXPERIMENTAL ASSESSMENT OF OVER-TESTING PROBABILITY IN BULK CURRENT INJECTION AS AN ALTERNATIVE TEST PROCEDURE TO RADIATED SUSCEPTIBILITY VERIFICATIONS

L. Badini, G. Spadacini, F. Grassi, S. A. Pignari, *Politecnico di Milano, Italy*; P. Bisognin, P. Pelissou, *Aibus Defence and Space, France*

09:00 E8-3 SCALABLE MODELING STRATEGY FOR EM INTERACTIONS IN COMPOSITE ELECTRIC AIRCRAFTS

W. Dyab, A. Sakr, K. Wu, *Polytechnique Montreal, Canada*; J.-P. Parmantier, I. Junqua, S. Bertuol, T. Volpert, *ONERA – The French Aerospace Lab, France*; C. Girard, G. Prin, *AXESSIM, Parc d'innovation, France*; A. Guidoni, G. M. Sammarone, *IDS, Italy*; F. Moupfouma, W. Tse, *Bombardier Aerospace, Canada*; K. Nuyten, A. Blommers, *Fokker Elmo B.V., Netherlands*

Monday, August 21, 2017 **08:20-09:20** **510BD**

F1 Microwave Remote Sensing of the Cryosphere (1)

Session Chairs: Martti Hallikainen, Jiancheng Shi

08:20 F1-1 (Invited) WHAT CAN SPACEBORNE LOW FREQUENCY MICROWAVE OBSERVATIONS TELL US ABOUT SEA ICE?

G. Heygster[1], C. Patilea[1], M. Huntemann[1,2], G. Spreen[1], L. T. Pedersen[3], F. Aires[4]

[1]University of Bremen, Germany; [2]Alfred-Wegener-Institute, Germany; [3]Danish Meteorological Institute, Denmark; [4]Observatoire de Paris, France

08:40 F1-2 (Invited) THE ULTRA-WIDEBAND SOFTWARE DEFINED MICROWAVE RADIOMETER (UWBRAD) FOR ICE SHEET SUBSURFACE TEMPERATURE SENSING: PROJECT OVERVIEW AND INITIAL CAMPAIGN RESULTS

M. J. Andrews[1], H. Li[1], J. Johnson[1], K. C. Jezek[1], A. Bringer[1], C. Yardim[1], C.-C. Chen[1], D. Belgiovane[1], V. Leuski[2], M. Durand[1], Y. Duan[1], G. Macelloni[3], M. Brogioni[3], S. Tan[4], L. Tsang[4]

[1]*Ohio State University, United States;* [2]*Microwave Radiometers and Antennas, United States;* [3]*Institute of Applied Physics, Italy;* [4]*University of Michigan, United States*

09:00 F1-3 (Invited) COMPARISON OF THEORETICAL AND EXPERIMENTAL BRIGHTNESS TEMPERATURES FOR SNOW ON TERRAIN AND SNOW ON LAKE ICE

M. T. Hallikainen, *Aalto University, Finland*

Monday, August 21, 2017 **08:20-09:20** **514B**

FK2 Various Aspects of Body Area Networks

Session Chairs: Slawomir Ambroziak, Luis Correia

08:20 FK2-1 (Invited) RADIO CHANNEL MEASUREMENTS IN 868 MHZ OFF-BODY COMMUNICATIONS IN A FERRY ENVIRONMENT

K. K. Cwalina, S. J. Ambroziak, P. Rajchowski, *Gdansk University of Technology, Poland*; L. M. Correia, *University of Lisbon, Portugal*

08:40 FK2-2 (Invited) RADIO CHANNEL MEASUREMENTS IN OFF-BODY COMMUNICATIONS IN A FERRY PASSENGER CABIN

P. T. Kosz, S. J. Ambroziak, *Gdansk University of Technology, Poland*; L. M. Correia, *University of Lisbon, Portugal*

09:00 FK2-3 ASSIMILATING OPTICAL AND RADIO DATA FROM E-POP

H. G. James, G. W. Perry, L. L. Cogger, A. D. Howarth, *The University of Calgary, Canada*

Monday, August 21, 2017 **08:20-09:20** **511BE**

G1 Data Assimilation Modeling (1)

Session Chairs: Ivan Galkin, Bruno Nava, Robert Schunk

08:20 G1-1 (Invited) ON THE USE OF THE LOCAL ENSEMBLE TRANSFORM KALMAN FILTER (LETKF) FOR IONOSPHERIC DATA ASSIMILATION

M. J. Angling, S. Elvidge, *University of Birmingham, United Kingdom*

08:40 G1-2 (Invited) ASSIMILATIVE MODELING OF IONOSPHERIC DYNAMICS FOR NOW-CASTING OF HF PROPAGATION CHANNELS IN THE PRESENCE OF TIDS

L. J. Nickisch, S. V. Fridman, M. A. Hausman, S. Kraut, *NorthWest Research Associates, United States*; G. Zunich, *Zunicalc, United States*

09:00 G1-3 DEVELOPMENTS IN AN HF NOWCASTING MODEL FOR TRANS-POLAR AIRLINE ROUTES

H. A. H. AL-Behadili, E. M. Warrington, A. J. Stocker, D. R. Siddle, *University of Leicester, United Kingdom*; F. Honary, N. C. Rogers, *Lancaster University, United Kingdom*; N. Y. Zaalov, *Saint Petersburg State University, Russia*; D. H. Boteler, D. W. Danskin, *Natural Resources Canada, Canada*

Monday, August 21, 2017 **08:20-09:20** **511CF**

H1 Wave-Particle Interactions and Their Effects on Planetary Radiation Belts (1)

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

08:20 H1-1 (Invited) UNDERSTANDING THE TERRESTRIAL RADIATION BELT ELECTRON SCATTERING EFFECTS OF PLASMASPHERIC HISS, MAGNETOSONIC WAVES AND EMIC WAVES

B. Ni, X. Gu, S. Fu, R. Shi, *Wuhan University, China (CIE)*

08:40 H1-2 GENERATION MECHANISM OF PLASMASPHERIC HISS AND ASSOCIATED ENERGETIC ELECTRON DYNAMICS

Y. Omura, S. Nakamura, *Kyoto University, Japan*; M. Hikishima, *JAXA, Japan*; D. Summers, *Memorial University of Newfoundland, Canada*; C. A. Kletzing, *University of Iowa, USA*

09:00 H1-3 (Invited) QUANTITATIVE ASSESSMENT OF EARTH'S RADIATION BELT ELECTRON DYNAMICS

W. Li[1,2], Q. Ma[2,1], R. M. Thorne[2]

[1]Boston University, United States; [2]University of California, Los Angeles, United States

Monday, August 21, 2017 **08:20-09:00** **516AB**

K1 Biomedical Applications of Low Frequency EMF Including TMS, DBS, MRI and MP (1)

Session Chair: Frank Prato

08:20 K1-1 (Invited) MR-IMAGING OF PHYSIOLOGICAL MICROENVIRONMENTS USING COMPUTER-CONTROLLED MAGNETOTACTIC BACTERIA LABELED WITH SUPERPARAMAGNETIC NANOPARTICLES

S. Martel, *Polytechnique Montreal, Canada*

Monday, August 21, 2017 **09:40-10:40** **511AD**

A2 Measurements of Isotropic and Anisotropic Magnetodielectrics (2)

Session Chairs: Steven Weiss, Amir Zaghloul

09:40 A2-1 CHARACTERIZATION AND DESIGN OF ELASTOMERIC MAGNETODIELECTRIC MATERIALS FOR RADAR ABSORBER STRUCTURES

A. Dalkilic, D. Dogan, M. E. Inal, *ASELSAN Inc., Turkey*

10:00 A2-2 WIDEBAND CYLINDRICAL DIELECTRIC RESONATOR ANTENNA OPERATING IN HEM11? MODE WITH IMPROVED GAIN: AN EFFECT OF SUPERSTRATE AND PARASITIC SHEET

S. K. K. Dash, T. Khan, *NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR, ASSAM, INDIA, India*

10:20 A2-3 CIRCULARLY POLARIZED DUAL-BAND CYLINDRICAL DIELECTRIC RESONATOR ANTENNA FOR CUBESAT APPLICATIONS

M. Borthakur, T. Khan, S. K. K. Dash, *NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR, INDIA*

Monday, August 21, 2017 **09:40-10:00** **510AC**

B2 B-Tutorial Sergei Tretyakov: "Metasurfaces: Synthesis for Perfect Refraction and Reflection of Waves into Arbitrary Directions

Session Chair: Ari Sihvola

09:40 B2-1 (Invited) METASURFACES: SYNTHESIS FOR PERFECT REFRACTION AND REFLECTION OF WAVES INTO ARBITRARY DIRECTIONS

S. Tretyakov, *Aalto University, Finland*

Monday, August 21, 2017 **09:40-10:40** **513A**

C2 Communications for the Smart Grid (2)

Session Chair: Jacque Palicot

09:40 C2-1 DIAGNOSTIC POTENTIAL OF FREE-SPACE RADIOMETRIC PARTIAL DISCHARGE MEASUREMENTS

A. A. Jaber[1], P. Lazaridis[1], B. I. Saeed[1], P. J. Mather[1], M. F. Q. Vieira[2], R. Atkinson[3], C. Tachtatzis[3], E. Iorkyase[3], M. Judd[4], I. A. Glover[1]

[1]University of Huddersfield, United Kingdom; [2]Universidade Federal de Campina, Brazil; [3]University of Strathclyde, United Kingdom; [4]High Frequency Diagnostics & Engineering, United Kingdom

10:00 C2-2 WIRELESS SENSOR NETWORK FOR RADIOMETRIC DETECTION AND ASSESSMENT OF PARTIAL DISCHARGE IN HV EQUIPMENT

D. W. Upton[1], B. I. Saeed[1], U. Khan[1], A. Jaber[1], H. Mohamed[1], K. Mistry[1], P. J. Mather[1], P. Lazaridis[1], M. F. Q. Vieira[2], R. Atkinson[3], C. Tachtatzis[3], E. Iorkyase[3], M. Judd[4], I. A. Glover[1]

[1]University of Huddersfield, United Kingdom; [2]Universidade Federal de Campina Grande, Brazil; [3]University of Strathclyde, United Kingdom; [4]High Frequency Diagnostics and Engineering Ltd, United Kingdom

10:20 C2-3 (Invited) A STUDY OF THE COMMUNICATION NEEDS IN MICRO-GRID SYSTEMS

C. Mavrokefalidis, D. Ampeliotis, K. Berberidis, *University of Patras, Greece*

Monday, August 21, 2017 **09:40-10:40** **513B**

D3 Microwave Photonics (2)

Session Chairs: Stavros Iezekiel, Jianping Yao

09:40 D3-1 (Invited) FIBER-BASED SMALL CELLING BACKHAULING: NETWORK PLANNING

C. Lim, C. Ranaweera, E. Wong, A. Nirmalathas, *The University of Melbourne, Australia*

10:00 D3-2 (Invited) RF INTERFERENCE MITIGATION USING PHOTONICS TECHNOLOGY

E. Ackerman, C. Cox, *Photonic Systems, Inc., United States*

10:20 D3-3 (Invited) SIMULTANEOUS MULTI-CHANNEL MICROWAVE PHOTONIC SIGNAL PROCESSING

L. R. Chen, *McGill University, Canada*

Monday, August 21, 2017 **09:40-10:40** **513C**

DB4 Microwave and Millimeter Wave Identification and Sensing (2)

Session Chairs: Ville Viikari, Smail Tedjini, Arnaud Vena

09:40 DB4-1 WIRELESS MONITORING OF A STRUCTURAL BEAM FOR POST-EARTHQUAKE DAMAGE ASSESSMENT

B. Ozbey[1], O. Kurc[2], H. V. Demir[1], V. B. Erturk[1], A. Altintas[1]

[1]Bilkent University, Turkey; [2]Middle East Technical University, Turkey

10:00 DB4-2 GESTURE RECOGNITION WITH THE CHIPLESS RIFD TECHNOLOGY

N. Barbot[1], E. Perret[1,2]

[1]University of Grenoble Alpes, LCIS, France; [2]Institut Universitaire de France, France

10:20 DB4-3 NOVEL CIRCULARLY-POLARIZED HORN ANTENNAS AND PHASE-LESS CHARACTERIZATION METHODS FOR SUB-MM-WAVE AND TERAHERTZ COMMUNICATION AND SENSING

S. Bhardwaj, N. K. Nahar, J. L. Volakis, *The Ohio State University, United States*

Monday, August 21, 2017 **09:40-10:40** **513EF**

E9 EMC in Complex Systems (2)

Session Chairs: Pierre Degauque, Ferran Silva

09:40 E9-1 DEVELOPMENT OF A TEST RIG TO MEASURE THE EM-SUSCEPTIBILITY OF AN UNMANNED AERIAL VEHICLE

F. Burghardt, H. Garbe, *Leibniz Universitaet Hannover, Germany*

10:00 E9-2 (Invited) MODELLING OF MULTI-MEGAWATT WIND TURBINES FOR EMI AND EMS INVESTIGATIONS BY A TOPOLOGICAL APPROACH

S. Fisahn, S. Koj, H. Garbe, *Leibniz Universität Hannover, Germany*

10:20 E9-3 (Invited) RISK BASED EMC FOR COMPLEX SYSTEMS

F. Leferink[1,2], J.-K. van der Ven[3], H. Bergsma[2], B. van Leersum[4]

[1]University of Twente, Netherlands; [2]THALES Nederland, Netherlands; [3]RH Marine, Netherlands; [4]Defence Material Organisation, Netherlands

Monday, August 21, 2017 **09:40-10:40** **510BD**

F3 Microwave Remote Sensing of the Cryosphere (2)

Session Chairs: Martti Hallikainen, Jiancheng Shi

09:40 F3-1 (Invited) SMAP MEASUREMENTS OF FROZEN AND THAWED SOIL

A. Colliander[1], C. Derksen[2], X. Xu[1], S. Dunbar[1], Y. Kim[3], J. Kimball[3], J. Lemmetyinen[4], A. Berg[5], S. Yueh[1]

[1]*Jet Propulsion Laboratory, California Institute of Technology, United States;* [2]*Environment Canada, Canada;* [3]*University of Montana, United States;* [4]*Finnish Meteorological Institute, Finland;* [5]*University of Guelph, Canada*

10:00 F3-2 (Invited) SNOW PARAMETER RETRIEVAL FROM WATER CYCLE OBSERVATION MISSION

J. Shi, C. Xiong, Y. Cui, *Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China*

Monday, August 21, 2017 **09:40-10:40** **511BE**

G2 Data Assimilation Modeling (2)

Session Chairs: Ivan Galkin, Bruno Nava

09:40 G2-1 ASSIMILATING DIVERSE KINDS OF DATA INTO NEQUICK 2

B. Nava[1], F. Azpilicueta[2], A. Kashcheyev[1]

[1]*The Abdus Salam International Centre for Theoretical Physics, Italy;* [2]*CONICET - Universidad Nacional de La Plata, Argentina*

10:00 G2-2 GLOBAL NOWCAST OF 3D BOTTOMSIDE IONOSPHERIC PLASMA DENSITY USING IRTAM

I. A. Galkin[1], B. W. Reinisch[1,2], D. Bilitza[3]

[1]*University of Massachusetts Lowell, United States;* [2]*Lowell Digisonde International, LLC, United States;* [3]*George Mason University, United States*

10:20 G2-3 THE USU-GAIM-FP DATA ASSIMILATION MODEL FOR IONOSPHERIC SPECIFICATIONS AND FORECASTS

L. Scherliess, R. W. Schunk, L. C. Gardner, V. Eccles, L. Zhu, J. J. Sojka, *Utah State University, United States*

Monday, August 21, 2017 **09:40-10:40** **513D**

GEH3 Seismo Electromagnetics (Lithosphere-Atmosphere- Ionosphere Coupling) (1)

Session Chairs: Sergey Pulinets, Yasuhide Hobara, Hanna Rothkaehl

09:40 GEH3-1 (Invited) CHARACTERISTICS OF 2D AND 3D STRUCTURES OF IONOSPHERIC ANOMALIES PRECEDING THE LARGE EARTHQUAKE

K. Hattori[1,1], P. Han[1,2], S. Hirooka[1], M. Yagmur[1], C. Yoshino[1], T. Kobari[1], A. Honma[1], J.-Y. Liu[3]

[1]*Chiba University, Japan;* [2]*Institute of Statistical Mathematics, Japan;* [3]*National Central University, Taiwan*

10:00 GEH3-2 (Invited) MEASURING THE SEISMO-GENERATED ELECTRIC FIELD IN THE IONOSPHERE BEFORE LARGE EARTHQUAKES

J.-Y. Liu, *National Central University, Taiwan*; K. Hattori, *Chiba University, Japan*

10:20 GEH3-3 (Invited) IONOSPHERE SOUNDING FOR PRE-SEISMIC ANOMALIES IDENTIFICATION (INSPIRE): RESULTS AND PERSPECTIVES

A. Krankowski[1], S. Pulinets[1,2], M. Hernandez-Pajares[3], I. I. Cherniak[1], I. Zakharenkova[1], H. Rothkaehl[4]

[1]*University of Warmia and Mazury, Poland;* [2]*Space Research Institute of Russian Academy of Sciences, Russia;* [3]*Politechnical University of Cataluna, Spain;* [4]*Space Research Centre, Polish Academy of Sciences, Poland*

Monday, August 21, 2017 **09:40-10:40** **511CF**

H2 Wave-Particle Interactions and Their Effects on Planetary Radiation Belts (2)

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

09:40 H2-1 RECENT RESULTS FROM THE ELECTRIC AND MAGNETIC FIELD INSTRUMENT SUITE AND INTEGRATED SCIENCE (EMFISIS) ON THE VAN ALLEN PROBES

C. Kletzing, *University of Iowa, United States*

10:00 H2-2 LARGE-AMPLITUDE UPPER-BAND CHORUS EMISSIONS OBSERVED BY VAN ALLEN PROBES

Y. Kubota[1,2], C. Kletzing[2], Y. Omura[1], G. Reeves[3]

[1]Research Institute for Sustainable Humanosphere, Kyoto University, Japan; [2]Department of Physics and Astronomy, University of Iowa, USA; [3]Los Alamos National Laboratory, USA

10:20 H2-3 PROMPT MEV RADIATION BELT ELECTRON ACCELERATION IN NON-LINEAR INTERACTIONS WITH VLF CHORUS

J. C. Foster, P. J. Erickson, *Massachusetts Institute of Technology, United States*; Y. Omura, *Kyoto University, Japan*; D. N. Baker, *University of Colorado Boulder, United States*; C. A. Kletzing, *University of Iowa, United States*; S. G. Claudepierre, *The Aerospace Corporation, United States*

Monday, August 21, 2017 **09:40-10:40** **516DE**

J3 Receivers and Radiometers: Design & Calibration (2)

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth, Richard Bradley, Miroslav Pantaleev

09:40 J3-1 (Invited) LOW-NOISE RECEIVERS FOR MID FREQUENCY APERTURE ARRAYS AND THEIR DEVELOPMENTS

W. A. van Cappellen, J. G. Bij de Vaate, *ASTRON, Netherlands*

10:00 J3-2 (Invited) ON THE PERFORMANCE LIMITS OF THE SKA1-MID REFLECTOR SYSTEM

R. Lehmensiek, *EMSS Antennas (Pty) Ltd, South Africa*; D. I. de Villiers, *University Stellenbosch, South Africa*

10:20 J3-3 (Invited) WIDE BAND SINGLE PIXEL FEED ADVANCED INSTRUMENTATION PROGRAM FOR SKA

B. Billade, *Onsala Space Observatory, Sweden*

Monday, August 21, 2017 **09:40-10:40** **514A**

J4 Digital Signal Processing Hardware (2)

Session Chairs: Albert Boonstra, Dan Werthimer

09:40 J4-1 WHAT NEXT FOR CASPER? THE FUTURE OF THE COLLABORATION FOR ASTRONOMY SIGNAL PROCESSING AND ELECTRONICS RESEARCH

J. Hickish, D. Werthimer, *UC Berkeley, United States*

10:00 J4-2 HERA NODE ARCHITECTURE AND SIGNAL PROCESSING

Z. Abdurashidova, *UC Berkeley, United States*

10:20 J4-3 THE CHIME GPU CORRELATOR X-ENGINE: CONSTRAINTS, PERFORMANCE, AND OPTIMIZATIONS

N. Denman, *University of Toronto, Canada*

Monday, August 21, 2017 **09:40-10:40** **516AB**

K2 Biomedical Applications of Low Frequency EMF Including TMS, DBS, MRI and MP (2)

Session Chair: Frank Prato

09:40 K2-1 (Invited) USING MAGNETOSOME GENES FOR MRI REPORTER GENE EXPRESSION

Q. Sun[1,2,2], S. C. Donnelly[1], F. S. Prato[1,2,2], D. E. Goldhawk[1,2,2]

[1]Lawson Health Research Institute, Canada; [2]Western University, Canada

10:20 K2-2 QUANTITATIVE ASSESSMENT OF THE FOCALITY OF A DOUBLE-D COIL IN THE HUMAN BRAIN

Y. Kawasaki[1], K. Hosomi[2], K. Yamamoto[3], S. Hara[3], Y. Abe[3], Y. Saitoh[2], M. Sekino[3]

[1]The University of Tokyo, Japan; [2]Osaka University, Japan; [3]The Univerisity of Tokyo, Japan

---

Monday, August 21, 2017 **11:00-12:00** **517CD**

L0 General Lecture 1: Michael Kramer - 'Exploring Gravity'

11:00 L0-1 (Invited) EXPLORING GRAVITY AND GRAVITATIONAL WAVES

M. Kramer, *Max-Planck-Institute fuer Radioastronomie, Germany*

Monday, August 21, 2017 **13:20-14:20** **511AD**

A3 Commission A Open Session

Session Chairs: Yasuhiro Koyama, Patrizia Tavella

13:20 A3-1 REFERENCE STANDARD FOR MILLIMETER-WAVE POWER PRIMARY STANDARDS SYSTEM

J.-Y. Kwon[1,2], Y.-P. Hong[1], D.-J. Lee[1,2], N.-W. Kang[1]

[1]KRISS, South Korea; [2]UST, South Korea

13:40 A3-2 UNCERTAINTY ANALYSIS OF CIRCULAR IRIS WAVEGUIDE VERIFICATION STANDARD FOR VECTOR NETWORK ANALYZERS

N. Shoaib, *National University of Sciences and Technology (NUST), Pakistan*; S. Shoaib, *HITEC University, Pakistan*

14:00 A3-3 METHOD FOR AUTOMATICALLY VALIDATING THE SIGNAL WITH PEAK AND OSCILLATION USING FEATURE SELECTIVE VALIDATION(FSV)

W. Du, N. Fang, Y. Xie, *Beihang University, China (CIE)*

Monday, August 21, 2017 **13:20-14:20** **510AC**

B3 Electromagnetic Theory (2)

Session Chairs: Daniel Sjöberg, Ben Steinberg

13:20 B3-1 FORCE TRACING AND ITS APPLICATION IN OPTICAL MANIPULATION

A. Akbarzadeh, *FORTH, Greece*; C. Caloz, *Polytechnique Montreal, Canada*

13:40 B3-2 (Invited) EMBEDDED EIGENSTATES AND COHERENT VIRTUAL ABSORPTION IN METAMATERIAL STRUCTURES

A. Alu[1], D. L. Sounas[1], F. Monticone[1,2], A. Krasnok[1]

[1]The University of Texas at Austin, United States; [2]Cornell University, United States

14:00 B3-3 (Invited) METAMATERIAL MEDIATED EM WAVE AMPLIFICATION

R. Seviour, *University of Huddersfield, United Kingdom*

Monday, August 21, 2017 **13:20-14:20** **513A**

C3 Enabling Technologies for Smart Cities (1)

Session Chair: Hongjian Sun

13:20 C3-1 SMART PHYSICAL LAYER BASED DIRECTIONAL COMMUNICATION NETWORKING

F. A. Qazi, M. F. Iskander, Z. Yun, G. Sasaki, S. M. M. Islam, *University of Hawaii at Manoa, United States*

13:40 C3-2 VSR5 OPTICAL 4×10GBPS CONVERTER IC AND 12×10GBPS VCSEL OPTICAL MODULE DESIGN

P. Miao, L. Tian, W. Zhu, Z. Song, W. Li, *Southeast University, China (CIE)*

14:00 C3-3 AN INSET FED SQUARE MICROSTRIP PATCH ANTENNA TO IMPROVE THE RETURN LOSS CHARACTERISTICS FOR 5G APPLICATIONS

B. G. Hakanoglu, *Ahi Evran University, Turkey*; M. Turkmen, *Erciyes University, Turkey*

Monday, August 21, 2017 **13:20-14:20** **514B**

CA4 Channel Measurements, Characterization and Verification through Electromagnetic Metrology and Measurement Post Processing (1)

Session Chairs: Jeanne QUIMBY, Sana Salous

13:20 CA4-1 AN X-BAND RADIO CHANNEL MODEL FOR PROPAGATION THROUGH THE SOLAR CORONA

A. J. Stocker, D. R. Siddle, E. M. Warrington, *University of Leicester, United Kingdom*; G. Mariotti, D. Silvestri, A. Zeqai, P. Tortora, *University of Bologna, Italy*; A. Argyriou, *University of Thessaly, Greece*; J. De Vicente, R. Abello, M. Mercolino, *ESA, Germany*

13:40 CA4-2 CHANNEL MODELING USING SOFTWARE DEFINED RADIO BASED SLIDING CORRELATOR CHANNEL SOUNDER

H.-C. Liu, J.-Y. Lin, Y.-H. Zhang, *National Taiwan University of Science and Technology, Taiwan*; C. L. Lin, *National Chung-Shan Institute of Science and Technology, Taiwan*

14:00 CA4-3 CHANNEL PROPAGATION EXPERIMENTAL MEASUREMENTS AND SIMULATIONS AT 52 GHZ

B. Montenegro-Villacieros[1], S. Salous[2], J. Bishop[1], X. Raimundo[2]

[1]JRC, Italy; [2]University of Durham, United Kingdom

Monday, August 21, 2017 **13:20-14:20** **513B**

D5 D-Tutorial J Leuthold: "The Path towards 100 Gbit/s Wireless Communications

Session Chair: Günter Steinmeyer

13:20 D5-1 (Invited) THE PATH TOWARDS 100 GBIT/S WIRELESS COMMUNICATIONS

J. Leuthold, R. Bonjour, M. Burla, C. Haffner, W. Heni, C. Hoessbacher, Y. Salamin, Y. Fedoryshyn, *ETH Zurich, Switzerland*

Monday, August 21, 2017 **13:20-14:40** **513C**

DB6 Microwave and Millimeter Wave Identification and Sensing (3)

Session Chairs: Ville Viikari, Smail Tedjini, Arnaud Vena

13:20 DB6-1 RADAR CROSS SECTION BASED DUAL-BAND DUAL-POLARIZED HUMIDITY SENSING TAG

R. Raju, G. E. Bridges, *Universtiy of Mantioba, Manitoba*

13:40 DB6-2 ANTIPODAL FERMI TAPERED SLOT ANTENNA ARRAY WITH SIW-BASED FEEDING NETWORK FOR 60-GHZ POINT TO POINT COMMUNICATIONS

I. M. Mohamed, A. Sebak, *Concordia University, Canada*

14:00 DB6-3 WIDE-BAND MILLIMETRE WAVE DOWN-CONVERTER BASED ON SIX-PORT CIRCUIT FOR RADAR AND SENSING APPLICATIONS

H. Arab Salmanabadi, C. Akyel, S. Tatu, *INRS, Canada*

14:20 DB6-4 COMPACT W-BAND ANTENNA FOR POLARIZATION DIVERSITY APPLICATIONS

A. B. Numan, J.-F. Frigon, J.-J. Laurin, *Polytechnique Montreal, Canada*

Monday, August 21, 2017 **13:20-14:20** **513EF**

E10 High-Power Electromagnetics (1)

Session Chairs: Robert Gardner, Dave Giri

13:20 E10-1 (Invited) ELECTRICAL BREAKDOWN STRENGTHS OF VARIOUS GASSES AND GAS MIXTURES

D. V. Giri, *Pro-Tech, United States*; V. Carboni, *L3 Communications, United States*; J. M. Lehr, *University of New Mexico, United States*

13:40 E10-2 (Invited) UPSET MODELING

R. L. Gardner, *Consultant, United States*

14:00 E10-3 RECOMMENDED IMPROVEMENTS FOR MIL-STD-188-125-1

W. A. Radasky, *Metatech Corporation, United States*; S. N. Longoria, *ETS-Lindgren, United States*

Monday, August 21, 2017 **13:20-14:20** **510BD**

F5 Microwave Remote Sensing of Vegetation and Terrestrial Snow

Session Chairs: Paolo Pampaloni, Simonetta Paloscia

13:20 F5-1 MODELING AND MEASUREMENT OF MULTI-FREQUENCY MICROWAVE EMISSION OF SOIL FREEZING AND THAWING PROCESSES

T. Zhao, J. Shi, *Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China*

13:40 F5-2 (Invited) MICROWAVE EMISSION ANALYSIS OVER LONG-TERM TIME SERIES OF SNOW DATA COLLECTED IN ITALIAN ALPS

S. Paloscia, E. Santi, P. Pampaloni, S. Pettinato, *IFAC/CNR, Italy*; X. Chuan, *RADI-CAS, China*; A. Crepaz, *Avalanche Center Arabba, Italy*

14:00 F5-3 (Invited) CRYORAD: A SPACEBORNE ULTRAWIDEBAND MICROWAVE RADIOMETER FOR THE OBSERVATION OF CRYOSPHERE AND THE MONITORING OF PERMAFROST.

G. Macelloni, M. Brogioni, F. Montomoli, M. Leduc-Leballeur, E. Santi, *IFAC - CNR, Italy*; S. Varchetta, *Thales Alenia Space, Italy*; J. Johnson, K. Jezek, *ElectroScience Laboratory, The Ohio State University, USA*

Monday, August 21, 2017 **13:20-14:20** **513D**

GEH4 Seismo Electromagnetics (Lithosphere-Atmosphere- Ionosphere Coupling) (2)

Session Chairs: Sergey Pulinets, Yasuhide Hobara, Hanna Rothkaehl

13:20 GEH4-1 GROUND-BASED VERTICAL SOUNDING OF THE IONOSPHERE TO IDENTIFY POSSIBLE IONOSPHERIC PRECURSORS OF EARTHQUAKE USING PARAMETERS OF MID-LATITUDE F2 AND ES LAYERS IN THE REGION OF THE KAMCHATKA PENINSULA USING POST-EVENT DATA PROCESSING (AIGNOS)

L. P. Korsunova, V. V. Hegai, *Pushkov Institute of Terrestrial Magnetism, Ionosphere and Radiowave Propagation RAS, Russian Federation*; S. A. Pulinets, *Space Research Institute, Russian Academy of Sciences, Russian Federation*

13:40 GEH4-2 PRE- EARTHQUAKE EFFECTS IN ATMOSPHERE AND IONOSPHERE REVEALED BY SATELLITE AND VLF/LF OBSERVATIONS

D. Ouzounov[1], A. Rozhnoi[2], M. Solovieva[2], M. Hayakawa[3], P. F. Biagi[4], S. Pulinets[2], H. Eichelberger[5], K. Schwingenschuh[5], V. Fedun[6]

[1]*Chapman University, United States;* [2]*Russian Academy of Sciences, Russia;* [3]*University of Electro-Communications, Japan;* [4]*University of Bari, Italy;* [5]*Austrian Academy of Sciences, Austria;* [6]*University of Shef?eld, UK*

14:00 GEH4-3 IONOSPHERIC DISTURBANCES ASSOCIATED WITH VOLCANIC ERUPTIONS OBSERVED BY GPS-TEC AND HF DOPPLER SOUNDING

A. Chonan, H. Nakata, H. Ohya, T. Takano, *Chiba University, Japan*; I. Tomizawa, *The University of Electro-Communications, Japan*; T. Tsugawa, M. Nishioka, *National Institute of Information and Communications Technology, Japan*

Monday, August 21, 2017 13:20-14:20 515ABC

GH5 Plasma Instabilities in the Ionosphere (1)

Session Chairs: Frank Lind, Robert Pfaff

13:20 GH5-1 (Invited) MID-LATITUDE E REGION PLASMA IRREGULARITIES OBSERVED DURING STORM AND QUIET CONDITIONS USING MULTI-STATIC, MULTI-FREQUENCY RADAR OBSERVATIONS

J. L. Chau[1], J.-P. St. Maurice[2], J. P. Vierinen[3], M. Urco[1]

[1]*Leibniz Institute of Atmospheric Physics at the University of Rostock, Germany;* [2]*University of Saskatchewan, Canada;* [3]*The Arctic University of Norway, Norway*

13:40 GH5-2 (Invited) THE ICEBEAR RADAR: A NEW FULLY DIGITAL 50-MHZ VHF BISTATIC RADAR FOR E-REGION RADAR OBSERVATIONS AND RESEARCH

G. C. Hussey, D. R. Huyghebaert, K. A. McWilliams, J.-P. St.-Maurice, *University of Saskatchewan, Canada*

14:00 GH5-3 MID-LATITUDE E REGION IRREGULARITY EXCITED BY KELVIN HELMHOLTZ INSTABILITY

Y. Liu, C. Zhou, X. Gu, B. Ni, Z. Zhao, *Wuhan University, China (CIE)*

Monday, August 21, 2017 13:20-14:20 511CF

H3 Wave-Particle Interactions and Their Effects on Planetary Radiation Belts (3)

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

13:20 H3-1 METHOD FOR DIRECT DETECTION OF PITCH ANGLE SCATTERING CAUSED BY PLASMA WAVES

M. Kitahara, Y. Katoh, *Tohoku University, Japan*

13:40 H3-2 STATISTICAL PROPERTIES OF PLASMASPHERIC HISS FROM VAN ALLEN PROBES

D. P. Hartley, C. A. Kletzing, S. R. Bounds, W. S. Kurth, G. B. Hospodarsky, *University of Iowa, United States*; O. Santolik, *Institute of Atmospheric Physics, Czech Republic*; R. B. Horne, *British Antarctic Survey, UK*

14:00 H3-3 (Invited) INITIAL REPORT OF THE PLASMA WAVE EXPERIMENT (PWE) ONBOARD THE ARASE (ERG) SATELLITE

Y. Kasahara[1], Y. Kasaba[2], H. Kojima[3], S. Yagitani[1], K. Ishisaka[4], A. Kumamoto[2], F. Tsuchiya[2], T. Imachi[1], M. Ozaki[1], S. Matsuda[5], M. Hikishima[6], Y. Katoh[2], A. Matsuoka[6], Y. Miyoshi[5], I. Shinohara[6]

[1]Kanazawa University, Japan; [2]Tohoku University, Japan; [3]Kyoto University, Japan; [4]Toyama Prefectural University, Japan; [5]Nagoya University, Japan; [6]ISAS/JAXA, Japan

Monday, August 21, 2017 **13:20-14:20** **516DE**

J5 Receivers and Radiometers: Design & Calibration (3)

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth, Richard Bradley, Miroslav Pantaleev

13:20 J5-1 (Invited) THE LOW FREQUENCY RECEIVERS FOR SKA1-LOW: DESIGN AND VERIFICATION

P. Benthem, M. Gerbers, J. G. Bij de Vaaate, S. Wijnholds, J. Bast, *ASTRON, Netherlands*; T. Booler, T. Colgate, B. Crosse, D. Emrich, P. Hall, B. Juswardy, D. Kenney, F. Schlagenhaufer, M. Sokolowski, A. Sutinjo, D. Ung, R. Wayth, A. Williams, *ICRAR/Curtin University, Australia*; M. Alderighi, P. Bolli, G. Comoretto, A. Mattana, J. Monari, G. Naldi, F. Perini, G. Pupillo, S. Rusticelli, M. Schiaffino, F. Schilliro, *INAF, Italy*; A. Aminei, R. Chiello, M. Jones, *University of Oxford, United Kingdom*; J. Baker, R. Bennett, R. Halsall, *STFC RAL, Scotland*

13:40 J5-2 A 275–500 GHZ HETERODYNE RECEIVER WITH HIGH-JC SIS JUNCTIONS: CONCEPT AND MEASUREMENTS

M. Kroug, S. Ezaki, K. Uemizu, T. Kojima, *National Astronomical Observatory of Japan, Japan*

14:00 J5-3 WAVEGUIDE RECEIVER DESIGN PROTOTYPES FOR THE 211-275 GHZ AND 790-950 GHZ FREQUENCY RANGES

K. I. Rudakov[1,2,3], P. N. Dmitriev[3], A. M. Baryshev[2,4], A. V. Khudchenko[2], R. Hesper[2], O. S. Kiselev[3], V. P. Koshelets[3]

[1]Moscow Institute of Physics and Technology, Russia; [2]University of Groningen, the Nederlands; [3]Kotel'nikov Institute of Radio Engineering and Electronics RAS, Russia; [4]SRON Netherlands Institute for Space Research, the Nederlands

Monday, August 21, 2017 **13:20-14:20** **514A**

JG8 Ionospheric Models and their Validation (1)

Session Chairs: Stefan Wijnholds, Sean Elvidge

13:20 JG8-1 A COMMUNITY WIDE IONOSPHERIC MODELLING CHALLENGE

S. Elvidge[1], M. J. Angling[1], M. Codrescu[2], M. Fedrizzi[2], I. A. Galkin[3], M. Hernandez-Pajares[4], N. Jackson-Booth[5], B. Nava[6], A. Ridley[7], D. Roma-Dollase[4]

[1]University of Birmingham, United Kingdom; [2]Space Weather Prediction Center, USA; [3]University of Massachusetts Lowell, USA; [4]Universitat Politècnica de Catalunya, Spain; [5]QinetiQ, United Kingdom; [6]The Abdus Salam International Centre for Theoretical Physics, Italy; [7]University of Michigan, USA

13:40 JG8-2 (Invited) CONSTRAINING IONOSPHERIC MODELS WITH RADIO INTERFEROMETRIC SELF-CALIBRATION DATA

S. J. Wijnholds, *ASTRON, Netherlands*

14:00 JG8-3 (Invited) THE EFFECT OF THE IONOSPHERE ON ASTRONOMICAL OBSERVATIONS BELOW 100 MHZ

F. de Gasperin[1], M. Mevius[2], H. Intema[1]

[1]Leiden University, Netherlands; [2]ASTRON, Netherlands

Monday, August 21, 2017 **13:20-14:20** **516AB**

KBE3 Uncertainty Management and Stochastic Methods in Experimental and Numerical Electromagnetism, Environmental Exposure Assessment and Dosimetry (1)

Session Chairs: Gabriele Gradoni, Joe Wiart, Ari Sihvola

13:20 KBE3-1 ESTIMATION OF UNCERTAINTY FOR ASSESSMENT OF HUMAN EXPOSURE LEVELS AT LOW FREQUENCY

B. C. Kim, S. B. Jeon, J.-I. Moon, S.-W. Kim, S.-M. Kim, I.-K. Cho, *ETRI, South Korea*

13:40 KBE3-2 IMPACT OF UNCERTAIN TRANSCRANIAL MAGNETIC STIMULATION COIL POSITION AND ORIENTATION IN THE STIMULATION FOR A MOTOR CORTEX

C. Li, *China Academy of Information and Communications Technology, China*

14:00 KBE3-3 STOCHASTIC DOSIMETRY FOR THE ASSESSMENT OF THE FETAL EXPOSURE TO 4G LTE TABLET IN REALISTIC SCENARIOS

E. Chiaramello, M. Parazzini, S. Fiocchi, P. Ravazzani, *Consiglio Nazionale delle Ricerche, Italy*; J. Wiart, *University Paris Saclay, France*

Monday, August 21, 2017 **15:00-16:00** **510AC**

B4 Electromagnetic Theory (3)

Session Chairs: Daniel Sjöberg, Ben Steinberg

15:00 B4-1 THEORY AND APPLICATIONS OF EXCEPTIONAL POINTS OF DEGENERACIES IN GAIN AND LOSS BALANCED DEVICES

M. Othman, F. Capolino, *University of California, Irvine, United States*

15:20 B4-2 (Invited) RELAXATION OF SOME NON-CONVEX CONSTRAINTS FOR Q-FACTOR OPTIMIZATION

B. L. G. Jonsson, S. Shi, L. Wan, *KTH Royal Institute of Technology, Sweden*

15:40 B4-3 (Invited) FUNDAMENTAL LIMITS ON THE MIMO CAPACITY USING SEMIDEFINITE PROGRAMMING

M. Gustafsson, C. Ehrenborg, *Lund University, Sweden*

Monday, August 21, 2017 **15:00-16:00** **513A**

C5 Enabling Technologies for Smart Cities (2)

Session Chair: Hongjian Sun

15:00 C5-1 PACKET SEGMENTATION FOR CONTENTION-BASED TRANSMISSION IN 5G

X. Tuo[1], F. Wang[1], Z. Zhao[2], Y. Zhang[2], D. Wang[1]

[1]State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, China (CIE); [2]Nokia Beijing Bell Lab, China (CIE)

15:20 C5-2 URBAN TRAFFIC INCIDENT DETECTION WITH MOBILE SENSORS BASED ON SVM

B. Pan, H. Wu, *Beijing Jiaotong University, China (CIE)*

15:40 C5-3 SA-BASED ORBITAL DESIGN METHOD FOR GEO-BISAR RESOLUTION IMPROVEMENT

Y. Cheng, S. Zhang, B. Zhao, C. Hu, *University of Electronic Science and Technology of China, China (CIE)*

Monday, August 21, 2017 **15:00-16:00** **514B**

CA6 Channel Measurements, Characterization and Verification through Electromagnetic Metrology and Measurement Post Processing (2)

Session Chairs: Jeanne QUIMBY, Sana Salous

15:00 CA6-1 METROLOGY-GRADE CHANNEL SOUNDER VERIFICATION AT MMWAVES FREQUENCIES

J. Quimby[1], D. Williams[1], K. Remley[1], P. Papazian[1], D. Ribeiro[2], J. Senic[1]

[1]NIST, United States; [2]University of Aveiro, Portugal

15:20 CA6-2 ANALYSIS AND SELECTION OF PROPAGATION MODELS FOR BROADCAST AND MOBILE SERVICES IN URBAN AREAS IN COLOMBIA

M. Patino[1], A. Rangel[1], J. Balbastre[2], D. Alonzo[1], Z. Lopez[1], F. Vega[1], J. Pantoja[1]

[1]Universidad Nacional de Colombia, Colombia; [2]Universitat Politècnica de València, Spain

15:40 CA6-3 A RESEARCH ON SAGE ALGORITHM BASED ON MASSIVE MIMO CHANNEL MEASUREMENTS

Q. Wang, B. Ai, R. He, J. Li, Z. Zhong, *Beijing Jiaotong University, China*; N. Li, H. Qin, *ZTE Corporation, China*

Monday, August 21, 2017 **15:00-16:00** **513B**

D7 Modeling of Electronic, Photonic and Plasmonic Devices (1)

Session Chairs: Ayhan Demircan, Jeremy Gulley

15:00 D7-1 (Invited) ULTRAFAST MECHANISM OF ENERGY-BAND MODIFICATION OF WIDE-BAND-GAP CRYSTALS BY PONDERMOTIVE POTENTIAL OF GAUSSIAN ULTRASHORT LASER PULSE

V. Gruzdev, O. Sergaeva, *University of Missouri, United States*

15:20 D7-2 SIMULATIONS OF ULTRAFAST LASER-INDUCED EXCITATION AND HEATING OF ELECTRON SUB-SYSTEM OF SEMICONDUCTORS WITH THE VINOGRADOV EQUATION AND MULTI-BAND KELDYSH FORMULA

V. Gruzdev[1], D. Austin[2], O. Sergaeva[1], E. Chowdhury[2]

[1]University of Missouri, United States; [2]The Ohio State University, United States

15:40 D7-3 (Invited) ULTRAFAST STRONG THZ-FIELD EFFECTS IN SEMICONDUCTORS

M. Kira, *University of Michigan, United States*; U. Huttner, S. W. Koch, *Philipps University Marburg, Germany*

Monday, August 21, 2017 **15:00-15:20** **513EF**

E11 High-Power Electromagnetics (2)

Session Chairs: Robert Gardner, Dave Giri

15:00 E11-1 AN INTEGRATED DESIGN METHOD FOR FUEL MEASUREMENT SYSTEM AGAINST ELECTROMAGNETIC INTERFERENCE

G. Chen, D. Su, S. Cui, Z. Peng, *Beihang University, China (CIE)*

Monday, August 21, 2017 **15:00-16:00** **510BD**

F6 Millimeter-Wave Propagation and Remote Sensing (1)

Session Chair: Albin Gasiewski

15:00 F6-1 MILLIMETER-WAVE ASTROCLIMATE INVESTIGATIONS ON BADARY OBSERVATORY NEAR BAIKAL LAKE

G. M. Bubnov[1,2], V. F. Vdovin[1,2], V. Y. Bukov[3], T. A. Makarov[2], G. N. Il'in[3], I. I. Zinchenko[1]

[1]Institute of Applied Physics RAS, Russian Federation; [2]Nizhny Novgorod State Technical University n.a. R.E. Alekseev, Russian Federation; [3]Institute of Applied Astronomy RAS, Russian Federation

15:20 F6-2 SUBMILLIMETER-WAVE LIMB SOUNDER, SMILES-2, FOR OBSERVATION OF THE STRATOSPHERE, MESOSPHERE, AND LOWER THERMOSPHERE

S. Ochiai[1], Y. Uzawa[1], Y. Irimajiri[1], P. Baron[1], T. Nishibori[2], T. Manabe[3], H. Maezawa[3], A. Mizuno[4], T. Nagahama[4], M. Suzuki[2], M. Shiotani[5]

[1]National Institute of Information and Communications Technology, Japan; [2]Japan Aerospace Exploration Agency, Japan; [3]Osaka Prefecture University, Japan; [4]Nagoya University, Japan; [5]Kyoto University, Japan

Monday, August 21, 2017 **15:00-16:40** **513D**

GEH6 Seismo Electromagnetics (Lithosphere-Atmosphere- Ionosphere Coupling) (3)

Session Chairs: Sergey Pulinets, Yasuhide Hobara, Hanna Rothkaehl

15:00 GEH6-1 COSEISMIC IONOSPHERIC DISTURBANCES AT MULTIPLE ALTITUDES ASSOCIATED WITH THE FORESHOCK OF TOHOKU EARTHQUAKE OBSERVED BY HF DOPPLER SOUNDING

H. Nakata, K. Takaboshi, T. Takano, *Chiba University, Japan*; I. Tomizawa, *The University of Electro-Communications, Japan*

15:20 GEH6-2 CO-VOLCANIC IONOSPHERIC PERTURBATIONS, OBSERVATIONS AND MODELING

E. Astafyeva, K. Shults, V. Rakoto, P. Lognonne, *IPGP, France*

15:40 GEH6-3 (Invited) VHF MODULATIONS IN THE WIRELESS SIGNALS ASSOCIATED WITH PRE-EARTHQUAKE PROCESSES

D. Ouzounov[1], S. Velichkova-Yotsova[2], S. Pulinets[3], A. Velez[1], N. Hatzopoulos[1]

[1]Chapman University, United States; [2]LAIMC project, Bulgaria; [3]Russian Academy of Sciences, Russia

16:00 GEH6-4 EARTHQUAKE LIGHTS: MECHANISM OF ENERGETIC COUPLING OF EARTH'S CRUST TO THE LOWER ATMOSPHERE

J. Jansky, V. P. Pasko, *Penn State University, United States*

16:20 GEH6-5 IMAGES OF THE BENIOFF ZONE IN THE LITHOSPHERE USING ELECTROMAGNETIC ENERGY RELEASED FROM STRESS IN TECTONIC PLATES

J. A. Heraud, V. A. Centa, *Pontificia Universidad Catolica del Peru, Peru*; T. Bleier, *Quakefinder Inc., USA*

Monday, August 21, 2017 **15:00-16:00** **515ABC**

GH7 Plasma Instabilities in the Ionosphere (2)

Session Chairs: Frank Lind, Robert Pfaff

15:00 GH7-1 (Invited) PLASMA INSTABILITY-DRIVEN MID-LATITUDE IONOSPHERIC IRREGULARITIES AND POTENTIAL CONSEQUENCES FOR RADAR AND GPS SCINTILLATION OBSERVATIONS

W. A. Scales, *Virginia Tech, United States*

15:20 GH7-2 (Invited) APPLYING LINEAR AND NONLINEAR E REGION PLASMA INSTABILITY THEORIES TO HIGH LATITUDE OBSERVATIONS.

J.-P. St-Maurice, S. Choudhury, *Institute of Space and Atmospheric Sciences, Canada (CAN)*

15:40 GH7-3 ASYMMETRY IN THE FARLEY-BUNEMAN DISPERSION RELATION CAUSED BY PARALLEL ELECTRIC FIELDS

V. V. Forsythe, R. A. Makarevich, *University of Alaska Fairbanks, Geophysical Institute, United States*

Monday, August 21, 2017 **15:00-16:00** **511CF**

H4 Wave-Particle Interactions and Their Effects on Planetary Radiation Belts (4)

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

15:00 H4-1 INTER-CALIBRATION OF VAP-HOPE PARTICLE DETECTORS TO OBTAIN THE ANISOTROPY OF ELECTRON PITCH ANGLE DISTRIBUTION

L. Juhász[1], J. Lichtenberger[1,2], Y. Omura[3], R. H. W. Friedel[4]

[1]Institute of Geography and Earth Sciences, Eotvos Lorand University, Hungary; [2]Geodetic and Geophysical Institute, RCAES, Hungary; [3]Research Institute for Sustainable Humanosphere, Kyoto University, Japan; [4]Los Alamos National Laboratory National Security Education Center, USA

15:20 H4-2 QUASI-LINEAR DIFFUSION COEFFICIENTS FOR HIGHLY OBLIQUE WHISTLER WAVES

J. M. Albert, *Air Force Research Lab, United States*

15:40 H4-3 UNUSUAL DETECTION OF LOW-FREQUENCY Z MODE WAVES NEAR THE PLASMAPAUSE BY THEMIS

U. Taubenschuss[1], O. Le Contel[2], O. Santolik[1,3]

[1]Institute of Atmospheric Physics, Czech Academy of Sciences, Czech Republic; [2]Laboratoire de Physique des Plasmas, CNRS/Ecole Polytechnique/UPMC, France; [3]Faculty of Mathematics and Physics, Charles University, Czech Republic

Monday, August 21, 2017 **15:00-16:00** **516DE**

J7 Receivers and Radiometers: Design & Calibration (4)

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth, Richard Bradley, Miroslav Pantaleev

15:00 J7-1 (Invited) MICROWAVE AND MILLIMETER-WAVE TECHNOLOGICAL DEVELOPMENTS AT YEBES OBSERVATORY

J. A. Lopez-Perez, J. A. Lopez-Fernandez, *IGN, Spain*

15:20 J7-2 (Invited) CALIBRATION OF APERTIF, THE NEW PHASED ARRAY FEED SYSTEM FOR THE WESTERBORK ARRAY

B. Hut, W. A. van Cappellen, *ASTRON, Netherlands*

15:40 J7-3 (Invited) FRONT-ENDS AND PHASED ARRAY FEEDS FOR THE SARDINIA RADIO TELESCOPE

A. Navarrini, *INAF-Astronomical Observatory of Cagliari, Italy*

Monday, August 21, 2017 **15:00-16:00** **514A**

JG10 Ionospheric Models and their Validation (2)

Session Chairs: Stefan Wijnholds, Sean Elvidge

15:00 JG10-1 (Invited) IONOSPHERIC STUDIES USING MWA AND LOFAR OBSERVATIONS

M. J. Rioja[1,2,3], R. Dodson[1], T. Franzen[4], G. Heald[2]

[1]ICRAR-UWA, Australia; [2]CSIRO, Australia; [3]Observatorio Astronomico Nacional (OAN), Spain; [4]ICRAR-Curtin, Australia

15:20 JG10-2 (Invited) TRAVELING IONOSPHERIC DISTURBANCES AND IONOSPHERIC GRADIENTS: IMPLICATIONS FOR RADIO ASTRONOMY

A. J. Coster, *MIT Haystack Observatory, United States*

15:40 JG10-3 ACCURATELY MODELLING THE IONOSPHERE AT HIGH LATITUDES USING THE ELECTRON DENSITY ASSIMILATIVE MODEL (EDAM)

R. A. Buckland, N. Jackson-Booth, R. Penney, P. Martin, *QinetiQ, United Kingdom*

Monday, August 21, 2017 **15:00-16:00** **516AB**

K4 Latest Development in Measurement and Applications of Dielectric Spectroscopy (1)

Session Chairs: Niels Kuster, Theodoros Samaras

15:00 K4-1 DIELECTRIC PROPERTIES OF HUMAN SKIN AT FREQUENCIES ABOVE 6 GHZ

P. Fallahi, A. Christ, M. Douglas, F. Muranyi, N. Kuster, *IT'IS Foundation, Switzerland*

15:20 K4-2 SIGNIFICANCE OF HETEROGENEITIES IN ACCURATE DIELECTRIC MEASUREMENTS OF BIOLOGICAL TISSUES

E. Porter, A. La Gioia, M. A. Elahi, M. O'Halloran, *National University of Ireland Galway, Ireland*

15:40 K4-3 MEASUREMENTS OF DIELECTRIC PROPERTIES OF SKIN LAYERS FROM LF TO MMW REGION

K. Wake, K. Sasaki, S. Watanabe, *National Institute of Information and Communications Technology, Japan*

Monday, August 21, 2017 **15:00-15:40** **514C**

SPC1 Student Paper Competition (1)

Session Chair: Sembiam Rengarajan

15:00 DB4-3 NOVEL CIRCULARLY-POLARIZED HORN ANTENNAS AND PHASE-LESS CHARACTERIZATION METHODS FOR SUB-MM-WAVE AND TERAHERTZ COMMUNICATION AND SENSING

S. Bhardwaj, N. K. Nahar, J. L. Volakis, *The Ohio State University, United States*

15:20 DB27-1 EFFECT OF ZERO-NONLINEARITY POINT ON OPTICAL EVENT HORIZON IN DEFOCUSED NONLINEAR MEDIA

S. Bose[1,2], R. Chattopadhyay[3], M. Pal[1], S. K. Bhadra[3]

[1]CSIR-Central Glass and Ceramaic Research Institute, India; [2]Academy of Scientific and Innovative Research, India; [3]Indian Association for the Cultivation of Science, India

Monday, August 21, 2017 **16:00-17:40** **511AD**

A4 Metrology for Wireless Power Transmission Solutions

Session Chairs: Nuno Borges Carvalho, Ke Wu

16:00 A4-1 THE NEW METHOD OF THE MICROSTRIP ANTENNAS DIAGNOSING

L. L. Nowosielski, M. M. Wnuk, *Military University of Technology, Poland*

16:20 A4-2 COOPERATIVE RADIOFREQUENCY (RF) AND PIEZOELECTRIC ENERGY HARVESTING FOR GLOBAL EFFICIENCY ENHANCEMENT

X. Gu[1], S. Hemour[2], K. Wu[1]

[1]Polytechnique Montreal, Canada; [2]University of Bordeaux, France

16:40 A4-3 REACTIVE NONLINEARITY FOR POWER HARVESTING-INSPIRED FREQUENCY DOWNCONVERTER

L. Guo[1], S. Hemour[2], K. Wu[1]

[1]Poly-GRAMES, École Polytechnique Montréal, Canada; [2]University of Bordeaux, France

17:00 A4-4 NOISE ANALYSIS OF DIFFERENTIAL WIDEBAND MILLIMETER-WAVE POWER HARVESTER IMPLEMENTED IN 65-NM BULK CMOS PROCESS

P. Burasa, K. Wu, *Ecole Polytechnique de Montréal, Canada*

17:20 A4-5 SINUSOIDAL WPT SIGNAL INTERFERER, A COMMUNICATIONS APPROACH

R. Figueiredo, N. Carvalho, *Intituto de Telecomunicações, Portugal*

Monday, August 21, 2017 **16:00-17:40** **510AC**

B5 Solutions to Canonical Problems

Session Chairs: Andrey Osipov, Paul Smith

16:00 B5-1 WAVES INTERACTION WITH MULTILAYERED CHIRAL SPHERE

Q. C. Shang, Z. S. Wu, T. Qu, G. Zhang, *Xidian University, China*; L. Gong, *Xi'an Technological University, China*

16:20 B5-2 BACKSCATTERING FROM ELECTRICALLY LARGE LOW-ABSORPTION SPHERES: AN EXPLANATION OF SOLAR GLORIES

A. V. Osipov, *Microwaves and Radar Institute, German Aerospace Center (DLR), Germany*

16:40 B5-3 (Invited) SCATTERING BY AN ELLIPTIC HALF-CYLINDER LOCATED INSIDE A DIHEDRAL REFLECTOR

D. Erricolo, F. Farzami, P. L. E. Uslenghi, *University of Illinois at Chicago, United States*

17:00 B5-4 (Invited) THE EFFECT OF ROUNDING THE CORNERS OF SCATTERING STRUCTURES: E-POLARISATION CASE

P. D. Smith, A. J. Markowskei, *Macquarie University, Australia*

17:20 B5-5 DIFFRACTION OF NONSYMMETRIC EIGENMODES BY THE END OF A SEMI-INFINITE OPEN GYROTROPIC CYLINDRICAL WAVEGUIDE

V. A. Es'kin, A. V. Kudrin, *University of Nizhny Novgorod, Russian Federation*

Monday, August 21, 2017 **16:00-17:40** **513B**

D8 Carbon-Based Photonics and Optoelectronics

Session Chairs: Frank Wang, Fabian Rotermund

16:00 D8-1 (Invited) OPTICAL NONLINEARITY AND ULTRAFAST LASER APPLICATIONS OF LAYERED MATERIALS BEYOND GRAPHENE

E. Kelleher, *Imperial College London, United Kingdom*

16:20 D8-2 (Invited) NONLINEAR OPTICS WITH LOW-DIMENSIONAL NANOMATERIALS

Z. Sun, *Aalto University, Finland*

16:40 D8-3 (Invited) OPTICAL SPECTROSCOPY OF INDIVIDUAL CARBON NANOTUBES

K. Liu, *School of Physics, Peking University, China (SRS)*

17:00 D8-4 (Invited) INFRARED FINGERPRINT SPECTROSCOPY OF NANOSCALE MOLECULES WITH GRAPHENE PLASMONS

Q. Dai, *National Center for Nanoscience and Technology, China*

17:20 D8-5 (Invited) ENHANCED GRAPHENE ABSORPTION AND ITS IMPLICATIONS FOR MID-INFRARED COMPONENTS

Z. Liu[1], X. Ying[1], Y. Pu[1], C. Yang[1], K. Li[1], J. Xu[2], Y. Jiang[1]

[1]University of Electronic Science and Technology of China, China; [2]Brown University, USA

Monday, August 21, 2017 **16:00-17:40** **513EF**

E12 Stochastic/Statistical Techniques in EMC (1)

Session Chairs: Luk Arnaut, Sergio Pignari

16:00 E12-1 (Invited) ADVANCED ANALYSIS OF THE TRANSIENT IMPEDANCE OF THE HORIZONTAL GROUNDING ELECTRODE: FROM STATISTICS TO SENSITIVITY INDICES

S. Šesnic[1], A. Šušnjara[1], S. Lalléchère[2], D. Poljak[1], K. El Khamlichi Drissi[2], P. Bonnet[2], F. Paladian[2]

[1]University of Split, Croatia; [2]Université Clermont Auvergne, France

16:20 E12-2 FAST AND ACCURATE STATISTICAL ESTIMATION OF COMMON MODE VOLTAGES AND CURRENTS IN WEAKLY NON-UNIFORM DIFFERENTIAL INTERCONNECTS

X. Wu[1], F. Grassi[1], P. Manfredi[2], G. Spadacini[1], D. Vande Ginste[2], S. A. Pignari[1]

[1]Politecnico di Milano, Italy; [2]Ghent University-imec, Belgium

16:40 E12-3 SENSITIVITY CROSSTALK ANALYSIS STUDY FOR AERONAUTICS TEST CASE

C. Jullien, J. Genoulaz, A. Dieudonne, *Safran Electrical & Power, France*

17:00 E12-4 (Invited) STATISTICAL ISSUES IN CONFORMITY ASSESSMENT OF EMC MEASUREMENT DATA

C. Carobbi, *University of Florence, Italy*

17:20 E12-5 A MONTE-CARLO-BASED SIMULATION OF WIRELESS DEVICE AND EMC MEASUREMENTS IN A REVERBERATION CHAMBER

D. Senic[1], D. F. Williams[1], D. C. Ribeiro[2], K. A. Remley[1]

[1]*NIST, United States;* [2]*University of Aveiro, Portugal*

Monday, August 21, 2017 **16:00-16:40** **510BD**

F7 Millimeter-Wave Propagation and Remote Sensing (2)

Session Chair: Albin Gasiewski

16:00 F7-1 MILLIMETER-WAVE CHANNEL MODELS FOR HUMAN PASSING THROUGH A LINE-OF-SIGHT PATH

X. Ye, X. Yin, *Tongji University, China*; H. Yan, *Huawei Technology Company, China*; A. P. Yuste, *Technical University of Madrid, Madrid, Spain*

16:20 F7-2 EXPERIMENTAL STUDY OF THE MICROWAVE RADAR DOPPLER SPECTRUM BACKSCATTERED FROM THE SEA SURFACE AT LOW INCIDENCE ANGLES

M. S. Ryabkova, V. Y. Karaev, Y. A. Titchenko, E. M. Meshkov, *Institute of Applied Physics of the Russian Academy of Sciences, Russian Federation*

Monday, August 21, 2017 **16:00-17:20** **515ABC**

GH8 Plasma Instabilities in the Ionosphere (3)

Session Chairs: Frank Lind, Robert Pfaff

16:00 GH8-1 (Invited) ORIGIN OF 150-KM RADAR ECHOES FOUND AFTER 50 YEARS?

M. M. Oppenheim, Y. S. Dimant, *Boston University, United States*

16:20 GH8-2 WHAT CONTROLS THE EVOLUTION OF THE RAYLEIGH-TAYLOR INSTABILITY INTO PLASMA BUBBLES?

C. Huang, *Air Force Research Laboratory, United States*

16:40 GH8-3 (Invited) INCOHERENT SCATTER RADAR AND IN SITU AND CHEMICAL RELEASE MEASUREMENTS OF SUNSET ELECTRODYNAMICS OF THE EQUATORIAL IONOSPHERE DURING THE NASA EVEX CAMPAIGN AT KWAJALEIN

E. Kudeki, P. M. Reyes, *University of Illinois at Urbana Champaign, United States*; R. F. Pfaff, *NASA, United States*; M. F. Larsen, *Clemson University, United States*

17:00 GH8-4 C/NOFS OBSERVATIONS OF REVERSED ZONAL E X B DRIFTS BELOW THE EQUATORIAL IONOSPHERIC F-PEAK AT SUNSET AND THEIR IMPLICATIONS FOR THE GENERATION OF LARGE SCALE INSTABILITIES

R. F. Pfaff, *NASA/Goddard Space Flight Center, United States*

Monday, August 21, 2017 **16:00-17:40** **511CF**

H5 Wave-Particle Interactions and Their Effects on Planetary Radiation Belts (5)

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

16:00 H5-1 TOWARD A SELF-CONSISTENT TREATMENT OF RADIATION BELT WAVE-PARTICLE INTERACTIONS

G. L. Delzanno, C. A. Jeffery, V. K. Jordanova, *LANL, United States*

16:20 H5-2 ENERGY TRANSFER BETWEEN DIFFERENT-CYCLOTRON-RESONANCE ELECTRONS VIA OBLIQUE WHISTLER-MODE WAVE PACKETS IN THE MAGNETOSPHERE

D. R. Shklyar, *Space Research Institute of Russian Academy of Sciences, Russian Federation*

16:40 H5-3 MODELING OF OBLIQUELY PROPAGATING ELECTROSTATIC WAVES IN THE INNER MAGNETOSPHERE

M. F. Bashir, *COMSATS Institute of Information Technology Lahore, Pakistan*; L. Chen, *University of Texas at Dallas, 800 W Campbell Rd. MS WT15, Richardson, TX 7508, USA*; G. Murtaza, *GC University Lahore, Pakistan, Pakistan*

17:00 H5-4 TWO-DIMENSIONAL PARTICLE SIMULATIONS OF WHISTLER-MODE WAVE PARTICLE INTERACTION

T. Nogi, Y. Omura, *Reserch Institute for Sustainable Humanosphere, Kyoto University, Japan*

17:20 H5-5 NONLINEAR GENERATION MECHANISM OF EMIC FALLING TONE EMISSIONS

M. Shoji, *Nagoya University, Japan*; Y. Omura, *Kyoto University, Japan*

Monday, August 21, 2017 **16:00-17:00** **516DE**

J9 Receivers and Radiometers: Design & Calibration (5)

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth, Richard Bradley, Miroslav Pantaleev

16:00 J9-1 DESIGN AND LABORATORY TESTING OF THE FIVE HUNDRED METER APERTURE SPHERICAL TELESCOPE (FAST) 19 BEAM L-BAND RECEIVER

A. Dunning[1], M. Bowen[1,2], S. Castillo[1], Y. S. Chung[1], P. Doherty[1], D. George[1], D. B. Hayman[1], K. Jeganathan[1], H. Kanoniuk[1], S. Mackay[1], L. Reilly[1], P. Roush[1], S. Severs[1], K. W. Smart[1], R. D. Shaw[1], S. L. Smith[1], T. Tzioumis[1], V.-C. J. Venables[1]

[1]CSIRO, Australia; [2]SKA Organisation, United Kingdom

16:20 J9-2 (Invited) REALIZATION OF PHASED ARRAYS FOR REFLECTOR OBSERVING SYSTEMS

L. Liu, K. Grainge, *University of Manchester, United Kingdom*

16:40 J9-3 (Invited) COMMISSIONING AND FIRST RESULTS OF THE NIKA2 INSTRUMENT, THE KILOPIXEL CONTINUUM CAMERA OF THE IRAM 30-M TELESCOPE

M. Calvo, *Institut Néeel, CNRS, France*

Monday, August 21, 2017 **16:00-17:40** **514A**

JG12 Ionospheric Models and their Validation (3)

Session Chairs: Stefan Wijnholds, Sean Elvidge

16:00 JG12-1 DIFFERENTIAL TOTAL ELECTRON CONTENT TOMOGRAPHY OF THE IONOSPHERE

J. G. Albert, *Leiden Observatory, Netherlands*

16:20 JG12-2 BIQUADRATIC-LORENSIAN (B-L) FUNCTIONS FOR ANALYTIC SOLUTIONS TO DATA FITTING AND RAY PROPAGATION

P. A. Bernhardt, J. D. Huba, K. F. Dymond, *Naval Research Laboratory, United States*; J. R. Franz, *MIT Lincoln Laboratory, United States*; N. Aponte, M. P. Sulzer, *Arecibo Observatory, United States*; R. B. Langley, *University of New Brunswick, Canada*; E. B. Shume, A. Komjathy, *NASA – JPL, United States*

16:40 JG12-3 COMPARISON OF EQUATORIAL IONIZATION ANOMALY GRADIENTS FROM MULTISTATION GPS TEC AND ARTIFICIAL NEURAL NETWORK FOR SCINTILLATION PREDICTION IN THE INDIAN LONGITUDES

D. Sur, A. Paul, *University of Calcutta, India*

17:00 JG12-4 FARADAY ROTATION, TOTAL ELECTRON CONTENT AND THEIR SENSITIVITY TO THE AVERAGE PARALLEL COMPONENT OF THE MAGNETIC FIELD.

A. C. Cushley, J.-M. A. Noël, K. Kabin, *Royal Military College of Canada, Canada*

17:20 JG12-5 EFFECTS OF IONOSPHERE AND TROPOSPHERE ON SENSITIVE RADIO OBSERVATIONS FROM 70 MHZ TO 24 GHZ.

A. Datta, S. Chakraborty, *Indian Institute of Technology Indore, India*

Monday, August 21, 2017 **16:00-17:20** **516AB**

K5 Therapeutic Application of RF EMF

Session Chairs: Lluis Mir, Koichi Ito

16:00 K5-1 NUMERICAL STUDY OF CONTRAST-ENHANCED FOCUSED MICROWAVE THERMAL THERAPY

J. Stang[1], S. Love[2], M. Moghaddam[1]

[1]University of Southern California, United States; [2]Dr. Susan Love Research Foundation, United States

16:20 K5-2 A COMPARATIVE STUDY FOR DEVELOPMENT OF MICROWAVE GLUCOSE SENSORS

T. Yilmaz, T. Ozturk, S. Joof, *Istanbul Technical University, Turkey*

16:40 K5-3 A SETUP FOR CELLS EM EXPOSURE DURING COHERENT ANTI-STOKES RAMAN (CARS) IMAGING

C. Merla[1], M. Liberti[2], P. Marracino[2], A. Azan[1], F. Apollonio[2], L. M. Mir[1]

[1]CNRS, France; [2]La Sapienza, Italy

17:00 K5-4 TEMPERATURE CALCULATIONS IN BODY DURING THERMAL TREATMENT BY CAPACITIVE HEATING DEVICE

K. Saito, K. Kumagae, K. Ito, *Chiba University, Japan*

Monday, August 21, 2017 **16:00-17:40** **514C**

SPC2 Student Paper Competition (2)

Session Chair: Sembiam Rengarajan

16:00 D13-3 A DUAL-POLARIZED MICROMACHINED BEAM-STEERING RADAR AT 240 GHZ FOR COLLISION AVOIDANCE APPLICATIONS

A. Jam, J. East, K. Sarabandi, *University of Michigan, MI*

16:20 B23P-3 PLANE WAVE DIFFRACTION BY A THIN MATERIAL STRIP: THE CASE OF E POLARIZATION

T. Nagasaka, K. Kobayashi, *Chuo University, Japan*

16:40 B24-1 A PLANAR CONTROLLED RECEPTION PATTERN ARRAY WITH DUAL-MODE TM11-TM21 MICROSTRIP ANTENNA ELEMENTS FOR INCREASED ANGULAR COVERAGE

N. Rezazadeh, L. Shafai, *University of Manitoba, Canada*

17:00 B24-3 MULTI-BAND MULTI-BEAM PERFORMANCE EVALUATION OF ON-SITE CODING DIGITAL BEAMFORMER USING ULTRA-WIDEBAND ANTENNA ARRAY

S. Bojja Venkatakrishnan, E. A. Alwan, J. L. Volakis, *The Ohio State University, United States*

Monday, August 21, 2017 **17:00-17:40** **516DE**

J11 Receivers and Radiometers: Design & Calibration (6)

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth, Richard Bradley, Miroslav Pantaleev

17:00 J11-1 IN-SITU CHARACTERIZATION OF INTERNATIONAL LOW-FREQUENCY APERTURE ARRAYS BY MEANS OF AN UAV-BASED SYSTEM

P. Bolli[1], S. J. Wijnholds[2], E. de Lera Acedo[3], A. Lingua[4], J. Monari[1], F. Paonessa[5], G. Pupillo[1], G. Virone[5]

[1]INAF, Italy; [2]ASTRON, The Netherlands; [3]University of Cambridge, UK; [4]Politecnico di Torino, Italy; [5]CNR, Italy

17:20 J11-2 CALIBRATING THE CHIME PATHFINDER

J. Mena, *McGill University, Canada*

Tuesday, August 22, 2017

Tuesday, August 22, 2017 **08:00-09:20** **510AC**

B6 Multiphysics and Multiscale Problems

Session Chairs: Zhizhang Chen, Qin Liu

08:00 B6-1 (Invited) THREE RECENT ADVANCES IN ELECTROMAGNETIC MODELING WITH THE FINITE-DIFFERENCE TIME-DOMAIN (FDTD) METHOD

Z. D. Chen, *Dalhousie University, Canada*

08:20 B6-2 DISCRETIZATION OF MAXWELL-VLASOV EQUATIONS BASED ON DISCRETE EXTERIOR CALCULUS

D.-Y. Na[1], Y. A. Omelchenko[2], B.-H. V. Borges[3], F. L. Teixeira[1]

[1]The Ohio State University, United States; [2]Trinum Research Inc., United States; [3]University of Sao Paulo, Brazil

08:40 B6-3 SCATTERING FROM FINITE PERIODIC ARRAYS OF SCATTERERS USING BROADBAND GREEN'S FUNCTION OF INFINITE PERIODIC SCATTERERS

S. Tan, L. Tsang, *University of Michigan, United States*

09:00 B6-4 SINGLE AND MULTIPLE ATOMIC DIPOLE RADIATORS

A. Y. Liu, T. Xia, L. Meng, W. C. Chew, *University of Illinois at Urbana Champaign, United States*

Tuesday, August 22, 2017 **08:00-09:20** **514A**

B7 Metasurface Engineering (1)

Session Chairs: Tie Jun Cui, Anthony Grbic, Stefano Maci

08:00 B7-1 (Invited) FUNCTIONAL METASURFACES: DO WE NEED NORMAL POLARIZATIONS?

S. Tretyakov[1], D.-H. Kwon[1,2], M. Albooyeh[3], F. Capolino[3]

[1]Aalto University, Finland; [2]University of Massachusetts, USA; [3]University of California, USA

08:20 B7-2 (Invited) METASURFACES WITH ADVANCED REFLECTION AND TRANSMITTION PROPERTIES BASED ON THE PRINCIPLE OF RESONANT COUPLING

A. Alu, D. L. Sounas, *The University of Texas at Austin, United States*

08:40 B7-3 (Invited) RECENT DEVELOPMENTS IN METASURFACE DESIGN AND APPLICATIONS

K. Achouri, C. Caloz, *Ecole Polytechnique de Montréal, Canada*

09:00 B7-4 (Invited) ELECTROMAGNETIC WAVE CONTROL BY METASURFACES: FROM DESIGN TO MANUFACTURING

L. La Spada, Y. Hao, *Queen Mary, University of London, United Kingdom*

Tuesday, August 22, 2017 **08:00-09:20** **513A**

C7 Quantum Communications and Networks (1)

Session Chairs: Grace Metcalfe, Amir Zaghloul

08:00 C7-1 (Invited) NANOPHOTONICS FOR QUANTUM INFORMATION TECHNOLOGIES

M. I. Davanco, *National Institute of Standards and Technology, United States*

08:20 C7-2 (Invited) SECURE QUANTUM COMMUNICATION OVER LONG DISTANCES

L. Li[1], S. Muralidharan[1], C.-L. Zou[1], V. V. Albert[1], J. Kim[2], N. Lutkenhaus[3], M. D. Lukin[4], S. M. Girvin[1], L. Jiang[1]

[1]Yale University, United States; [2]Duke University, United States; [3]University of Waterloo, Canada; [4]Harvard University, United States

08:40 C7-3 (Invited) COUPLING QUBITS TO PHOTONS VIA DUAL ATOMIC SPECIES FOR QUANTUM NETWORKING

M. Saffman, *University of Wisconsin-Madison, United States*

09:00 C7-4 (Invited) AN ION-CAVITY QUANTUM INTERFACE

M. Lee[1], K. Friebe[1], D. A. Fioretto[1], K. Schüppert[1], F. R. Ong[1], P. Jobez[1], R. Blatt[1,2], T. E. Northup[1]

[1]University of Innsbruck, Austria; [2]Institute for Quantum Optics and Quantum Information of the Austrian Academy of Sciences, Austria

Tuesday, August 22, 2017 **08:00-09:20** **514C**

C8 Application of Radio Propagation Research Results in Radio System and Signal Design (1)

Session Chairs: Robert Bultitude, Yves Lostanlen

08:00 C8-1 MODELLING OF STATISTICAL FADING PARAMETERS IN MARITIME CONTAINER TERMINAL ENVIRONMENTS

M. M. Ferreira[1], S. J. Ambroziak[2], F. D. Cardoso[1], J. Sadowski[2], L. M. Correia[3]

[1]ESTSetubal, Polytechnic Institute of Setubal and INESC-ID, Portugal; [2]Gdansk University of Technology, Faculty of Electronics, Telecommunications and Informatics, Poland; [3]Instituto Superior Tecnico, University of Lisbon and INESC-ID, Portugal

08:20 C8-2 (Invited) RELATIONSHIPS AMONG STATISTICAL CHANNEL PARAMETERS FOR AN AIR-GROUND CHANNEL: STATIONARITY DISTANCE, RICEAN K-FACTOR, AND RMS DELAY SPREAD

D. W. Matolak, *University of South Carolina, United States*; R. Sun, *National Institute of Standards & Technology, United States*

08:40 C8-3 (Invited) SIMULTANEOUS OUTDOOR CHANNEL SOUNDING IN THE V AND K BANDS

X. Raimundo, A. Cheema, S. El-Faitori, S. Salous, *University of Durham, United Kingdom*

09:00 C8-4 (Invited) PROPAGATION MODELING IN TUNNEL ENVIRONMENTS WITH RAY-TRACING AND VECTOR PARABOLIC EQUATION METHODS: THEORY AND COMPARISONS WITH MEASUREMENTS

C. D. Sarris, N. Sood, X. Zhang, *University of Toronto, Canada*

Tuesday, August 22, 2017 **08:00-09:00** **517CD**

D9 Keynote on Gravitational Wave Detection

Session Chairs: Günter Steinmeyer, Roman Schnabel

08:00 D9-1 (Invited) GRAVITATIONAL WAVE DETECTION FROM SPACE WITH LISA

K. Danzmann, *AEI Hannover, Germany*

Tuesday, August 22, 2017 **08:00-09:20** **513B**

DA10 Optical Frequency Metrology (1)

Session Chairs: Ekkehard Peik, Yann Le Coq

08:00 DA10-1 (Invited) YTTERBIUM OPTICAL LATTICE CLOCKS AT NIST

A. Ludlow[1], W. McGrew[1,2], K. Beloy[1], R. Fasano[1,2], D. Nicolodi[1], X. Zhang[1,3], R. Brown[1], M. Schioppo[1,4], G. Milani[1,5], T. H. Yoon[1,6]

[1]National Institute of Standards and Technology, United States; [2]University of Colorado, United States; [3]Peking University, China; [4]Heinrich-Heine-Universität Düsseldorf, Germany; [5]Politecnico di Torino, Italy; [6]Korea University, Korea

08:20 DA10-2 (Invited) DEVELOPMENT OF CRYOGENIC SR OPTICAL LATTICE CLOCKS AND THEIR APPLICATIONS

M. Takamoto[1,1,2], I. Ushijima[1,1,2], M. Das[1,1,2], H. Katori[1,1,3,2]

[1]RIKEN, Japan; [2]JST, Japan; [3]The University of Tokyo, Japan

08:40 DA10-3 AN OPTICAL SECOND WITH STRONTIUM OPTICAL LATTICE CLOCKS

J. Lodewyck, S. Bilicki, G. Vallet, E. Bookjans, R. Le Targat, *LNE-SYRTE, Observatoire de Paris, France*

09:00 DA10-4 COMPARISON BETWEEN TWO YTTERBIUM OPTICAL LATTICE CLOCKS

Q. Gao, C. Han, M. Zhou, S. Li, S. Shuang, Y. Yao, B. Li, H. Qiao, D. Ai, G. Lou, M. Zhang, L. Ma, X. Xu, *East China Normal University, China (CIE)*

Tuesday, August 22, 2017 **08:00-08:40** **513EF**

E13 Stochastic/Statistical Techniques in EMC (2)

Session Chairs: Luk Arnaut, Sergio Pignari

08:00 E13-1 COPULAS, CORRELATION AND DEPENDENCE IN UNCERTAINTY QUANTIFICATION OF EMC

L. R. Arnaut, *Queen Mary University London, United Kingdom*

08:20 E13-2 EFFECT OF LOADING ON FIELD UNIFORMITY: ENERGY DIFFUSION IN REVERBERANT ENVIRONMENTS

M. P. Robinson[1], I. D. Flintoft[1], J. F. Dawson[1], A. C. Marvin[1], F. I. Funn[2], L. Dawson[1], X. Zhang[1]

[1]University of York, United Kingdom; [2]Republic of Singapore Airforce, Singapore

---

Tuesday, August 22, 2017 **08:00-09:00** **510BD**

F8 Remote Sensing Measurements of Precipitation (1)

Session Chairs: Chandrasekar V Chandra, Luca Baldini

08:00 F8-1 PRECIPITATION SENSING EXPERIMENT WITH A PROTOTYPE DUAL-POLARIZATION WEATHER RADAR FOR CIVIL AIRCRAFT

L. Baldini[1], F. Berizzi[2], A. Coccia[3], F. Cuccoli[2], M. D'Amico[4], S. Lischi[2], A. Lupidi[2], F. Milani[5]

[1]CNR - Institute of Atmospheric Sciences and Climate, Italy; [2]RaSS-CNIT, Galleria G.B. Gerace 18, , Italy, Italy; [3]Metasensing BV, The Netherlands; [4]Politecnico di Milano, Milano, Italy; [5]IDS, Ingegneria dei Sistemi, Italy

08:20 F8-2 (Invited) A DATA FUSION SYSTEM FOR ACCURATE PRECIPITATION ESTIMATION USING SATELLITE AND GROUND RADAR OBSERVATIONS: URBAN SCALE APPLICATION IN DALLAS-FORT WORTH METROPLEX

H. Chen[1], V. Chandrasekar[1], R. Cifelli[2], P. Xie[3], H. Tan[1]

[1]Colorado State University, United States; [2]NOAA/Earth System Research Laboratory, United States; [3]NOAA/Climate Prediction Center, United States

08:40 F8-3 (Invited) A MACHINE LEARNING SYSTEM FOR RAINFALL ESTIMATION FROM SPACEBORNE AND GROUND RADARS

V. Chandrasekar, H. Tan, H. Chen, *Colorado State University, United States*

Tuesday, August 22, 2017 **08:00-09:20** **513C**

FB9 Electromagnetic Problems Involving Volume Scattering (1)

Session Chairs: Ari Sihvola, Cuong Nguyen

08:00 FB9-1 ON THE FULL-WAVE SOLUTION FOR ELECTROMAGNETIC SCATTERING FROM SNOW-PACKS

M. Zaky, K. Sarabandi, *University of Michigan, United States*

08:20 FB9-2 MODELING OF THE SLIPI TECHNIQUE WITH THE LARGE SCATTERER APPROXIMATION OF THE RTE

E. Kristensson, G. Kristensson, *Lund University, Sweden*

08:40 FB9-3 BOUNDARY LAYER ANOMALIES OBSERVED FROM RADIOMETRIC OBSERVATIONS DURING CONVECTIVE RAIN

R. Chakraborty, A. Maitra, *University of Calcutta, India*

09:00 FB9-4 ALIASING EFFECT DUE TO CONVECTIVE RAIN ON MICRO RAIN RADAR REFLECTIVITY PROFILE AT A TROPICAL LOCATION

S. Jana, A. Maitra, *University of Calcutta, India*

Tuesday, August 22, 2017 **08:00-09:20** **511BE**

G9 Advances in Irregularities and Scintillation Studies (1)

Session Chairs: Emanoel Costa, T Maruyama

08:00 G9-1 (Invited) SPECTRAL ANALYSIS OF EQUATORIAL PLASMA BUBBLES OBTAINED BY HIGH-RESOLUTION BUBBLE MODEL AND C/NOFS SATELLITE

T. Yokoyama, *National Institute of Information and Communications Technology, Japan*; C. L. Rino, C. S. Carrano, K. M. Groves, *Boston College, USA*; P. A. Roddy, *Air Force Research Laboratory, USA*

08:20 G9-2 IRREGULARITIES AND SCINTILLATIONS, END-TO-END FROM SWARM TO THE GROUND

S. Aol[1], S. C. Buchert[2], E. Jura[1], E. van Groningen[3]

[1]Mbarara University of Science and Technology, Uganda; [2]Swedish Institute of Space Physics, Sweden; [3]Uppsala University, Sweden

08:40 G9-3 ON THE EFFECT OF THERMOSPHERIC NEUTRAL WINDS ON POST-MIDNIGHT FIELD-ALIGNED IRREGULARITIES AT LOW LATITUDES

T. Dao[1,2], Y. Otsuka[1], K. Shiokawa[1], M. Nishioka[3], M. Yamamoto[4], S. M. Buhari[5], M. Abdullah[5], A. Husin[6]

[1]Institute for Space-Earth Environmental Research, Nagoya University, Japan; [2]Ho Chi Minh City Institute of Physics, Vietnam; [3]National Institute of Information and Communications Technology, Japan; [4]Research Institute for Sustainable Humanosphere, Kyoto University, Japan; [5]Universiti Kebangsaan Malaysia, Malaysia; [6]National Institute of Aeronautics and Space (LAPAN), Indonesia

09:00 G9-4 A COMPARATIVE STUDY OF IONOSPHERE SCINTILLATIONS AT LOW AND HIGH LATITUDES

Y. Beniguel, *IEEA, France*

Tuesday, August 22, 2017 **08:00-09:20** **514B**

GF10 Radio Studies on Polar Aeronomy (1)

Session Chairs: Giorgiana De Franceschi, Chandrasekar V Chandra, Luca Baldini

08:00 GF10-1 GENERATION, DYNAMICS, AND DECAY OF A POLAR CAP PATCH

J. P. Thayyil[1], K. Hosokawa[2], K. Shiokawa[3], D. R. Themens[1], P. Prikryl[1]

[1]University of New Brunswick, Canada; [2]University of Electro-communications, Japan; [3]Nagoya University, Japan

08:20 GF10-2 A STUDY OF TRAVELING IONOSPHERIC DISTURBANCES AND THEIR ASSOCIATED SCINTILLATION BEHAVIORS AT SOUTH POLE

S. Priyadarshi, Q. Q-H. Zhang, *Institute of Space Sciences, Shandong University, Weihai China, China (CIE)*; E. G. Thomas, *Thayer School of Engineering, Dartmouth College, Hanover, New Hampshire, USA, USA*; L. Spogli, C. Cesaroni, *Istituto Nazionale di Geofisica e Vulcanologia Rome, Italy, Italy*

08:40 GF10-3 ANALYSIS OF THE IONOSPHERIC SCINTILLATIONS DURING 20-21 JANUARY 2016 FROM SANAE BY MEANS OF THE DEMOGRAPE SCINTILLATION RECEIVERS

J. Stephenson[1], P. J. Cilliers[2,3], L. Alfonsi[4], L. Spogli[4,5], G. De Franceschi[4], V. Romano[4], I. Hunstad[4], N. Linty[6], O. Terzo[7], F. Dovis[6], J. Ward[2], C. Cesaroni[4]

[1]University of KwaZulu-Natal, South Africa., South Africa; [2]South African National Space Agency (SANSA), South Africa; [3]University of Cape Town, South Africa; [4]Instituto Nazionale di Geofisica e VulcanologiaI (INGV), Italy; [5]SPACEARTH Technology, Italy; [6]Politecnico di Torino, Italy; [7]Istituto Superiore Mario Boella (ISMB), Italy

09:00 GF10-4 (Invited) AN INTERNATIONAL INITIATIVE FOR ATMOSPHERIC RESEARCH AT THE POLES

L. Alfonsi, *Istituto Nazionale di Geofisica e Vulcanologia, Italy*; N. Bergeot, *Royal Observatory of Belgium, Belgium*

Tuesday, August 22, 2017 **08:00-09:20** **511CF**

H6 Wave-Particle Interactions and Their Effects on Planetary Radiation Belts (6)

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

08:00 H6-1 POWER DISTRIBUTION OF MAGNETOSPHERIC WHISTLER MODE WAVES WITH FINITE ELECTRON AND ION TEMPERATURE

A. S. Maxworth, M. Golkowski, *University of Colorado Denver, United States*; D. Malaspina, A. Jaynes, *University of Colorado Boulder, United States*

08:20 H6-2 COMBINING SELF-CONSISTENT AND TEST-PARTICLE SIMULATIONS TO UNDERSTAND WAVE-PARTICLE INTERACTIONS BETWEEN CHORUS AND RADIATION BELT ELECTRONS

C. L. da Silva, R. E. Denton, M. K. Hudson, R. M. Millan, *Dartmouth College, United States*

08:40 H6-3 CHARACTERISTICS OF SUBIONOSPHERIC VLF SIGNAL PROPAGATION DURING ENERGETIC ELECTRON INJECTIONS

R. Ghaffari[1], C. M. Cully[1], D. L. Turner[2], G. D. Reeves[3,4]

[1]University of Calgary, Canada; [2]Aerospace Corporation, USA; [3]Los Alamos National Laboratory, USA; [4]The New Mexico Consortium, USA

09:00 H6-4 THREE-DIMENSIONAL FORWARD MODELING OF LIGHTNING-INDUCED ELECTRON PRECIPITATION FROM THE RADIATION BELTS

A. P. Sousa, *Stanford University, United States*; R. A. Marshall, *University of Colorado, Boulder, United States*

Tuesday, August 22, 2017 **08:00-09:20** **513D**

HG7 Radio Science for Space Weather (1)

Session Chairs: Mauro Messerotti, Viviane Pierrard

08:00 HG7-1 (Invited) RADIO OBSERVATIONS AND SPACE WEATHER

J. Magdalenic, *Royal Observatory of Belgium, Belgium*

08:20 HG7-2 SOLAR CORONAL RADIO BURSTS AT 1.5-3 SOLAR RADII ABOVE ACTIVE REGIONS

Y. Voitenko, V. Pierrard, *Royal Belgian Institute for Space Aeronomy, Belgium*; V. Melnik, *Institute of Radio Astronomy of NASU, Ukraine*; A. Brazhenko, A. Frantsuzenko, *Poltava Gravimetric Observatory of NASU, Ukraine*

08:40 HG7-3 (Invited) RADIO TOOLS FOR THE FORECASTING OF CORONAL MASS EJECTIONS AND SOLAR ENERGETIC PARTICLES

K.-L. Klein, P. Zucca, *Observatoire de Paris, France*; C. Salas Matamoros, *University of Costa Rica, Costa Rica*

09:00 HG7-4 (Invited) THE LOW FREQUENCY ARRAY (LOFAR): A COMPREHENSIVE TOOL FOR SPACE WEATHER OBSERVATION

R. A. Fallows[1], M. M. Bisi[2], M. Mevius[1], M. Brentjens[1], G. Kruithof[1]

[1]ASTRON - the Netherlands Institute for Radio Astronomy, Netherlands; [2]Rutherford Appleton Laboratory, UK

Tuesday, August 22, 2017 **08:00-09:20** **516DE**

J13 Millimeter/Submillimeter Arrays (1)

Session Chairs: Lars Nyman, Jongsoo Kim

08:00 J13-1 (Invited) THE IMPACT OF ALMA IN EXPLORING THE UNIVERSE AT MILLIMETRE/SUB-MILLIMETRE WAVELENGTHS

P. Cox, *Joint ALMA Observatory, Chile*

08:20 J13-2 CIRCULARLY POLARIZED STACKED-YAGI ANTENNA WITH LOGARITHMIC SPIRAL ELEMENTS FOR E-BAND APPLICATIONS

B. Zarghooni, K. Wu, *Ecole Polytechnique de Montreal, Canada*

08:40 J13-3 (Invited) EXTRAGALACTIC SCIENCE USING MM/SUBMM ARRAYS

D. Iono, *NAOJ, Japan*

09:00 J13-4 (Invited) SUSTAINING SUBMILLIMETER SCIENCE: NEW DEVELOPMENT

H. A. Wootten, *National Radio Astronomy Observatory, United States*

Tuesday, August 22, 2017 **08:00-09:15** **515ABC**

J14 Latest News and Observatory Reports (1)

Session Chairs: Richard Bradley, Willem Baan

08:00 J14-1 PRESENT STATUS AND FUTURE DIRECTIONS OF ONSALA SPACE OBSERVATORY, SWEDEN

M. Lindqvist, *Onsala Space Observatory, Sweden*

08:15 J14-2 GREEN BANK OBSERVATORY - CURRENT STATUS

K. O'Neil, *Green Bank Observatory, United States*

08:30 J14-3 ENHANCING THE RADIO ASTRONOMY CAPABILITIES AT NASA'S DEEP SPACE NETWORK

J. Lazio[1], T. Kuiper[1], M. M. Franco[1], C. Garcia-Miro[2], S. Horiuchi[3], C. Jacobs[1], C. Naudet[1], L. Teitelbaum[1]

[1]Jet Propulsion Laboratory, California Institute of Technology, United States; [2]Madrid Deep Space Communications Complex, Spain; [3]CSIRO Astronomy and Space Science, Canberra Deep Space Communications Complex, Australia

08:45 J14-4 HI SCIENCE WITH THE SKA PATHFINDERS KAT-7 & MEERKAT

C. Carignan, *University of Cape Town, South Africa*

09:00 J14-5 THE NEXT GENERATION VERY LARGE ARRAY

M. McKinnon, B. Butler, C. Carilli, S. Durand, W. Grammer, E. Murphy, R. Selina, S. Srikanth, *NRAO, United States*

Tuesday, August 22, 2017 **08:00-09:20** **516AB**

K6 EMF Standards and Health Protection

Session Chairs: Akimasa Hirata, Kenneth Foster

08:00 K6-1 (Invited) SAFETY CODE 6: RECOMMENDED HUMAN EXPOSURE LIMITS TO RF-EMF IN CANADA

J. P. McNamee, *Health Canada, Canada*

08:20 K6-2 THERMAL MODELING FOR THE NEXT GENERATION OF RADIOFREQUENCY EXPOSURE LIMITS

K. R. Foster, *University of Pennsylvania, United States*; M. C. Ziskin, *Temple University Medical School, United States*; Q. Balzano, *University of Maryland, United States*

08:40 K6-3 RELATIONSHIP OF INCIDENT POWER DENSITY AVERAGED OVER AREA AND SKIN TEMPERATURE ELEVATION

A. Hirata, D. Funahashi, Y. Hashimoto, *Nagoya Institute of Technology, Japan*; I. Laakso, *Aalto University3. Department of Electrical Engineering and Auto, Finland*; K. R. Foster, *University of Pennsylvania, USA*

09:00 K6-4 AN EFFECT OF SKIN MODELING ON TEMPERATURE ELEVATION BY MILLIMETER-WAVE AND TERAHERTZ-WAVE EXPOSURE USING A TWO-DIMENSIONAL FOREARM MODEL

K. Sasaki, S. Watanabe, *National Institute of Information and Communications Technology, Japan*

Tuesday, August 22, 2017 **09:40-11:00** **511AD**

A5 Advances in Sensor Development and Applications

Session Chairs: Chouki Zerrouki, Andon Lazarov

09:40 A5-1 FAST IMAGING OF VELOCITY PROFILES OF TWO-PHASE FLOWS USING ELECTRICAL CAPACITANCE VOLUME TOMOGRAPHY SENSORS

S. Chowdhury[1], C. Gunes[1], Q. M. Marashdeh[2], F. L. Teixeira[1]

[1]The Ohio State University, United States; [2]Tech4Imaging LLC, United States

10:00 A5-2 DISPLACEMENT-CURRENT PHASE TOMOGRAPHY AND ELECTRICAL CAPACITANCE TOMOGRAPHY FOR AIR-WATER FLOW SYSTEMS

C. Gunes[1], S. Chowdhury[1], Q. M. Marashdeh[2], F. L. Teixeira[1]

[1]The Ohio State University, United States; [2]Tech4Imaging, United States

10:20 A5-3 3D-PRINTED DISPOSABLE WIRELESS SENSOR FOR ENVIRONMENTAL MONITORING

M. F. Farooqui, A. Shamim, *King Abdullah University University of Science and Technology (KAUST), Saudi Arabia*

10:40 A5-4 THE ANTENNA CORRELATION COEFFICIENT IN WIRELESS SENSOR NETWORKS

A. Bhattacharya, R. Vaughan, *Simon Fraser University, Canada*

Tuesday, August 22, 2017 **09:40-11:00** **510AC**

B8 Advanced Algorithms in Computational Electromagnetics (1)

Session Chairs: Vladimir Okhmatovski, Pasi Ylä-Oijala

09:40 B8-1 A MULTI-SOLVER ALGORITHM FOR ELECTROMAGNETIC MODELING OF COMPLEX OBJECTS

J. Guan, S. Yan, K. Zhang, J.-M. Jin, *University of Illinois at Urbana-Champaign, United States*

10:00 B8-2 AN ABSORBING BOUNDARY CONDITION FOR LIMITED BANDWIDTH APPLICATIONS AS AN ALTERNATIVE TO THE PML IN DISPERSIVE MEDIA

B. Abdulkareem, J.-P. Bérenger, F. Costen, *University of Manchester, UK, United Kingdom*

10:20 B8-3 (Invited) A COMPARATIVE STUDY OF SINGULARITY TREATMENT SCHEMES IN HIGHER-ORDER NYSTRÖM METHOD FOR ACOUSTIC SCATTERING

N. Alharthi, R. Chen, H. Bagci, D. Keyes, *King Abdullah University of Science and Technology, Saudi Arabia*

10:40 B8-4 (Invited) HIGH FREQUENCY SPECTRA OF RESONANCE-FREE INTEGRAL EQUATIONS AND RELATED ALGORITHMS

F. P. Andriulli, *IMT Atlantique, France*

Tuesday, August 22, 2017 **09:40-11:00** **514A**

B9 Metasurface Engineering (2)

Session Chairs: Tie Jun Cui, Anthony Grbic, Stefano Maci

09:40 B9-1 (Invited) SHARED APERTURE MODULATED METASURFACE ANTENNAS

D. González Ovejero[1], G. Minatti[2], M. Faenzi[2], F. Caminita[2,3], E. Martini[2,3], S. Maci[2]

[1]Institut d'Électronique et de Télécommunications de Rennes - UMR CNRS 6164, France; [2]University of Siena, Italy; [3]Wave Up s.r.l., Italy

10:00 B9-2 (Invited) EXPERIMENTAL VERIFICATION OF REFLECTIONLESS WIDE-ANGLE REFRACTION VIA A BIANISOTROPIC HUYGENS' METASURFACE

M. Chen[1], E. Abdo-Sánchez[2], A. Epstein[3], G. V. Eleftheriades[1]

[1]University of Toronto, Canada; [2]Universidad de Málaga, Spain; [3]Technion - Israel Institute of Technology, Israel

10:20 B9-3 (Invited) A SUB-WAVELENGTH, HOLLOW-CORE WAVEGUIDING NETWORK BASED ON COMPLEMENTARY HIGH AND LOW IMPEDANCE CLADDING

N. Mohammadi Estakhri, N. Engheta, R. Kastner, *University of Pennsylvania, United States*

10:40 B9-4 (Invited) INFORMATION METAMATERIALS AND METASURFACES

T. J. Cui, S. Liu, *Southeast University, China*

Tuesday, August 22, 2017 **09:40-11:00** **513A**

C9 Quantum Communications and Networks (2)

Session Chairs: Grace Metcalfe, Amir Zaghloul

09:40 C9-1 (Invited) SPIN-PHOTON ENTANGLEMENT IN SOLID-STATE DEFECT CENTERS

D. A. Golter, C. W. Lai, *U.S. Army Research Laboratory, United States*

10:00 C9-2 (Invited) SEMICONDUCTOR QUANTUM NETWORKS USING QUANTUM DOTS

E. Waks, J. Kim, S. Sun, *University of Maryland, USA*; G. Solomon, *NIST, USA*

10:20 C9-3 (Invited) SCALABLE INTEGRATION OF SOLID STATE QUANTUM MEMORIES COUPLED TO A PHOTONIC INTEGRATED CIRCUIT

S. Mouradian, N. Wan, T. J. Lu, M. Walsh, E. Bersin, H. Choi, D. Englund, *Massachusetts Institute of Technolory, United States*

10:40 C9-4 (Invited) ENTANGLEMENT-ENHANCED TELESCOPE

V. S. Malinovsky, S. Santra, B. Kirby, M. Brodsky, *US Army Research Lab, United States*

Tuesday, August 22, 2017 **09:40-11:00** **514C**

C10 Application of Radio Propagation Research Results in Radio System and Signal Design (2)

Session Chairs: Robert Bultitude, Yves Lostanlen

09:40 C10-1 DIFFUSE SCATTERING IMPLEMENTATION AND VERIFICATION IN RAY LAUNCHING BASED TOOL AT 5.4 GHZ

A. Navarro, *Universidad Icesi, Colombia*; D. Guevara, D. Parada, *Universidad Francisco de Paula Santander, Colombia*

10:00 C10-2 (Invited) TACTILE LOCALIZATION IN MM-WAVE SYSTEMS: CHANNEL MEASUREMENTS REQUIREMENTS, CHALLENGES AND OPPORTUNITIES

Y. Nasser, K. Y. Kabalan, A. Chehab, *American University of Beirut, Lebanon*

10:20 C10-3 RADIO-PROPAGATION-MEASUREMENT-BASED CALCULATIONS OF MULTI-USER DISTRIBUTED MIMO CHANNEL CAPACITY FOR A SMALL CLUTTERED ROOM AT 2 GHZ, 18 GHZ AND 28 GHZ

M. Alkadamani, R. Bultitude, *Carleton University, Canada*

10:40 C10-4 ADVANTAGE OF LIDAR POINT CLOUD DATA IN THE DESIGN OF MMWAVE WIRELESS URBAN NETWORKS

J. Stéphan, Y. Corre, Y. Lostanlen, *Siradel, France*

Tuesday, August 22, 2017 **09:40-11:00** **514B**

D11 Terahertz Generation and Applications (1)

Session Chairs: Christoph Hauri, Mona Jarrahi

09:40 D11-1 (Invited) RECEIVERS, ANTENNAS, AND SYSTEMS AT TERAHERTZ FREQUENCIES

G. Chattopadhyay, *Jet Propulsion Laboratory, California Institute of Technology, United States*

10:00 D11-2 (Invited) HIGH-ORDER NONLINEARITIES IN GAP AND DIAMOND DRIVEN BY AN ULTRASTRONG THZ FIELD

C. Vicario, *Paul Scherrer Institute, Switzerland*

10:20 D11-3 (Invited) TERAHERTZ LASERS BASED UPON AMPLIFYING REFLECTARRAY ANTENNAS

L. Xu[1], C. Curwen[1], J. L. Reno[2], T. Itoh[1], B. S. Williams[1]

[1]University of California Los Angeles, United States; [2]Sandia National Laboratories, United States

10:40 D11-4 (Invited) DETECTION IN GRAPHENE AND OTHER 2D MATERIALS: TOWARDS A TUNABLE THZ CAMERA

A. Tredicucci, *Università di Pisa, Italy*

Tuesday, August 22, 2017 **09:40-11:00** **513B**

DA12 Optical Frequency Metrology (2)

Session Chairs: Ekkehard Peik, Yann Le Coq

09:40 DA12-1 (Invited) INTERNATIONAL OPTICAL AND MICROWAVE CLOCK COMPARISONS VIA LONG-HAUL COHERENT FIBER LINKS

P.-E. Pottie[1], O. Lopez[2], S. Koke[3], J. Kronjaeger[4], A. Kuhl[3], W.-K. Lee[1], G. Valet[1], A. Al-Masoudi[3], A. Roland[4], S. Bilicki[1], E. Bookjans[1], R. Le Targat[1], F. Meynadier[1], A. Amy-Klein[2], C. Lisdat[3], H. Margolis[4], I. Hill[4], P. Gill[4], W. Bowden[4], R. Hobson[4], G. Marra[4], U. Sterr[3], F. Baynes[3], S. Doerscher[3], C. Grebing[3], N. Quintin[2], D. Xu[1], E. Cantin[2], E. Camisard[5], G. Grosche[3]

[1]Observatoire de Paris / CNRS, France; [2]Laboratoire de Physique des Lasers, France; [3]Physikalisch-Technische Bundesanstalt, Germany; [4]National Physical Laboratory, UK; [5]RENATER, France

10:00 DA12-2 (Invited) OPTO-ELECTRONIC GENERATION OF MICROWAVE SIGNALS WITH ZEPTOSECOND LEVEL ABSOLUTE TIMING NOISE AND CHARACTERIZATION

X. Xie[1], R. Bouchand[1], D. Nicolodi[1], M. Giunta[2], W. Hansel[3], M. Lezius[3], A. Joshi[4], S. Datta[4], C. Alexandre[5], M. Lours[1], P.-A. Tremblin[6], G. Santarelli[6], R. Holzwarth[3], Y. Le Coq[1]

[1]LNE-SYRTE - Observatoire de Paris, France; [2]Max-Planck-Institut für Quantenoptik, Germany; [3]Menlo Systems GmbH, Germany; [4]Discovery Semiconductors Inc., USA; [5]CNAM, CEDRIC Laboratory, France; [6]LP2N, IOGS, France

10:20 DA12-3 (Invited) LASER FREQUENCY STABILIZATION BASED ON STEADY-STATE SPECTRAL-HOLE BURNING IN EU3+:Y2SIO5

S. Cook[1,2], D. R. Leibrandt[1,3]

[1]National Institute of Standards and Technology, United States; [2]Stable Laser Systems, United States; [3]University of Colorado, United States

10:40 DA12-4 SYSTEMATIC UNCERTAINTY ANALYSES OF 171YB+ SINGLE-ION ATOMIC CLOCKS

E. Peik, N. Huntemann, C. Sanner, R. Lange, B. Lipphardt, C. Tamm, *PTB, Germany*

Tuesday, August 22, 2017 **09:40-10:40** **513EF**

E14 Geomagnetic Disturbances (GMD) and Effects

Session Chairs: William Radasky, Edward Savage

09:40 E14-1 (Invited) SUMMARY OF THE CIGRÉ STUDY COMMITTEE C4 PROJECT ON GEOMAGNETIC STORM ENVIRONMENTS

W. A. Radasky, *Metatech Corporation, United States*

10:00 E14-2 SUDDEN IMPULSE ENVIRONMENT FOR CIGRE TECHNICAL BROCHURE

E. B. Savage, W. A. Radasky, J. L. Gilbert, *Metatech Corporation, California*

10:20 E14-3 UNCERTAINTY ANALYSIS OF GEOMAGNETICALLY INDUCED CURRENTS BASED ON POLYNOMIAL CHAOS TECHNIQUE

Q. Liu[1,2], Y. Chen[2], Y. Rong[3], Y. Xie[2]

[1]Xi'an University of Science and Techenology, China (CIE); [2]Xi'an Jiaotong University, China (CIE); [3]Xinjiang Electric Power Design Institute, China (CIE)

Tuesday, August 22, 2017 **09:40-11:00** **510BD**

F10 Remote Sensing Measurements of Precipitation (2)

Session Chairs: Chandrasekar V Chandra, Luca Baldini

09:40 F10-1 CHARACTERIZATION OF HIGH ICE WATER CONTENT CELLS IN TROPICAL CLOUDS USING IN-SITU AND MULTI-FREQUENCY REMOTE SENSING MEASUREMENTS

M. Wolde, C. Nguyen, K. Baibakov, *National Research Council Canada, Canada*; A. Korolev, *Environment and Climate Change Canada, Canada*; P. Gabriel, *Horizon Science and Technology, Canada*

10:00 F10-2 (Invited) OBSERVATIONS AND PERFORMANCE OF THE NASA DUAL-FREQUENCY DUAL-POLARIZATION DOPPLER RADAR (D3R) FROM FIVE YEARS OF OPERATION

V. Chandrasekar[1], H. Chen[1], M. Vega[1,2], R. M. Beauchamp[1], M. Kumar[1], S. Joshil[1], W. A. Petersen[3], D. Wolff[4], M. Schwaller[2]

[1]Colorado State University, United States; [2]NASA Goddard Space Flight Center, United States; [3]NASA Marshall Space Flight Center, United States; [4]NASA Wallops Flight Facility, United States

10:20 F10-3 USING GROUND-BASED KU-/KA-BAND SCANNING RADAR OBSERVATIONS TO QUANTIFY PRECIPITATION VARIABILITY ACROSS SATELLITE FIELD-OF-VIEWS

C. R. Williams, *University of Colorado Boulder, United States*; C. V. Chandrasekar, *Colorado State University, United States*

10:40 F10-4 POLARIMETRIC RADAR CHARACTERISTICS OF SIMULATED AND OBSERVED SEVERE CONVECTIVE CORES BETWEEN MC3E AND TWP-ICE

T. Matsui, T. Iguchi, S. Lang, W.-K. Tao, *NASA GSFC, United States*; B. Dolan, J. Barnum, S. Rutledge, *Colorado State University, United States*

Tuesday, August 22, 2017 **09:40-10:40** **513C**

FB11 Electromagnetic Problems Involving Volume Scattering (2)

Session Chairs: Ari Sihvola, Cuong Nguyen

09:40 FB11-1 CHARACTERISTICS OF HIGH VELOCITY SMALL DROPS IN TROPICAL CONVECTIVE RAIN

T. Sarkar, A. Maitra, *University of Calcutta, India*

10:00 FB11-2 ENSEMBLE DETECTION ANALYSIS IN SPACE-BORNE DOPPLER MEASUREMENTS

M. Aksoy, *University of Maryland Baltimore County, United States*; P. E. Racette, L. Li, *NASA Goddard Space Flight Center, United States*

10:20 FB11-3 OBSERVATIONS AND ANALYSIS OF TORNADOES ON 15 JANUARY 2017 IN DALLAS-FORT WORTH CASA RADAR NETWORK

S. S. Joshil, V. Chandrasekar, *Colorado State University, United States*

G11 Advances in Irregularities and Scintillation Studies (2)

Session Chairs: Emanoel Costa, T Maruyama

09:40 G11-1 SUB-SECOND VARIATIONS IN AURORAL REGION TOTAL ELECTRON CONTENT

A. M. McCaffrey, P. T. Jayachandran, *University of New Brunswick, Canada*

10:00 G11-2 (Invited) APPLICATION OF IRREGULARITY PARAMETER ESTIMATION FOR INTERPRETING STRUCTURE AT DIFFERENT ALTITUDES WITHIN AN EQUATORIAL PLASMA BUBBLE

C. S. Carrano, C. L. Rino, K. M. Groves, *Boston College, United States*; A. Bhattacharyya, *Indian Institute of Geomagnetism, India*

10:20 G11-3 SATELLITE-BEACON IONOSPHERIC-SCINTILLATION GLOBAL MODEL OF THE UPPER ATMOSPHERE (SIGMA): ENHANCEMENTS AND GPS SIGNAL PROPAGATION MODELING

J. P. Conroy, *Virginia Polytechnic Institute and State University, United States*; K. Deshpande, *Embry-Riddle Aeronautical University, United States*

10:40 G11-4 SOME CONSEQUENCES OF THE DIMENSIONAL REDUCTION 3D/2D ON THE NUMERICAL PREDICTION OF IONOSPHERIC SCINTILLATION EFFECTS UNDER WEAK AND STRONG PERTURBATION REGIMES

A. Galmiche, V. Fabbro, *ONERA, France*; L. Féral, *Federal University of Toulouse, France*; S. Rougerie, *CNES, France*

GF12 Radio Studies on Polar Aeronomy (2)

Session Chairs: Giorgiana De Franceschi, Chandrasekar V Chandra, Luca Baldini

09:40 GF12-1 DAYTIME SENSITIVITY OF THE LOWER IONOSPHERE TO SOLAR X-RAY FLARES EVALUATED FROM VLF SIGNAL MEASUREMENTS

E. L. Macotela[1], J.-P. Raulin[2], J. Manninen[1], E. Correia[2,3], T. Turunen[1]

[1]University of Oulu, Finland; [2]Universidade Presbiteriana Mackenzie, Brazil; [3]National Institute for Space Research, Brazil

10:00 GF12-2 GPS PHASE SCINTILLATION AND AURORAL ELECTROJET CURRENTS DURING GEOMAGNETIC STORMS OF MARCH 17, 2013 AND 2015

P. Prikryl[1,2], R. Ghoddousi-Fard[2], A. Viljanen[3], J. M. Weygand[4], B. S. R. Kunduri[5], E. G. Thomas[6], J. M. Ruohoniemi[7], M. Connors[8], D. W. Danskin[2], P. T. Jayachandran[1], K. S. Jacobsen[8], Y. L. Andalsvik[8], T. Durgonics[9], K. Oksavik[10,11], Y. Zhang[12], E. Spanswick[13], V. Sreeja[14], M. Aquino[14], P. J. Cilliers[15], G. Li[16], B. Ning[16], C. N. Mitchell[17], L. Spogli[18,19], M. Terkildsen[20], A. T. Weatherwax[21]

[1]University of New Brunswick, Canada; [2]Natural Resources Canada, Canada; [3]Finnish Meteorological Institute, Finland; [4]University of California, USA; [5]Virginia Tech, USA; [6]Dartmouth College, USA; [7]Athabasca University, Canada; [8]Norwegian Mapping Authority, Norway; [9]Technical University of Denmark, Denmark; [10]Department of

Physics and Technology, University of Bergen, Norway; [11]The University Centre in Svalbard, Norway; [12]Johns Hopkins University Applied Physics Laboratory, USA; [13]University of Calgary, Canada; [14]University of Nottingham, UK; [15]South African National Space Agency, South Africa; [16]Chinese Academy of Sciences, China; [17]University of Bath, UK; [18]Istituto Nazionale di Geofisica e Vulcanologia, Italy; [19]SpacEarth Technology, Italy; [20]Bureau of Meteorology, Australia; [21]Siena College, USA

10:20 GF12-3 GEOSPACE ENVIRONMENT MONITORING AT THE PRINCESS ELISABETH ANTARCTIC (PEA) STATION: INSTRUMENTATION AND FIRST RESULTS

N. Bergeot[1], J.-M. Chevalier[1], F. Darrouzet[2], J. Rasson[3], J. Lichtenberger[4,5], C. Bruyninx[1]

[1]Royal Observatory of Belgium, Belgium; [2]Royal Belgian Institute for Space Aeronomy, Belgium; [3]Royal Institute of Meteorology, Belgium; [4]Eötvös University, Hungary; [5]Research Center for Astronomy and Earth Sciences, Hungary

10:40 GF12-4 GREENLAB: AUTONOMOUS LOW POWER SYSTEM EXTENDING MULTI-CONSTELLATION GNSS ACQUISITION IN ANTARCTICA

L. Mossucca[1], L. Pilosu[1], P. Ruiu[1,2], G. Giordanengo[1], S. Ciccia[1,2], G. Vecchi[2], O. Terzo[1], V. Romano[3,4], L. Spogli[3,4], C. Cesaroni[3], I. Hunstad[3], A. Serratore[3]

[1]Istituto Superiore Mario Boella, Italy; [2]Politecnico di Torino, Italy; [3]Istituto Nazionale di Geofisica e Vulcanologia, Italy; [4]SpacEarth Technology, Italy

---

Tuesday, August 22, 2017 **09:40-11:00** **511CF**

H8 Drivers, Detection, and Ionospheric Impacts of Precipitation from the Radiation Belts (1)

Session Chairs: Craig Rodger, Christopher Cully

09:40 H8-1 (Invited) OBSERVATIONS DIRECTLY LINKING CHORUS TO RELATIVISTIC MICROBURSTS: VAN ALLEN PROBES EFW AND FIREBIRD II

A. Breneman[1], A. Crew[2], J. Sample[3], D. Klumpar[3], M. Shumko[3], O. Agapitov[4], A. Johnson[3], J. Wygant[1], B. Blake[5], D. Turner[5]

[1]School of Physics and Astronomy/The University of Minnesota, United States; [2]Goddard Space Flight Center, United States; [3]Montana State University, United States; [4]University of California Berkeley, United States; [5]Aerospace Corporation, United States

10:00 H8-2 OCCURRENCE CHARACTERISTICS OF RELATIVISTIC ELECTRON MICROBURSTS FROM SAMPEX OBSERVATIONS

E. Douma, C. J. Rodger, *University of Otago, New Zealand*; L. W. Blum, *NASA Goddard Space Flight Center, USA*; M. A. Clilverd, *British Antarctic Survey (NERC), United Kingdom*

10:20 H8-3 ENERGETIC PRECIPITATION AS MONITORED BY SUBIONOSPHERIC VLF PROPAGATION AND BY BREMSSTRAHLUNG X-RAYS ON THE ABOVE2 STRATOSPHERIC BALLOON FLIGHTS

C. M. Cully[1], M. Patrick[1], M. P. McCarthy[2], A. Kouznetsov[1]

[1]University of Calgary, Canada; [2]University of Washington, USA

10:40 H8-4 ATMOSPHERIC SIGNATURES AND DIAGNOSTICS OF ENERGETIC PARTICLE PRECIPITATION

R. A. Marshall, W. Xu, *University of Colorado Boulder, United States*; A. Kero, E. Turunen, *University of Oulu, Finland*

Tuesday, August 22, 2017 **09:40-10:20** **513D**

HG9 Radio Science for Space Weather (2)

Session Chairs: Mauro Messerotti, Viviane Pierrard

09:40 HG9-1 (Invited) RADIO OBSERVATIONS OF METEOROIDS WITH BRAMS: RELEVANCE FOR SPACE WEATHER APPLICATIONS

H. Lamy, *Belgian Institute for Space Aeronomy, Belgium*

10:00 HG9-2 THE KEY ROLE OF RADIO SCIENCE IN DISCRIMINATING BETWEEN NATURAL AND INTENTIONAL RFIS

M. Messerotti, *INAF-Astronomical Observatory of Trieste, Italy*

Tuesday, August 22, 2017 **09:40-11:00** **516DE**

J15 Millimeter/Submillimeter Arrays (2)

Session Chairs: Lars Nyman, Jongsoo Kim

09:40 J15-1 (Invited) THE NEW ECOSYSTEM OF ALMA

S. A. Corder[1,2]

[1]*National Radio Astronomy Observatory, United States;* [2]*Joint ALMA Observatory, Chile*

10:00 J15-2 (Invited) THE NORTHERN EXTENDED MILLIMETER ARRAY (NOEMA)

R. Neri, *IRAM, France*

10:20 J15-3 (Invited) THE SUBMILLIMETER ARRAY - CURRENT STATUS AND FUTURE PLANS

R. Blundell, P. K. Grimes, S. N. Paine, E. Tong, L. Zeng, *Smithsonian Astrophysical Observatory, United States*

10:40 J15-4 (Invited) OVERVIEW OF THE CURRENT ALMA FRONTEND AND ITS FUTURE DEVELOPMENTS

S. Asayama, *National Astronomical Observatory of Japan, Japan*; N. D. Whyborn, *Joint ALMA Observatory, Chile*

Tuesday, August 22, 2017 **09:40-10:40** **515ABC**

J16 Latest News and Observatory Reports (2)

Session Chairs: Richard Bradley, Willem Baan

09:40 J16-1 NETWORKED SENTINEL SYSTEMS OF REMOTELY LOCATED ANTENNAS OF UPGRADED GMRT

S. Nayak, *GMRT-NCRA-TIFR, India*

09:55 J16-2 LESSONS FROM 1 YEAR OF CHIME PATHFINDER DATA

S. R. Siegel, *McGill University, Canada*

10:10 J16-3 CAPABILITY IMPROVEMENTS AT THE ARIZONA RADIO OBSERVATORY

R. W. Freund, L. M. Ziurys, D. C. Forbes, T. W. Folkers, E. F. Lauria, *The University of Arizona, United States*

10:25 J16-4 FULL-SKY MAPS OF THE VHF RADIO SKY WITH THE OWENS VALLEY LONG WAVELENGTH ARRAY

M. W. Eastwood, G. Hallinan, *California Institute of Technology, United States*

Tuesday, August 22, 2017 **09:40-11:00** **516AB**

K7 Electromagnetic Biomedical Imaging (1)

Session Chairs: Milica Popovic, Joe LoVetri

09:40 K7-1 MICROWAVE DOSIMETRY AND MEDICAL IMAGING: A FRUITFUL ROUND-TRIP STORY

J.-C. Bolomey, *Paris Sud University, France*; M. Popovic, *McGill University, Canada*

10:00 K7-2 TERAHERTZ IMAGING OF FRESHLY EXCISED INVASIVE DUCTAL CARCINOMA BREAST TUMORS

T. Bowman[1], K. Bailey[2], M. El-Shenawee[1]

[1]University of Arkansas, United States; [2]Oklahoma State University, United States

10:20 K7-3 (Invited) COMPARISON OF RADAR-BASED MICROWAVE IMAGING ALGORITHMS APPLIED TO EXPERIMENTAL BREAST PHANTOMS

M. A. Elahi[1], B. R. Lavoie[2], E. Porter[1], M. Glavin[1], E. Jones[1], E. Fear[2], M. O'Halloran[1]

[1]National University of Ireland Galway, Ireland; [2]University of Calgary, Canada

10:40 K7-4 SUPPORT VECTOR MACHINES TO AID BREAST CANCER DIAGNOSIS USING A MICROWAVE RADAR PROTOTYPE

R. C. Conceicao, D. M. Godinho, *Instituto de Biofísica e Engenharia Biomédica, Portugal*; D. Byrne, I. Craddock, *Department of Electrical & Electronic Engineering, United Kingdom*

Tuesday, August 22, 2017 **11:00-12:00** **511AD**

A6 Metrological Analysis of Material Properties

Session Chairs: Nosherwan Shoaib, Imran Shoaib

11:00 A6-1 MODEL-ASSISTED NDT FOR SUB-MM SURFACE-BREAKING CRACK DETECTION IN ALLOYS

V. P. Bui[1], C. Lane[2], Y. Zhong[1], Y. L. Hor[1], C. E. Png[1]

*[1]A*STAR Institute of High Performance Computing (IHPC), Singapore; [2]A*STAR Advanced Remanufacturing and Technology Centre (ARTC), Singapore*

11:20 A6-2 ANALYSIS OF THE COMPOSITE EXIT-HOLE EFFECT ON THE SEAWATER DIELECTRIC MEASUREMENTS

Y. Zhou, R. H. Lang, *The George Washington University, United States*

11:40 A6-3 THE REFLECTION COEFFICIENT OF THE CORUNDUM-BASED MATERIAL IN X BAND

M. Vakhitov, D. Klygach, *South Ural State University (national research university), Russian Federation*

Tuesday, August 22, 2017 **11:00-12:00** **510AC**

B10 Advanced Algorithms in Computational Electromagnetics (2)

Session Chairs: Vladimir Okhmatovski, Pasi Ylä-Oijala

11:00 B10-1 EFFICIENT ANALYSIS OF STRUCTURES IN LAYERED MEDIA USING THE MPIE METHOD

D. Li, D. R. Wilton, D. R. Jackson, J. Chen, *University of Houston, United States*

11:20 B10-2 SPECTRAL ANALYSIS OF FINITE DIFFERENCE MODELS OF OPEN STRUCTURES IN TIME AND FREQUENCY DOMAIN

P. Jorkowski, L. Kuen, R. Schuhmann, *Technische Universität Berlin, Germany*

11:40 B10-3 (Invited) PHYSICAL INSIGHT OF THE CHARACTERISTIC MODES AND LONGITUDINAL VECTOR POTENTIAL ANALYSIS IN POTENTIAL-BASED INTEGRAL EQUATION

Q. S. Liu[1], S. Sun[2], Q. I. Dai[3], W. C. Chew[3], L. J. Jiang[1]

[1]The University of Hong Kong, Hong Kong; [2]University of Electronic Science and Technology of China, China; [3]University of Illinois at Urbana-Champaign, United States

---

Tuesday, August 22, 2017 **11:00-11:40** **514A**

B11 Metasurface Engineering (3)

Session Chairs: Tie Jun Cui, Anthony Grbic, Stefano Maci

11:00 B11-1 (Invited) APERTURE SYNTHESIS WITH METASURFACE-BASED RADIAL WAVEGUIDES

J. D. Heebl, A. Grbic, *University of Michigan, United States*

11:20 B11-2 CONFORMAL ANISOTROPIC METASURFACES FOR CONTROLLING SCATTERING, GUIDANCE, AND RADIATION OF ELECTROMAGENTIC WAVES

Z. H. Jiang, *Southeast University, China (CIE)*; D. H. Werner, *The Pennsylvania State University, United State of America*

Tuesday, August 22, 2017 **11:00-12:00** **514C**

C12 Ultra-High Bit Rate Radio Communications Engineering at Tera Hertz (1)

Session Chairs: Claudio Balocco, Andrew Gallant

11:00 C12-1 CHARACTERIZATION OF DISPERSION CODE MULTIPLEXING (DCM) IN INCOHERENT RADIO CHANNELS

L. Zou, C. Caloz, *Ecole Polytechnique of Montreal, QC*

11:20 C12-2 MULTILEVEL MODULATION IN TERAHERTZ BANDS BY PHOTONICS TECHNOLOGIES

A. Kanno, N. Sekine, A. Kasamatsu, N. Yamamoto, *National Institute of Information and Communications Technology, Japan*; T. Kawanishi, *Waseda University, Japan*

11:40 C12-3 (Invited) MICROMACHINED AND MILLED COMPONENTS FOR THZ BEAM MANIPULATION

M. Hajji, C. Hill, J. Hammler, D. Wood, D. Zeze, C. Balocco, A. Gallant, *Durham University, United Kingdom*

Tuesday, August 22, 2017 **11:00-12:00** **513B**

D13 Terahertz Generation and Applications (2)

Session Chairs: Christoph Hauri, Mona Jarrahi

11:00 D13-1 (Invited) INTENSE TERAHERTZ SOURCES FOR NONLINEAR INTERACTIONS

J. A. Fulop[1,2,3], L. Palfalvi[2], J. Hebling[1,2,2]

[1]MTA-PTE High-Field Terahertz Reserch Group, Hungary; [2]University of Pécs, Hungary; [3]ELI-ALPS, Hungary

11:20 D13-2 INTENSE THZ-COHERENT TRANSITION RADIATION FROM LASER SOLID PLASMA INTERACTION

W. J. Ding, S.-P. Gao, *Institute of High Performance Computing, Agency for Science Technology and Research (A*STAR), Singapore*

11:40 D13-3 A DUAL-POLARIZED MICROMACHINED BEAM-STEERING RADAR AT 240 GHZ FOR COLLISION AVOIDANCE APPLICATIONS

A. Jam, J. East, K. Sarabandi, *University of Michigan, MI*

Tuesday, August 22, 2017 **11:00-12:00** **513EF**

E15 Time Reversal in Electromagnetics

Session Chairs: Julien de Rosny, Florian Monsef

11:00 E15-1 SPATIOTEMPORAL WAVE FRONT SHAPING USING SPATIAL-MICROWAVE-MODULATORS: A POSSIBLE ALTERNATIVE TO TIME REVERSAL

P. del Hougne, F. Lemoult, M. Fink, G. Lerosey, *Institut Langevin, ESPCI Paris, France*

11:20 E15-2 REAL-TIME PASSIVE COHERENT MICROWAVE IMAGING SYSTEM USING A DISORDERED CAVITY

A. C. Tondo Yoya, B. Fuchs, M. Davy, *Institute of Electronics and Telecommunications of Rennes, France*

11:40 E15-3 APPLICATION OF DORT AND PULSE INVERSION TO DETECTION AND ELECTROMAGNETIC FOCUSING ON NONLINEAR ELEMENTS

S. K. Hong, *Soongsil University, South Korea*; J. M. Faia, K. W. McClintick, *Rose-Hulman Institute of Technology, United States*

Tuesday, August 22, 2017 **11:00-11:40** **510BD**

F12 Remote Sensing Measurements of Precipitation (3)

Session Chairs: Chandrasekar V Chandra, Luca Baldini

11:00 F12-1 RAIN PREDICTION USING RADIOMETRIC OBSERVATIONS AT A TROPICAL LOCATION

A. Maitra, R. Chakraborty, *University of Calcutta, India*

11:20 F12-2 THE NEFOCAST PROJECT: A NOWCASTING WEATHER PLATFORM BASED ON DUAL-FREQUENCY INTERACTIVE SATELLITE TERMINALS

G. Bacci[1], F. Binaglia[2], L. Facheris[3], D. V. Finocchiaro[4], F. Giannetti[5], M. Moretti[5], A. Ortolani[6], A. Petrolino[1], R. Reggiannini[5], A. Vaccaro[1]

[1]MBI srl, Italy; [2]Pro.Ge.Com. srl, Italy; [3]Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Italy; [4]Eutelsat S.A., France; [5]University of Pisa, Italy; [6]Istituto di Biometeorologia (IBIMET), Italy

Tuesday, August 22, 2017 **11:00-11:40** **513C**

FB13 Electromagnetic Problems Involving Volume Scattering (3)

Session Chairs: Ari Sihvola, Cuong Nguyen

11:00 FB13-1 EXPLOITING SATELLITE KA AND KU LINKS FOR THE REAL-TIME ESTIMATION OF RAIN INTENSITY

E. Adirosi[1], L. Facheris[1], A. Petrolino[2], F. Giannetti[3], R. Reggiannini[3], M. Moretti[3], S. Scarfone[3], S. Melani[4], F. Collard[5], G. Bacci[2]

[1]Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), Italy; [2]Mediterranean Broadband Infrastructure (M.B.I.) S.r.l., Italy; [3]University of Pisa, Italy; [4]Istituto di Biometeorologia (IBIMET), CNR, Italy; [5]Eutelsat S.A., France

11:20 FB13-2 ADAPTIVE BEAMFORMING SYNTHESIS FOR THINNED FRACTAL ANTENNA ARRAYS

S. E. El-Khamy, A. S. Eltrass, *Alexandria University, Faculty of Engineering, Egypt*; H. Fawzy, *Pharos University, Egypt*

Tuesday, August 22, 2017 **11:00-12:00** **511BE**

G13 Advances in Irregularities and Scintillation Studies (3)

Session Chairs: Emanoel Costa, T Maruyama

11:00 G13-1 (Invited) ON EXTENSION OF THE HYBRID SCINTILLATION PROPAGATION MODEL FOR SIGNALS IN TRANSIONOSPHERIC STOCHASTIC CHANNELS

V. E. Gherm, N. N. Zernov, *The University of St.Petersburg, Russian Federation*

11:20 G13-2 IONOSPHERIC EFFECTS ON A WIDE BANDWIDTH CHIRP RADAR SIGNAL

D. L. Knepp, *NorthWest Research Associates, California*

11:40 G13-3 SCINTILLATION EFFECTS ON VHF/UHF SATELLITE COMMUNICATIONS AND MITIGATION TECHNIQUES

C. Huang, R. G. Caton, R. T. Parris, J. M. Holmes, *Air Force Research Laboratory, United States*

Tuesday, August 22, 2017 **11:00-12:00** **517CD**

GF14 Radio Studies on Polar Aeronomy (3)

Session Chairs: Giorgiana De Franceschi, Chandrasekar V Chandra, Luca Baldini

11:00 GF14-1 FIELD DEPLOYMENT OF TWO GNSS IN COLLABORATION WITH THE ISINGLASS SOUNDING ROCKET MISSION IN ALASKA

A. J. Coster, *MIT Haystack Observatory, United States*; D. Hampton, *University of Alaska, United States*; K. Lynch, *Dartmouth College, United States*; S. Skone, *University of Calgary, Canada*

11:20 GF14-2 FROM SOLAR CYCLE 23 TO SOLAR CYCLE 24: TWELVE YEARS OF IONOSPHERIC SCINTILLATIONS MEASUREMENTS AT NY-ÅLESUND (SVALBARD ISLAND)

C. Cesaroni, L. Spogli, V. Romano, L. Alfonsi, I. Hunstad, G. De Franceschi, *INGV, italy*

11:40 GF14-3 TEC DATA INGESTION INTO IRI AND NEQUICK OVER THE ANTARCTIC

B. Nava[1], K. Alazo-Cuartas[1], Y. Migoya-Orue'[1], A. Kashcheyev[1], M. Pietrella[2], C. Scotto[2], M. Pezzopane[2], S. M. Radicella[1]

[1]The Abdus Salam International Centre for Theoretical Physics, Italy; [2]Istituto Nazionale di Geofisica e Vulcanologia, Italy

---

Tuesday, August 22, 2017 **11:00-12:00** **511CF**

H10 Drivers, Detection, and Ionospheric Impacts of Precipitation from the Radiation Belts (2)

Session Chairs: Craig Rodger, Christopher Cully

11:00 H10-1 (Invited) NONRESONANT INTERACTIONS OF ELECTROMAGNETIC ION CYCLOTRON WAVES WITH RELATIVISTIC ELECTRONS

L. Chen, *University of Texas, Dallas, United States*

11:20 H10-2 MONTE CARLO SIMULATION OF ENERGETIC ELECTRON PRECIPITATION

W. Xu, R. A. Marshall, X. Fang, *University of Colorado Boulder, United States*

11:40 H10-3 ELECTRON PRECIPITATION FROM EMIC WAVES: EVIDENCE OF SUB-MEV EMIC-DRIVEN PRECIPITATION

C. J. Rodger, A. T. Hendry, *University of Otago, New Zealand*; M. A. Clilverd, *British Antarctic Survey (NERC), United Kingdom*; M. J. Engebretson, *Augsburg College, USA*; C. A. Kletzing, *University of Iowa, USA*; I. R. Mann, *University of Alberta, Canada*; M. R. Lessard, *University of New Hampshire, USA*

Tuesday, August 22, 2017 **11:00-12:00** **516DE**

J17 J-Tutorial Lars-Ake Nyman: "The Atacama Large Millimeter Array (ALMA)"

Session Chairs: Willem Baan, Richard Bradley

11:00 J17-1 THE ATACAMA LARGE MILLIMETER/SUBMILLIMETER ARRAY (ALMA)

L.-A. Nyman, *Joint ALMA Observatory, Chile*

Tuesday, August 22, 2017 **11:00-12:00** **516AB**

K8 Electromagnetic Biomedical Imaging (2)

Session Chairs: Milica Popovic, Joe LoVetri

11:00 K8-1 (Invited) PHASE UNWRAPPING THROUGH INCREMENTAL COMPARISONS BETWEEN PHANTOM LAYERS

T. Rydholm[1], A. Fhager[1], M. Persson[1], P. M. Meaney[1,2]

[1]Chalmers University of Technology, Sweden; [2]Dartmouth College, USA

11:20 K8-2 IMMERSION MEDIUM INDEPENDENT MICROWAVE BREAST IMAGING

A. Baran, J. LoVetri, *University of Manitoba, Canada*; D. Kurrant, E. Fear, *University of Calgary, Canada*

11:40 K8-3 (Invited) ANALYSIS OF OPTIMAL MICROWAVE IMAGING SYSTEM AND ALGORITHM PARAMETERS FOR 3D RECONSTRUCTIONS OF BREAST TISSUES

A. Baran[1], D. Kurrant[2], E. Fear[2], J. LoVetri[1]

[1]University of Manitoba, Canada; [2]University of Calgary, Canada

Tuesday, August 22, 2017 **13:40-14:40** **511AD**

A7 Space Metrology (1)

Session Chairs: Liu Min, Pedro Cruz

13:40 A7-1 (Invited) DISCUSSION ON THE DEFINITION OF BASIC PHYSICAL UNITS IN SPACE METROLOGY

L. Min, L. Biye, *Beijing Orient Institute of Measurement & Test, China (CIE)*

14:20 A7-2 TESTING OF A POSSIBLE RF-GENERATOR FOR A SPACE BASED AOTF APPLICATION IN THE FRAME OF AN ESA SPACE MISSION

J. A. Vanhamel[1], S. Berkenbosch[1], E. Dekemper[1], P. Leroux[2], E. Neefs[1], E. Vanlil[2]

[1]Belgian Institute for Space Aeronomy, Belgium; [2]KU Leuven, Belgium

Tuesday, August 22, 2017 **13:40-14:40** **510AC**

B12 Integral Equation, Hybrid, and Fast Methods (1)

Session Chairs: Thomas Eibert, Francesco Andriulli

13:40 B12-1 NOVEL SINGLE SOURCE INTEGRAL EQUATION FOR SOLUTION OF SCATTERING PROBLEMS ON 3D IMPERFECTLY CONDUCTING OBJECTS

F. Lori Sheikh Hossieni[1], A. Menshov[2], O. Goni[1], A. Aljamal[1], V. Okhmatovski[1]

[1]Farhad Sheikh Hossieni, Canada; [2]University of Texas at Austin, USA

14:00 B12-2 (Invited) ON THE RESONANCES OF CHARACTERISTIC MODES

P. Ylä-Oijala, J. Lappalainen, D. Tzarouchis, A. Sihvola, *Aalto University, Finland*

14:20 B12-3 (Invited) AN EXPLICIT TIME MARCHING SCHEME FOR SOLVING SURFACE INTEGRAL EQUATIONS OF ACOUSTICS

R. Chen, N. Alharthi, S. B. Sayed, H. Bagci, D. Keyes, *King Abdullah University of Science and Technology (KAUST), Saudi Arabia*

Tuesday, August 22, 2017 **13:40-14:40** **513C**

B13 Inverse Scattering and Imaging (1)

Session Chairs: Matteo Pastorino, Lianlin Li

13:40 B13-1 (Invited) STUDY OF THE IMPACT OF NOISE ON TWO REAL-TIME MICROWAVE INVERSION METHODS

D. Tajik, D. S. Shumakov, N. K. Nikolova, *McMaster University, Canada*

14:00 B13-2 (Invited) SINGLE-SENSOR MICROWAVE IMAGER USING 1-BIT PROGRAMMABLE CODING METASURFACE

L. Li, *Peking University, China (CIE)*; T. Cui, *Southeast University, China(CIE)*

14:20 B13-3 (Invited) A NON-ITERATIVE EIGENFUNCTION-BASED INVERSE SOLVER FOR PEC-ENCLOSED ELECTROMAGNETIC IMAGING

N. Abdollahi, I. Jeffrey, J. LoVetri, *University of Manitoba, Canada*

Tuesday, August 22, 2017 **13:40-14:40** **514B**

C13 Ultra-High Bit Rate Radio Communications Engineering at Tera Hertz (2)

Session Chairs: Claudio Balocco, Andrew Gallant

13:40 C13-1 EXTREME WIDEBAND ARBITRARY WAVEFORM GENERATOR BASED ON FREQUENCY MULTIPLEXING

A. Czylwik, S. Bieder, M. Sichma, *University Duisburg-Essen, Germany*

14:00 C13-2 (Invited) COHERENT DETECTION OF BROADBAND TERAHERTZ PULSES VIA CMOS-COMPATIBLE SOLID-STATE DEVICES

A. Tomasino[1], A. Mazhorova[1], M. Clerici[2], M. Peccianti[3], S.-P. Ho[1,4], Y. Jestin[1], A. Pasquazi[3], A. Markov[1], X. Jin[1], R. Piccoli[1], S. Delprat[1], M. Chaker[1], A. Busacca[5], J. Ali[4], L. Razzari[1], R. Morandotti[1]

[1]INRS, Canada; [2]University of Glasgow, UK; [3]University of Sussex, UK; [4]University of Technology Malaysia, Malaysia; [5]University of Palermo, Italy

14:20 C13-3 VISIBLE LIGHT COMMUNICATION BASED ON OFFSET PULSE POSITION MODULATION (OFFSET-PPM) USING HIGH POWER LED

M. H. Ahfayd, M. J. Sibley, P. J. Mather, *University of Huddersfield, United Kingdom*

Tuesday, August 22, 2017 **13:40-14:20** **513B**

D14 Material and Metamaterials for Microwave to Optical Wave Applications (1)

Session Chairs: Tatsuo Itoh, Benjamin Williams

13:40 D14-1 (Invited) ON THE CIRCUIT MODELING OF STACKED CLOSELY SPACED APERTURE-LIKE FSSS

F. Medina, C. Molero, R. Rodriguez-Berral, F. Mesa, *University of Sevilla, Spain*

14:00 D14-2 (Invited) RECENT PROGRESS ON NONRECIPROCAL CRLH METAMATERIALS FOR ANTENNA APPLICATIONS

T. Ueda, *Kyoto Institute of Technology, Japan*

Tuesday, August 22, 2017 **13:40-14:40** **513EF**

E16 EMC for PCB and Package

Session Chairs: Christopher Holloway, ERPING LI

13:40 E16-1 A FIRST PRINCIPLES, MULTIPOLE-BASED CABLE BRAID ELECTROMAGNETIC PENETRATION MODEL

S. Campione, L. K. Warne, W. L. Langston, W. A. Johnson, R. S. Coats, L. I. Basilio, *Sandia National Laboratories, United States*

14:00 E16-2 EFFICIENT CHARACTERIZATION OF INTERFERENCE PROPAGATION IN MULTILAYERED SUBSTRATES WITH MULTIPLE-STAGE OPEN DISCONTINUITIES

M. Grau Novellas, R. Serra, *Eindhoven University of Technology, Netherlands*; M. Rose, *NXP Semiconductors, Netherlands*

14:20 E16-3 A SYSTEM AND SOURCE JOINT ESTIMATION METHOD FOR EM EMISSION MODELING OF CLOCK CIRCUITS

X. Hao, S. Xie, W. Zhang, *Beihang University, China*

Tuesday, August 22, 2017 **13:40-14:40** **510BD**

F14 Microwave Sensing of Soil Moisture (1)

Session Chairs: Y. Kerr, Simon Yueh, David Le Vine

13:40 F14-1 FULL-WAVE SIMULATIONS OF ELECTROMAGNETIC SCATTERING BY VEGETATION FOR MICROWAVE REMOTE SENSING BASED ON NUMERICAL 3D SOLUTIONS OF MAXWELL EQUATIONS

H. Huang, L. Tsang, *University of Michigan, United States*; T.-H. Liao, E. Njoku, A. Colliander, *Jet Propulsion Laboratory, California Institute of Technology, United States*; K.-H. Ding, *Air Force Research Laboratory, Wright-Patterson AFB, United States*

14:00 F14-2 (Invited) SMOS: FROM SOIL MOISTURE TO CLIMATE MONITORING AND APPLICATIONS

Y. H. Kerr[1], J.-P. Wigneron[2], A. Mahmoodi[1], A. Al Bitar[1], A. Al-Yaari[2], S. Bircher[1], P. Ferrazzoli[3], A. Mialon[1], M. Parrens[1], P. Richaume[1], N. Rodriguez[1], C. Vittucci[3], S. Mecklenburg[4]

[1]CESBIO, France; [2]INRA, France; [3]Tor vergata University, Italy; [4]ESA, Italy

14:20 F14-3 DEVELOPMENT OF AN INTEGRATED SOIL MOISTURE DATA RECORD USING SMAP AND SMOS DATA

S. Chan, *NASA Jet Propulsion Laboratory, United States*; R. Bindlish, P. O'Neill, *NASA Goddard Space Flight Center, United States*; T. Jackson, *USDA ARS Hydrology and Remote Sensing Laboratory, United States*; Y. Kerr, *CESBIO-CNES, France*

Tuesday, August 22, 2017 13:40-14:40 513D

FB15 EM Modeling and Applications of Underground Imaging (1)

Session Chairs: Lorenzo Capineri, Motoyuki Sato

13:40 FB15-1 (Invited) ARRAY GPR SYSTEM "YAKUMO" AND ITS APPLICATIONS

M. Sato, *Tohoku University, Japan*

14:00 FB15-2 (Invited) GPR MEASUREMENTS INVERSION IN CASE OF SPATIALLY VARYING ANTENNA POLARIZATION

J. Wang, P. J. Aubry, A. Yarovoy, *Delft University of Technology, Netherlands*

14:20 FB15-3 DESIGN OF NONLINEAR MUTUAL COUPLING OPERATOR FOR ANTENNA ARRAYS USING A NOVEL ACGF-DEEP-LEARNING TECHNOLOGY

A. M. Alzahed[1], S. M. Mikki[2], Y. M. M. Antar[1]

[1]Royal Military College of Canada, Canada; [2]University of New Haven, USA

Tuesday, August 22, 2017 13:40-14:40 511BE

G15 Incoherent Scatter Radar (1)

Session Chairs: Ingrid Mann, Emma Spanswick, Mike Kosch

13:40 G15-1 INCOHERENT SCATTER PLASMA LINES: A POWERFUL TOOL TO STUDY AURORA AT SONDRESTROM ISR

A. N. Bhatt[1], J. Vierinen[2], J. Semeter[3], M. Hirsch[3], M. McCready[1], S. Kaeppler[1], E. Kendall[1]

[1]SRI International, United States; [2]University of Trmoso, Norway; [3]Boston University, United States

14:00 G15-2 GEOSPACE RADAR ARCHITECTURE AND DESIGN

F. D. Lind[1], J. Vierinen[2], P. J. Erickson[1], R. Volz[1]

[1]MIT Haystack Observatory, United States; [2]University of Tromsø, Norway

14:20 G15-3 FIRST RESULTS FROM A LONG-TERM INCOHERENT SCATTER RADAR INVESTIGATION OF E-REGION THERMOSPHERIC WINDS

S. R. Kaeppler[1], M. F. Larsen[2], R. A. Mesquita[2], R. H. Varney[1], A. Reimer[1], M. J. Nicolls[3]

[1]SRI International, United States; [2]Clemson University, United States; [3]LeoLabs Inc, United States

---

Tuesday, August 22, 2017 **13:40-14:40** **514A**

G16 Improvement of GNSS Radio Occultation Techniques (1)

Session Chairs: Norbert Jakowski, Keith Groves

13:40 G16-1 IONOSPHERIC REFRACTION ON GNSS RADIO OCCULTATION SIGNALS

M. M. Hoque, N. Jakowski, *German Aerospace Center (DLR), Germany*

14:00 G16-2 RADIO OCCULTATION MODELLING IN COMPLEX IONOSPHERES

C. J. Coleman, *The University of Adelaide, Australia*; B. Forte, *The University of Bath, UK*

14:20 G16-3 IMPROVEMENT OF GNSS RADIO OCCULTATION TECHNIQUES

L. C. Gardner, L. Scheriliess, R. W. Schunk, *Utah Stat University - CASS, United States*

Tuesday, August 22, 2017 **13:40-14:40** **511CF**

H11 H-Tutorial Craig Rodger: “Drivers, Detection, and Wider Significance of Precipitation from the Radiation Belts"

Session Chair: O. Santolik

13:40 H11-1 (Invited) DRIVERS, DETECTION, AND WIDER SIGNIFICANCE OF PRECIPITATION FROM THE RADIATION BELTS

C. J. Rodger, *University of Otago, New Zealand*

Tuesday, August 22, 2017 **13:40-14:20** **516DE**

J18 Millimeter/Submillimeter Arrays (3)

Session Chairs: Lars Nyman, Jongsoo Kim

13:40 J18-1 (Invited) THE CURRENT STATUS AND FUTURE PLAN OF MM/SUB-MM MIXERS IN ASIAA

M.-J. Wang, *Academia Sinica, China (SRS)*

14:00 J18-2 DESIGN OF AN OPTICAL BEAM COMBINER FOR DUAL BAND OBSERVATION WITH ALMA

D. Montofre[1], A. Baryshev[1,2], P. Mena[3], R. Hesper[1]

[1]Kapteyn Institute, Netherlands; [2]SRON, Netherlands; [3]3Department of Electrical Engineering, Chile

Tuesday, August 22, 2017 **13:40-14:40** **514C**

J19 Recent and Future Space Missions (1)

Session Chairs: Fabrice Herpin, Martin Giard

13:40 J19-1 THE FIRST DETECTION OF A SOLAR BURST AT 3 AND 7 THZ

P. Kaufmann[1,2], J.-P. Raulin[1], R. Marcon[2,3], A. S. Kudaka[1], R. F. Hidalgo Ramírez[1]

[1]Universidade Presbiteriana Mackenzie, Brazil; [2]UNICAMP, Brazil; [3]OSBL, Brazil

14:00 J19-2 THE NETHERLANDS - CHINA LOW FREQUENCY EXPLORER

A. J. Boonstra, M. Wise, H. van der Marel, M. Ruiter, M. Arts, D. Prinsloo, J. Bast, G. Kruithof, *ASTRON, Netherlands*; H. Falcke, M. Klein-Wolt, C. Brinkerink, H. Pourshaghaghi, *Radboud University, Netherlands*; J. Rotteveel, E. Bertels, A. Berciano Alba, *ISIS - Innovative Solutions in Space, Netherlands*; J. Ping, L. Chen, M. Huang, Y. Yan, X. Chen, M. Zhang, M. Wang, *NAOC-CAS, China*; H. Rothkaehl, *SRC-PAS, Poland*

14:20 J19-3 THE HERSCHEL SPACE MISSION

F. Herpin, *Laboratoire d'Astrophysique de Bordeaux, France*; E. Caux, *IRAP, France*; L. Pagani, *LERMA, Observatoire de Paris, France*

Tuesday, August 22, 2017 **13:40-14:40** **516AB**

K9 Electromagnetic Biomedical Imaging (3)

Session Chairs: Milica Popovic, Joe LoVetri

13:40 K9-1 (Invited) SPATIAL FIELD INTENSITY SHAPING VIA OPTIMIZED MULTI TARGET TIME REVERSAL

G. G. Bellizzi[1,2], L. Crocco[2], T. Isernia[1,2]

[1]Università Mediterranea di Reggio Calabria, Italy; [2]CNR-IREA, Consiglio Nazionale delle Ricerche, Italy

14:00 K9-2 (Invited) MICROWAVE IMAGING WITH A TIME-DOMAIN RECONSTRUCTION ALGORITHM

A. Fhager, M. Persson, *Chalmers University of Technology, Sweden*

14:20 K9-3 (Invited) EVALUATION OF A FACETED PEC AIR-BASED BREAST IMAGING SYSTEM

J. LoVetri, A. Baran, M. Asefi, K. Nemez, I. Jeffrey, *University of Manitoba, Canada*

Tuesday, August 22, 2017 **14:40-15:20** **511AD**

A8 Space Metrology (2)

Session Chairs: Liu Min, Pedro Cruz

14:40 A8-1 COMPACT-FIBERED OPTICAL FREQUENCY STANDARD AT 1542 NM STABILIZED ON IODINE HYPERFINE LINE IN THE 10-15 RANGE FOR SPACE APPLICATIONS

C. Philippe[1], R. Le Targat[1], D. Holleville[1], M. Lours[1], T. Leveque[2], R. Le Goff[3], P. Wolf[1], O. Acef[1]

[1]SYRTE / CNRS / Observatoire de Paris, France; [2]CNES, France; [3]SODERN, France

15:00 A8-2 AN IMPLEMENTATION METHOD OF ELECTRICAL REFERENCE STANDARDS FOR PERMANENT LUNAR BASES

Y. Li, L. Min, W. Yan, *Beijing Orient Institute of Measurement and Test, China (CIE)*

Tuesday, August 22, 2017 **14:40-15:40** **510AC**

B14 Integral Equation, Hybrid, and Fast Methods (2)

Session Chairs: Thomas Eibert, Francesco Andriulli

14:40 B14-1 (Invited) FAST NEAR-FIELD ITERATION BASED ON STATIC AND DYNAMIC GREEN'S FUNCTIONS

S. Karki, C. Raucy, C. Craeye, *Universite catholique de Louvain, Belgium*

15:00 B14-2 (Invited) ANALYSIS AND SYNTHESIS OF FIELDS IN MODULATED METASURFACES

G. Minatti[1], F. Caminita[2], E. Martini[2], S. Maci[1]

[1]University of Siena, Italy; [2]Wave-Up S.r.l, Italy

15:20 B14-3 SOMMERFELD INTEGRALS FOR MULTI-LAYER, GROUNDED DIELECTRIC SUBSTRATES: A COMPARATIVE NUMERICAL ANALYSIS OF EXACT AND ASYMPTOTIC METHODS

K. C. Durbhakula, D. Chatterjee, A. M. Hassan, *University of Missouri Kansas City, United States*; M. S. Kluskens, *Naval Research Laboratory, United States*

Tuesday, August 22, 2017 **14:40-15:40** **513C**

B15 Inverse Scattering and Imaging (2)

Session Chairs: Matteo Pastorino, Lianlin Li

14:40 B15-1 (Invited) AN INVERSE SCATTERING PROCEDURE IN LEBESGUE SPACES WITH NON-CONSTANT EXPONENTS

C. Estatico, A. Fedeli, M. Pastorino, A. Randazzo, *University of Genoa, Italy*

15:00 B15-2 (Invited) ON THE SCATTERING BY A PULSED SOURCE WITH THE CWA

C. Ponti, M. Santarsiero, G. Schettini, *"Roma Tre" University, Italy*

15:20 B15-3 (Invited) A PERFORMANCE ANALYSIS OF TYPICAL IMAGING ALGORITHMS IN GROUND-BASED SYNTHETIC APERTURE RADAR

C. Hu, Q. He, W. Tian, Y. Deng, X. Dong, *Beijing Institute of Technology, China (CIE)*

Tuesday, August 22, 2017 **14:40-15:40** **514B**

CDB14 Exploitation of Non-Linearities for Passive Wireless Sensors (1)

Session Chairs: Yvan Duroc, Ville Viikari, Ke Wu

14:40 CDB14-1 (Invited) EXPLOITATION OF HARMONIC SIGNALS GENERATED BY THE UHF RFID CHIPS: NEW PROMISES FOR THE RADIO FREQUENCY IDENTIFICATION TECHNOLOGY

G. Andia Vera[1], D. Allane[1,2], Y. Duroc[3], S. Tedjini[1]

[1]Grenoble-INP, University Grenoble-Alpes, France; [2]University Claude Bernard Lyon 1, University of Lyon, France; [3]University of Sciences and Technology Houari Boumediene, Algérie

15:00 CDB14-2 SHAPING MICROWAVE FIELDS USING NON-LINEAR UNSOLICITED FEEDBACK: APPLICATION TO ENERGY HARVESTING

P. del Hougne, M. Fink, F. Lemoult, G. Lerosey, *Institut Langevin, ESPCI Paris, France*

15:20 CDB14-3 MILLIMETER-WAVE SOURCELESS RECEIVER ARRAY

R. Liu, K. Wu, *Polytechnique Montréal, Canada*

Tuesday, August 22, 2017 **14:40-15:40** **513B**

D15 Material and Metamaterials for Microwave to Optical Wave Applications (2)

Session Chairs: Tatsuo Itoh, Benjamin Williams

14:40 D15-1 (Invited) PHOTOLUMINESCENCE ENGINEERING USING III-V DIELECTRIC METAMATERIALS

S. Liu[1], S. Addamane[2], M. B. Sinclair[1], G. A. Keeler[1], G. Balakrishnan[2], I. Brener[1]

[1]Sandia National Labs, United States; [2]University of New Mexico, United States

15:00 D15-2 (Invited) INTERSUBBAND POLARITONIC METASURFACES FOR FREQUENCY MIXING AND OPTICAL POWER LIMITING

N. Nookala[1], J. Lee[1], Y. Liu[1], M. Tymchenko[1], G. Boehm[2], M.-C. Amann[2], O. Wolf[3], J. L. Reno[3], I. Brener[3], A. Alu[1], M. A. Belkin[1]

[1]The University of Texas at Austin, United States; [2]Technical University of Munich, Germany; [3]Sandia National Laboratories, United States

15:20 D15-3 (Invited) OPTOMECHANICAL METAMATERIALS FOR ROOM TEMPERATURE THZ DETECTION

Y. Todorov, C. Belacel, D. Gacemi, S. Barbieri, I. Favero, C. Sirtori, *Université Paris Diderot, France*

Tuesday, August 22, 2017 **14:40-15:40** **513EF**

E17 Lightning and Related Phenomena (1)

Session Chairs: Vladimir A. Rakov, Satoru Yoshida

14:40 E17-1 (Invited) A NUMERICAL STUDY OF SITE ERRORS IN MAGNETIC DIRECTION FINDING OF LIGHTNING

S. Araki, Y. Baba, *Doshisha University, Japan*; V. A. Rakov, *University of Florida, USA*

15:00 E17-2 (Invited) A DUAL BAND 3D LIGHTNING LOCATING SYSTEM

H. Liu, W. Dong, *Laboratory of Lightning Physics and Protection Engineering, State Key Laboratory of Severe Weather, China*; L. Li, *Chongqing Meteorological Bureau, China*

15:20 E17-3 (Invited) MODELING NARROW BIPOLAR PULSES USING NUMERICAL SOLUTION TO FREDHOLM EQUATION

S. Karunarathne, *Baptist College of Health Sciences, United States*; N. Karunarathne, T. Marshall, M. Stolzenburg, *University of Mississippi, United States*

Tuesday, August 22, 2017 **14:40-15:40** **510BD**

F16 Microwave Sensing of Soil Moisture (2)

Session Chairs: Y. Kerr, Simon Yueh, David Le Vine

14:40 F16-1 (Invited) RELATION BETWEEN SMOS OPTICAL THICKNESS AND PANTROPICAL BIOMASS

C. Vittucci, P. Ferrazzoli, L. Guerriero, *Tor Vergata University, Italy*; Y. Kerr, P. Richaume, *CESBIO, France*; G. Vaglio Laurin, *Tuscia University, Italy*

15:00 F16-2 (Invited) HIGH-RESOLUTION ENHANCED PRODUCT BASED ON SMAP ACTIVE-PASSIVE APPROACH USING SENTINEL 1A AND 1B SAR DATA

N. N. Das[1], D. Entekhabi[2], S. Kim[1], T. Jagdhubar[3], S. Dunbar[1], S. Yueh[1], A. Colliander[1]

[1]Jet Propulsion Laboratory, NASA, United States; [2]Massachusetts Institute of Technology, United States; [3]German Aerospace Center (DLR), Germany

15:20 F16-3 INTEGRATION OF SMAP, AMSR2 AND SENTINEL-1 DATA FOR SOIL MOISTURE MONITORING

S. Paloscia, E. Santi, P. Pampaloni, S. Pettinato, *IFAC/CNR, Italy*; L. Brocca, L. Ciabatta, *IRPI-CNR, Italy*; D. Entekhabi, *MIT, USA*

Tuesday, August 22, 2017 **14:40-15:40** **513D**

FB17 EM Modeling and Applications of Underground Imaging (2)

Session Chairs: Lorenzo Capineri, Motoyuki Sato

14:40 FB17-1 (Invited) GROUND PENETRATING RADAR WITH CONTACT HORN ANTENNAS

M. Pieraccini, N. Rojhani, L. Miccinesi, *University of Florence, Italy*

15:00 FB17-2 (Invited) FIELD MEASUREMENT OF PERMITTIVITY, ELECTRICAL CONDUCTIVITY, MAGNETIC SUSCEPTIBILITY, AND TOPOGRAPHIC RELIEF OF SOILS IN DONBASS, UKRAINE FOR ROBOTIC, MULTI-SENSOR, HUMANITARIAN DEMINING SYSTEM DESIGN

G. Pochanin, V. Ruban, L. Varianytsia-Roshchupkina, O. Orlenko, I. Pochanina, *Dept.of Radiophysical Introscopy, O.Ya. Usikov Inst. for Radiophysics and Electronics, Ukraine*; S. Truskavetsky, K. Viatkin, A. Sherstyuk, T. Byndych, *Nat. Scientific Center, Inst. for Soil Science and Agrochemistry Research named after O.N. Sokolovsk, Ukraine*; L. Capineri, P. Falorni, *Università degli Studi di Firenze, Italy*; T. Bechtel, L. Houser, *Dept. of Earth & Environment, Franklin & Marshall College, USA*

Tuesday, August 22, 2017 **14:40-15:40** **511BE**

G17 Incoherent Scatter Radar (2)

Session Chairs: Ingrid Mann, Emma Spanswick, Mike Kosch

14:40 G17-1 VALIDATION OF AN INCOHERENT SCATTER RADAR PERFORMANCE SIMULATOR

P. J. Erickson[1], J. Vierinen[2], F. D. Lind[1], R. Volz[1]

[1]Massachusetts Institute of Technology, United States; [2]University of Tromsø, Norway

15:00 G17-2 STUDIES OF POLAR CAP DYNAMICS USING MULTIPLE INCOHERENT SCATTER RADARS

R. H. Varney, *SRI International, United States*; R. G. Gillies, *University of Calgary, Canada*

15:20 G17-3 ION-NEUTRAL COUPLING OBSERVATIONS DURING RECENT COORDINATED INCOHERENT SCATTER RADAR CAMPAIGNS FOR GEOSPACE STORM AND DISTURBANCE STUDIES

S.-R. Zhang, P. J. Erickson, *MIT, United States*

Tuesday, August 22, 2017 **14:40-15:20** **514A**

G18 Improvement of GNSS Radio Occultation Techniques (2)

Session Chairs: Norbert Jakowski, Keith Groves

14:40 G18-1 RECEIVER BIAS ESTIMATION AND VALIDATION OF E-POP GAP-O IONOSPHERIC RADIO OCCULTATION MEASUREMENTS

C. Watson[1,2], R. B. Langley[3], D. R. Themens[3], A. W. Yau[2], A. Howarth[2], P. T. Jayachandran[3]

[1]University Corporation for Atmospheric Research, United States; [2]University of Calgary, Canada; [3]University of New Brunswick, Canada

15:00 G18-2 SCINTILLATION SPECIFICATION WITH GNSS RADIO OCCULTATION TECHNIQUES

K. M. Groves, C. S. Carrano, W. J. McNeil, C. L. Rino, *Boston College, USA*

Tuesday, August 22, 2017 **14:40-15:20** **511CF**

H12 Drivers, Detection, and Ionospheric Impacts of Precipitation from the Radiation Belts (3)

Session Chairs: Craig Rodger, Christopher Cully

14:40 H12-1 (Invited) ENERGETIC ELECTRON PRECIPITATION INTO THE MIDDLE ATMOSPHERE; CHORUS-WAVE PARTICLE INTERACTIONS

Y. Miyoshi[1], I. Sinohara[2], T. Takashima[2], K. Asamura[2], N. Higashio[2], T. Mitani[2], S. Yokota[2], S. Kasahara[3], Y. Kazama[4], S.-Y. Wang[4], Y. Kasahara[5], Y. Kasaba[6], S. Yagitani[5], A. Matsuoka[2], H. Kojima[7], Y. Katoh[6],

K. Shiokawa[1], K. Seki[3], K. Hosokawa[8], S. Oyama[1], Y. Ogawa[9], S. Kurita[1], M. Hirahara[1], T. Hori[3], K. Keika[3], M. Shoji[1], M. Teramoto[1], S. Matsuda[1]

[1]Nagoya University, Japan; [2]JAXA, Japan; [3]University of Tokyo, Japan; [4]ASIAA, Taiwan; [5]Kanazawa University, Japan; [6]Tohoku University, Japan; [7]Kyoto University, Japan; [8]The University of Electro-Communications, Japan; [9]NIPR, Japan

15:00 H12-2 CONJUGATE LEP EVENTS OBSERVED AT PALMER STATION, ANTARCTICA

D. Kim, R. C. Moore, *University of Florida, United States*

Tuesday, August 22, 2017 **14:40-15:40** **514C**

J21 Recent and Future Space Missions (2)

Session Chairs: Fabrice Herpin, Martin Giard

14:40 J21-1 (Invited) THE MILLIMETRON SPACE OBSERVATORY: STATUS AND PROGRESS UPDATE

T. de Graauw[1], A. Smirnov[1], A. Baryshev[2], P. de Bernardis[3], S. Likhachev[1], E. Golubev[1], T. Kosmovich[1], N. Kardashev[1]

[1]Astro Space Center of P.N. Lebedev Physical Institute,, Russia; [2]2Kapteyn Astronomical Institute, University of Groningen,, the Netherlands; [3]Sapienza University of Rome, Italy

15:00 J21-2 (Invited) SPICA: THE FIR SPACE TELESCOPE PROPOSED TO ESA FOR THE M5 CALL; UNVEILING THE OBSCURED UNIVERSE

M. Giard, *IRAP (CNRS-Université de Toulouse III), France*

15:20 J21-3 (Invited) ORIGINS SPACE TELESCOPE: OVERVIEW AND SCIENCE CASES

C. Battersby, *Harvard-Smithsonian Center for Astrophysics, United States*

Tuesday, August 22, 2017 **14:40-15:40** **516AB**

K10 Electromagnetic Biomedical Imaging (4)

Session Chairs: Milica Popovic, Joe LoVetri

14:40 K10-1 (Invited) STRATEGIES FOR INTEGRATING ULTRASOUND AND MICROWAVE DATA FOR IMPROVED BREAST IMAGING

E. Fear, M. Omer, D. Kurrant, *University of Calgary, Canada*; A. Baran, J. LoVetri, P. Mojabi, *University of Manitoba, Canada*

15:00 K10-2 (Invited) STUDY ON THE ACCURACY OF FORWARD MODELING IN ELECTRICAL IMPEDANCE TOMOGRAPHY FOR THORAX IMAGING

K. Zhang, M. Li, F. Yang, S. Xu, *Tsinghua University, China (CIE)*; A. Abubakar, *Schlumberger, USA*

15:20 K10-3 REAL-TIME TRACKING OF METALLIC TREATMENT PROBE IN INTERSTITIAL THERMAL THERAPY

G. Chen, J. Stang, M. Moghaddam, *University of Southern California, United States*

Tuesday, August 22, 2017 **16:00-17:00** **514B**

CDB15 Exploitation of Non-Linearities for Passive Wireless Sensors (2)

Session Chairs: Yvan Duroc, Ville Viikari, Ke Wu

16:00 CDB15-1 TRANSPONDER UTILIZING THE MODULATED RE-SCATTERING COMMUNICATION PRINCIPLE

T. A. Siddiqui, M. M. Islam, K. Rasilainen, V. Viikari, *Aalto University, Finland*

16:20 CDB15-2 (Invited) STUDY ON NON-LINEAR EFFECTS OF TWO COUPLED UHF-BAND RFID TAGS

J. Holopainen, X. Gao, V. Viikari, *Aalto University School of Electrical Engineering, Finland*

16:40 CDB15-3 INVESTIGATIONS ON MINIATURIZED RF FRONT-END IN MIMO CHANNEL EMULATOR

X. Fei, L. Tian, *Southeast University, China (CIE)*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

A3P POSTERS - Commission A Open Session

Session Chairs: Yasuhiro Koyama, Patrizia Tavella

A3P-1 METHOD FOR AC CURRENT MEASUREMENT BASED ON DIGITAL SAMPLING TECHNOLOGY

S. Chen, X. Huang, W. Sun, H. Wang, *Beijing Orient Institute of Measurement and Test, China (CIE)*

A3P-2 ENSEMBLE DETECTION ANALYSIS FOR CHARACTERIZING NON-STATIONARY PROCESSES

M. Aksoy, *University of Maryland Baltimore County, United States*; P. E. Racette, *NASA Goddard Space Flight Center, United States*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

A5P POSTERS - Advances in Sensor Development and Applications

Session Chairs: Chouki Zerrouki, Andon Lazarov

A5P-1 A HIGH PRECISION SIGNAL ANALYSISSYSTEM BASED ON SOC

B. Li, J. Song, M. Zhang, *Beijing Oriental Institute of Measurement and Test, China (CIE)*

A5P-2 SURFACE ACOUSTIC WAVE SENSORS: FROM DESIGN TO CHEMICAL AND BIOLOGICAL APPLICATIONS

N. Fourati, C. Zerrouki, *Conservatoire National des Arts et métiers, France*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

A6P POSTERS - Metrological Analysis of Material Properties

Session Chair: Nosherwan Shoaib

A6P-1 COMPLEX PERMITTIVITY MEASUREMENT OF LIQUIDS USING A 7-MM OPEN-CIRCUITED COAXIAL LINE SAMPLE HOLDER AT MOBILE TELECOMMUNICATION FREQUENCIES

T.-W. Kang, J.-H. Kim, J.-Y. Kwon, N.-W. Kang, *Korea Research Institute of Standards and Science, South Korea*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

AE10P POSTERS - SI Units

Session Chairs: Felicitas Arias, Carl Williams

AE10P-1 RECENT PROGRESS ON MICROWAVE POWER STANDARDS IN BIRMM

W. He[1,2,3], W. Zhang[2,3], C. Cheng[2,3], C. Yang[2,3], H. Yin[4]

[1]The Graduate School of The Second Academy of China, China (CIE); [2]Nation Key Laboratory of Metrology and Calibration Technology, China (CIE); [3]eijing Institute of Radio Metrology and Masurement, China (CIE); [4]Beijing Institute of Environmental Characteristics, China (CIE)

AE10P-2 A NEW METHOD FOR EVALUATING MEASUREMENT UNCERTAINTY OF AC IMPEDANCE

Y. L. Li, X. J. Yan, L. You, K. Wu, *Beijing Orient Institute of Measurement & Test, China (CIE)*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

B1P POSTERS - Electromagnetic Theory

Session Chair: Daniel Sjöberg

B1P-1 REALIZABILITY OF STRUCTURES FOR DUAL BAND COMPLEMENTARY REFLECTION/TRANSMISSION USING A CONVEX OPTIMIZATION APPROACH

D. Sjöberg, *Lund University, Sweden*

B1P-2 ELECTRIC POLARIZABILITY ESTIMATION FOR PLANAR FREQUENCY SELECTIVE ARRAYS

A. Ludvig-Osipov, B. L. G. Jonsson, *KTH Royal Institute of Technology, Sweden*

B1P-3 CAVITY MODEL ANALYSIS OF SPHERICAL-RECTANGULAR PRINTED ANTENNAS BY EMPLOYING BASIC SPHERICAL VECTOR TRANSFORMATION TECHNIQUES

O. Demir, *Aselsan Inc., Turkey*; G. Dural, *METU, Turkey*

B1P-4 AN APPROACH TO THE DIELECTRIC RELAXATION SPECTRUM AS A CONTINUOUS DISTRIBUTION OF DEBYE PROCESSES

T. P. Iglesias, *University of Vigo, Spain*; G. Vilão, *Instituto Superior de Engenharia do Porto, Portugal*; J. C. R. Reis, *Universidad de Lisboa, Portugal*

B1P-5 RADIATION ENERGY OF ANTENNA FIELDS: CRITIQUE AND A SOLUTION THROUGH RECOVERABLE ENERGY

S. M. Mikki, *University of New Haven, USA*; A. M. Alzahed, Y. M. M. Antar, *Royal Military College of Canada, Canada*

B1P-6 POINCARÉ WAVELETS AND THEIR APPLICATIONS TO GAUSSIAN BEAM SUMMATION

E. Gorodnitskiy, M. Perel, *Saint Petersburg State University, Russian Federation*

B1P-7 ANALYSIS OF A PERFORATED SIW STRUCTURE WITH A RECTANGULAR AIR BOX AND ITS APPLICATION TO THE DESIGN OF A STEP-IMPEDANCE MICROWAVE FILTER

A. Coves, G. Torregrosa, G. Vicent, E. Bronchalo, A. A. San Blas, *Universidad Miguel Hernandez de Elche (UMH), Spain*; M. Bozzi, *University of Pavia, Italy*

B1P-8 ELECTROMAGNETIC SCATTERING OF A LAGUERRE-GAUSSIAN VORTEX BEAM BY UNIAXIAL ANISOTROPIC BISPHERES

T. Qu[1], Z. S. Wu[1], J. J. Wu[1], Q. C. Shang[1], G. Jeon[1,2], Z. J. Li[1]

[1]*Xidian University, China;* [2]*Incheon National University, Korea*

B1P-9 IRREGULAR-GRID-BASED PARTICLE-IN-CELL SIMULATIONS OF RESONANT ELECTRON DISCHARGES WITH PROBABILISTIC SECONDARY ELECTRON EMISSION MODEL

D.-Y. Na[1], Y. A. Omelchenko[2], F. L. Teixeira[1]

[1]*The Ohio State University, United States;* [2]*Trinum Research Inc., United States*

B1P-10 ON THE EXACT SOLUTION FOR THE EIGENMODES OF THE TAPE HELIX

M. Norgren, *KTH Royal Institute of Technology, Sweden*

B1P-11 FIELD DISTRIBUTIONS OF THE HYBRID MODES IN RECTANGULAR WAVEGUIDES FILLED WITH UNIAXIAL MEDIA WITH TILTED OPTIC AXIS LYING IN SIDEWALL PLANES

K. Sun, J. K. Lee, J. W. Graham, *Syracuse University, United States*

B1P-12 PASSIVE APPROXIMATION AND OPTIMIZATION WITH B-SPLINES

Y. Ivanenko, S. Nordebo, *Linnaeus University, Sweden*

B1P-13 TRACING OF METASURFACE WAVES

C. Della Giovampaola[1], M. Mencagli[2], E. Martini[3], M. Albani[1], S. Maci[1]

[1]*University of Siena, Italy;* [2]*University of Pennsylvania, USA;* [3]*Wave Up s.r.l., Italy*

B1P-14 ON THE ACCURACY OF FRIIS' TRANSMISSION FORMULA AT SHORT RANGE

O. Breinbjerg, K. Kaslis, *Technical University of Denmark, Denmark*

B1P-15 EXISTENCE OF RADIALLY SYMMETRIC COMPLEX SURFACE WAVES IN LOSSY GOUBAU LINE

E. Kuzmina, *Moscow Technological University (MIREA), Russian Federation*; Y. Shestopalov, *University of Ga¨vle, Sweden*

B1P-16 DESIGN OF A NARROW-BAND FILTER BASED ON THE BREWSTER PHENOMENON FOR MICROWAVE APPLICATIONS

A. Coves, *Universidad Miguel Hernandez de Elche, Spain*; S. Marini, *Universidad de Alicante, Spain*; B. Gimeno, *Universidad de Valencia, Spain*; D. Sánchez, A. M. Rodríguez, V. E. Boria, *Universidad Politécnica de Valencia, Spain*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

B6P POSTERS - Multiphysics and Multiscale Problems

Session Chairs: Weng Cho Chew, Qing Huo Liu, Levent Gurel

B6P-1 TRANSIENT ANALYSIS OF ELECTROMAGNETIC WAVE INTERACTIONS ON MAGNETIZED FERRITES USING LANDAU- LIFSHITZ-GILBERT AND VOLUME INTEGRAL EQUATIONS

S. B. Sayed[1], H. Arda Ulku[2], H. Bagci[1]

[1]King Abdullah University of Science and Technology (KAUST), Saudi Arabia; [2]Gebze Technical University, Turkey

B6P-2 UNSTRUCTURED BLOCK MESHING IN TIME-DOMAIN TLM METHOD WITH LOCAL TIME-STEP

A. A. Ijjeh, *University of Nice Sophia-Antipolis, France*; M. M. Ney, *IMT Atlantique, France*

B6P-3 DESIGN OF CNT-BASED PERFECT ABSORBERS OVER SWIR TO LWIR FREQUENCIES FOR SENSING APPLICATIONS.

G. Behera[1], S. M. Mikki[2], Y. M. M. Antar[1]

[1]Royal Military College of Canada, Canada; [2]University of New Haven, USA

B6P-4 ANALYSIS OF MULTILAYER INTERCONNECTS DISTRIBUTED ENERGY-PER-BIT AND POWER INTEGRITY WITH KRON-BRANIN FORMALISM

Z. Xu, Y. Liu, B. Ravelo, O. Maurice, *ESIGELEC, France*

B6P-5 NON-CONFORMAL IE-PE-DDM USING REVERSE OPERATION SELF-CONSISTENT EVALUATION

M. Jiang, J. Hu, Z. Nie, *University of Electronic Science and Technology of China, China (CIE)*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

B7P POSTERS - Metasurface Engineering

Session Chairs: Tie Jun Cui, Anthony Grbic, Stefano Maci

B7P-1 BACK RADIATION SUPPRESSION THROUGH A SEMITRANSPARENT ROUND GROUND PLANE FOR MM-WAVE OMNIDIRECTIONAL ANTENNAS

K. Klionovski, M. F. Farooqui, A. Shamim, *King Abdullah University of Science and Technology, Saudi Arabia*

B7P-2 A NOVEL SELF-PACKAGED MICROSTRIP LINE

J. Zhang, X. Zhang, A. A. Kishk, *Concordia University, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

B8P POSTERS - Advanced Algorithms in Computational Electromagnetics

Session Chairs: Vladimir Okhmatovski, Pasi Ylä-Oijala

B8P-1 GPGPU FDTD: OUTPUT OF DATA

F. Costen[1,2], L. Xanthos[1], R. Himeno[2], H. Yokota[2]

[1]*The University of Manchester, United Kingdom;* [2]*RIKEN, Japan*

B8P-2 WIDEBAND ELECTROMAGNETIC SCATTERING COMPUTATIONS FOR SMOOTH CONDUCTING 2D CYLINDERS USING THE RAS-AWE METHOD

M. A. Hassan, A. A. Kishk, *Concordia University, Canada*

B8P-3 FAST AND ACCURATE EXTRACTING SURFACE AND LEAKY WAVE POLES FOR MULTILAYERED STRUCTURES BASED ON GPU/CPU HETEROGENEOUS PLATFORM

Z. Song, X.-W. Zhu, L. Tian, P. Miao, *Southeast University, China (CIE)*

B8P-4 PRECISE ANALYSIS OF NEAR-FIELD LIGHT USING FAST INVERSE LAPLACE TRANSFORM

S. Ohnuki, D. Wu, S. Watanabe, R. Takahashi, *Nihon University, Japan*; T. Yamaguchi, *Tokyo Metropolitan Industrial Technology Research Institute, Japan*

B8P-5 LEBEDEV FDTD METHOD FOR ELECTROMAGNETIC SIMULATIONS OF ANISOTROPIC MATERIALS

M. Salmasi, M. Potter, *University of Calgary, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

B13P POSTERS - Inverse Scattering and Imaging

Session Chairs: Lianlin Li, Matteo Pastorino

B13P-1 ELECTROMAGNETIC BIOMEDICAL IMAGING IN BANACH SPACES: A NUMERICAL CASE STUDY

A. Fedeli, M. Pastorino, A. Randazzo, *University of Genoa, Italy*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

B99P POSTERS - Commission B Open Session

B99P-1 DESIGN OF AN UWB POWER SPLITTER OF ARBITRARY SPLIT RATIO USING ASYMMETRICAL DOUBLE RIDGE WAVEGUIDE

M. A. Nasr, A. A. Kishk, *Concordia University, Canada*

B99P-2 A NEW COMPRESSED SENSING BASED APPROACH FOR NULL STEERING OF LINEAR ARRAYS BY PERTURBING MINIMUM NUMBER OF ELEMENTS

M. A. Abdelhay, *Alexandria Higher Institute of Engineering and Technology, Egypt*; S. E. El-Khamy, *Alexandria University, Egypt*

B99P-3 BROADBAND MICROSTRIP TO WAVEGUIDE TRANSITION

L. Vietzorreck, M. Elsässer, *TU Muenchen, Germany*; E. Miralles Navarro, V. Ziegler, *Airbus, Germany*

B99P-4 A COMPACT WIDEBAND FLEXIBLE ANTENNA

W.-H. Zong[1], Z. Li[1], S.-S. Fu[1], C.-J. Du[1], S. Li[2], J. Wang[3], Z.-J. Jin[1]

[1]*Qingdao University, China (SRS);* [2]*Qingdao University, China;* [3]*Nagoya Institute of Technology, Japan*

B99P-5 A WIDEBAND CIRCULARLY POLARIZED CYLINDRICAL DRA LOADED WITH SRR AND EXCITED WITH A QUESTION SHAPED MICROSTRIP FEED LINE

R. Kumar[1], C.-W. Park[2], R. K. Chaudhary[1]

[1]Indian Institute of Technology (Indian School of Mines), Dhanbad, India; [2]University of Quebec in Rimouski, Canada

B99P-6 MODELING FOR ELECTROMAGNETIC HEAT COUPLING ANALYSIS IN COMPACT RF AND DIGITAL ELECTRONIC DEVICES AND ASSEMBLIES

Z. O. Zaw, C. E. Png, *Institute of High Performance Computing, Singapore*

B99P-7 DESIGN OF A DISPERSION-SWITCHABLE PHASER FOR CHIRPING MODULATION

Q. Zhang, T. Guo, Y. Chen, *Southern University of Science and Technology, China*

B99P-8 ZIGZAG MICROSTRIP LEAKY-WAVE ANTENNA MIMICKING WAVE PROPAGATION IN METALLIC WAVEGUIDES

Q. Zhang, A. Kandwal, Y. Chen, *Southern University of Science and Technology, China*; C. Caloz, *Ecole Polytechnique de Montreal, Canada*

B99P-9 SCATTERING MECHANISM ANALYSIS OF SEA CLUTTER AT UHF BAND BY DOPPLER SPECTRUM CHARACTERISTICS

P. Zhao, X. Li, J. Zhang, Y. Zhang, X. Zhu, *China Research Institute of Radiowave Propagation, China (CIE)*

B99P-10 BALANCED-TO-BALANCED MICROSTRIP DIPLEXER BASED ON MAGNETICALLY COUPLED OPEN-LOOP RESONATORS

A. Fernandez-Prieto[1], A. Lujambio[2], J. Martel[1], F. Medina[1], R. R. Boix[1]

[1]University of Sevilla, Spain; [2]Skylife Engineering, Spain

B99P-11 TRANSIENT TRANSFER COUPLED RESPONSE - SPHERICAL HARMONICS EXPANSION

A. Shlivinski, *Ben-Gurion University of the Negev, Israel, Israel*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

C8P POSTERS - Application of Radio Propagation Research Results in Radio System and Signal Design

Session Chair: Robert Bultitude

C8P-1 A ULTRA-WIDEBAND QUARTER WAVELENGTH FOLDED HALF E PATCH ANTENNA

Z. Shi[1,2], A. Qing[1,2], H. Li[1]

[1]Southwest Jiaotong University, China (CIE); [2]University of Electronic Science and Technology of China, China (CIE)

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

C12P POSTERS - Ultra-High Bit Rate Radio Communications Engineering at Tera Hertz

Session Chairs: Claudio Balocco, Andrew Gallant

C12P-1 BACK TO SINGLE CARRIER FOR TERA HERTZ COMMUNICATIONS

J. Palicot, F. Bader, *CentraleSupélec, France*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

C17P POSTERS - Spectrum Sharing, Issues, Co-Existence, and Interference

Session Chairs: Anthony Martone, Jeff Reed

C17P-1 COOPERATIVE SPECTRUM OCCUPANCY MEASUREMENTS AND ANALYSIS IN 2.4 GHZ ISM BAND

A. Cheema, S. Salous, *University of Durham, United Kingdom*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

CA4P POSTERS - Channel Measurements, Characterization and Verification through Electromagnetic Metrology and Measurement Post Processing

Session Chairs: Jeanne QUIMBY, Sana Salous

CA4P-1 REAL TIME MIMO SOUNDER: APPLICATION TO GROUND-TO-AIR CHANNEL CHARACTERIZATION IN FORESTED ENVIRONMENT

P. Laly, D. P. Gaillot, M. Lienard, P. Degauque, *University of Lille, France*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

CB18P POSTERS - 5G Communication Systems

Session Chairs: Ozlem Kilic, Amir Zaghloul

CB18P-1 A SHORT REVIEW OF CURRENT CHALLENGES AND POTENTIAL APPLICATIONS OF FULL DUPLEX IN WIRELESS NETWORKS

T. Vial[1], A. Lefevre[1], M. Le Penven[1], Q. Bodinier[1,2]

[1]CentraleSupélec, France; [2]IETR, France

CB18P-2 DIRECTIVE ANTENNAS FOR FUTURE 5G MOBILE WIRELESS COMMUNICATIONS

M. M. Mahmoud Ali, A.-R. Sebak, *Concordia University, Québec*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

D1P POSTERS - Microwave Photonics

Session Chair: Stavros Iezekiel

D1P-1 A COUPLED OPTOELECTRONIC OSCILLATOR BASED ON A RESONANT SATURABLE ABSORBER MIRROR

D. Zhu, T. Du, S. Pan, *Nanjing University of Aeronautics and Astronautics, China (CIE)*

D1P-2 FEC IMPROVEMENT OF TRANSMISSION PERFORMANCE IN DIGITAL RADIO ON RADIO

K. Tsukamoto, K. Kumamoto, T. Nakamura, T. Mochii, *Osaka Institute of Technology, Japan*

D1P-3 PERFORMANCE IMPROVEMENT OF 60 GHZ RADIO-OVER-FIBER FRONTHAUL USING COORDINATED MULTIPOINT TRANSMISSION

Y. Tian, K.-L. Lee, C. Lim, A. Nirmalathas, *University of Melbourne, Australia*

D1P-4 ACTUAL PROBLEMS IN RADIOPHOTONICS

Y. Gulyaev, *Kotelnikov Institute of Radio-engineering and Electronics RAS, Russian Federation*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

D8P POSTERS - Carbon-Based Photonics and Optoelectronics

Session Chairs: Frank Wang, Fabian Rotermund

D8P-1 BROADBAND ULTRAFAST CARRIER DYNAMICS OF SINGLE-WALL CARBON NANOTUBES

C. Zhu, Y. Liu, Y. Xu, F. Wang, *Nanjing University, China*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

D11P POSTERS - Terahertz Generation and Applications

Session Chairs: Christoph Hauri, Mona Jarrahi

D11P-1 TERAHERTZ GYROTRONS WITH QUASI-REGULAR CAVITIES

I. V. Osharin, I. V. Bandurkin, Y. K. Kalynov, A. V. Savilov, *Institute of Applied Physics, Russian Academy of Sciences (IAP RAS), Russian Federation*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

D18P POSTERS - Modeling of Electronic, Photonic and Plasmonic Devices

Session Chairs: Ayhan Demircan, Jeremy Gulley

D18P-1 SPATIAL DIVISION MULTIPLE ACCESS ENABLED UHF RFID SYSTEMS

H.-C. Liu, H.-G. Mao, *National Taiwan University of Science and Technology, Taiwan*

D18P-2 DUAL BAND NEAR ISOTROPIC GSM ANTENNA ON 3D PRINTED PACKAGE

Z. Su, R. M. Bilal, A. Shamim, *King Abdullah University of Science and Technology, Saudi Arabia*

D18P-3 A QUASI BUTLER MATRIX WITH 6×6 BEAM-FORMING CAPACITY USING 3×3 HYBRID COUPLERS

K. Ding[1], J. Bai[2], A. Kishk[1]

[1]Concordia University, Canada; [2]Beihang University, China

D18P-4 A NOVEL SINGLE CONDUCTOR ANTENNA FOR MOBILE HANDSETS

M. Haridim, M. Bank, Y. Shalit, J. Gavan, *HIT-Holon Institute of Technology, Israel*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

DA10P POSTERS - Optical Frequency Metrology

Session Chair: Ekkehard Peik

DA10P-1 A COMPACT LIGHT SOURCE AT 399 NM USING A PERIODICALLY POLED LINBO3 WAVEGUIDE FOR LASER COOLING YTTERBIUM

T. Kobayashi[1], D. Akamatsu[1], Y. Nishida[2], T. Tanabe[1], M. Yasuda[1], F.-L. Hong[3], K. Hosaka[1]

[1]National Metrology Institute of Japan, Japan; [2]NTT Electronics Corporation, Japan; [3]Yokohama National University, Japan

DA10P-2 SEARCH FOR LASER EXCITATION OF THE LOW-ENERGY ISOMER IN 229TH AND THE NUCLEAR OPTICAL CLOCK

E. Peik, D.-M. Meier, J. Thielking, P. Glowacki, M. Okhapkin, *PTB, Germany*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

DB2P POSTERS - Microwave and Millimeter Wave Identification and Sensing

Session Chairs: Arnaud Vena, Smail Tedjini

DB2P-1 DEVELOPMENT OF PASSIVE UHF RFID TAG ON FLEXIBLE FOIL FOR SPORT BALLS PRESSURE MONITORING

A. Rennane[1,2,3], A. Abdelnour[2], D. Kaddour[2], R. Touhami[1], S. Tedjini[2]

[1]University of Sciences and Technology HouariBoumediene (USTHB), Algeria; [2]Université Grenoble Alpes/LCIS, France; [3]Centre de Développement des Energies Renouvelables, CDER, Algeria

DB2P-2 EXTENDED HEMISPHERICAL INTEGRATED LENS ANTENNA FOR V-BAND APPLICATIONS

J. Pourahmadazar, T. Denidni, *National Institute of Scientific Research (INRS), Centre for Energy, Materials and Telecommunicatio, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

E8P POSTERS - EMC in Complex Systems

Session Chairs: Pierre Degauque, Ferran Silva

E8P-1 IMPACT OF AN ARC TRACKING BETWEEN DC WIRES ON THE POWER LINE COMMUNICATION CHANNEL CHARACTERISTICS

V. Degardin[1], P. Laly[1], L. Kone[1], F. Valensi[2], M. Lienard[1], P. Degauque[1]

[1]University of Lille, France; [2]University of Toulouse, France

E8P-2 RADIATION EFFICIENCY OF AN INDIVIDUAL ANTENNA IN A SYSTEM OF MULTIPLE NON-IDENTICAL ANTENNAS

S. De Silva, L. Belostotski, M. Okoniewski, *University of Calgary, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

E15P POSTERS - Time Reversal in Electromagnetics

Session Chairs: Julien de Rosny, Florian Monsef

E15P-1 BREAKING PARITY TIME REVERSAL SYMMETRY IN FILTERS

R. L. Gardner, *Consultant, United States*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

E21P POSTERS - Measurement Techniques

Session Chairs: Ramiro Serra, Christophe Lemoine

E21P-1 SHIELDING EFFECTIVENESS MEASUREMENT FOR PHYSICALLY SMALL ENCLOSURE IN FAST TELESCOPE

H. Gan[1,2], H. Zhang[1,2], Y. Yue[1,2], H. Hu[1], S. Huang[1], J. Song[1], J. Sun[1,2], H. Liu[1,2], C. Jin[1,2]

[1]National Astronomical Observatories, Chinese Academy of Sciences, China (CIE); [2]Key Laboratory of Radio Astronomy, Chinese Academy of Sciences, China (CIE)

E21P-2 A STUDY OF ACTIVE ELEMENT CHARACTERIZATION BY DE-EMBEDDED CALIBRATION MEASUREMENTS

S.-M. Han, J. Lim, D. Ahn, *Soonchunhyang University, South Korea*; W.-S. Yoon, *Hoseo University, South Korea*

E21P-3 REAL-TIME TRANSIENT ANALYSERS FOR RADIO ASTRONOMY

A. R. Botha, J. Manley, P. S. Van der Mewer, A. J. Otto, F. Kapp, *MESA Product Solutions, South Africa*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

F1P POSTERS - Microwave Remote Sensing of the Cryosphere

Session Chairs: Martti Hallikainen, Jiancheng Shi

F1P-1 PRECIPITABLE WATER RETRIEVAL OVER ANTARCTICA FROM SATELLITE MICROWAVE HUMIDITY SOUNDERS

G. Heygster, C. Melsheimer, A. Trana Gomez, G. Spreen, *University of Bremen, Germany*; M. Negusini, *Institute of Radio Astronomy, Italy*; B. H. Petkov, C. Tomasini, *Institute of Atmospheric Sciences and Climate, Italy*

F1P-2 ESTIMATION OF HIGH ICE WATER CONTENT USING DUAL-FREQUENCY POLARIMETRIC AIRBORNE RADAR DATA

C. Nguyen, M. Wolde, K. Baibakov, *National Research Council Canada, Canada*; A. Korolev, *Environment and Climate Change Canada, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

F8P POSTERS - Remote Sensing Measurements of Precipitation

Session Chairs: Luca Baldini, Chandra Chadrasekar

F8P-1 CHARACTERISTICS OF DSDS AT TWO DIFFERENT CLIMATES AND THEIR IMPLICATION INTO RADAR PRECIPITATION ESTIMATION

W. Bang, G. Lee, *Kyungpook National University, South Korea*

F8P-2 IDENTIFICATION OF SNOW FROM GPM-DPR OBSERVATIONS AND CROSS VALIDATION WITH S-BAND GROUND RADAR DUAL POLARIZATION MEASUREMENTS

S. K. Biswas, M. Le, V. Chandrasekar, *Colorado State University, United States*

F8P-3 QUANTITATIVE PRECIPITATION ESTIMATION USING C-BAND DUAL-POLARIZATION RADAR: A CASE STUDY FOR JULY 21, 2012 FLOOD IN BEIJING

W. Xu[1], D. Su[2], D. Lu[1]

[1]Institute of Atmospheric Physics, Chinese Academy of Sciences, China; [2]Chengdu University of Information Technology, China

F8P-4 DEVELOPING X-BAND MAGNETRON DOPPLER RADAR FOR WEATHER MODIFICATION

Z. Yao, *Chengdu University of Information Technology, China*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

F22P POSTERS - Propagation Modeling for Aerospace Applications

Session Chairs: Carlo Capsoni, Animesh Maitra

F22P-1 GRAVITY WAVE STUDIES OVER A TROPICAL LOCATION USING RADIO OCCULTATION AND RADIOSONDE MEASUREMENTS

G. Rakshit, A. Maitra, *University of Calcutta, India*

F22P-2 THE FUTURE OF PLANETARY ATMOSPHERIC, SURFACE, AND INTERIOR SCIENCE USING RADIO AND LASER LINKS

S. W. Asmar[1], J. W. Armstrong[1], D. H. Atkinson[1], D. J. Bell[1], M. K. Bird[2], V. Dehant[3], L. Iess[4], J. Lazio[1], I. R. Linscott[5], A. J. Mannucci[1], E. Mazarico[6], R. S. Park[1], M. Pätzold[7], R. A. Preston[1], R. A. Simpson[5]

[1]Jet Propulsion Laboratory, United States; [2]Argelander Institut für Astronomie, Universität, Germany; [3]Royal Observatory of Belgium, Belgium; [4]Università La Sapienza, Italy; [5]Stanford University, United States; [6]NASA Goddard Space Flight Center, United States; [7]Rheinisches Institut für Umweltforschung an der Universität zu Köln, Germany

---

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

FB9P POSTERS - Electromagnetic Problems Involving Volume Scattering

Session Chairs: Ari Sihvola, Cuong Nguyen

FB9P-1 ACTIVE AND PASSIVE PROBING OF MULTILAYERED MEDIA USING DISCRETE ANGLE RADIATIVE TRANSFER INCLUDING SCATTERING ORDER CONTRIBUTIONS

P. Gabriel, *Horizon Science and Technology, Canada*; H. Barker, *Environment and Climate Change Canada, Canada*; C. Nguyen, K. Baibakov, M. Wolde, *Flight Research Laboratory, National Research Council, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

G1P POSTERS - Data Assimilation Modeling

Session Chairs: Ivan Galkin, Bruno Nava

G1P-1 ASSIMILATION OF THERMOSPHERIC WIND DATA FOR GLOBAL ESTIMATION OF IONOSPHERIC DRIVERS

D. S. Miladinovich[1], U. Ramirez[1], G. S. Bust[2], S. Datta-Barua[1]

[1]Illinois Institute of Technology, United States; [2]Johns Hopkins University Applied Physics Laboratory, United States

G1P-2 EFFECTIVE SOLAR INDICES FOR IONOSPHERIC MODELING: A PROPOSAL FOR A REAL TIME IRI

A. Pignalberi[1], M. Pezzopane[2], I. Galkin[3], R. Rizzi[1]

[1]University of Bologna, Italy; [2]Istituto Nazionale di Geofisica e Vulcanologia, Italy; [3]University of Massachusetts, USA

G1P-3 A REVISED MODEL OF STATISTICAL IONOSPHERIC CONVECTION USING MIDLATITUDE AND POLAR CAP SUPERDARN RADARS

E. G. Thomas, S. G. Shepherd, *Dartmouth College, United States*

G1P-4 ENOI APPROACH TO THERMOSPHERIC DATA ASSIMILATION

E. M. Henley, *Met Office, United Kingdom*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

G9P POSTERS - Advances in Irregularities and Scintillation Studies

Session Chairs: Vadim Gherm, Charles Carrano, Nikolay Zernov

G9P-1 THE IONOSPHERIC SCINTILLATION STUDY BASED ON THE OBSERVATION OF GPS SCINTILLATION MONITOR AFFILIATED TO CHINA MERIDIAN PROJECT

D. Zhang, Y. Hao, Z. Xiao, *Department of Geophysics, Peking University, China*

G9P-2 IONOSPHERIC RESPONSES TO PROLONGED SOUTHWARD IMF ON 4-5 APRIL 2006

G. Ma[1], Q. Wan[1], J. Li[1], X. Wang[1], T. Maruyama[1,2]

[1]National Astronomical Observatories, CAS, China (CIE); [2]National Institute of Information and Communications Technology, Japan

G9P-3 ASYMMETRY OF IONOSPHERIC SCINTILLATIONS FROM CONJUGATE SITES AS A CONSEQUENCE OF THE MAGNETOSPHERE CONFIGURATION

L. Alfonsi[1], G. D'Angelo[2], M. Piersanti[3,3], L. Spogli[1,4]

[1]Istituto Nazionale di Geofisica e Vulcanologia, Italy; [2]Università degli Studi "Roma Tre", Italy; [3]Università di L'Aquila, Italy; [4]SpacEarth Technology, Italy

G9P-4 ON WIDTHS AND SEPARATIONS OF EQUATORIAL PLASMA DEPLETIONS OBSERVED BY THE C/NOFS PLANAR LANGMUIR PROBE

E. P. O. Costa, *CETUC PUC-Rio, Brazil*; P. A. Roddy, J. O. Ballenthin, *Air Force Research Laboratory, USA*; K. M. Groves, *Boston College, USA*

G9P-5 MONITORING HELIOSPHERIC SCINTILLATION WITH LOFAR

M. Grzesiak, M. Pozoga, B. Matyjasiak, D. Przepiórka, H. Rothkaehl, R. Wronowski, *Space Research Center Polish Academy of Sciences, Poland*

G9P-6 IONIK NETWORK BASED ON A LOW COST SCINTILLATION MONITOR FOR CONTINUOUS MONITORING OF IONOSPHERE

E. R. de Paula, *National Institute for Space Research-INPE, Brazil*; A. O. Moraes, *Aeronautics and Space Institute (IAE), São José dos Campos, SP, Brazil, Brazil*; B. Vani, J. F. G. Monico, *São Paulo State University (UNESP), Presidente Prudente, SP, Brazil, Brazil*

G9P-7 OBSERVATIONS OF IONOSPHERIC SCINTILLATION IMPACTS ON WIDEBAND CHANNELS

R. G. Caton, C. Huang, R. T. Parris, J. M. Holmes, *Air Force Research Laboratory, United States*

G9P-8 CLIMATOLOGY OF SMALL-MEDIUM SCALE IONOSPHERIC PLASMA IRREGULARITIES OBSERVED BY FORMOSAT-3/COSMIC GNSS RADIO OCCULTATION RECEIVERS

C. Watson, N. Pedatella, *University Corporation for Atmospheric Research, United States*

G9P-9 GPS TRIPLE-FREQUENCY STATISTICAL STUDY OF IONOSPHERIC AMPLITUDE SCINTILLATION AT LOW LATITUDE

A. O. Moraes, *Instituto de Aeronáutica e Espaço-IAE, Brazil*; B. Vani, *Instituto Federal de Educação, Ciência e Tecnologia de São Paulo - Presidente Epitácio - IFSP-PEP, Brazil*; E. Costa, *Centro de Estudos em Telemcounicações, Pontifícia Universidade Católica do Rio de Janeiro -CETUC/PUC, Brazil*; E. de Paula, *Instituto Nacional de Pesquisas Espaciais – INPE, Brazil*; J. G. Monico, *Universidade Estadual Paulista Júlio de Mesquita Filho - UNESP, Brazil*

G9P-10 DAYTIME ZONAL DRIFTS IN THE IONOSPHERIC 150 KM AND E REGIONS ESTIMATED USING EAR OBSERVATIONS

P. Pavan Chaitanya, A. K. Patra, *National Atmospheric Research Laboratory, India*; Y. Otsuka, *Institute for Space-Earth Environmental Research, Nagoya University, Japan*; T. Yokoyama, *National Institute of Information and Communication Technology, Japan*; M. Yamamoto, *Research Institute for Sustainable Humanosphere, Japan*

G9P-11 MULTI-CONSTELLATION GNSS SCINTILLATION AT MID-LATITUDES

M. A. Jean, J. P. Conroy, W. A. Scales, *Virginia Polytechnic Institute and State University, United States*

G9P-12 ON THE APPEARANCE OF SPORADIC-E AND THE OCCURRENCE OF DAYTIME GHZ SCINTILLATION

A. Seif, J. Y. Liu, *National Central University, Taiwan, Taiwan*; B. Carter, R. Norman, *SPACE Research Centre, RMIT University, Melbourne, Victoria, Australia, Australia*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

G15P POSTERS - Incoherent Scatter Radar

Session Chairs: Ingrid Mann, Emma Spanswick, Mike Kosch

G15P-1 MONTE-CARLO SIMULATIONS OF ION VELOCITY DISTRIBUTIONS AND RESULTING INCOHERENT RADAR SPECTRA UNDER STRONG ION FRICTIONAL HEATING CONDITIONS

L. V. Goodwin[1], J.-P. St-Maurice[1], H. Akbari[2], R. J. Spiteri[1]

[1]University of Saskatchewan, Canada; [2]Boston University, USA

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

G23P POSTERS - Science with Modern Ionosondes and Associated Instrumentation and Models

Session Chairs: Ivan Galkin, Anna Belehaki, John Bosco Habarulema

G23P-1 THE DST GROUP HIGH-FIDELITY, MULTI-CHANNEL OBLIQUE INCIDENCE IONOSONDE

A. J. Heitmann, R. S. Gardiner-Garden, *Defence Science and Technology Group, Australia*

G23P-2 A SOFTWARE TOOL FOR AUTOMATIC SCALING OF IONOGRAMS

C. Jiang, G. Yang, Y. Zhang, Z. Zhao, Y. Hu, *School of Electronic Information, Wuhan University, China (CIE)*

G23P-3 DIAGNOSIS OF QUASI-WAVE PERTURBATIONS IN THE TOPSIDE IONOSPHERE BY MODIFIED SSA METHOD

O. A. Maltseva, P. F. Denisenko, V. V. Sotsky, *Institute of Physics Southern Federal University, Russian Federation*

G23P-4 A WARNING SYSTEM FOR TRAVELLING IONOSPHERIC DISTURBANCES USING SKYWAVE DOPPLER FREQUENCY AND ANGLE-OF-ARRIVAL MEASUREMENTS

A. Belehaki, *National Observatory of Athens, Greece*; B. Reinisch, *Lowell Digisonde International, LLC, USA*; I. Galkin, *University of Massachusetts Lowell, Space Science Laboratory, USA*

G23P-5 STUDYING THE PARAMETERS OF FREQUENCY DISPERSION FOR RADIO LINKS OF DIFFERENT LENGTH USING SDR BASED SOUNDING SYSTEM

V. Ivanov[1], D. Ivanov[1], N. Ryabova[1], M. Ryabova[2], A. Chernov[1], V. Ovchinnikov[1]

[1]Volga State University of Technology, Russian Federation; [2]Bauman Moscow State Technical University, Russian Federation

G23P-6 IONOSPHERIC VERTICAL DRIFTS OBTAINED BY DIGISONDE DPS4D AND OTHER DIFFERENT TECHNIQUES.

J. Boska, D. Kouba, *Institute of Atmospheric physics ASCR, Czech Republic*

G23P-7 DETECTION OF COSEISMIC IONOSPHERIC DISTURBANCES BY HIGH LATITUDE IONOSONDE AT A GREAT DISTANCE FROM EPICENTER

T. Maruyama, H. Shinagawa, *National Institute of Information and Communications Technology, Japan*; K. Yusupov, A. Akchurin, *Kazan Federal University, Russian Federation*

G23P-8 INTERFEROMETRY METHOD TO CONVENTIONAL IONOSONDE DATA IN SUPPORT OF A PILOT NETWORK FOR IDENTIFICATION OF TRAVELLING IONOSPHERIC DISTURBANCES

D. Altadill[1], E. Blanch[1], V. Paznukhov[2], J. M. Juan[3], A. Belehaki[4], T. Verjulst[5], I. Galkin[6], B. Reinisch[7], D. Buresova[8], J. Mielich[9], M. Parkinson[10], J. Sanz[3]

[1]*Observatori de l'Ebre (OE); Universitat Ramon Llull - CSIC, Spain;* [2]*Institute for Scientific Research, Boston College, USA;* [3]*GAGE, Universitat Politecnica de Catalunya, Spain;* [4]*National Observatory of Athens, IAASARS, Greece;* [5]*Royal Meteorological Institute (RMI), Belgium;* [6]*Space Science Laboratory, UMass, USA;* [7]*Lowell Digisonde International, USA;* [8]*Institute of Atmospheric Research, Academy of Sciences of Czech Republic, Czech Republic;* [9]*Leibniz-Institute of Atmospheric Physics, Germany;* [10]*Space Weather Services, Australian Bureau of Meteorology, Australia*

G23P-9 MSTID EXTRACTION FROM MORE FREQUENT IONOGRAMS

A. Akchurin, G. Smirnov, *Kazan Federal University, Russian Federation*

G23P-10 THE ASSIMILATION OF FORWARD OBLIQUE IONOSONDE PROFILES INTO THE ELECTRON DENSITY ASSIMILATIVE MODEL (EDAM)

P. L. Martin, N. K. Jackson-Booth, R. W. Penney, R. A. Buckland, *QinetiQ, United Kingdom*

G23P-11 ADAPTATION OF THE LOWER IONOSPHERE IRI MODEL TO VERTICAL SOUNDING DATA

O. A. Maltseva, P. F. Denisenko, V. V. Sotsky, *Institute of Physics Southern Federal University, Russian Federation*

G23P-12 USE OF THE HOUGH TRANSFORM FOR THE PROPAGATION MODE EXTRACTION

A. Kolchev[1,2], I. Egoshin[2], A. Akchurin[1]

[1]*Kazan Federal University, Russian Federation;* [2]*Mari State University, Russian Federation*

G23P-13 THE APPLICATION OF DYNAMIC TIME WARPING TO UNDERSTAND CORRELATION DISTANCES IN THE IONOSPHERE

N. V. Rankov, C. Mitchell, *University of Bath, United Kingdom*; G. Bust, E. Miller, *The Johns Hopkins University Applied Physics Laboratory, USA*; W. Liles, *Independent Consultant, USA*; J. Doyle, *U.S. Naval Research Laboratory, USA*; I. Dekine, *MITRE, USA*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

GEH3P POSTERS - Seismo Electromagnetics (Lithosphere-Atmosphere- Ionosphere Coupling)

Session Chairs: Sergey Pulinets, Yasuhide Hobara, Hanna Rothkaehl

GEH3P-1 D-REGION IONOSPHERIC OSCILLATIONS MEASURED BY LF TRANSMITTER SIGNALS AFTER THE 2011 OFF THE PACIFIC COAST OF TOHOKU EARTHQUAKE

H. Ohya[1], F. Tsuchiya[2], H. Shinagawa[3], K. Nozaki[3], K. Shiokawa[4], H. Nakata[1], Y. Miyoshi[4]

[1]*Chiba University, Japan;* [2]*Tohoku University, Japan;* [3]*National Institute of Information and Communications Technology, Japan;* [4]*Nagoya University, Japan*

GEH3P-2 AN INVESTIGATION ON THE ELECTRIC FIELD PENETRATION FOR SEISMO-IONOSPHERIC RESEARCH

C. Zhou, Y. Liu, *Wuhan University, China (CIE)*

GEH3P-3 **EXCITATION MECHANISM AND BEHAVIORS OF CO-SEISMIC ELECTROMAGNETIC WAVES**

M. Tsutsui, *Kyoto Sangyo University, Japan*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

GH19P POSTERS - Meteors, collisional EMPs, and other Highly-Transient Space Plasma Events

Session Chairs: John Mathews , Asta Pellinen-Wannberg, Margaret Campbell-Brown

GH19P-1 **TRANSIENT ES-LAYERS 2013-2014**

K. Yusupov[1], T. Maruyama[2], A. Akchurin[1], O. Sherstyukov[1]

[1]Kazan Federal University, Russian Federation; [2]National Institute of Information and Communications Technology, Japan

---

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

H1P POSTERS - Wave-Particle Interactions and Their Effects on Planetary Radiation Belts

Session Chairs: Richard Horne, David Shklyar, Craig Kletzing

H1P-1 **RESONANT DIFFUSION OF ENERGETIC ELECTRONS BY NARROWBAND Z MODE WAVES IN SATURN'S INNER MAGNETOSPHERE**

X. Gu, B. Ni, C. Zhou, R. Shi, Z. Zhao, *Wuhan University, China (CIE)*

H1P-2 **THE WAVE-PARTICLE INTERACTION BETWEEN EMIC WAVES AND MIRRORING ELECTRONS**

S. Fu, B. Ni, *EIS, Wuhan University, China (CIE)*

H1P-3 **OCCURRENCE CHARACTERISTICS OF VERY LARGE AMPLITUDE WHISTLER MODE WAVES IN THE INNER MAGNETOSPHERE: VAN ALLEN PROBES EFW OBSERVATION**

S. Kurita[1], Y. Miyoshi[1], J. R. Wygant[2], J. W. Bonnell[3], A. Breneman[2], C. A. Kletzing[4]

[1]Nagoya University, Japan; [2]University of Minnesota, USA; [3]University of California, Berkeley, USA; [4]University of Iowa, USA

H1P-4 **RESONANT INTERACTION OF ENERGETIC IONS AND RELATIVISTIC ELECTRONS WITH ELECTROMAGNETIC ION-CYCLOTRONE WAVES**

V. S. Grach[1], A. G. Demekhov[2,1]

[1]Institute of Applied Physics, Russian Academy of Sciences, Russian Federation; [2]Polar Geophysical Institute, Russian Federation

H1P-5 **INITIAL REPORT OF THE ONBOARD FREQUENCY ANALYZER/WAVEFORM CAPTURE (OFA/WFC) ON BOARD THE ERG(ARASE) SATELLITE AND ITS CALIBRATION TECHNIQUE**

S. Matsuda[1], Y. Kasahara[2], H. Kojima[3], Y. Kasaba[4], T. Imachi[2], M. Ozaki[2], S. Yagitani[2], K. Ishisaka[5], A. Kumamoto[4], F. Tsuchiya[4], M. Ota[2], Y. Miyoshi[1], A. Matsuoka[6], M. Hikishima[6], I. Shinohara[6]

[1]Nagoya University, Japan; [2]Kanazawa University, Japan; [3]Kyoto University, Japan; [4]Tohoku University, Japan; [5]Toyama Prefectural University, Japan; [6]ISAS/JAXA, Japan

H1P-6 ON THE RESONANT INTERACTION OF RELATIVISTIC ELECTRONS WITH OBLIQUE WHISTLER-MODE WAVES.

I. Kuzichev[1], D. Shklyar[1,2]

[1]Space Research Institute, Russian Federation; [2]Moscow Institute of Physics and Technology (State University), Russian Federation

---

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

HG13P POSTERS - Active Experiments and Radio Sounding

Session Chairs: Vikas Sonwalkar, Robert Moore, Natasha Jackson-Booth, Todd Pedersen

HG13P-1 NUMERICAL STUDY OF ARTIFICIAL GENERATION AND PROPAGATION OF ULF WAVES IN THE IONOSPHERIC F REGION AT DIFFERENT LATITUDES

X. Xu, C. Zhou, R. Shi, B. Ni, Z. Zhao, Y. Zhang, *Ionospheric Lab of Wuhan University, China (CIE)*

HG13P-2 AN INTEGRATED MESOSPHERIC AND IONOSPHERIC SOUNDING SYSTEM

Z. Zhao, G. Yang, C. Zhou, C. Jiang, X. Gu, *Wuhan University, China (CIE)*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

HGE14P POSTERS - Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

HGE14P-1 LOW-FREQUENCY MAGNETIC PULSES FROM THE POSITIVE LEADER IN TWO NATURAL LIGHTNING FLASHES

G. Lu, *Institute of Atmospheric Physics, Chinese Academy of Sciences, China*

HGE14P-2 INITIATION OF POSITIVE STREAMER CORONA IN LOW THUNDERCLOUD FIELDS

Q. Cai, J. Jánský, V. Pasko, *Penn. State University, United States*

HGE14P-3 A SYNERGIC APPROACH TO THE STUDY OF TGFS AND ENERGETIC RADIATION FROM THUNDERSTORMS

M. Marisaldi[1], N. Østgaard[1], K. Albrechtsen[1], B. Carlson[2,1], P. Kochkin[1], N. G. Lehtinen[1], A. Mezentsev[1], A. B. Skeltved[1]

[1]Birkeland Centre for Space Science, University of Bergen, Norway; [2]Department of Physics, Carthage College, USA

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

J2P POSTERS - Digital Signal Processing Hardware

Session Chairs: Albert Boonstra, Dan Werthimer

J2P-1 A NEW 1TBPS ETHERNET STREAMING DATA INTERFACE BETWEEN FPGA AND GPU BASED DIGITAL SIGNAL PROCESSING SYSTEMS FOR A PHASED ARRAY FEED

J. Tuthill, D. George, A. Brown, C. Phillips, R. Beresford, M. Leach, T. Tzioumis, M. Baquiran, G. A. Hampson, J. D. Bunton, *CSIRO Astronomy and Space Science, Australia*

J2P-2 A GPU-BASED DIGITAL BACK-END FOR THE UPGRADED GMRT

S. H. Reddy[1], S. Kudale[1], U. Gokhale[2], I. Halagalli[1], N. Raskar[1], K. De[3], S. Gnanaraj[1], A. Kumar[1], Y. Gupta[1]

[1]Giant Meterwave Radio Telescope, NCRA, TIFR, India; [2]Indian Institute of Technology Bombay, India; [3]Indian Institute of Science Bangalore, India

J2P-3 DESIGN OF A LABVIEW-BASED POLYPHASE FILTER BANK SPECTROMETER FOR RADIO ASTRONOMY USING FLEXRIO FPGA TECHNOLOGY AND CUDA-ENABLED GPU

R. G. Freundt Rueda, J. A. Heraud Perez, *Pontificia Universidad Católica del Perú, Peru*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

J5P POSTERS - Receivers and Radiometers: Design and Calibration

Session Chairs: Arnold van Ardenne, Roberto Neri, Sivasankaran Srikanth

J5P-1 90° PHASE SHIFTER BASED ON SUBSTRATE INTEGRATED WAVEGUIDE TECHNOLOGY FOR KU-BAND APPLICATIONS

M. A. Abdelaal, S. I. Shams, A. A. Kishk, *Concordia University, Canada*

J5P-2 CALIBRATION OF THE NETHERLANDS-CHINA LOW FREQUENCY EXPLORER

H. van der Marel, A.-J. Boonstra, *ASTRON, Netherlands*; C. Brinkerink, *Radboud University Nijmegen, Netherlands*

J5P-3 QUANTIFYING THE SAMPLNG IN UV-PLANE: IMPLICATIONS FOR IMAGING EXTENDED RADIO SOURCES

R. Kale, *National Centre for Radio Astrophysics, Tata Institute of Fundamental Research, India*

J5P-4 THE ERROR ANALYSIS BETWEEN THE MEASUREMENT AND ORIGINAL SOLAR RADIO POLARIZATION DEGREE

S. Li, H. Y. Yan, W. Wang, H. D. Liu, *National Astronomical Observatories, Chinese Academy of Sciences, China*

J5P-5 A HIGH MASS FLOW HELIUM COMPRESSOR DESIGN

S. D. White, J. D. Nelson, R. G. Simmons, K. H. Lehman, *National Radio Astronomy Observatory, United States*

J5P-6 DEVELOPMENT OF SUITABLE TECHNOLOGIES FOR HETERODYNE W-BAND FOCAL PLANE ARRAYS

R. Molina, I. Barrueto, C. Jarufe, D. Monasterio, N. Reyes, P. Mena, L. Bronfman, *University of Chile, Chile*

J5P-7 FIVE-HUNDRED-METER APERTURE SPHERICAL RADIO TELESCOPE (FAST) ANALOGUE RECEIVER DESIGN CHALLENGES AND PROGRESS

K. Jeganathan, Y. S. Chung, A. Dunnning, P. Doherty, S. Mackay, L. Reilly, P. M. Roush, R. D. Shaw, *CSIRO, Australia*

J5P-8 MEASUREMENTS OF THE RADIO BACKGROUND AT LONG WAVELENGTHS

N. Patra, C. K. Day, A. R. Parsons, *University of California, United States*

J5P-9 SIMULATIONS OF GIANT METREWAVE RADIO TELESCOPE OBSERVATIONS

R. Kale, D. K. Deo, *National Centre for Radio Astrophysics, Tata Institute of Fundamental Research, India*

J5P-10 2SB AND BALANCED RECEIVER ARCHITECTURES USING HOLE COUPLERS

D. Henke, I. Wevers, P. Niranjanan, L. Knee, *NRC Herzberg Astronomy and Astrophysics, Canada*

J5P-11 LOW FREQUENCY WIDEBAND FEEDS FOR THE UPGRADED GMRT

H. R. Bandari, *TATA INSTITUTE OF FUNDAMENTAL RESEARCH, India*

J5P-12 LOW NOISE, MULTIBAND FRONT-END RECEIVER ELECTRONICS FOR THE UPGRADED GMRT

A. N. Raut, S. K. Subramaniam, S. Chatterjee, G. B. Parikh, I. Khan, V. B. Bhalerao, A. Prajapati, *GMRT-NCRA, TIFR, India*

J5P-13 QUAD-RIDGE FLARED HORN FEED DESIGN AND ANALYSIS FOR WBSPF IN RADIO TELESCOPE

Y. Ma, *National Astronomical Observatories, Chinese Academy of Sciences, China*; B. Billade, *Chalmers University of Technology, Sweden*; Z. Z. Abidin, *University Tun Hussein Onn Malaysia, Malaysia*

J5P-14 COMPACT RADIO ASTRONOMY RECEIVERS - DIGITISING THE SIGNAL AT THE ANTENNA

M. Bentum, *University of Twente, Netherlands*

J5P-15 SKALA3: AN OPTIMIZED ANTENNA AND LNA DESIGN FOR ENHANCED SKA1-LOW PASSBAND CALIBRATABILITY

E. de Lera Acedo, *University of Cambridge, United Kingdom*; B. Wakley, *Cambridge Consultants, United Kingdom*

J5P-16 A NOVEL APPROACH OF WALSH SYNCHRONIZATION FOR A RADIO TELESCOPE

S. Chaudhari, B. Ajithkumar, N. Shinde, S. Gupta, A. Vishwakarma, Y. Gupta, *National Centre for Radio Astrophysics (NCRA)-TIFR, India*

J5P-17 STATUS OF THE ULTRA-WIDEBAND RECEIVER PACKAGE FOR THE NORTH AMERICAN ARRAY

J. Velazco, M. Soriano, D. Hoppe, L. Samoska, A. Janzen, E. Long, J. Bowen, L. D'Addario, *Jet Propulsion Laboratory, United States*

J5P-18 HIGH PERFORMANCE CRYOGENIC FRACTAL 180° HYBRID POWER DIVIDER WITH INTEGRATED DIRECTIONAL COUPLER

A. Ladu[1], G. Valente[1], G. Montisci[2], A. Navarrini[1], P. Marongiu[1], G. Mazzarella[2], T. Pisanu[1]

[1]INAF-Astronomical Observatory of Cagliari, Italy; [2]DIEE-University of Cagliari, Italy

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

J19P POSTERS - Recent and Future Space Missions

Session Chairs: Fabrice Herpin, Martin Giard

J19P-1 ULTRA-LONG WAVELENGTH RADIO ASTRONOMY – SCIENCE CASES AND TECHNICAL CHALLENGES

M. Bentum[1,2]

[1]University of Twente, Netherlands; [2]ASTRON, Netherlands

J19P-2 ROTATIONALLY INVARIANT AND PHASE PRESERVING STOKES PARAMETERS

J. E. S. Bergman, *Swedish Institute of Space Physics, Sweden*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

J20P POSTERS - The Square Kilometer Array

Session Chairs: Douglas Bock, Robert Braun, Justin Jonas

J20P-1 SIGNAL PROCESSING ASPECTS OF THE SAMPLE CLOCK FREQUENCY OFFSET SCHEME FOR THE SKA1 MID TELESCOPE ARRAY

B. Carlson, T. Gunaratne, *National Research Council Canada, Canada*

J20P-2 DISENTANGLING THE SUNYAEV–ZELDOVICH EFFECT AND DIFFUSE EMISSION SUB–STRUCTURE IN GALAXY CLUSTERS

S. S. Malu, A. Datta, *Indian Institute of Technology Indore, India*; S. Colafrancesco, *University of the Witwatersrand, South Africa*; S. Paul, *SP Pune University, India*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

J22P POSTERS - Single Dish Instruments

Session Chairs: Karen O'Neil, Ettore Carretti, Zhi-Qiang Shen

J22P-1 IMPROVED HIGH FREQUENCY PERFORMANCE OF THE GREEN BANK TELESCOPE

R. J. Maddalena[1], R. M. Prestage[1], D. T. Frayer[1], B. S. Mason[2], K. O'Neil[1]

[1]Green Bank Observatory, United States; [2]National Radio Astronomy Observatory, United States

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

J24P POSTERS - Very Long Baseline Interferometry

Session Chairs: Huib van Langevelde, Hideyuki Kobayashi

J24P-1 VLBI STUDIES OF GAMMA-RAY-EMITTING YOUNG RADIO AGN

P. Mohan, T. An, *Shanghai Astronomical Observatory, China*

J24P-2 "QUASAR" VLBI NETWORK: PAST, PRESENT, AND FUTURE

A. Ipatov, Y. Bondarenko, *Institute of Applied Astromomy of RAS, Russian Federation*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

JG8P POSTERS - Ionospheric Models and their Validation

Session Chairs: Stefan Wijnholds, Sean Elvidge

JG8P-1 ESTIMATION OF GPS-TEC USING DIFFERENT TECHNIQUES AND COMPARISON WITH VALUES FROM IRI-2012, NEQUICK-2 AND IRI-PLAS 2015 MODELS DURING GEOMAGNETIC STORMS

A. O. Adewale[1], O. S. Bolaji[1,2], E. O. Oyeyemi[1], O. O. Akinola[1], R. O. Kaka[3]

[1]University of Lagos, Nigeria; [2]University of Tasmania, Australia; [3]Afe Babalola University, Nigeria

JG8P-2 ON THE POSSIBILITIES OF THE EXISTENCE OF MOLECULAR IONS IN THE LUNAR IONOSPHERE: A STUDY USING RESULTS FROM CHANDRAYAAN-I S-BAND RADIO OCCULTATION EXPERIMENT AND A PHOTOCHEMICAL MODEL

A. Kailasam Madathil, *INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY, India*; R. K. Choudhary, A. Bhardwaj, *SPACE PHYSICS LABORATORY, VSSC, India*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

K4P POSTERS - Latest Development in Measurement and Applications of Dielectric Spectroscopy

Session Chairs: Theodoros Samaras, Niels Kuster

K4P-1 MICROWAVE SENSING APPROACHES TO MONITORING PHYSIOLOGICAL RESPONSES

D. C. Garrett, J. Bourqui, E. C. Fear, *University of Calgary, Canada*

K4P-2 DIELECTRIC STUDY OF BIOLOGICAL PHENOMENA AT THE SINGLE CELL LEVEL: ELECTROPORATION AND STARVATION

E. Salimi, S. Afshar, K. Braasch, M. Butler, D. Thomson, G. Bridges, *University of Manitoba, Canada*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

K6P POSTERS - EMF Standards and Health Protection

Session Chairs: Kenneth Foster, Akimasa Hirata

K6P-1 SAFETY ASSESSMENT OF ULTRA-HIGH VOLTAGE TRANSMISSION POWER LINES WITH AC-750 KV

M. Lu, *Lanzhou Jiaotong University, China (CIE)*; S. Ueno, *Kyushu University, Japan*

K6P-2 OCCUPATIONAL EXPOSURE TO MAGNETIC FIELDS FROM MEDICAL SOURCES

R. Stam, *National Institute for Public Health and the Environment, Netherlands*

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

K7P POSTERS - Electromagnetic Biomedical Imaging

Session Chairs: Milica Popovic, Joe LoVetri

K7P-1 CROSS-SECTIONAL THERMOACOUSTIC IMAGING USING MULTI-LAYER CYLINDRICAL MEDIA

D. Elmas, B. Uzun, *Isik University, TURKEY*; M. Idemen, M. Karaman, *Istanbul Technical University, TURKEY*

K7P-2 MICROWAVE BASED MEDICAL IMAGING

J. Vrba, *Czech Technical University in Prague, Czech Republic*

K7P-3 MICROWAVE BASED MEDICAL IMAGING

J. Vrba jr., *Czech Technical University in Prague, Czech Republic*

K7P-4 MULTI-SENSOR CARDIO-PULMONARY STETHOSCOPE FOR QUANTITATIVE LUNG WATER MEASUREMENT

R. R. G. Perron[1], M. F. Iskander[1], T. B. Seto[2], F. A. Qazi[1], D. A. Bibb[1], E. Lim[3]

[1]University of Hawaii at Manoa - College of Engineering, United States; [2]The Queen's Medical Center, United States; [3]University of Hawaii at Manoa, United States

K7P-5 DATA PRECONDITIONING WITH GABOR NONSTATIONARY DECONVOLUTION FOR RADAR IMAGING OF HIGHLY DISSIPATIVE AND DISPERSIVE MEDIA

E. Fear, M. Potter, Y. Liu, *University of Calgary, Canada*

K7P-6 TERAHERTZ IMAGING AND SEGMENTATION OF FRESHLY EXCISED XENOGRAFT MOUSE TUMORS

T. Bowman[1], K. Khan[1], T. Chavez[1], K. Alhallak[1], D. Lee[1], N. Rajaram[1], A. Chakraborty[1], J. Wu[1], K. Bailey[2], M. El-Shenawee[1]

[1]University of Arkansas, United States; [2]Oklahoma State University, United States

Tuesday, August 22, 2017 **16:00-19:00** **517AB**

K11P POSTERS - Biological Effects and Related Mechanisms of EMF Exposure

Session Chairs: Guglielmo Dinzeo, Alexandre Legros, Guglielmo d'Inzeo

K11P-1 EFFECTS OF LONG-TERM EXPOSURE TO 0.3 THZ IN HUMAN KERATINOCYTE CELLS

S. Koyama[1], E. Narita[1], Y. Shimizu[1], K. Sasaki[2], M. Mizuno[2], S. Watanabe[2], M. Taki[3], N. Shinohara[1], J. Miyakoshi[1]

[1]Research Institute for Sustainable Humanosphere, Kyoto University, Japan; [2]National Institute of Information and Communications Technology, Japan; [3]Tokyo Metropolitan University, Japan

K11P-2 STUDY ON NON-THERMAL EFFECTS OF EXPOSURE TO 0.07-0.6 THZ RADIATION TO CULTURED CELLS

N. Yaekashiwa[1], S. Otsuki[1], S. Hayashi[1,2], K. Kawase[1,3]

[1]RIKEN, Japan; [2]NICT, Japan; [3]Nagoya University, Japan

K11P-3 ENZYMATIC, GENETIC AND MORPHOLOGICAL ALTERATION IN DIFFERENT ORGANELLES OF RAT EXPOSED TO LOW LEVEL MICROWAVE RADIATION

P. Rajamani, R. Gautam, K. V. Singh, J. Nirala, S. Pardhiya, *Jawaharlal Nehru University, India*; J. Behari, *Amity University, India*

K11P-4 THE INFLUENCE OF WEAK EMF AT THE SCHUMANN RESONANCE FREQUENCY ON RAT CARDIAC CELL CULTURE

G. Elhalel, C. G. Price, A. Shainberg, *Tel Aviv University, Israel*

K11P-5 MODULATORY ROLE OF MANGANESE DIOXIDE NANOPARTICLES IN 3G MOBILE PHONE FREQUENCY EXPOSED MALE WISTAR RATS

S. Pardhiya, R. Gautam, V. Singh, J. P. Nirala, P. Rajamani, *Jawaharlal Nehru University, India*

K11P-6 3G MOBILE PHONE RADIATION: EFFECTS ON REPRODUCTIVE SYSTEM OF MALE WISTAR RAT

R. Gautam, K. V. Singh, S. Parhdhiya, J. P. Nirala, P. Rajamani, *Jawaharlal Nehru University, -India*

K11P-7 MONITORING THE MOLECULAR COMPOSITION OF LIVE CELLS EXPOSED TO PULSED ELECTRIC FIELDS BASED ON TERAHERTZ MEASUREMENTS

A. Azan, M. Grognot, L. Descamps, G. Gallot, L. M. Mir, *CNRS, France*

K11P-8 VERSATILE EXPOSURE SYSTEM FOR LABORATORY EXPERIMENTS FINALIZED TO THERAPEUTIC APPLICATIONS IN THE IF RANGE

E. della Valle[1], F. Camera[1], A. Paffi[1], S. Petralito[1], V. Roncacè[2], C. Burattini[2], G. Aicardi[2,2], M. Liberti[1], F. Apollonio[1]

[1]Sapienza, University of Rome, Italy; [2]University of Bologna, Italy

K11P-9 LIVE CELL IMAGING FOR REAL-TIME DETECTION OF NEURONAL ACTIVITY INDUCED BY TIME-VARYING MAGNETIC FIELD EXPOSURE

M. Ikehata[1], K. Wada[2], Y. Suzuki[2], A. Saito[3], S. Yosie[1], S. Nakasono[3]

[1]Railway Technical Research Institute, Japan; [2]Tokyo Metropolitan University, Japan; [3]Central Research Institute of Electric Power Industry, Japan

K11P-10 A STUDY SARS FOR SMART-WATCH MODEL WITH MONOPOLE ANTENNA

S.-E. Hong, J.-H. Kwon, H.-D. Choi, *ETRI, South Korea*

K11P-11 EFFECTS OF INTERMEDIATE FREQUENCY MAGNETIC FIELD EXPOSURE AT 85 KHZ ON OXIDATIVE STRESS IN MICE

A. Ushiyama[1], K. Hattori[2], S. Ohtani[2], H. Iwanami[2], M. Maeda[2], N. Kunugita[1], K. Wada[3], Y. Suzuki[3], K. Ishii[1]

[1]National Institute of Public Health, Japan; [2]Meiji Pharmaceutical University, Japan; [3]Tokyo Metropolitan University, Japan

K11P-12 MOBILE PHONE RADIATION EXPOSURE: OXIDATIVE STRESS INDUCED CYTOMORPHIC CHANGES IN HIPPOCAMPUS AND CONSEQUENTIAL EFFECT ON CONTEXTUAL FEAR MEMORY.

K. V. Singh, R. Gautam, S. Pardhiya, P. Rajamani, *Jawaharlal Nehru University, India*

K11P-13 ANALYSIS OF TIME TREND IN INCIDENCE OF BRAIN TUMORS USING MULTISTAGE CARCINOGENESIS MODEL ASSUMING POSSIBLE ASSOCIATION BETWEEN MOBILE PHONE USE AND BRAIN TUMOR INCIDENCE

M. Hagiwara, M. Taki, *Tokyo Metropolitan University, Japan*; Y. Sato, N. Kojimahara, N. Yamaguchi, *Tokyo Women's Medical University, Japan*; K. Wake, *National Institute of Information and Communications Technology, Japan*

Wednesday, August 23, 2017

Wednesday, August 23, 2017 **08:00-08:40** **511AD**

AE9 Advanced Time and Frequency Transfer Techniques

Session Chairs: Felicitas Arias, Demetrios Matsakis

08:00 AE9-1 (Invited) FREQUENCY TRANSFER STUDY USING GPS AND PPP FROM MULTIPLE RECEIVERS

M. Gertsvolf, *National Research Council, Canada*

08:20 AE9-2 AN ENSEMBLE OF GPS RECEIVERS FOR GPS CARRIER-PHASE TIME TRANSFER

J. Yao, J. Levine, *NIST, United States*

Wednesday, August 23, 2017 **08:00-09:20** **510AC**

B16 Staffan Ström Memorial Session (1)

Session Chair: Gerhard Kristensson

08:00 B16-1 (Invited) INTRODUCTION TO MEMORIAL SESSION OF STAFFAN STRÖM

G. Kristensson, *Lund University, Sweden*

08:20 B16-2 (Invited) REMEMBERING STAFFAN AND ELECTROMAGNETIC SCATTERING: CORRECTIONS TO CLASSICAL MIXING FORMULAE

A. Sihvola, *Aalto University, Finland*

08:40 B16-3 (Invited) DIFFRACTION BY A FINITE PARALLEL-PLATE WAVEGUIDE WITH FOUR-LAYER MATERIAL LOADING

K. Kobayashi, *Chuo University, Japan*

09:00 B16-4 (Invited) ON THE MOST GENERAL LINEAR AND LOCAL BOUNDARY CONDITIONS

I. V. Lindell, *Aalto University, School of Electrical Engineering, Finland*

Wednesday, August 23, 2017 **08:00-09:20** **514A**

B17 Computational Electromagnetics (1)

Session Chairs: Pasi Ylä-Oijala, Thomas Eibert

08:00 B17-1 CHARACTERISTIC MODE ANALYSIS ENHANCED BY REDUCED-ORDER MODELING OF ARBITRARY BACKGROUND INHOMOGENEITY

Q. Dai, H. Gan, W. C. Chew, *UIUC, United States*

08:20 B17-2 FEEDING TECHNIQUE FOR ENDFIRE ARRAY ANTENNAS USING CONVEX OPTIMIZATION

J. Helander, D. Sjöberg, D. Tayli, *Lund University, Sweden*

08:40 B17-3 ELECTROMAGNETIC ANALYSIS OF TIME VARYING MEDIA USING VOLUME INTEGRAL EQUATIONS

S. B. Sayed[1], H. Arda Ulku[2], H. Bagci[1]

[1]King Abdullah University of Science and Technology (KAUST), Saudi Arabia; [2]Gebze Technical University, Turkey

09:00 B17-4 AN H-MATRIX ACCELERATED METHOD OF MOMENTS SOLUTION OF A NEW SINGLE-SOURCE INTEGRAL EQUATION FOR SCATTERING PROBLEMS

R. Gholami[1], J. Mojolagbe[1], F. Lori Sheikh Hosseini[1], A. Menshov[2], V. Okhmatovski[1]

[1]University of Manitoba, Canada; [2]University of Texas at Austin, USA

Wednesday, August 23, 2017 **08:00-09:20** **513B**

D16 Electric Field Synthesis at Photonic Frequencies (1)

Session Chairs: Bruno Schmidt, Eleftherios Goulielmakis

08:00 D16-1 (Invited) TIME-DOMAIN QUANTUM PHYSICS

A. Leitenstorfer, *University of Konstanz, Germany*

08:40 D16-2 ROUTE TO COHERENT ELECTRONICS

E. Goulielmakis, *MPG, Germany*

Wednesday, August 23, 2017 **08:00-09:20** **513EF**

E18 Lightning and Related Phenomena (2)

Session Chairs: Vladimir A. Rakov, Satoru Yoshida

08:00 E18-1 EFFECTIVE MODELING OF MULTIDIRECTIONAL CFRP PANELS BASED ON CHARACTERIZING UNIDIRECTIONAL SAMPLES FOR STUDYING THE LIGHTNING DIRECT EFFECT

S.-P. Gao[1], H. M. Lee[1], X.-K. Gao[1], Q. F. Lim[2], W. Thitsartarn[2], E.-X. Liu[1], C. E. Png[1]

*[1]Institute of High Performance Computing, A*STAR, Singapore; [2]Institute of Material Research and Engineering, A*STAR, Singapore*

08:20 E18-2 (Invited) LIGHTNING MAPPING INTERFEROMETER OBSERVATIONS ON LIGHTNING DISCHARGE

Z. Sun[1], X. Qie[1,2], M. Liu[1], R. Jiang[1,2], H. Zhang[1,3]

[1]Institute of Atmospheric Physics, Chinese Academy of Sciences, China (CIE); [2]Nanjing University of Information Science & Technology, China (CIE); [3]University of Chinese Academy of Sciences, China (CIE)

08:40 E18-3 (Invited) THE CONSTRUCTION OF WRF-ELECTRIC MODEL AND ITS PRELIMINARY APPLICATION

T. L. Xu, *Chinese Academy of Meteorological Sciences, China (CIE)*

09:00 E18-4 (Invited) LIGHTNING ACTIVITY ASSOCIATED WITH A CONVECTIVE CELL INVOLVING MULTIPLE PRECIPITATION CORES

S. Yoshida[1], E. Yoshikawa[2], K. Kusunoki[1], T. Adachi[1], H. Inoue[1], S. Hayashi[1]

[1]*Meteorological Research Institute, Japan;* [2]*Japan Aerospace Exploration Agency, Japan*

Wednesday, August 23, 2017 **08:00-09:20** **510BD**

F18 Microwave Remote Sensing of Vegetation (1)

Session Chairs: Simonetta Paloscia, Mehmet Kurum

08:00 F18-1 (Invited) ON THE RELATIONSHIP BETWEEN ACTIVE AND PASSIVE OBSERVATIONS OF VEGETATION:

L. Guerriero, P. Ferrazzoli, C. Vittucci, R. Rahmoune, *University of Rome Tor Vergata, Italy*

08:20 F18-2 (Invited) VEGETATION DYNAMICS IN AGRICULTURAL CROPS USING GROUND-BASED ACTIVE AND PASSIVE MICROWAVE OBSERVATIONS

J. Judge[1], P.-W. Liu[1], S. Steele-Dunne[2], A. Monsivais-Huertero[3], S. Chakrabarti[1], R. DeRoo[4], A. England[5]

[1]*Center for Remote Sensing, University of Florida, United States;* [2]*Delft University of Technology, Netherlands;* [3]*Instituto Politécnico Nacional, Mexico;* [4]*University of Michigan-Ann Arbor, United States;* [5]*University of Michigan-Dearborn, United States*

08:40 F18-3 (Invited) RETRIEVAL OF VEGETATION BIOMASS FROM MULTIFREQUENCY MICROWAVE AMSR2 DATA

S. Paloscia, E. Santi, P. Pampaloni, S. Pettinato, *IFAC/CNR, Italy*

09:00 F18-4 VARIATIONS IN BACKSCATTER OVER A CORN CANOPY'S GROWING SEASON

A. Sharma, *The Johns Hopkins University Applied Physics Laboratory, United States*; R. H. Lang, *The George Washington University, United States*; M. Kurum, *Mississippi State University, United States*; P. O'Neill, *NASA Goddard Space Flight Center, United States*; M. Cosh, *USDA, United States*

Wednesday, August 23, 2017 **08:00-09:20** **513A**

FC19 Multi-Parameter Radars and Wave Propagation for Remote Sensing and Disaster Management (1)

Session Chairs: Madhu Chandra, Tullio Tanzi, Eric Mokole

08:00 FC19-1 (Invited) POLARIMETRIC MULTIPARAMETER WEATHER RADAR

D. Fischer, I. Klein, *Münster University of Applied Sciences, Germany*

08:20 FC19-2 (Invited) INNOVATIVE MULTIPLE-INPUT MULTIPLE-OUTPUT SYNTHETIC APERTURE RADAR CONCEPTS FOR REMOTE SENSING AND DISASTER MANAGEMENT

T. Rommel[1], M. Chandra[2], A. Moreira[1], M. Younis[1], G. Krieger[1]

[1]*German Aerospace Centre (DLR), Germany;* [2]*Technical University Chemnitz, Germany*

08:40 FC19-3 TOWARDS REAL TIME PREDICTION OF PROPAGATION CONDITIONS IN THE MARITIME BOUNDARY LAYER

A. Danklmayer[1], J. Förster[2], V. Fabbro[3], G. Biegel[1], L. Castanet[3], J.-P. Marcellin[3], Y. Hurtaud[4]

[1]Fraunhofer FHR, Germany; [2]Bundeswehr Technical Center for Ships and Naval Weapons, Naval Technology and Research, Germany; [3]Office National d'Etudes et de Recherches Aérospatiales (ONERA), France; [4]DGA, France

09:00 FC19-4 DAMAGE ASSESSMENT USING AIRBORNE POLARIMETRIC AND INTERFEROMETRIC SAR: PI-SAR2

A. Nadai, S. Uratsuka, T. Umehara, T. Kobayashi, T. Matsuoka, S. Kojima, J. Uemoto, *National Institute of Information and Communications Technology, Japan*

Wednesday, August 23, 2017 **08:00-09:20** **511BE**

GH19 Meteors, Collisional EMPs, and Other Highly-Transient Space Plasma Events (1)

Session Chairs: John Mathews , Asta Pellinen-Wannberg, Margaret Campbell-Brown

08:00 GH19-1 (Invited) RECENT ADVANCES IN IONOSPHERIC DUSTY PLASMA INVESTIGATIONS USING GROUND-BASED HIGH POWER RADIOWAVE HEATING

W. A. Scales, *Virginia Tech, United States*

08:20 GH19-2 METEOR SHOWER FLUXES FROM TRANSVERSE SCATTER RADAR OBSERVATIONS

M. D. Campbell-Brown, *University of Western Ontario, Canada*

08:40 GH19-3 STUDY OF THE QUADRANTIDS 2016 USING BRAMS DATA

H. Lamy[1], C. Verbeeck[2], S. Calders[1], A. Martinez Picar[2], C. Tetard[1], E. Gamby[1]

[1]Royal Belgian Institute for Space Aeronomy, Belgium; [2]Royal Observatory of Belgium, Belgium

09:00 GH19-4 METEOROID FLARING AS A POSSIBLE SOURCE OF INTENSE LANGMUIR WAVES

J. D. Mathews, *Penn State University, United States*; F. T. Djuth, *Geospace Research, Inc., United States*

Wednesday, August 23, 2017 **08:00-09:00** **514B**

GHJ20 Workshop on Extreme Space Weather Environments (1)

Session Chairs: Philip Wilkinson, Mike Hapgood, Terrance Onsager, Anthony Mannucci, Viviane Pierrard, Mauro Messerotti, Karl-Ludwig Klein

08:00 GHJ20-1 (Invited) EXTREME EVENTS OF SOLAR ENERGETIC PARTICLES

I. G. Usoskin, *University of Oulu, Finland*

08:20 GHJ20-2 (Invited) EXTREME ELECTRON ENVIRONMENTS LEADING TO SPACECRAFT CHARGING

N. P. Meredith, *British Antarctic Survey, United Kingdom*

08:40 GHJ20-3 INVESTIGATION OF THE EXTREME SOLAR PROTON FLUXES AT HIGH LATITUDES WITH USE OF HEO-3 SATELLITE DATA

L. Nikitina, L. Trichtchenko, D. Danskin, *Natural Resources Canada, Canada*

Wednesday, August 23, 2017 **08:00-09:20** **513C**

HG13 Active Experiments and Radio Sounding (1)

Session Chairs: Vikas Sonwalkar, Robert Moore, Natasha Jackson-Booth, Todd Pedersen

08:00 HG13-1 RADIO TECHNOLOGIES FOR PLANETARY EXPLORATIONS

P. Song, I. Galkin, B. Reinisch, *University of Massachusetts Lowell, United States*

08:20 HG13-2 POSSIBLE EVIDENCE OF L-MODE ELECTROMAGNETIC WAVE PUMPING OF IONOSPHERIC PLASMA IN GEOMAGNETIC ZENITH

T. B. Leyser, *Swedish Institute of Space Physics, Sweden*; H. G. James, *University of Calgary, Canada*; B. Gustavsson, *University of Tromsø, Norway*; M. T. Rietveld, *EISCAT Scientific Association, Norway*

08:40 HG13-3 COMPARISON OF RECENT STIMULATED ELECTROMAGNETIC EMISSION OBSERVATIONS AT HAARP AND EISACT

H. Fu, *Fudan, China (CIE)*; W. A. Scales, *Virginia Tech, USA*; P. A. Bernhardt, S. J. Briczinski, *Naval Research Labratory, USA*

09:00 HG13-4 OPTIMIZING THE ELF/VLF SOURCE ABOVE HAARP

R. C. Moore, *University of Florida, United States*

Wednesday, August 23, 2017 **08:00-09:20** **511CF**

HGE14 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (1)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

08:00 HGE14-1 (Invited) STUDIES OF LIGHTNING INITIATION

P. Krehbiel, *New Mexico Tech, United States*

08:20 HGE14-2 (Invited) TRANSITION FROM INITIAL LEADER TO STEPPED LEADER IN NEGATIVE CLOUD-TO-GROUND LIGHTNING

M. Stolzenburg, T. C. Marshall, S. Karunarathne, *University of Mississippi, United States*; R. E. Orville, *Texas A&M University, United States*

08:40 HGE14-3 (Invited) ELECTROMAGNETIC SIGNATURES OF ISOLATED BREAKDOWN LIGHTNING PROCESSES

I. Kolmasova[1,2], O. Santolik[1,2], E. Defer[3], S. Pedeboy[4], R. Lan[1], L. Uhlir[1], S. Coquillat[3], D. Lambert[3], J.-P. Pinty[3], S. Prieur[3]

[1]Institute of Atmospheric Physics, CAS, Czechia; [2]Faculty of Mathematics and Physics, Charles University, Czechia; [3]Laboratoire d'Aérologie, Université de Toulouse, UPS, CNRS, Observatoire Midi-Pyrénées, France; [4]Météorage, France

09:00 HGE14-4 LIGHTNING NARROW BIPOLAR EVENTS PRODUCED BY FAST NEGATIVE BREAKDOWN

J. Tilles[1], N. Liu[1], P. R. Krehbiel[2], W. Rison[2], M. A. Stanley[2], R. G. Brown[3], J. G. Wilson[3], J. R. Dwyer[1], L. Boggs[4], M. Stock[5]

[1]University of New Hampshire, United States; [2]New Mexico Tech, United States; [3]NASA Kennedy Space Center, United States; [4]Florida Institute of Technology, United States; [5]Earth Networks, United States

Wednesday, August 23, 2017 **08:00-09:20** **516DE**

J22 Single Dish Instruments (1)

Session Chairs: Karen O'Neil, Ettore Carretti, Zhi-Qiang Shen

08:00 J22-1 (Invited) AN UNPRECEDENTED DRIFT-SCAN COMMENSAL SURVEY BY FAST

D. Li, M. Krco, L. Qian, R. Nan, Y. Yue, C. Jin, R. Duan, Y. Zhu, *National Astronomical Observatories of China, China (CIE)*; D. Werthimer, *Berkeley, USA*

08:20 J22-2 (Invited) FUTURE PLANS FOR THE ARECIBO OBSERVATORY

F. C. Cordova, *SRI International/Arecibo Observatory, Puerto Rico*

08:40 J22-3 (Invited) TRANSFORMATIVE SCIENCE WITH THE GREEN BANK OBSERVATORY

K. O'Neil, R. Maddalena, *Green Bank Observatory, United States*

09:00 J22-4 (Invited) THE EFFELSBERG 100-M RADIO TELESCOPE: CURRENT STATUS AND OUTLOOK

A. Kraus, G. Wieching, M. Kramer, *Max-Planck-Institut für Radioastronomie, Germany*

Wednesday, August 23, 2017 **08:00-09:20** **516AB**

K11 Biological Effects and Related Mechanisms of EMF Exposure (1)

Session Chairs: Guglielmo Dinzeo, Alexandre Legros, Guglielmo d'Inzeo

08:00 K11-1 (Invited) ACUTE NEUROPHYSIOLOGICAL RESPONSE TO ELF MF EXPOSURE IN HUMAN

A. G. Legros[1], J. Modolo[2], S. Davarpanah Jazi[3], C. Baker[3], M. Corbacio[3], D. Goulet[4], M. Plante[4], M. Souques[5], F. Deschamps[6], G. Ostiguy[4], J. Lambrozo[5], A. Thomas[1]

[1]Imaging Program, Lawson Health Research Institute, Canada; [2]INSERM, Université de Rennes 1, France; [3]Western University, Canada; [4]Hydro-Québec, Canada; [5]EDF, France; [6]RTE, France

08:20 K11-2 (Invited) RESISTANCE OF ELECTRONIC MEDICAL IMPLANTS TO 50-60 HZ ELECTRIC AND MAGNETIC FIELDS

G. Ostiguy, M. Plante, *Hydro-Québec, Canada*; D.-H. Nguyen, A. Turgeon, *Institut de recherche électrique du Québec, Canada*; K. Dyrda, *Montreal Heart Institute, Canada*

08:40 K11-3 (Invited) ACTIVATION THRESHOLDS FOR ELECTROSTIMULATION BY TMS AND DES: BRAIN MAPPING VIA MULTISCALE MODEL

J. Gomez-Tames, S. Aonuma, T. Kutsuna, A. Hirata, *Nagoya Institute of Technology, Japan*

09:00 K11-4 (Invited) POWER-FREQUENCY MAGNETIC FIELD AND HEALTH

M. Plante, G. Ostiguy, *Hydro-Québec, Canada*

Wednesday, August 23, 2017 **09:40-10:40** **511AD**

AE10 SI Units

Session Chairs: Felicitas Arias, Carl Williams

09:40 AE10-1 THE REALIZATION AND CALIBRATION OF ACTIVE SIMULATION IMPEDANCE

X. J. Yan, Y. L. Li, K. Wu, L. You, *Beijing Orient Institute of Measurement & Test, China (CIE)*

10:00 AE10-2 ROADMAP FOR THE REDEFINITION OF THE SI SECOND

E. F. Arias, *BIPM, France*

10:20 AE10-3 CALIBRATION SYSTEM FOR LOW-CURRENT TRANSRESISTANCE AMPLIFIERS WITH A LOW-FREQUENCY SINEWAVE SOURCE

I. Finardi[1,2], L. Callegaro[1]

[1]*Istituto Nazionale di Ricerca Metrologica, Italy;* [2]*Politecnico di Torino, Italy*

Wednesday, August 23, 2017 **09:40-10:40** **510AC**

B18 Staffan Ström Memorial Session (2)

Session Chair: Gerhard Kristensson

09:40 B18-1 (Invited) EXTENSION OF THE UTD TO THE DIFFRACTION OF COMPLEX-SOURCE BEAMS

G. Manara, *University of Pisa, Italy*; L. Klinkenbusch, *Kiel University, Germany*

10:00 B18-2 (Invited) COMBINING MICROSCOPIC AND MACROSCOPIC POYNTING THEOREMS TO FIND POSITIVE ENERGIES

A. D. Yaghjian, *Electromagnetics Research Consultant, United States*

10:20 B18-3 (Invited) OPTICAL BIO-IMAGING ASSISTED BY NANO-PARTICLES

S. He[1,2]

[1]*Zhejiang University, China;* [2]*Royal Institute of Technology, Sweden*

Wednesday, August 23, 2017 **09:40-10:40** **514A**

B19 Computational Electromagnetics (2)

Session Chairs: Pasi Ylä-Oijala, Thomas Eibert

09:40 B19-1 (Invited) COMPUTATIONAL ANALYSIS AND FULL-WAVE OPTIMIZATIONS OF NANOANTENNA ARRAYS FOR DESIRED SCATTERING AND RADIATION CHARACTERISTICS

A. Altinoklu[1,2], O. Ergul[1]

[1]*Middle East Technical University, Turkey;* [2]*ASELSAN Inc., Turkey*

10:00 B19-2 MOM SOLUTION FOR SPATIALLY MODULATED IMPENETRABLE IMPEDANCE STRIP

B. A. Khan, R. Paknys, *Concordia University Montreal, Canada*

10:20 B19-3 ANTENNA GAIN DETERMINATION IN THE NEAR-FIELD USING PROPAGATING PLANE-WAVE EXPANSIONS

O. Neitz, T. F. Eibert, *Technical University of Munich, Germany*

Wednesday, August 23, 2017 09:40-10:40 513A

C16 C-Tutorial Sana Salous, Jeanne Quimby: 'Challenges of Millimeter Radio Channel Sounding and Channel Modelling'

Session Chair: Amir Zaghloul

09:40 C16-1 CHALLENGES OF MILLIMETER RADIO CHANNEL SOUNDING AND CHANNEL MODELLING

S. Salous, *University of Durham, United Kingdom*

Wednesday, August 23, 2017 09:40-10:40 513B

D17 Electric Field Synthesis at Photonic Frequencies (2)

Session Chairs: Bruno Schmidt, Eleftherios Goulielmakis

09:40 D17-1 (Invited) LOCAL FIELD EFFECTS AND COHERENT CHARGE DYNAMICS IN DIELECTRICS DRIVEN BY ULTRASHORT ELECTRIC FIELD TRANSIENTS

T. Elsaesser, *Max-Born-Institute, Germany*

10:20 D17-2 LINEARIZING NONLINEAR OPTICS

B. E. Schmidt[1], P. Lassonde[2], G. Ernotte[2], M. Clerici[3], R. Morandotti[2], H. Ibrahim[2], F. Legare[2]

[1]few-cycle Inc., Canada; [2]INRS, Canada; [3]University of Glasgow, UK

Wednesday, August 23, 2017 09:40-10:40 513EF

E19 Lightning and Related Phenomena (3)

Session Chairs: Vladimir A. Rakov, Satoru Yoshida

09:40 E19-1 A SEMI-ANALYTICAL SIMPLIFIED APPROACH TO COMPUTE LIGHTNING RADIATED ELECTRIC FIELDS AT LONG DISTANCES TAKING INTO ACCOUNT IONOSPHERIC REFLECTION

M. Azadifar[1], D. Li[2], M. Rubinstein[3], F. Rachidi[1]

[1]Swiss Federal Institute of Technology (EPFL), Switzerland; [2]Nanjing University of Information Science and Technolog, China; [3]University of Applied Sciences of Western Switzerland, Switzerland

10:00 E19-2 (Invited) LIGHTNING/IONOSPHERE INTERACTIONS AND EXPERIMENTAL OBSERVATIONS

R. C. Moore, A. J. Erdman, D. A. Kotovsky, *University of Florida, United States*

10:20 E19-3 SIMULATION ANALYSIS ON OVERVOLTAGE OF WIND TURBINES BY LIGHTNING STROKE

D. Xu, J. Guo, M. Zhen, Y. Jin, *Xi'an Jiaotong University,Shaanxi, China, China (SRS)*

Wednesday, August 23, 2017 **09:40-10:40** **510BD**

F20 Microwave Remote Sensing of Vegetation (2)

Session Chairs: Simonetta Paloscia, Mehmet Kurum

09:40 F20-1 (Invited) USE OF MICROWAVE SIGNALS OF OPPORTUNITY FOR ROOT ZONE SOIL MOISTURE RETRIEVAL

M. Moghaddam, A. Azemati, *University of Southern California, United States*

10:00 F20-2 (Invited) ESTIMATION OF FOREST BIOMASS AND CANOPY HEIGHT USING PASSIVE OPTICAL REMOTE SENSING AND RADAR WITH LIMITED LIDAR DATA

M. L. Benson, L. E. Pierce, K. Bergen, K. Sarabandi, *University of Michigan, United States of America*

10:20 F20-3 (Invited) GNSSBIO: FOREST BIOMASS RETRIEVAL BASED ON GNSS GROUND RECEIVER

A. Mollfulleda, F. Martín, *Starlab, Spain*; S. Paloscia, E. Santi, *CNR-IFAC, Italy*; L. Guerriero, *Tor Vergata Univeirisy of Rome, Italy*; N. Pierdicca, *La sapienza Univeristy of Rome, Italy*; N. Floury, *ESA/ESTEC, Netherlands*

Wednesday, August 23, 2017 **09:40-10:40** **513D**

FC21 Multi-Parameter Radars and Wave Propagation for Remote Sensing and Disaster Management (2)

Session Chairs: Madhu Chandra, Tullio Tanzi, Eric Mokole

09:40 FC21-1 (Invited) PROPAGATION MODELLING TOWARDS THE DESIGN OF DRONE-BORNE GPR FOR HUMANITARIAN APPLICATIONS

M. Chandra, *Technische Universitaet Chemnitz, Germany*; T. J. Tanzi, *Institut Mines-Telecom, Telecom ParisTech, France*

10:00 FC21-2 (Invited) PROOF-OF-CONCEPT: SPECTRUM AND ENERGY EFFICIENT MULTI-USER CR NETWORK VIA VACANCY AND QUALITY BASED CHANNEL SELECTION

N. Modi[1], P. Mary[2], C. Moy[1], S. Darak[3]

[1]CentraleSupélec, France; [2]INSA de Rennes, France; [3]IIIT Delhi, India

10:20 FC21-3 SFN MIMO CHANNEL MODEL FOR HIGH-SPEED RAILWAY

J. Zhao, L. Xiong, Y. Zhang, X. Yang, *State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiao tong University, China (CIE)*; Y. Tan, *Beijing Xinwei Telecom Technology Group Co. ,Ltd, China (CIE)*

Wednesday, August 23, 2017 **09:40-10:40** **511BE**

GH21 Meteors, Collisional EMPs, and Other Highly-Transient Space Plasma Events (2)

Session Chairs: John Mathews , Asta Pellinen-Wannberg, Margaret Campbell-Brown

09:40 GH21-1 (Invited) MULTI-RADAR OBSERVATIONS OF METEORS

J. Kero[1], G. Stober[2], C. Schult[2], P. Brown[3], Z. Krzeminski[3], R. Marshall[4], R. Latteck[2], W. Cooke[5], I. Häggström[6]

[1]Swedish Institute of Space Physics (IRF), Sweden; [2]Leibniz-Institute of Atmospheric Physics (IAP), Germany; [3]University of Western Ontario, Canada; [4]University of Colorado, USA; [5]NASA Marshall Space Flight Center, USA; [6]EISCAT Scientific Association, Sweden

10:00 GH21-2 (Invited) RADIO-WAVE SCATTERING BY METEORS AND THE DEPENDENCE ON METEOR TRAIL STRUCTURE

W. K. Hocking, R. E. Silber, *University of Western Ontario, Canada*

10:20 GH21-3 HYPERVELOCITY IMPACT FLASH AND PLASMA ON ELECTRICALLY BIASED SPACECRAFT SURFACES

Y. M. Hew, S. Close, *Stanford Univeristy, United States*

Wednesday, August 23, 2017 **09:40-10:00** **514B**

GHJ22 Workshop on Extreme Space Weather Environments (2)

Session Chairs: Philip Wilkinson, Mike Hapgood, Terrance Onsager, Anthony Mannucci, Viviane Pierrard, Mauro Messerotti, Karl-Ludwig Klein

09:40 GHJ22-1 (Invited) INFLUENCE OF EXTREME MAGNETIC STORMS ON THE UPPER ATMOSPHERE

Y. Deng, *University of Texas at Arlington, United States*; C. Sheng, *NCAR/HAO, United States*; B. Tsurutani, A. Mannucci, *JPL, California Institute of Technology, United States*

Wednesday, August 23, 2017 **09:40-10:40** **513C**

HG15 Active Experiments and Radio Sounding (2)

Session Chairs: Vikas Sonwalkar, Robert Moore, Natasha Jackson-Booth, Todd Pedersen

09:40 HG15-1 HF RAY TRACING OF THE ARTIFICIALLY DISTURBED IONOSPHERE ABOVE SURA HEATING FACILITY

E. S. Andreeva[1], V. L. Frolov[2,3], A. M. Padokhin[1], C. L. Siefring[4], G. James[5]

[1]Lomonosov Moscow State University, Russian Federation; [2]Lobachevsky University, Russian Federation; [3]Kazan Federal University, Russian Federation; [4]Naval Research Laboratory, US; [5]The University of Calgary, Canada

10:00 HG15-2 (Invited) ARECIBO - HF FACILITY

E. Nossa[1], M. P. Sulzer[1], A. Santoni[1], P. J. Perillat[2], N. Aponte[1], C. G. M. Brum[1]

[1]Arecibo Observatory - SRI, United States; [2]Arecibo Observatory - USRA, United States

Wednesday, August 23, 2017 **09:40-10:40** **511CF**

HGE16 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (2)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

09:40 HGE16-1 MODELING THE FORMATION OF THE LIGHTNING CHANNEL CORONA SHEATH

B. E. Carlson, *Carthage College, United States*; N. G. Lehtinen, A. B. Skeltved, *University of Bergen, Norway*

10:00 HGE16-2 REPEATABILITY OF LIGHTNING INDUCED IONOSPHERIC DISTURBANCES IN VLF REMOTE SENSING

M. B. Cohen, N. Pailoor, *Georgia Institute of Technology, United States*; M. Golkowski, *University of Colorado Denver, United States*

10:20 HGE16-3 ESTIMATION OF THE EARTH IONOSPHERE WAVEGUIDE USING NARROWBAND VLF TRANSMITTERS

N. C. Gross, M. B. Cohen, *Georgia Institute of Technology, United States*

Wednesday, August 23, 2017 **09:40-10:40** **516DE**

J23 Single Dish Instruments (2)

Session Chairs: Karen O'Neil, Ettore Carretti, Zhi-Qiang Shen

09:40 J23-1 (Invited) SHANGHAI 65M TIANMA RADIO TELESCOPE

Z.-Q. Shen, Z. Yan, *Shanghai Astronomical Observatory, China (CIE)*

10:00 J23-2 (Invited) FUTURE PLANS FOR THE PARKES RADIO TELESCOPE IN THE ERA OF THE SKA

J. A. Green, *CSIRO Astronomy and Space Science, Australia*

10:20 J23-3 (Invited) THE SARDINIA RADIO TELESCOPE (SRT)

E. Carretti, *INAF, Italy*

Wednesday, August 23, 2017 **09:40-10:40** **516AB**

K12 Biological Effects and Related Mechanisms of EMF Exposure (2)

Session Chairs: Alexandre Legros, Guglielmo Dinzeo, Guglielmo d'Inzeo

09:40 K12-1 PERSONALIZATION OF HUMAN COMPUTATIONAL ANATOMICAL MODELS

A. Alaia[1], B. A. Lloyd[1], N. Kuster[1,2]

[1]IT'IS Foundation, Schweiz; [2]ETH Zurich, Switzerland

10:00 K12-2 MAGNETIC MOLECULAR DYNAMICS SIMULATIONS WITH VELOCITY VERLET ALGORITHM

E. della Valle[1], P. Marracino[1], S. Setti[2], R. Cadossi[2], M. Liberti[1], F. Apollonio[1]

[1]*Sapienza, University of Rome, Italy;* [2]*IGEA Spa, Italy*

10:20 K12-3 CONFOCAL RAMAN MICROSPECTROSCOPY TO INVESTIGATE THE INTERACTION BETWEEN PULSED ELECTRIC FIELDS AND LIVE CELLS

A. Azan[1], V. Untereiner[1,2], C. Gobinet[1], O. Piot[1,2], M. Breton[1], L. M. Mir[1]

[1]*CNRS, France;* [2]*University of Reims Champagne-Ardenne, France*

Wednesday, August 23, 2017 **11:00-12:00** **517CD**

L1 General Lecture 2: Steven A. Cummer - 'Transient Luminous Events and Terrestrial Gamma Ray Flashes'

11:00 L1-1 (Invited) TRANSIENT LUMINOUS EVENTS AND TERRESTRIAL GAMMA RAY FLASHES

S. A. Cummer, *Duke University, United States*

Wednesday, August 23, 2017 **13:40-14:40** **511AD**

A11 Metrology in the THz Region (1)

Session Chairs: Masatoshi Kajita, Kunfeng Chen

13:40 A11-1 (Invited) THZ METROLOGY AT PTB

A. Steiger, *PTB, Germany*

14:00 A11-2 (Invited) INTENSE TERA-PHOTONICS SOURCE AND POWER CALIBRATION

H. Minamide, Y. Takida, *RIKEN, Japan*

14:20 A11-3 (Invited) ABSOLUTE FREQUENCY MEASUREMENT USING TERAHERTZ FREQUENCY COMB

T. Minamikawa, T. Yasui, *Tokushima University, Japan*

Wednesday, August 23, 2017 **13:40-14:40** **510AC**

B20 Metasurface Engineering (4)

Session Chairs: Tie Jun Cui, Anthony Grbic, Stefano Maci

13:40 B20-1 DIRECTED PROPAGATION OF ELECTROMAGNETIC WAVES IN STRATIFIED PERIODIC STRUCTURES

M. V. Perel, M. S. Sidorenko, *Saint Petersburg State University, Russian Federation*

14:00 B20-2 DYNAMIC METASURFACE ANTENNAS FOR MICROWAVE COMPUTATIONAL IMAGING

M. F. Imani, T. Sleasman, M. Boyarsky, L. Pulido-Mancera, J. Gollub, D. Smith, *Duke University, United States*

14:20 B20-3 PERFECT ANOMALOUS REFLECTION WITH AN AGGRESSIVELY DISCRETIZED HUYGENS' METASURFACE

A. M. H. Wong, G. V. Eleftheriades, *University of Toronto, Canada*

Wednesday, August 23, 2017 **13:40-14:40** **513A**

C17 Spectrum Sharing, Issues, Co-Existence, and Interference (1)

Session Chairs: Anthony Martone, Jeff Reed

13:40 C17-1 (Invited) A SURVEY OF SPECTRUM SHARING TECHNIQUES FOR RADAR SYSTEMS

M. Labib[1], V. Marojevic[1], A. F. Martone[2], J. H. Reed[1], A. I. Zaghloul[1,2]

[1]Virginia Polytechnic Institute and State University, United States; [2]US Army Research Laboratory, United States

14:00 C17-2 (Invited) RECONFIGURABLE TRANSMITTER AMPLIFIERS FOR NEXT-GENERATION SPECTRALLY SENSITIVE ADAPTIVE RADAR

C. Baylis, R. J. Marks II, *Baylor University, United States*; A. Semnani, D. Peroulis, *Purdue University, United States*; E. Viveiros, *Army Research Laboratory, United States*; L. Cohen, *Naval Research Laboratory, United States*

14:20 C17-3 (Invited) THE SPECTRUM ANALYSIS SOLUTION (SAS) SYSTEM FOR MULTI-PURPOSE SPECTRUM SENSING: DESIGN AND PERFORMANCE

R. K. Pooler, R. M. Narayanan, *The Pennsylvania State University, United States*; A. F. Martone, K. A. Gallagher, K. D. Sherbondy, *U.S. Army Research Laboratory, United States*

Wednesday, August 23, 2017 **13:40-14:40** **514A**

CB18 5G Communication Systems (1)

Session Chairs: Ozlem Kilic, Amir Zaghloul

13:40 CB18-1 LOW-COST HIGH DATA-RATE DIRECT-CONVERSION MULTI-PORT RECEIVER FOR MILLIMETER-WAVE INDOOR WIRELESS APPLICATIONS

C. Hannachi, B. Zouggari, S. O. Tatu, *Institut National de la Recherche Scientifique INRS-EMT, Canada*

14:00 CB18-2 (Invited) CLUSTERS EFFECT IN URBAN ENVIRONMENTS ON INITIAL CELL SEARCHING PROCEDURE USING DIRECTIONAL ARRAY IN MMWAVE CELLULAR NETWORKS

T. K. Vo Dai, O. Kilic, H. Liu, *The Catholic University of America, USA*

14:20 CB18-3 DESIGN OF A 30-GHZ HIGH GAIN QUASI-YAGI ANTENNA

E. H. Mujammami, A. Sebak, *Concordia University, Canada*

Wednesday, August 23, 2017 **13:40-14:40** **513B**

D18 Modeling of Electronic, Photonic and Plasmonic Devices (2)

Session Chairs: Ayhan Demircan, Jeremy Gulley

13:40 D18-1 (Invited) TERAHERTZ PHOTONICS: FROM CLASSICAL TO RELATIVISTIC LASER-PLASMA INTERACTION REGIMES

L. B. Berge, *CEA-DAM-DIF, France*

14:00 D18-2 (Invited) TIME-DEPENDENT IONIZATION MODELING FOR MAXWELL SOLVERS: APPLICATION TO THE NONLINEAR FEMTOSECOND LASER PROPAGATION IN DIELECTRICS

G. Duchateau, E. Smetanina, B. Chimier, R. Nuter, A. Bourgeade, *CELIA, France*

14:20 D18-3 (Invited) COMPREHENSIVE MODELING OF NONLINEAR ULTRASHORT-LASER INDUCED PHENOMENA IN DIELECTRIC TARGETS

A. Rudenko, J.-P. Colombier, T. E. Itina, *Lyon University, France*

Wednesday, August 23, 2017 **13:40-14:40** **513D**

DA19 Optical Frequency Metrology (3)

Session Chairs: Ekkehard Peik, Yann Le Coq

13:40 DA19-1 OPTICAL FREQUENCY REFERENCES FOR SPACE APPLICATIONS

A. Resch[1], T. Schuldt[1], M. Oswald[2], K. Döringshoff[3], L. Wörner[2], K. Abich[1], J. Sanjuan[1], M. Gohlke[1], E. Kovalchuk[3], A. Peters[3], C. Braxmaier[1]

[1]DLR German Aerospace Center, Germany; [2]Center of Applied Space Technology and Microgravity, Germany; [3]Humboldt-University Berlin, Germany

14:00 DA19-2 A NARROW LINEWIDTH LASER SYSTEM FOR STRONTIUM AND YTTERBIUM OPTICAL LATTICE CLOCKS

T. Kobayashi[1,2], H. Inaba[1,2], D. Akamatsu[1], S. Okubo[1,2], K. Hosaka[1,2]

[1]AIST, Japan; [2]JST, Japan

14:20 DA19-3 ACOUSTO-OPTIC FREQUENCY COMBS FOR HETERODYNE INTERFEROMETRY

V. Durán[1,2], C. Schnébelin[1,2], H. G. de Chatellus[1,2]

[1]Univ. Grenoble Alpes, LIPHY, F-38000 Grenoble, France, France; [2]CNRS, LIPHY, F-38000 Grenoble, France, France

---

Wednesday, August 23, 2017 **13:40-14:00** **513EF**

E20 Lightning and Related Phenomena (4)

Session Chairs: Vladimir A. Rakov, Satoru Yoshida

13:40 E20-1 (Invited) NEAR-FIELD, LOW FREQUENCY INTERFEROMETRIC IMAGING OF LIGHTNING

M. Stock, S. Heckman, *Earth Networks, United States*; T. Ushio, *Osaka University, Japan*

Wednesday, August 23, 2017 **13:40-14:40** **510BD**

F22 Propagation Modeling for Aerospace Applications (1)

Session Chairs: Carlo Capsoni, Animesh Maitra

13:40 F22-1 RADIOMETRIC MEASUREMENTS OF CLOUD ATTENUATION OVER EARTH-SPACE PATH AT A TROPICAL LOCATION

A. De, R. Chakraborty, A. Maitra, *INSTITUTE OF RADIO PHYSICS & ELECTRONICS, India*

14:00 F22-2 (Invited) FIRST RESULTS OF TOTAL ATTENUATION DISTRIBUTIONS AND FADE DYNAMICS FROM THE ALPHASAT PROPAGATION EXPERIMENT IN MADRID

D. Pimienta-del-Valle, A. Benarroch, J. M. Riera, P. Garcia-del-Pino, *Universidad Politécnica de Madrid, Spain*

14:20 F22-3 USE OF WRF TO GENERATE SITE DIVERSITY STATISTICS IN SOUTH OF FRANCE

G. Fayon[1], L. Féral[2], L. Castanet[1], N. Jeannin[1], X. Boulanger[1]

[1]ONERA - The French Aerospace Lab, France; [2]Federal University of Toulouse, France

---

Wednesday, August 23, 2017 **13:40-14:40** **511BE**

G23 Science with Modern Ionosondes and Associated Instrumentation and Models (1)

Session Chairs: Ivan Galkin, Anna Belehaki, John Bosco Habarulema

13:40 G23-1 (Invited) TOPSIDE AND TRANSIONOSPHERIC SOUNDING EXPERIMENTS ONBOARD THE TRANSPORT CARGO SPACESHIP "PROGRESS" AND INTERNATIONAL SPACE STATION (ISS)

S. A. Pulinets, *Space Research Institute, Russian Academy of Sciences, Russian Federation*; N. P. Danilkin, N. G. Kiotonaeva, *Fiodorov Institute of Applied Geophysics, Russian Federation*; I. S. Danilov, *Joint Stak Company VNIIEM Corporation, Russian Federation*; A. V. Markov, *S.P. Korolev Rocket and Space Corporation «ENERGIA», Russian Federation*

14:00 G23-2 (Invited) NETTIDE: PILOT IONOSONDE NETWORK FOR IDENTIFICATION OF TRAVELLING IONOSPHERIC DISTURBANCES

B. W. Reinisch[1,2], I. A. Galkin[2], A. Belehaki[3], V. P. Paznukhov[4], X. Huang[1], J. Mielich[5], D. Altadill[6], D. Buresova[7], T. Verhulst[8], S. Stankov[8], E. Blanch[6], D. Kouba[7], I. Tsagouri[3], A. Mouzakis[3], M. Messerotti[9], M. Parkinson[10], M. Iischi[11]

[1]Lowell Digisonde International, LLC, United States; [2]University of Massachusetts Lowell, United States; [3]National Observatory of Athens, Greece; [4]Boston College, United States; [5]Leibnitz-Institute of Atmospheric Physics, Germany; [6]Observatori de l'Ebre, Spain; [7]Institute of Atmospheric Research, Academy of Sciences of Czech Republic, Czech Republic; [8]Royal Meteorological Institute, Belgium; [9]National Institute of Astrophysics, Italy; [10]Australian Bureau of Meteorology, Australia; [11]National Institute of Information and Communications Technology, Japan

14:20 G23-3 (Invited) LOW PROBABILITY OF INTERCEPT VERTICAL INCIDENCE IONOSPHERIC SOUNDER

J. H. Nixon, J. J. Signorotti, B. A. Martin, R. G. Fenske, J. E. Polendo, *Southwest Research Institute, United States*

Wednesday, August 23, 2017 **13:40-14:40** **514B**

GHJ24 Workshop on Extreme Space Weather Environments (3)

Session Chairs: Philip Wilkinson, Mike Hapgood, Terrance Onsager, Anthony Mannucci, Viviane Pierrard, Mauro Messerotti, Karl-Ludwig Klein

13:40 GHJ24-1 (Invited) IMPACT OF IONOSPHERIC SCINTILLATION ON GPS APPLICATIONS DURING SEVERE GEOMAGNETIC STORMS

X. Pi, A. J. Mannucci, B. A. Iijima, W. Lu, *Jet Propulsion Laboratory, California Institute of Technology, United States*

14:00 GHJ24-2 (Invited) EXTREME SPACE WEATHER IMPACT ON GNSS

S. Skone, *University of Calgary, Canada*

14:20 GHJ24-3 A GLOBAL SCINTILLATION OCCURRENCE PROBABILITY MODEL CONSTRUCTED BY USING FORMOSAT-3/COSMIC S4-INDEX DATA

J.-Y. Liu, S.-P. Chen, *National Central University, China (SRS)*

Wednesday, August 23, 2017 **13:40-14:40** **513C**

HG17 Active Experiments and Radio Sounding (3)

Session Chairs: Vikas Sonwalkar, Robert Moore, Natasha Jackson-Booth, Todd Pedersen

13:40 HG17-1 A NUMERICAL STUDY OF THE LANGMUIR PARAMETRIC INSTABILITY EXCITED BY POWERFUL HF WAVE HEATING AT DIFFERENT LATITUDES

C. Zhou, X. Wang, M. Liu, B. Ni, Z. Zhao, *Wuhan University, China (CIE)*

14:00 HG17-2 EXCITATION OF PARAMETRIC INSTABILITY BY X-MODE RF HEATING

F. Honary, P. D. Cannon, *Lancaster University, United Kingdom*; X. Wang, *Wuhan University, People's Republic of China*

14:20 HG17-3 ANALYSIS OF SIDEBANDS FROM WHISTLER MODE TRIGGERED EMISSIONS AND IMPLICATIONS FOR NONLINEAR WAVE GROWTH

M. Golkowski, J. Costabile, *University of Colorado Denver, United States*; M. Spasojevic, *Stanford University, United States*

Wednesday, August 23, 2017 **13:40-14:40** **511CF**

HGE18 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (3)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

13:40 HGE18-1 D-REGION IONOSPHERIC REMOTE SENSING WITH LF/MF SIGNALS OF OPPORTUNITY

M. A. Higginson-Rollins, M. B. Cohen, *Georgia Tech, United States*

14:00 HGE18-2 MICRO-SECOND TIME SCALE VLF TRANSMISSION DISTURBANCES ASSOCIATED WITH LIGHTNING

K. Koh, Z. Liu, M. Füllekrug, *University of Bath, United Kingdom*

14:20 HGE18-3 (Invited) MODELING OF X-RAY IMAGES PRODUCED BY STEPPING LIGHTNING LEADERS

W. Xu, R. A. Marshall, *University of Colorado Boulder, United States*; S. Celestin, *University of Orleans, CNRS, France*; V. P. Pasko, *Pennsylvania State University, United States*

Wednesday, August 23, 2017 **13:40-14:40** **516DE**

J24 Very Long Baseline Interferometry (1)

Session Chairs: Huib van Langevelde, Hideyuki Kobayashi

13:40 J24-1 (Invited) THE ORIGINS, DEVELOPMENT, AND POTENTIAL OF VERY-LONG-BASELINE INTERFEROMETRY

J. M. Moran, *Harvard Smithsonian Center for Astrophysics, United States*

14:00 J24-2 (Invited) VERA ASTROMETRY OF GALACTIC MASER SOURCES

T. Nagayama[1], T. Hirota[1], M. Honma[1], T. Jike[1], N. Kawaguchi[1], H. Kobayashi[1], A. Nakagawa[2], T. Omodaka[2], T. Oyama[1], K. M. Shibata[1], K. Sunada[1], Y. Tamura[1]

[1]National Astromonical Observatory of Japan, Japan; [2]Kagoshima University, Japan

14:20 J24-3 RECENT ADVANCES IN VLBI ASTROMETRY

R. Dodson, M. Rioja, *University of Western Australia, Australia*

Wednesday, August 23, 2017 **13:40-14:40** **515ABC**

J25 Single Dish Instruments (3)

Session Chairs: Karen O'Neil, Ettore Carretti, Zhi-Qiang Shen

13:40 J25-1 FOCAL FIELD INTERFEROMETER: STATISTICAL DETECTION OF SPECTRAL LINES FROM ENSEMBLE OF GALAXIES

D. A. Roshi, W. Shillue, *National Radio Astronomy Observatory, United States*; S. Jeyakumar, *Universidad de Guanajuato, Mexico*

14:00 J25-2 SPACE DEBRIS DETECTION IN LOW EARTH ORBIT WITH THE SARDINA RADIO TELESCOPE

T. Pisanu[1], G. Muntoni[2], L. Schirru[1], F. Gaudiomonte[1], G. Valente[1], E. Urru[1], G. Serra[1], G. Montisci[2], G. Mazzarella[2]

[1]National Institute for Astrophysics, Italy; [2]Cagliari University, Italy

14:20 J25-3 CRYOPAF - A 2.8 - 5.18 GHZ CRYOGENIC PHASED ARRAY FEED RECEIVER

L. S. Locke, R. Wierzbicki, *NRC Herzberg, Canada*

Wednesday, August 23, 2017 **13:40-14:40** **516AB**

K13 K-Tutorial Tahera Emilie van Deventer: "International EMF Project to Assess Health and Environmental Effects of Exposure to Static and Time Varying Electric and Magnetic Fields in the Frequency Range 0-300 GHz.

Session Chair: Joe Wiart

Wednesday, August 23, 2017 **14:40-15:40** **511AD**

A12 Metrology in the THz Region (2)

Session Chairs: Masatoshi Kajita, Kunfeng Chen

14:40 A12-1 (Invited) HIGH-PRECISION MEASUREMENT OF TERAHERTZ FREQUENCY USING UNSTABILIZED FEMTOSECOND LASER

Q. Sun[1], Y. Deng[1], B. Wu[2], Y. Yang[1]

[1]National Institute of Metrology, P. R. China; [2]Science and Technology on Electronic Test and Measurement Laboratory, P. R. China

15:00 A12-2 (Invited) PRECISION ENHANCEMENT IN TERAHERTZ TIME-DOMAIN SPECTROSCOPY

D. Molter[1], M. Trierweiler[1], F. Ellrich[1], J. Jonuscheit[1], G. von Feymann[1,2]

[1]Fraunhofer Institute for Industrial Mathematics ITWM, Germany; [2]Department of Physics and Research Center OPTIMAS, University of Kaiserslautern, Germany

15:20 A12-3 PRECISE MEASUREMENT OF THE VIBRATIONAL TRANSITION FREQUENCIES OF HOMONUCLEAR DIATOMIC MOLECULAR IONS

M. Kajita, *National Institute of Information and Communications Technology, Japan*

Wednesday, August 23, 2017 **14:40-15:40** **510AC**

B21 Metasurface Engineering (5)

Session Chairs: Tie Jun Cui, Anthony Grbic, Stefano Maci

14:40 B21-1 FREQUENCY TUNABLE GRAPHENE METAMATERIAL REFLECTARRAY

S. H. Zainud-Deen, *Faculty of Electronic Eng., Menoufia University, Egypt, Egypt*; A. M. Mabrouk, *Faculty of Engineering and Technology, Badr University in Cairo, Egypt, Egypt*; H. A. Malhat, *Faculty of Electronic Engeering- Menoufia University, Egypt*

15:00 B21-2 DYNAMIC METASURFACE APERTURES FOR SYNTHETIC APERTURE RADAR IMAGING APPLICATIONS

T. Sleasman[1], M. Boyarsky[1], L. Pulido-Mancera[1], T. Fromenteze[1], M. F. Imani[1], M. Reynolds[2], D. R. Smith[1]

[1]Duke University, United States; [2]University of Washington, United States

15:20 B21-3 OPTICAL MODULATION WITH TUNABLE HYBRID METASURFACES

C. Argyropoulos, T. Guo, *University of Nebraska-Lincoln, United States*

Wednesday, August 23, 2017 **14:40-15:40** **513A**

C19 Spectrum Sharing, Issues, Co-Existence, and Interference (2)

Session Chairs: Anthony Martone, Jeff Reed

14:40 C19-1 (Invited) IMPACT OF RADIO FREQUENCY INTERFERENCE ON RADAR SYSTEMS
K. A. Gallagher, A. F. Martone, K. D. Sherbondy, *The Army Research Laboratory, United States*

15:00 C19-2 (Invited) PROPAGATION MEASUREMENTS AND MODELING TECHNIQUES FOR 3.5 GHZ RADAR-LTE SPECTRUM SHARING
C. R. Anderson, *United States Naval Academy, United States*; G. D. Durgin, *Georgia Institute of Technology, United States*

15:20 C19-3 A DECODE-AND-FORWARD COOPERATIVE PROTOCOL USING COMPLETE COMPLEMENTARY CODES FOR LOS BASED TRANSMISSIONS.
N. El-Ganainy, *Arab Academy for Science, Technology, and Maritime Transport, Egypt*

Wednesday, August 23, 2017 **14:40-15:40** **514A**

CB20 5G Communication Systems (2)

Session Chairs: Ozlem Kilic, Amir Zaghloul

14:40 CB20-1 CORRELATION BASED HIGHLY SECURE IMAGE HIDING IN AUDIO SIGNALS USING WAVELET DECOMPOSITION AND CHAOTIC MAPS HOPPING FOR 5G MULTIMEDIA COMMUNICATIONS
M. H. Elsherif, S. E. Elkhamy, N. O. Korany, *faculty of engineering Alexandria university, Egypt*

15:00 CB20-2 IMPACT OF CONSIDERING THE ITU-R TWO SLOPE PROPAGATION MODEL IN THE SYSTEM CAPACITY TRADE-OFF FOR LTE-A HETNETS WITH SMALL CELLS
S. C. Sousa, F. J. Velez, J. M. Peha, *IT/UBI, Portugal*

15:20 CB20-3 PRACTICAL DESIGN METHODOLOGY FOR PLANAR ORTHOMODE TRANSDUCERS BASED ON SHORT SLOT COUPLERS AND POLARIZATION SELECTIVE WALLS
A. A. Sakr, W. Dyab, K. Wu, *Polytechnique Montreal, Canada*

Wednesday, August 23, 2017 **14:40-15:40** **513B**

DBC20 Wireless Power Transmission (1)

Session Chairs: Apostolos Georgiadis, Naoki Shinohara

14:40 DBC20-1 (Invited) OPTIMIZATION OF WIRELESS POWER TRANSFER SYSTEMS WITH MULTIPLE PASSIVE ELEMENTS
H.-D. Lang, C. D. Sarris, *University of Toronto, Canada*

15:00 DBC20-2 MID–RANGE, COUPLING–INDEPENDENT, WIRELESS POWER TRANSFER WITH PARALLEL RESONATORS

A. Costanzo[1], M. Dionigi[2], F. Mastri[1], M. Mongiardo[2], G. Monti[3], L. Tarricone[3], R. Sorrentino[2]

[1]University of Bologna, Italy; [2]University of Perugia, Italy; [3]University of Salento, Italy

15:20 DBC20-3 RESONANT INDUCTIVE WPT LINK WITH LOAD–INDEPENDENT VOLTAGE GAIN

A. Costanzo[1], M. Dionigi[2], F. Mastri[1], M. Mongiardo[2], G. Monti[3], L. Tarricone[3], R. Sorrentino[2]

[1]University of Bologna, Italy; [2]University of Perugia, Italy; [3]University of Salento, Italy

---

Wednesday, August 23, 2017 **14:40-15:40** **513EF**

E21 Measurement Techniques (1)

Session Chairs: Ramiro Serra, Christophe Lemoine

14:40 E21-1 (Invited) MEASUREMENT AND ANALYSIS OF VOLUMETRIC AND HELICAL STIRRING OF REVERBERATION CHAMBERS USING STIR MATRICES

L. R. Arnaut, *Queen Mary University London, United Kingdom*; F. Moglie, L. Bastianelli, V. Mariani Primiani, *Universita Politecnica delle Marche, Italy*

15:00 E21-2 (Invited) A MEASUREMENT SETUP FOR THE VALIDATION AND VERIFICATION OF NONLINEAR EFFECTS IN AN HPEM CONTEXT

M. Kotzev[1], M. Kreitlow[2], F. Gronwald[1]

[1]University of Siegen, Germany; [2]Bundeswehr Research Institute for Protective Technologies and NBC Protection, Germany

15:20 E21-3 (Invited) TIME-FREQUENCY DIVERSITY MEASUREMENTS IN POWER SYSTEMS

F. Leferink[1,2], I. Setiawan[1]

[1]University of Twente, Netherlands; [2]THALES Nederland, Netherlands

---

Wednesday, August 23, 2017 **14:40-15:40** **510BD**

F23 Propagation Modeling for Aerospace Applications (2)

Session Chairs: Carlo Capsoni, Animesh Maitra

14:40 F23-1 (Invited) FADE MITIGATION IN FUTURE Q/V-BAND HIGH-THROUGHPUT SATELLITES

R. Nebuloni, *Consiglio Nazionale delle Ricerche, Italy*; C. Capsoni, *Politecnico di Milano, Italy*

15:00 F23-2 (Invited) HYBRID HIGH-THROUGHPUT SATELLITE COMMUNICATIONS SYSTEM USING RADIO AND OPTICAL FREQUENCIES

M. Toyoshima, *National Institute of Information and Communications Technology, Japan*

15:20 F23-3 (Invited) AVAILABILITY OF AERONAUTICAL AD-HOC NETWORK IN DIFFERENT GLOBAL AIR TRANSPORT FLEET SCENARIOS

K.-D. F. Buechter, *Bauhaus Luftfahrt e.V., Germany*

Wednesday, August 23, 2017 **14:40-15:40** **511BE**

G25 Science with Modern Ionosondes and Associated Instrumentation and Models (2)

Session Chairs: Ivan Galkin, Anna Belehaki, John Bosco Habarulema

14:40 G25-1 STUDIES OF WAVE ACTIVITY IN THE THERMOSPHERE-IONOSPHERE SYSTEM USING DYNASONDE TECHNIQUES

N. Zabotin[1], O. A. Godin[2], C. Negrea[1,3], T. Bullett[1,4], L. Zabotina[1]

[1]University of Colorado Boulder, United States; [2]Naval Postgraduate School, United States; [3]Institute of Space Science, Roma^nia; [4]NOAA/NCEI, United States

15:00 G25-2 SOUNDERS FOR IONOSPHERIC SCIENCE

T. J. Harris, *Defence Science and Technology Group, Australia*

15:20 G25-3 COMBINED TID OBSERVATION BY IONOSONDE AND DENSE GPS/GLONASS NETWORK

R. Sherstyukov, A. Akchurin, O. Sherstyukov, *Kazan Federal University, Russian Federation*

Wednesday, August 23, 2017 **14:40-15:20** **514B**

GHJ26 Workshop on Extreme Space Weather Environments (4)

Session Chairs: Philip Wilkinson, Mike Hapgood, Terrance Onsager, Anthony Mannucci, Viviane Pierrard, Mauro Messerotti, Karl-Ludwig Klein

14:40 GHJ26-1 USING EXTREME VALUE THEORY FOR DETERMINING THE PROBABILITY OF CARRINGTON-LIKE SOLAR FLARES

S. Elvidge, M. J. Angling, *University of Birmingham, United Kingdom*

15:00 GHJ26-2 (Invited) EXTREME SPACE WEATHER EVENT BENCHMARKS FOR THE US SPACE WEATHER ACTION PLAN

R. Viereck[1], T. Fuller-Rowell[1], J. Love[2], E. Talaat[3], D. Biesecker[1]

[1]NOAA Boulder, United States; [2]USGS, United States; [3]NASA, United States

Wednesday, August 23, 2017 **14:40-15:40** **513C**

HG19 Active Experiments and Radio Sounding (4)

Session Chairs: Vikas Sonwalkar, Robert Moore, Natasha Jackson-Booth, Todd Pedersen

14:40 HG19-1 VARIATION OF PLASMASPHERIC FIELD-ALIGNED ELECTRON AND ION DENSITIES AS A FUNCTION OF GEOMAGNETIC STORM ACTIVITY

A. Reddy, V. S. Sonwalkar, *University of Alaska Fairbanks, United States*

15:00 HG19-2 ENHANCING THE ISIS-1 TOPSIDE DIGITAL IONOGRAM DATABASE

R. F. Benson[1], D. Biltza[2], S. F. Fung[1], V. Truhlik[3], Y. Wang[4]

[1]*NASA/Goddard Space Flight Center, United States;* [2]*GMU/SWL/Goddard Space Flight Center, United States;* [3]*Czech Academy of Sciences, Czech Republic;* [4]*UMBC/GPHI/Goddard Space Flight Center, United States*

15:20 HG19-3 THE LOS ALAMOS MISSION CONCEPT TO CONNECT MAGNETOSPHERIC PHYSICAL PROCESSES TO IONOSPHERIC PHENOMENA

E. A. Dors[1], G. L. Delzanno[1], G. D. Reeves[1], J. E. Borovsky[2], M. F. Thomsen[3], B. E. Carlsten[1], M. G. Henderson[1], E. Sanchez[4], E. Spanswick[5], B. E. Gilchrist[6]

[1]*Los Alamos National Laboratory, United States;* [2]*Space Science Institute, United States;* [3]*Planetary Science Institute, United States;* [4]*SRI International, United States;* [5]*University of Calgary, Canada;* [6]*University of Michigan, United States*

Wednesday, August 23, 2017 14:40-15:40 511CF

HGE20 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (4)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

14:40 HGE20-1 (Invited) NEUTRONS IN GROUND-DETECTED TERRESTRIAL GAMMA-RAY FLASHES

D. M. Smith, G. S. Bowers, *University of California, Santa Cruz, United States*; M. Kamogawa, S. Takahashi, A. Ishikawa, *Tokyo Gakugei University, Japan*; D. Wang, *Gifu University, Japan*; M. Stock, S. Heckman, *Earth Networks, United States*; S. A. Cummer, *Duke University, United States*; Y. Hobara, *University of Electro-Communications, Japan*

15:00 HGE20-2 A DOWNWARD BEAM OF ENERGETIC POSITRONS FROM THE EYEWALL OF HURRICANE PATRICIA

G. S. Bowers, D. M. Smith, *University of California Santa Cruz, United States*; N. A. Kelley, *Berkeley Applied Analytics, United States*; S. A. Cummer, *Duke University, United States*; J. R. Dwyer, *University of New Hampshire, United States*; S. Heckman, *Earth Networks, United States*; R. H. Holzworth, *University of Washington, United States*; P. Reasor, J. Gamache, F. Marks, T. Richards, *NOAA, United States*; H. K. Rassoul, *Florida Institute of Technology, United States*

15:20 HGE20-3 TERRESTRIAL GAMMA FLASHES AT GROUND LEVEL -- TETRA II

D. J. Pleshinger, M. L. Cherry, *Louisiana State University, United States*

Wednesday, August 23, 2017 14:40-15:40 516DE

J26 Very Long Baseline Interferometry (2)

Session Chairs: Huib van Langevelde, Hideyuki Kobayashi

14:40 J26-1 (Invited) MILLIMETER VLBI WITH PHASED ALMA

V. L. Fish, *MIT Haystack Observatory, United States*

15:00 J26-2 (Invited) RADIOASTRON RESULTS AND PROSPECTS FOR SPACE VLBI

Y. Y. Kovalev, *Lebedev Physical Institute, Russian Federation*

15:20 J26-3 WATER MEGAMASERS AT EXTREME RESOLUTION

W. A. Baan[1], A. Alakoz[2], T. An[3], S. Ellingsen[4], C. Henkel[5], H. Imai[6], V. Kostenko[2], J. McCallum[4], J. Moran[7], A. Sobolev[8], M. Voronkov[9]

[1]Netherlands Institute for Radioastronomy, ASTRON, Netherlands; [2]AstroSpace Center, Lebedev Physical Institute, Russia; [3]Shanghai Astronomical Observatory, China; [4]University of Tasmania, Australia; [5]Max Planck Institut fuer Radioastronomie, Germany; [6]University of Kagoshima, Japan; [7]Center for Astrophysics, Harvard University, United States; [8]Ural Federal University, Russia; [9]CSIRO Commonwealth Scientific Research Organisation, Australia

Wednesday, August 23, 2017 14:40-15:40 515ABC

J27 Single Dish Instruments (4)

Session Chairs: Karen O'Neil, Ettore Carretti, Zhi-Qiang Shen

14:40 J27-1 A HIGHLY-SENSITIVE CRYOGENIC PHASED ARRAY FEED FOR THE GREEN BANK TELESCOPE

D. Anish Roshi[1], W. Shillue[1], J. R. Fisher[1], M. Morgan[1], J. Castro[1], W. Groves[1], T. Boyd[1], B. Simon[2], L. Hawkins[2], V. van Tonder[2], J. D. Nelson[2], J. Ray[2], T. Chamberlain[2], S. White[2], R. Black[3], K. F. Warnick[3], B. Jeffs[3], R. Prestage[2]

[1]National Radio Astronomy Observatory, United States; [2]Green Bank Observatory, United States; [3]Brigham Young University, United States

15:00 J27-2 MAPPING THE SKY WITH A DEROTATING MULTI-FEED RECEIVER

S. Poppi[1], S. Righini[2], M. Buttu[1], M. Bartolini[2], C. Migoni[1], A. Orlati[2], A. Fara[1]

[1]Istituto Nazionale di Astrofisica - Osservatorio Astronomico di Cagliari, Italy; [2]Istituto Nazionale di Astrofisica - Istituto di Radioastronomia, Italy

15:20 J27-3 DESIGN OF SUPER-RESOLVING TORALDO PUPILS FOR RADIO ASTRONOMICAL APPLICATIONS

L. Olmi[1,2], P. Bolli[1], L. Carbonaro[1], L. Cresci[1], D. Mugnai[3], E. Natale[1], R. Nesti[1], D. Panella[1], J. Roda[1], G. Zacchiroli[1]

[1]INAF, Italy; [2]University of Puerto Rico, USA; [3]CNR, Italy

Wednesday, August 23, 2017 14:40-15:40 516AB

KBE14 Uncertainty Management and Stochastic Methods in Experimental and Numerical Electromagnetism, Environmental Exposure Assessment and Dosimetry (2)

Session Chairs: Gabriele Gradoni, Joe Wiart, Ari Sihvola

14:40 KBE14-1 SURROGATE MODEL BASED ON POLYNOMIAL CHAOS OF INDOOR EXPOSURE INDUCED FROM A WLAN SOURCE

Y. Pinto, J. Wiart, *LTCI, Télécom ParisTech, Université Paris-Saclay, Chaire C2M, France*

15:00 KBE14-2 TIME DOMAIN TECHNIQUE FOR RAPID, BROADBAND MEASUREMENT OF HUMAN ABSORPTION CROSS SECTION IN A REVERBERATION CHAMBER

M. P. Robinson, X. Zhang, I. D. Flintoft, *University of York, United Kingdom*

15:20 KBE14-3 EFFICIENT UNCERTAINTY QUANTIFICATION IN COMPUTATIONAL ELECTROMAGNETICS USING AN ADAPTIVE METROPOLIS-HASTINGS METHOD WITH IMPORTANCE SAMPLING

S. S. Ganta, B. D. Van Veen, S. C. Hagness, *University of Wisconsin-Madison, USA*

Wednesday, August 23, 2017 **16:00-17:40** **511AD**

A13 Time Dissemination for Critical Applications

Session Chairs: Marina Gertsvolf, Leon Lobo

16:00 A13-1 (Invited) REQUIREMENTS AND METHODS FOR DISTRIBUTING ACCURATE AND TRACEABLE TIME INFORMATION

J. Levine, *National Institute of Standards and Ttechnology, United States*

16:20 A13-2 DEVELOPMENT OF A SECURE, PRECISE, AND TRACEABLE SOURCE OF TIME FOR INDUSTRIAL AND FINANCIAL APPLICATIONS

J. E. Bernard, A. Charbonneau, B. Hoger, H. Pham, M. Gertsvolf, *National Research Council, Canada*

16:40 A13-3 THE EUROPEAN DEMETRA PROJECT: DEMONSTRATING TIME SERVICES BASED ON THE EUROPEAN GNSS

P. Tavella, *INRIM, Italy*

17:00 A13-4 LINKEDCLOCKS FOR A ROBUST SOLUTION OF GNSS TIMING RECEIVERS

J. Díaz, E. Ros, *Seven Solutions S.L/U. Granada, Spain*; R. Rodriguez, B. Rat, A. Gonzalez, *Seven Solutions S.L, Spain*

17:20 A13-5 THE NPLTIME SERVICE: UTC TRACEABLE TIME OVER FIBRE FOR THE FINANCIAL SECTOR

E. M. Laier English, L. Lobo, *NPL, United Kingdom*

Wednesday, August 23, 2017 **16:00-17:40** **510AC**

B22 Advanced Antenna Concepts (1)

Session Chairs: John Volakis, Christos Christodoulou

16:00 B22-1 A WIDEBAND SWITCHED BEAM ANTENNA ARRAY USING CAVITY-BACKED MONOPOLE ELEMENTS

E. Merkley[1], B. Jackson[2], C. Saavedra[1], Y. Antar[3]

[1]Queen's University, Canada; [2]Defence Research and Development Canada, Canada; [3]Royal Military College of Canada, Canada

16:20 B22-2 BROADBAND REFLECTOR ANTENNA FOR SIMULTANEOUS TRANSMIT AND RECEIVE (STAR) APPLICATIONS

P. Valale Prasannakumar, M. A. Elmansouri, D. S. Filipovic, *University of Colorado,Boulder, United States*

16:40 B22-3 LINEARLY AND CIRCULARLY POLARIZED REFLECTARRAY ANTENNAS WITH 4-ARM ARCHIMEDEAN SPIRAL LATTICE

H. A. Malhat, S. H. Zainud-Deen, *Faculty of Electronic Engeering- Menoufia University, Egypt*

17:00 B22-4 (Invited) ULTRA-WIDEBAND LOW-SCAN ARRAYS WITH RECONFIGURABLE BANDWIDTH FOR DIGITAL BEAMFORMING APPLICATION OPERATING FROM UHF TO MILLIMETER WAVES

D. K. Papantonis, E. A. Alwan, J. L. Volakis, *The Ohio State University, USA*

17:20 B22-5 A FOUR ELEMENT PHASED PATCH ANTENNA ARRAY USING FLUIDIC PHASE SHIFTER

I. Goode, C. Saavedra, *Queen's University, Canada*

Wednesday, August 23, 2017 16:00-19:00 513D

C22 Quantum Optics by Professor Mikhail Lukin, Keynote speech (duration 45 min)

Session Chair: Sana Salous

Wednesday, August 23, 2017 16:00-17:40 514A

CB23 5G Communication Systems (3)

Session Chairs: Ozlem Kilic, Amir Zaghloul

16:00 CB23-1 MIMO-UFMC IN THE PRESENCE OF ANTENNA MUTUAL COUPLING AND PHASE NOISE

X. Chen[1], S. Zhang[2], A. Zhang[1]

[1]Xi'an Jiaotong University, China (CIE); [2]Aalborg University, Denmark

16:20 CB23-2 (Invited) PLANAR ANTENNA SYSTEM FOR FULL-DUPLEX APPLICATIONS

T. J. Douglas, K. Sarabandi, *University of Michigan, United States*

16:40 CB23-3 A BROADBAND HIGH-EFFICIENCY DOHERTY POWER AMPLIFIER WITH CONTINUOUS INVERSE CLASS-F DESIGN

F. Meng, Y. Sun, L. Tian, X.-W. Zhu, *Southeast University, China (CIE)*

17:00 CB23-4 HIGH GAIN LOW PROFILE HIGH DENSE DIELECTRIC PATCH ANTENNA USING FSS SUPERSTRATE

M. Asaadi, A. Beltayib, H. Ghalyon, A. Sebak, *Concordia University, Canada*

17:20 CB23-5 (Invited) EXTENDING LTE INTO THE UNLICENSED SPECTRUM: REGULATORY AND TECHNOLOGICAL CHALLENGES

M. Labib[1], V. Marojevic[1], A. F. Martone[2], J. H. Reed[1], A. I. Zaghloul[1,2]

[1]Virginia Polytechnic Institute and State University, United States; [2]US Army Research Laboratory, United States

Wednesday, August 23, 2017 **16:00-17:40** **513B**

D21 CMOS Compatible Photonics

Session Chairs: Roberto Morandotti, Milos Popovic

16:00 D21-1 (Invited) SLOW LIGHT IN DISPERSION-ENGINEERED PHOTONIC CRYSTAL RING RESONATORS

K. McGarvey-Lechable[1], T. Hamidfar[1], D. Patel[2], L. Xu[2], D. V. Plant[2], P. Bianucci[1]

[1]Concordia University, Canada; [2]McGill University, Canada

16:20 D21-2 (Invited) HIGH QUALITY ENTANGLEMENT ON A SILICON-CHIP

F. Mazeas[1], F. Kaiser[1], D. Aktas[1], W. Zhang[2], C. Alonso Ramos[2], T. Lunghi[1], X. LeRoux[2], E. Cassan[2], D. Marris-Morini[2], L. Vivien[2], L. Labonté[1], S. Tanzilli[1]

[1]Inphyni (CNRS UMR 7010), France; [2]C2N, France

16:40 D21-3 (Invited) SUBWAVELENGTH NANOPHOTONIC STRUCTURES FOR INTEGRATION AND SENSING

P. Cheben, *National Research Council, Canada*; H. Podmore, *York University, Canada*

17:00 D21-4 (Invited) CHIP-BASED OPTICAL FREQUENCY COMBS

A. Gaeta, *Columbia University, United States*

Wednesday, August 23, 2017 **16:00-17:00** **513EF**

E22 Measurement Techniques (2)

Session Chairs: Ramiro Serra, Christophe Lemoine

16:00 E22-1 (Invited) A TIME DOMAIN MEASUREMENT APPROACH FOR SHIELDING AND SHIELDING MATERIAL EVALUATION

P. G. Wiid, S. O. Kuja, N. A. Omollo, *Stellenbosch University, South Africa*

16:20 E22-2 DEVELOPMENT OFWIDE-BAND MICROWAVE RADIOMETER FOR GROUND OBSERVATION

T. Takano, *Nihon University, Japan*; N. Kawaguchi, *National Astronomical Observatory of Japan, Japan*; T. Maeda, *Japan Aerospace Exploration Agency, Japan*

16:40 E22-3 SPATIAL RESOLUTION ENHANCEMENT OF SATELLITE-BORNE MICROWAVE RADIOMETER USING ANTENNA PATTERN MATCHING TECHNIQUE

T. Maeda, *Japan Aerospace Exploration Agency, Japan*

Wednesday, August 23, 2017 **16:00-17:40** **510BD**

F24 Propagation Modeling for Aerospace Applications (3)

Session Chairs: Carlo Capsoni, Animesh Maitra

16:00 F24-1 AVERAGING ASPECTS IN SHORT TERM FORECASTS OF TROPOSPHERIC ATTENUATION

M. Schönhuber, F. Cuervo, S. Rošker, M. Schwinzerl, *Joanneum Research, Austria*

16:20 F24-2 (Invited) TECHNOLOGIES FOR THE GROUND SEGMENT OF THE FUTURE Q/V BAND SATELLITE SYSTEMS: THE QV –LIFT PROJECT

G. Codispoti, G. Parca, *Agenzia Spaziale italiana, Italy*; G. Amendola, L. Boccia, *CNIT-Universita' della Calabria, Italy*; G. Goussetis, S. Cosmopoulos, *Heriot Watt University, UK*; M. Siegler, *ERZIA, Spain*; C. Riva, R. Nebuloni, *CNIT-Politecnico di Milano and IEIIT/CNR, Italy*; A. Jourier, *Ommic, France*; R. Campo, A. Arcidiacono, *Eutelsat, France*; R. Eleuteri, F. Cipolloni, *Skytech, Italy*; G. Bacci, A. Petrolioìno, *MBI, Italy*; M. Calisti, *MARTEL-INNOVATE, CH*

16:40 F24-3 PREDICTION OF OPERATIONAL PARAMETERS OF THE BANDPASS SIGNAL IN THE BUILT-UP TERRAIN - ATMOSPHERE RADIO COMMUNICATION CHANNELS

Y. Ben-Shimol, N. Blaunstein, *BGU, Israel*

17:00 F24-4 RAPID CHANGES IN CROSS-POLARIZATION DISCRIMINATION OF KA-BAND SATELLITE COMMUNICATIONS LINKS CAUSED BY LIGHTNING DISCHARGES

Y. Maekawa, *Osaka Electro-Communication University, Japan*

17:20 F24-5 CHARACTERIZATION OF KU-BAND AMPLITUDE SCINTILLATION ON EARTH-SPACE PATH OVER AKURE, SW NIGERIA.

A. G. Ashidi, J. S. Ojo, A. T. Adediji, M. O. Ajewole, *Federal University of Technology, Nigeria*

Wednesday, August 23, 2017 **16:00-17:20** **511BE**

GH27 Meteors, Collisional EMPs, and Other Highly-Transient Space Plasma Events (3)

Session Chairs: John Mathews , Asta Pellinen-Wannberg, Margaret Campbell-Brown

16:00 GH27-1 DETECTION OF EMPS GENERATED BY METEOROID IMPACTS ON THE MMS SPACECRAFT AND PROBLEMS WITH SIGNAL INTERPRETATION

J. Vaverka[1], A. Pellinen-Wannberg[1,2], J. Kero[2], I. Mann[1,3], A. De Spiegeleer[1], M. Hamrin[1], C. Norberg[1,2], T. Pitkänen[1]

[1]Umeå University, Sweden; [2]Swedish Institute of Space Physics, Sweden; [3]Arctic University of Norway, Norway

16:20 GH27-2 ELECTROMAGNETIC PULSE EMISSIONS FROM HYPERVELOCITY IMPACTS ON CHARGED TARGETS

A. Nuttall, A. Goel, S. Close, I. Linscott, *Stanford University, United States*

16:40 GH27-3 DETECTION AND CHARACTERIZATIONOF METEOR SHOCKWAVES USING RADAR OBSERVED METEOR HEAD ECHO/HEIGHT CORRELATION

R. E. Silber, W. K. Hocking, *The University of Western Ontario, Canada*; M. Gritsevich, *Russian Academy of Sciences, Russia*; E. A. Silber, *Brown University, USA*; M. L. Niculescu, *INCAS - National Institute for Aerospace Research "ElieCarafoli", Romania*

17:00 GH27-4 (Invited) METEOROID SPUTTERING, HIGH-ALTITUDE RADAR AND OPTICAL METEORS, AND SOURCES FOR LOWER-THERMOSPHERIC METALS

J. D. Mathews, B. Gao, S. Kesaraju, *Penn State University, United States*; S. Raizada, *Arecibo Observatory/SRI, United State*

Wednesday, August 23, 2017 **16:00-17:40** **514B**

GHJ28 Workshop on Extreme Space Weather Environments (5)

Session Chairs: Philip Wilkinson, Mike Hapgood, Terrance Onsager, Anthony Mannucci, Viviane Pierrard, Mauro Messerotti, Karl-Ludwig Klein

Wednesday, August 23, 2017 **16:00-17:00** **513C**

HG21 Active Experiments and Radio Sounding (5)

Session Chairs: Vikas Sonwalkar, Robert Moore, Natasha Jackson-Booth, Todd Pedersen

16:00 HG21-1 DEVELOPING A VLF TRANSMITTER FOR LEO SATELLITES: PROBING OF PLASMASPHERE AND RADIATION BELTS - THE POPRAD CONCEPT

J. Lichtenberger[1,2], O. Santolik[3], J. Solymosi[4], L. Graclík[5], F. Darrouzet[6], A. Demekhov[7], A. Kudrin[8], N. Lehtinen[9]

[1]Eötvös University, Hungary; [2]Research Center for Astronomy ans Space Sciences, Hungary; [3]Institute of Atmospheric Physics, Czech Republic; [4]BHE Bonn Hungary Electronics Ltd., Hungary; [5]G.L. Electronic Ltd,, Czech Republic; [6]Royal Belgian Institute for Space Aeronomy, Belgium; [7]Institute of Applied Physics, Russia; [8]University of Nizhny Novgorod, Russia; [9]University of Bergen, Norway

16:20 HG21-2 PARAMETRIC INSTABILITY EXCITED BY X-MODE POWERFUL HF WAVES: OBSERVATIONS AND THEORY

X. Wang[1], C. Zhou[1], P. Cannon[2], M. Liu[1], F. Honary[2], B. Ni[1], Z. Zhao[1]

[1]Wuhan University, China (CIE); [2]Lancaster University, UK

16:40 HG21-3 SPACECRAFT-CHARGING MITIGATION OF A HIGH-POWER ELECTRON BEAM EMITTED BY A MAGNETOSPHERIC SPACECRAFT

G. L. Delzanno, F. Lucco Castello, *Los Alamos National Laboratory, United States*; O. Leon, G. Miars, B. Gilchrist, *University of Michigan, United States*; J. Borovsky, *Space Science Institute, United States*

Wednesday, August 23, 2017 **16:00-17:40** **511CF**

HGE22 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (5)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

16:00 HGE22-1 AN EVENT OBSERVED WITH FERMI GBM BOTH AS A TERRESTRIAL GAMMA-RAY FLASH (TGF) AND A TERRESTRIAL ELECTRON BEAM (TEB)

M. C. Stanbro[1], M. S. Briggs[1,1], O. J. Roberts[2], E. Cramer[1], J. R. Dwyer[3]

[1]University of Alabama in Huntsville, USA; [2]NASA Marshall Space Flight Centre / Universities Space Research Association, USA; [3]University of New Hampshire, USA

16:20 HGE22-2 CURRENT STATE OF THE LIGHTNING-LEADER-BASED TGF PRODUCTION THEORY

S. Celestin, *University of Orleans, CNRS, France*

16:40 HGE22-3 TERRESTRIAL GAMMA-RAY FLASHES INITIATED BY POSITIVE LIGHTNING LEADERS

J. R. Dwyer, N. Liu, *University of New Hampshire, United States*

17:00 HGE22-4 (Invited) THUNDERSTORM HIGH-ENERGY RADIATION MEASURED IN-FLIGHT

P. Kochkin[1,2], A. P. J. van Deursen[2], A. I. de Boer[3], M. Bardet[3], C. Allasia[4], J. Boissin[4], N. Ostgaard[2]

[1]University of Bergen, Norway; [2]Eindhoven University of Technology, Netherlands; [3]Netherlands Aerospace Centre, Netherlands; [4]Airbus, France

17:20 HGE22-5 SPRITE STREAMER DENSITIES ABOVE AND BELOW ~55 KM HEIGHT

M. Fullekrug[1], K. Koh[1], Z. Liu[1], A. Mezentsev[1], N. Ogechukwu[2,3], M. Kosch[2]

[1]University of Bath, United Kingdom; [2]Univeristy of Capetown, South Africa; [3]South African National Space Agency, South Africa

---

Wednesday, August 23, 2017 **16:00-17:40** **516DE**

J28 Very Long Baseline Interferometry (3)

Session Chairs: Huib van Langevelde, Hideyuki Kobayashi

16:00 J28-1 CONSTRAINING EMISSION AND SCATTERING PROPERTIES OF THE CRAB PULSAR THROUGH VLBI

R. Main, M. van Kerkwijk, *University of Toronto, Canada*; U.-L. Pen, *Canadian Institute for Theoretical Astrophysics, Canada*

16:20 J28-2 THE NEXT DECADE OF VLBA DEVELOPMENTS

W. F. Brisken[1], A. J. Beasley[2], S. J. Durand[2], J. D. Romney[1]

[1]Long Baseline Observatory, United States; [2]National Radio Astronomy Observatory, United States

16:40 J28-3 PROPER MOTION OF A SUPERMASSIVE BLACK HOLE BINARY

R. T. Zavala, *US Naval Observatory Flagstaff Station, United States*; G. B. Taylor, K. Bansal, *University of New Mexico, United States*; R. W. Romani, *Stanford University, United States*; A. B. Peck, *Gemini Observatory, United States*

17:00 J28-4 PRESENT STATUS AND FUTURE DIRECTIONS OF THE EUROPEAN VLBI NETWORK

M. Lindqvist, *Onsala Space Observatory, Sweden*

17:20 J28-5 (Invited) VLBI WITH THE SKA

C. Reynolds, *CSIRO Astronomy and Space Science, Australia*; Z. Paragi, *Joint Institute for VLBI in Europe, the Netherlands*

K15 Electromagnetic Inversion for Biomedical, Geophysical, Non-destructive Testing, and Antenna Characterization Applications (1)

Session Chairs: Puyan Mojabi, Aria Abubakar

16:00 K15-1 (Invited) BOREHOLE SIZE AND MUD RESISTIVITY EVALUATION FROM LOGGING-WHILE-DRILLING PROPAGATION RESISTIVITY MEASUREMENTS IN VERTICAL AND LOW-ANGLE WELLS

K. Sun, G. L. Wang, A. Abubakar, *Schlumberger, United States*

16:20 K15-2 (Invited) MULTIPLICATIVE REGULARIZED CONTRAST SOURCE INVERSION ALGORITHM USING PARALLELED COMPUTING ARCHITECTURE

M. Li, *Tsinghua University, China (CIE)*; X. Y. Wang, *University of California San Diego, USA*; A. Abubakar, *Schlumberger, USA*

16:40 K15-3 (Invited) SPARSITY PROMOTION AND INVERSE SOURCE PROBLEMS FOR QUALITATIVE RECONSTRUCTION OF BURIED TARGETS

M. T. Bevacqua, T. Isernia, *Università Mediterranea di Reggio Calabria, Italy*

17:00 K15-4 METHOD FOR CHARACTERIZING LAMINAR TISSUES VIA SURFACE REFLECTOMETRY

W. Haines[1], E. Neufeld[2], Z. Popovic[1]

[1]*University of Colorado at Boulder, United States;* [2]*IT'IS Foundation, Switzerland*

17:20 K15-5 A WAVEGUIDE-BASED METHOD FOR EXTRACTING COMPLEX PERMITTIVITY OF DIELECTRIC SLAB BY GENERAL IMPEDANCE BOUNDARY CONDITION (GIBC)

K. Wang, J.-J. Laurin, K. Wu, *Polytechnique Montreal, Canada*

Thursday, August 24, 2017

Thursday, August 24, 2017 **08:00-09:20** **510AC**

B23 Novel Mathematical Methods in Electromagnetics (1)

Session Chairs: Kazuya Kobayashi, Yury Shestopalov

08:00 B23-1 (Invited) METHODS FOR VERIFYING SOLVABILITY OF THE PERMITTIVITY RECONSTRUCTION IN CANONICAL WAVEGUIDE INVERSE PROBLEMS

Y. Shestopalov, *Faculty of Engineering and Sustainable Development, University of Gävle, Sweden*

08:20 B23-2 POLARIZABILITY OF RADIALLY ANISOTROPIC ELLIPTIC CYLINDERS WITH HYPERBOLIC PERMITTIVITY

H. Wallén, T. Rimpiläinen, A. Sihvola, *Aalto University School of Electrical Engineering, Finland*

08:40 B23-3 NON-SEPARABLE SOLUTIONS OF HELMHOLTZ' EQUATION REVISITED

E. H. Van Lil, P. J. Luypaert, *KU Leuven, Belgium*

09:00 B23-4 (Invited) GUARANTEED A POSTERIORI ESTIMATES OF RIGHT-HAND SIDES IN TRANSMISSION PROBLEMS FOR HELMHOLTZ EQUATIONS

Y. Shestopalov, *Faculty of Engineering and Sustainable Development, University of Gävle, Sweden*; Y. Podlipenko, A. Nakonechny, *Taras Shevchenko National University of Kyiv, Ukraine*

Thursday, August 24, 2017 **08:00-09:20** **513C**

B24 Advanced Antenna Concepts (2)

Session Chairs: Ahmed Kishk, Dejan Filipovic

08:00 B24-1 A PLANAR CONTROLLED RECEPTION PATTERN ARRAY WITH DUAL-MODE TM11-TM21 MICROSTRIP ANTENNA ELEMENTS FOR INCREASED ANGULAR COVERAGE

N. Rezazadeh, L. Shafai, *University of Manitoba, Canada*

08:20 B24-2 EXACT SOLUTIONS FOR LENS AND REFLECTOR SHAPING

G. G. Cheng, Y. Zhu, G. A. Jan, *Allwave Corporation, United States*

08:40 B24-3 MULTI-BAND MULTI-BEAM PERFORMANCE EVALUATION OF ON-SITE CODING DIGITAL BEAMFORMER USING ULTRA-WIDEBAND ANTENNA ARRAY

S. Bojja Venkatakrishnan, E. A. Alwan, J. L. Volakis, *The Ohio State University, United States*

09:00 B24-4 GENETIC ALGORITHM OPTIMIZATION OF TRAVELING WAVE SLOT ARRAYS USING FULL WAVE METHOD OF MOMENTS ANALYSIS

S. R. Rengarajan, *California State University, United States*

Thursday, August 24, 2017 **08:00-09:20** **513A**

C24 Compressive Sensing and its Applications in Detection and Tracking of Objects in Motion (1)

Session Chairs: Ozlem Kilic, Aly Fathy

08:00 C24-1 POTENTIAL BIOLOGICAL PRINCIPLES OF HORNET'S NATURAL RADAR, TRACKING, POSITIONING, AND WIRELESS COMMUNICATION SYSTEMS

J. Gavan, M. Haridim, *HIT-Holon Institute of Technology, Israel*

08:20 C24-2 (Invited) SPARSITY-BASED MOTION DETECTION USING DISTRIBUTED RADAR SYSTEMS

F. Ahmad, *Temple University, United States*

08:40 C24-3 MULTI-FEATURE FUSION FOR TARGET RECOGNITION BASED ON IMPROVED D-S EVIDENCE ITERATIVE DISCOUNT METHOD

C. Wang, *Nanjing University of Aeronautics & Astronautics, China (CIE)*

09:00 C24-4 (Invited) ADVANCES IN SPARSE IMAGE RECONSTRUCTION IN THROUGH-THE-WALL RADAR

A. Hoorfar, W. Zhang, *Villanova University, USA*

Thursday, August 24, 2017 **08:00-09:20** **514A**

C25 Radio Signal Processing and Radar Systems (1)

Session Chairs: Shilong Pan, Daiyin Zhu

08:00 C25-1 MODELING AND PERFORMANCE ANALYSIS OF ADVANCED DETECTION ARCHITECTURES FOR ADS-B SIGNALS IN HIGH INTERFERENCE ENVIRONMENTS

S. Chiocchio, A. Persia, F. Santucci, F. Graziosi, M. Faccio, *University of L'Aquila, Italy*

08:20 C25-2 (Invited) PHOTONIC-BASED RADAR FOR HIGH RESOLUTION TARGET DETECTION AND IMAGING

F. Zhang, S. Pan, *Nanjing University of Aeronautics and Astronautics, China (CIE)*

08:40 C25-3 ENHANCEMENT OF THE SENSITIVITY OF A DIGITAL RECEIVER BY TIME SYNCHRONOUS AVERAGING

E. Novakov, M. Asgharzadeh, G. Maury, *IMEP-LAHC, France*

09:00 C25-4 NEURAL NETWORK BASED MOVING TARGETS LOCALIZATION IN SAR-GMTI SYSTEM

X. Zhang, J. Zhao, B. Liu, *Qian Xuesen Laboratory of Space Technology, China (CIE)*

Thursday, August 24, 2017 **08:00-09:20** **513B**

D22 Terahertz Generation and Applications (3)

Session Chairs: Christoph Hauri, Mona Jarrahi

08:00 D22-1 SUB-THZ HETERODYNE FET DETECTORS MEASURING SIGNAL STRENGTH, FREQUENCY, AND PHASE

M. Shur[1], S. Rumyantsev[1], V. Kachorovskii[1,2]

[1]Rensselaer Polytechnic Institute, United States; [2]A. F. Ioffe Insitute of Physics and Technology, Russia

08:20 D22-2 SUB-THZ TERAHERTZ BEAM TESTING OF MILLIMETER WAVE MONOLITHIC INTEGRATED CIRCUITS

M. Shur, S. Rumyantsev, A. Muraviev, *Rensselaer Polytechnic Institute, United States*; S. Rudin, G. Rupper, M. Reed, *U.S. Army Research Laboratory, United States*; J. Suarez, *U.S. Army RDECOM CERDEC, United States*

08:40 D22-3 A LOW NOISE AND POWER CONSUMPTION, HIGH-GAIN LNA IN 130 NM SIGE BICMOS USING TRANSMISSION LINES

M. Fanoro, S. S. Olokede, S. Sinha, *University of Johannesburg, South Africa, South Africa*

09:00 D22-4 WASTE HEAT HARVESTING USING NANO RECTENNAS

A. Meredov, G. Jayaswal, A. Shamim, *King Abdullah University of Science and Technology, Saudi Arabia*

Thursday, August 24, 2017 **08:00-09:20** **513EF**

E23 EMC in Wired and Wireless Systems

Session Chairs: Farhad Rachidi, Motti Haridim, Jacob Gavan, Frank Gronwald

08:00 E23-1 ON THE USE OF MAGNETIC CURRENT LOOP SOURCE MODEL IN LIGHTNING ELECTROMAGNETICS

D. Poljak, D. Cavka, *University of Split, Croatia*; F. Rachidi, *EPFL, Switzerland*

08:20 E23-2 TIME MARCHING SIMULATION OF SIGNAL PROPAGATION IN POWER LINES LOADED WITH NON-LINEAR DEVICES

J. Becerra, F. Vega, *Universidad Nacional de Colombia, Colombia*; F. Rachidi, *Swiss Federal Institute of Technology (EPFL), Switzerland*

08:40 E23-3 COMPARATIVE STUDY OF TRANSIENT DISTURBANCES IMPACT ON 2G AND 4G TELECOMMUNICATION SYSTEMS IN A RAILWAY CONTEXT

M. R. Kousri, V. Deniau, J. Rioult, *IFSTTAR, France*; G. Romero, E. P. Simon, *Inuversity of Lille, France*

09:00 E23-4 EXPERIMENTAL COMPLIANCE OF REAL WPT SYSTEMS EQUIPPED IN ELECTRIC VEHICLES

S. Watanabe, J. Chakarothai, K. Wake, *National Institute of Information and Communications Technology, Japan*; T. Kinoshita, *Nissan Motor Co., Ltd., Japan*

Thursday, August 24, 2017 **08:00-09:20** **510BD**

F25 Remote Sensing from Nanosatellites (1)

Session Chairs: Steven Reising, Jaan Praks

08:00 F25-1 (Invited) AN OVERVIEW OF THE NASA TROPICS EARTH VENTURE MISSION

R. V. Leslie, W. J. Blackwell, *MIT Lincoln Laboratory, United States*; S. A. Braun, *NASA GSFC, United States*

08:20 F25-2 (Invited) CALIBRATION AND TEST OF THE MICROWAVE RADIOMETER TECHNOLOGY ACCELERATION (MIRATA) CUBESAT

G. Allan[1], A. Hein[1], Z. Lee[1], W. Marlow[2], I. Osaretin[2], M. DiLiberto[2], K. Cahoy[1], D. Cousins[2], W. J. Blackwell[2]

[1]Massachusetts Institute of Technology, USA; [2]MIT Lincoln Laboratory, USA

08:40 F25-3 (Invited) THE CUBESAT RADIOMETER RADIO FREQUENCY INTERFERENCE TECHNOLOGY VALIDATION (CUBERRT) MISSION

J. T. Johnson, C.-C. Chen, A. O'Brien, G. E. Smith, C. McKelvey, M. Andrews, C. Ball, J. L. Garry, *The Ohio State University, United States*; S. Misra, S. Brown, R. Jarnot, D. C. Bradley, P. N. Mohammed, J. F. Lucey, J. R. Piepmeier, K. Horgan, M. Solly, J. Knuble, D. Lu, *NASA, United States*; J. Kocz, *California Institute of Technology, United States*

09:00 F25-4 IMPROVING CUBESAT TRANSMITTER EIRP TO ENABLE SPACE NETWORK COMMUNICATION CAPABILITIES

S. Rahimizadeh[1], P. Fetterer[2], Z. Popovic[1], H. Shaw[2]

[1]University of Colorado at Boulder, United States; [2]Goddard Space Flight Facility, United States

---

Thursday, August 24, 2017 **08:00-09:20** **511BE**

G29 GNSS Applications in Radio Science (1)

Session Chairs: Matthew Angling, Seebany Datta-Barua

08:00 G29-1 (Invited) TOPSIDE IONOSPHERIC TOTAL ELECTRON CONTENT FROM CASSIOPE GAP MEASUREMENTS USING GPS PRECISE POINT POSITIONING TECHNIQUES

H. Nicholson, R. B. Langley, *University of New Brunswick, Canada*

08:20 G29-2 REAL-TIME IGS NETWORK TO STUDY IONOSPHERIC IRREGULARITIES: IMPACT OF GLONASS

R. Ghoddousi-Fard, *Natural Resources Canada, Canada*

08:40 G29-3 ESTIMATION METHOD OF IONOSPHERIC TEC DISTRIBUTION FROM SINGLE-FREQUENCY GPS MEASUREMENTS WITH POLYNOMIAL MODELS

Y. Goto, W. Z. Hein, A. Matsui, Y. Kasahara, *Kanazawa University, Japan*

09:00 G29-4 (Invited) DERIVATION AND APPLICABILITY OF 3D ELECTRON CONTENT AND DECORRELATION LENGTHS OBTAINED FROM GROUND- AND LEO-BASED GNSS MODELS

H. Lyu[1,2], M. Hernández-Pajares[1], E. Monte-Moreno[3]

[1]IonSAT-UPC, Spain; [2]GNSS Research Center, Wuhan University, China; [3]TALP-UPC, Spain

---

Thursday, August 24, 2017 **08:00-09:00** **513D**

G30 Ionospheric Space Weather (1)

Session Chairs: Sandro Radicella, Anthea Coster, Patricia Doherty

08:00 G30-1 (Invited) THE SPACE WEATHER FORECAST TESTBED (SWFT): FORECAST TOOLS FOR UPPER ATMOSPHERE SPACE WEATHER

A. J. Mannucci[1], C. Wang[2], X. Meng[1], O. P. Verkhoglyadova[1], B. T. Tsurutani[1], G. I. Rosen[2], S. Sharma[3]

[1]Jet Propulsion Laboratory, California Institute of Technology, United States; [2]University of Southern California, United States; [3]University of Maryland, United States

08:20 G30-2 (Invited) AURORAL SPACE WEATHER PRODUCT FOR GNSS

S. Skone, M. Najmafshar, E. Spanswick, S. Mushini, *University of Calgary, Canada*

Thursday, August 24, 2017 **08:00-09:20** **511CF**

HGE23 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (6)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

08:00 HGE23-1 ELVES ASSOCIATED WITH TERRESTRIAL GAMMA-RAY FLASHES

N. Liu, J. Dwyer, *The University of New Hampshire, United States*; S. Cummer, *Duke University, United States*

08:20 HGE23-2 LABORATORY MODELING OF HIGH-ALTITUDE DISCHARGES

A. A. Evtushenko, A. V. Strikovskiy, E. A. Mareev, M. E. Gushin, S. V. Korobkov, *IAP RAS, Russian Federation*

08:40 HGE23-3 (Invited) ANALYSIS OF DIURNAL VARIATION AND ROLE OF LIGHTNING IN THE GLOBAL ELECTRIC CIRCUIT OBTAINED FROM DIFFERENT NUMERICAL MODELS

J. Jansky[1], G. M. Lucas[2], C. Kalb[3], V. Bayona[3], M. J. Peterson[3], W. Deierling[2], N. Flyer[3], V. P. Pasko[1]

[1]Pennsylvania State University, United States; [2]University of Colorado Boulder, United States; [3]NCAR, United States

09:00 HGE23-4 SOLAR EFFECTS ON THE GLOBAL ATMOSPHERIC ELECTRIC CIRCUIT

J. C. Tacza Anaya, J.-P. Raulin, M. C. De Juli, *Presbyterian Mackenzie University, Brazil*

Thursday, August 24, 2017 **08:00-09:20** **514B**

HJ24 Solar, Planetary, and Heliospheric Radio Emissions (1)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

08:00 HJ24-1 (Invited) THE FIRST ALMA OBSERVATION OF A PLASMOID EJECTION FROM AN X-RAY BRIGHT POINT

M. Shimojo[1], H. S. Hudson[2,3], S. M. White[4], T. S. Bastian[5], K. Iwai[6]

[1]National Astronomical Observatory of Japan, Japan; [2]University of Glasgow, UK; [3]University of California, Berkeley, USA; [4]Air Force Research Laboratory, USA; [5]National Radio Astronomy Observatory, USA; [6]National Institute of Information and Communications Technology, Japan

08:20 HJ24-2 RECENT ADVANCES IN MILLIMETER TO FAR-INFRARED SOLAR PHYSICS

J.-P. Raulin, *Presbyterian Mackenzie University, Brazil*

08:40 HJ24-3 MICROWAVE TYPE-III BURSTS AND THE DIAGNOSTICS OF FLARING SOURCE REGIONS

B. Tan, *The National Astronomical Observatories of Chinese Academy of Sciences, China*

09:00 HJ24-4 POLARIZED SOLAR ACTIVITY AT MM-WAVES

R. F. Hidalgo Ramirez[1], P. Kaufmann[1,2], A. Morosi[1]

[1]Presbyterian University Mackenzie, Brazil; [2]Campinas State University, Brazil

---

Thursday, August 24, 2017 **08:00-09:20** **516DE**

J29 Detection of Short-Duration Transients and Pulsars (1)

Session Chairs: Joeri van Leeuwen, Vicky Kaspi, Ben Stappers

08:00 J29-1 (Invited) FAST RADIO BURSTS AND THE SQUARE KILOMETRE ARRAY

E. F. Keane, *SKA Organisation, United Kingdom*

08:20 J29-2 (Invited) SEARCHING FOR FRBS AND RADIO TRANSIENTS WITH PARKES AND APERTIF

E. B. Petroff, *ASTRON, Netherlands*

08:40 J29-3 (Invited) FAST RADIO BURSTS AS COSMOLOGICAL PROBES

J.-P. Macquart, *ICRAR/Curtin University, Australia*

09:00 J29-4 (Invited) EXPLORING THE DYNAMIC RADIO SKY WITH NEW TECHNOLOGY

M. Kramer, *Max-Planck-Institute fuer Radioastronomie, Germany*

Thursday, August 24, 2017 **08:00-09:20** **516AB**

K16 EMF Exposure Assessment and Dosimetry for New Technologies (WPT)

Session Chairs: Samyoung Chung, Teruo Onishi

08:00 K16-1 A NOVEL ULTRA-THIN FLEXIBLE METAMATERIAL ABSORBER FOR HUMAN BODY PROTECTION FROM EMF HAZARDS

H. Griguer, *EMSI Rabat, Morocco*; M. M. Tentzeris, A. Nauroze, *School of Electrical and Computer Engineering, Georgia Institute of Technology, USA*; M. Drissi, *UEB, France*

08:20 K16-2 A NOVEL EXTRAPOLATION METHOD FOR EXPOSURE EVALUATION INSIDE A LIQUID PHANTOM IN THE PROXIMITY OF MHZ-BAND WIRELESS POWER TRANSFER SYSTEMS

S. Shimoyama[1,2], J. Chakarothai[2], K. Wake[2], T. Arima[1,2], S. Watanabe[2], T. Uno[1]

[1]Tokyo university of agriculture and technology, Japan; [2]National Institute of Information and Communications Technology, Japan

08:40 K16-3 (Invited) MAGNETIC FIELD MEASUREMENT OF WIRELESS CHARGING SYSTEM ACCORDING TO STATE OF CHARGE

S. Park, B. Choi, J. Kim, *Korea Automotive Technology Institute, South Korea*; J. Kim, *Green Power Co Ltd., South Korea*

09:00 K16-4 (Invited) IN VITRO ASSESSMENT OF IMPLANTABLE CARDIAC PACEMAKER EMI TRIGGERED BY INTERMITTENT SIGNAL OF WIRELESS POWER TRANSFER SYSTEM IN STANDBY MODE

T. Hikage, T. Nojima, *Hokkaido University, JAPAN*; H. Fujimoto, *Medtronic Japan Co., Ltd., JAPAN*

Thursday, August 24, 2017 **09:40-10:40** **511AD**

A14 Time and Frequency Standards

Session Chairs: Felicitas Arias, Masatoshi Kajita

09:40 A14-1 (Invited) STEERING OF A TIME SCALE USING AN OPTICAL CLOCK

T. Ido, H. Hachisu, F. Nakagawa, Y. Hanado, *National Institute of Information and Communications Technology, Japan*

10:00 A14-2 A PILOT STUDY ON INCORPORATING AN OPTICAL CLOCK IN A TIME SCALE

J. Yao, J. Levine, *NIST, United States*

10:20 A14-3 (Invited) SR+ SINGLE ION OPTICAL CLOCK

P. Dubé, J. E. Bernard, M. Gertsvolf, *National Research Council Canada, Canada*

Thursday, August 24, 2017 **09:40-11:00** **510AC**

B25 Novel Mathematical Methods in Electromagnetics (2)

Session Chairs: Kazuya Kobayashi, Yury Shestopalov

09:40 B25-1 WAVE CATASTROPHES IN PROBLEMS OF PROPAGATION AND DIFFRACTION

D. V. Rastyagaev[1], D. S. Lukin[2], A. A. Kryukovsky[1]

[1]Russian New University, Russian Federation; [2]Moscow Institute of Physics and Technology, Russian Federation

10:00 B25-2 ANALYSIS OF A STRIP ANTENNA LOCATED ON THE INTERFACE BETWEEN AN ISOTROPIC MEDIUM AND A HYPERBOLIC METAMATERIAL

A. V. Kudrin[1], T. M. Zaboronkova[2], A. S. Zaitseva[1], N. V. Yurasova[1]

[1]University of Nizhny Novgorod, Russian Federation; [2]R.E. Alekseev Technical University of Nizhny Novgorod, Russian Federation

10:20 B25-3 DIFFRACTION OF TE POLARISED ELECTROMAGNETIC WAVES BY A NONLINEAR INHOMOGENEOUS METAL-DIELECTRIC WAVEGUIDE

E. Smolkin, *Penza State University, Russian Federation*; Y. Shestopalov, *University of Gävle, Sweden*

10:40 B25-4 (Invited) THEOREM FOR THE G2(C,P,N) NUMBERS AND ITS APPLICATION IN THE THEORY OF WAVEGUIDES

G. N. Georgiev, *University of Veliko Tirnovo, Bulgaria*; M. N. Georgieva-Grosse, *Consulting and Researcher in Physics and Computer Sciences, Germany*

Thursday, August 24, 2017 **09:40-11:00** **513C**

B26 Advanced Antenna Concepts (3)

Session Chairs: Ahmed Kishk, Dejan Filipovic

09:40 B26-1 ON THE USE OF WIDEBAND FEEDS WITH MILLIMETER-WAVE LUNEBURG LENSES

M. Notaros, M. Ignatenko, D. S. Filipovic, *University of Colorado Boulder, United States*

10:00 B26-2 SOURCE-GENERATED ELECTROMAGNETIC HOPFIONS

I. M. Besieris, *Virginia Tech, United States*; A. M. Shaarawi, *The American University of Cairo, Egypt*

10:20 B26-3 A DUAL-BAND RECONFIGURABLE FILTENNA FOR INTERWEAVE COGNITIVE RADIO NETWORK

R. Bhattacharya, M. Tulsyan, S. Saha, *National Institute of Technology Patna, India*

10:40 B26-4 C- BAND CIRCULARLY POLARIZED RECONFIGURABLE REFLECTARRAY UNIT CELLS

M. Mehri Dehnavi, J.-J. Laurin, *Ecole polytechnique de Montreal, Canada*

Thursday, August 24, 2017 **09:40-11:00** **513A**

C26 Compressive Sensing and its Applications in Detection and Tracking of Objects in Motion (2)

Session Chairs: Ozlem Kilic, Aly Fathy

09:40 C26-1 COMPRESSIVE SENSING APPROACH TO DETECT TARGETS USING STEPPED-FREQUENCY CONTINOUS-WAVE RADARS

N. H. Tran, O. Kilic, *The Catholic University of America, United States*; S. Nahar, L. Ren, A. E. Fathy, *University of Tennessee, United States*

10:00 C26-2 (Invited) DEVELOPMENT OF A STEP FREQUENCY CONTINUOUS WAVE RADAR FOR DETECTION AND TRACKING OF OBJECTS IN MOTION

A. Fathy, L. Ren, S. Nahar, *U. Tennessee, USA*; O. Kilic, *Catholic University of America, USA*

10:20 C26-3 CHIPLESS WIRELESS TEMPERATURE SENSOR BASED ON C-LIKE SCATTERER FOR STANDARD RFID READER

H. El Matbouly[1], K. Zannas[1], Y. Duroc[2], S. Tedjini[1]

[1]Grenoble-INP/LCIS Universite Grenoble-Alpes, France; [2]University of Lyon, UCBL, Ampere Laboratory, F-69622, France

10:40 C26-4 NON-ORTHOGONAL WAVEFORMS FOR MACHINE TYPE COMMUNICATION

X. He, F. Wang, *State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, China (CIE)*; X. Chen, *Beijing Engineering Research Center of High-speed Railway Broadband Mobile Communications, China (CIE)*; D. Miao, Z. Zhao, *Nokia Beijing Bell Lab, China (CIE)*

Thursday, August 24, 2017 **09:40-10:20** **514A**

C27 Radio Signal Processing and Radar Systems (2)

Session Chairs: Shilong Pan, Daiyin Zhu

09:40 C27-1 ARCHITECTURE, PARAMETERS ESTIMATION AND COHERENT PERFORMANCE ANALYSIS OF A DISTRIBUTED NETWORK RADAR SYSTEM

J. Yu, *Shanghai Key Laboratory of Intelligent Sensing and Recognition, Shanghai Jiao Tong University, China, China (CIE)*

10:00 C27-2 ON THE STATIC CLUTTER SUPPRESSION FOR THE DVB-T BASED PASSIVE RADARS

O. Mahfoudia[1,2], F. Horlin[2], X. Neyt[1]

[1]Royal Military Academy, Belgium; [2]Université Libre de Bruxelles, Belgium

---

Thursday, August 24, 2017 **09:40-11:00** **513B**

D23 Plasmonics and Metamaterials (1)

Session Chair: Christoph Lienau

09:40 D23-1 (Invited) ULTRAFAST NANOPLASMONICS FOR PRECISION SPECTROSCOPY AND STRONG FIELD PHYSICS

S. Kim, *Pusan National University, South Korea*; Y.-J. Kim, *Nanyang Technological University, Singapore*; S.-W. Kim, *Korea Advanced Institute of Science and Technology, South Korea*

10:00 D23-2 (Invited) SUBWAVELENGTH LASER ABLATION USING IMPULSIVELY EXCITED SURFACE PLASMONS

L. Shi, *Liebniz University, Germany*

10:20 D23-3 W-ALON NANOCERMET THIN FILM BASED METAMATERIALS FOR MULTI-BAND ABSORPTION AT INFRA-RED FREQUENCIES

J. K. Pradhan[1], G. Behera[2], S. A. Ramakrishna[1]

[1]Indian Institute of Technology, Kanpur, India; [2]Royal Military College of Canada, Canada

10:40 D23-4 BIO-SYNTHETIC METAMATERIALS

S. J. Butler, R. R. Seviour, *University of Huddersfield, United Kingdom*

Thursday, August 24, 2017 **09:40-11:00** **513EF**

E24 New Concepts in Wireless Communications

Session Chair: Gabriele Gradoni

09:40 E24-1 ENHANCING WIRELESS INDOOR COMMUNICATION WITH SPATIAL-MICROWAVE-MODULATORS

P. del Hougne[1], N. Kaina[1], M. Dupré[1], T. Floume[2], F. Lemoult[1], M. Fink[1], G. Lerosey[1]

[1]Institut Langevin, ESPCI Paris, France; [2]GREENERWAVE, France

10:00 E24-2 (Invited) FIRST-PRINCIPLE MODELING AND STATISTICAL CHARACTERIZATION OF WIRELESS CHANNELS IN COMPLEX ELECTROMAGNETIC ENVIRONMENTS

Z. Peng, Y. Shao, S. Lin, *University of New Mexico, United States*

10:20 E24-3 NON-INTERFERING CHANNELS IN A NEAR-FIELD MIMO COMMUNICATION

S. Phang[1], M. I. Maricar[1], D. Schäfer[2], M. T. Ivrlac[3], S. Greedy[1], G. Gradoni[1,1], R. Baggen[2], S. C. Creagh[1], D. W. P. Thomas[1], J. Nossek[3], G. Tanner[1]

[1]*University of Nottingham, United Kingdom;* [2]*IMST GmbH, Germany;* [3]*Technische Universität München, Germany*

10:40 E24-4 (Invited) ENERGY-GEOMETRY-ENTROPY BOUNDS AWARE ANALYSIS OF STOCHASTIC FIELD-FIELD CORRELATIONS FOR EMERGING WIRELESS COMMUNICATION TECHNOLOGIES

S. Wane, *NXP-Semiconductors, France*; D. Bajon, *ISAE-SUPAERO, France*; J. Russer, P. Russer, *TUM, Germany*; G. Gradoni, *University of Nottingham, United Kingdom*

Thursday, August 24, 2017 **09:40-11:00** **510BD**

F26 Remote Sensing from Nanosatellites (2)

Session Chairs: Steven Reising, Jaan Praks

09:40 F26-1 (Invited) ENABLING TEMPORALLY-RESOLVED OBSERVATIONS OF CLOUDS AND PRECIPITATION INITIATION USING 6U-CLASS NANOSATELLITE CONSTELLATIONS: TEMPORAL EXPERIMENT FOR STORMS AND TROPICAL SYSTEMS TECHNOLOGY DEMONSTRATION (TEMPEST-D) MISSION

S. C. Reising[1], T. C. Gaier[2], C. D. Kummerow[1], S. Padmanabhan[2], B. H. Lim[2], C. Heneghan[2], V. Chandrasekar[1], W. Berg[1], J. P. Olson[1], S. T. Brown[2], J. Carvo[3], M. Pallas[3]

[1]*Colorado State University, United States;* [2]*Jet Propulsion Laboratory, United States;* [3]*Blue Canyon Technologies, United States*

10:00 F26-2 (Invited) SYSTEMS ENGINEERING ANALYSIS OF THE USE OF NANOSATELLITES TO OBSERVE TEMPORAL EVOLUTION OF STORM SYSTEMS

J. P. Olson, V. Chandrasekar, S. K. Biswas, *Colorado State University, United States*

10:20 F26-3 PRELAUNCH PERFORMANCE OF THE 118.75 GHZ POLARCUBE 3U TEMPERATURE SOUNDING RADIOMETER

L. Periasamy, A. J. Gasaiewski, *University of Colorado at Boulder, United States*

10:40 F26-4 (Invited) TROPOSPHERIC WATER AND CLOUD ICE (TWICE) MILLIMETER- AND SUB-MILLIMETER-WAVE RADIOMETER FOR 6U-CLASS SATELLITES: PERFORMANCE ANALYSIS OF COMMAND AND DATA HANDLING SUBSYSTEM

M. Ogut, X. Bosch-Lluis, S. C. Reising, Y. V. Goncharenko, *Colorado State University, United States*; P. Kangaslahti, E. Schlecht, R. Cofield, N. Chahat, S. Padmanabhan, J. Jiang, S. T. Brown, *Jet Propulsion Laboratory, United States*; W. R. Deal, A. Zamora, K. Leong, S. Shih, G. Mei, *Northrop Grumman Corporation, United States*

Thursday, August 24, 2017 **09:40-11:00** **511BE**

G31 GNSS Applications in Radio Science (2)

Session Chairs: Matthew Angling, Seebany Datta-Barua

09:40 G31-1 ANALYSIS OF SEASONAL IONOSPHERIC GRADIENTS OVER TURKEY FOR YEAR 2011

M. Koroglu, O. Koroglu, *Roketsan Missiles Inc., Turkey*; F. Arikan, *Hacettepe University, Turkey*

10:00 G31-2 (Invited) CONNECTION BETWEEN LOW LATITUDE ELECTRODYNAMICS AND LARGE SCALE TIDS AS INFERRED FROM GNSS INFORMATION

J. B. Habarulema[1,2], Z. Katamzi[1,2]

[1]South African National Space Agency, South Africa; [2]Rhodes University, South Africa

10:40 G31-4 ON THE APPLICATION OF NEW STRONG-SCATTER THEORETICAL RESULTS TO THE INTERPRETATION OF GPS SCINTILLATION

C. L. Rino, C. S. Carrano, K. M. Gorves, *Institute for Scientific Research, United States*; B. Brietsch, Y. Jaio, Y. Morton, *Colorado State University, United States*

Thursday, August 24, 2017 **09:40-10:40** **513D**

G32 Ionospheric Space Weather (2)

Session Chairs: Sandro Radicella, Anthea Coster, Patricia Doherty

09:40 G32-1 (Invited) EFFECT OF SOLAR ACTIVITY ON NIGHT-TIME F-LAYER HEIGHT PROFILE AT THE MAGNETIC EQUATOR IN WEST AFRICA DURING THE SOLAR MINIMUM PERIOD 1995 – 1997

K. Z. Zaka, K. S. Tanoh, *Laboratory of Atmospheric Physics, UFR SSMT, University Felix Houphouet Boigny Abidjan-Cocody,, Cote d'Ivoire*; N. M. Mene, *University Peleforo-Gbon-Coulibaly of Korhogo, Cote d'Ivoire*

10:00 G32-2 ASSESSING THE DEGREE OF IONOSPHERIC PERTURBATION FROM RADIO TOMOGRAPHIC DATA

I. A. Nesterov, E. S. Andreeva, M. O. Nazarenko, Y. S. Tumanova, A. M. Padokhin, *Lomonosov Moscow State University, Russian Federation*

10:20 G32-3 WARNING SYSTEM FOR GNSS SIGNAL DEGRADATION CAUSED BY SOLAR RADIO BURSTS

J.-M. Chevalier, N. Bergeot, C. Marqué, C. Bruyninx, *Royal Observatory of Belgium, Belgium*

Thursday, August 24, 2017 **09:40-11:00** **511CF**

HGE25 Atmospheric, Ionospheric, Magnetospheric and High Energy Effects of Lightning Discharges (7)

Session Chairs: Sebastien Celestin, Ningyu Liu, Martin Fullekrug

09:40 HGE25-1 (Invited) LIGHTNING OBSERVATIONS FROM NEWLY DEPLOYED DETECTION SYSTEMS

H. Christian, *Univ. of Alabama in Huntsville, Alabama*

10:00 HGE25-2 (Invited) ISUAL MULTI-BAND PHOTOMETRIC MEASUREMENT OF TLES IN LIMB VIEW OBSERVATION FROM SPACE

C.-L. Kuo, *National Central University, Taiwan*; Y.-J. Wu, J.-K. Chou, S.-C. Chang, A. B.-C. Chen, H.-T. Su, R.-R. Hsu, *National Cheng Kung University, Taiwan*

10:20 HGE25-3 (Invited) OPTICAL AND ELECTROMAGNETIC CHARACTERISTICS OF LIGHTNING AND TLES DERIVED FROM THE JEM-GLIMS NADIR OBSERVATIONS

M. Sato[1], H. Kikuchi[2], T. Ushio[2], T. Adachi[3], T. Sato[1], T. Morimoto[4], M. Suzuki[5], A. Yamazaki[5], Y. Takahashi[1]

[1]Hokkaido University, Japan; [2]Osaka University, Japan; [3]Meteorological Research Institute, Japan; [4]Kindai University, Japan; [5]JAXA, Japan

10:40 HGE25-4 (Invited) TARANIS SATELLITE: SCIENTIFIC PAYLOAD AND SCIENTIFIC OBJECTIVES

J.-L. Pinçon, *LPC2E University of Orléans/CNRS, France*

Thursday, August 24, 2017 **09:40-11:00** **514B**

HJ26 Solar, Planetary, and Heliospheric Radio Emissions (2)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

09:40 HJ26-1 (Invited) RADIO SIGNATURES OF PARTICLE ACCELERATION IN THE SOLAR CORONA

K.-L. Klein, *Observatoire de Paris, France*

10:00 HJ26-2 IMAGING OF SOLAR TYPE III RADIO BURSTS WITH LOFAR

F. Breitling, G. Mann, C. Vocks, *Leibniz-Institut für Astrophysik Potsdam (AIP), Germany*

10:20 HJ26-3 THE SUN RADIO IMAGING SPACE EXPERIMENT (SUNRISE)

J. Lazio[1], J. C. Kasper[2], F. Alibay[1], N. Amiri[1], T. Bastian[3], C. Cohen[4], E. Landi[2], W. B. Manchester[2], A. Reinard[5], N. Schwadron[6], B. Cecconi[7], G. Hallinan[4], A. Hegedus[2], V. Krupar[8], M. Maksimovic[7], A. Zaslavsky[7]

[1]Jet Propulsion Laboratory, California Insitute of Technology, United States; [2]University of Michigan, United States; [3]National Radio Astronomy Observatory, United States; [4]California Institute of Technology, United States; [5]National Atmospheric & Oceanic Administration, United States; [6]University of New Hampshire, United States; [7]Observatoire de Paris, France; [8]Czech Academy of Sciences, Czech Republic

10:40 HJ26-4 RADIO SIGNATURES OF SHOCK ACCELERATED ELECTRON BEAMS IN THE CORONA

G. J. Mann[1], V. N. Melnik[2], H. O. Rucker[3], A. A. Konovalenkoi[2], A. I. Brazhenko[4]

[1]Leibniz-Institut fuer Astrophysik Potsdam, Germany; [2]Institute of Radio Astronomy of NASU, Ukraine; [3]Commission for Astronomy, Austrian Academy of Sciences, Austria; [4]Poltava Gravimetrical Observatoryof Institute of Geophysics of NASU, Ukraine

---

Thursday, August 24, 2017 **09:40-11:00** **516DE**

J30 Detection of Short-Duration Transients and Pulsars (2)

Session Chairs: Joeri van Leeuwen, Vicky Kaspi, Ben Stappers

09:40 J30-1 (Invited) REALFAST ALL THE TIME WITH THE VERY LARGE ARRAY

S. Burke-Spolaor, *West Virginia University, USA*; C. J. Law, *Berkeley, USA*; B. Andersen, *University of Virginia, USA*; G. C. Bower, *Academia Sinica Institute of Astronomy and Astrophysics, USA*; B. Butler, P. Demorest, *National Radio Astronomy Observatory, USA*; T. J. W. Lazio, *Jet Propulsion Laboratory, USA*; M. Rupen, *NRC Herzberg, Canada*

10:00 J30-2 (Invited) THE REPEATING FAST RADIO BURST FRB 121102

P. Scholz[1], L. G. Spitler[2], J. W. T. Hessels[3,4], C. G. Bassa[3], S. Bogdanov[5], G. C. Bower[6], S. Burke-Spolaor[7,8], B. J. Butler[7], S. Chatterjee[9], J. M. Cordes[9], P. Demorest[7], V. M. Kaspi[10], A. Keimpema[11], H. J. van Langevelde[11,12], C. J. Law[13], J. Lazio[14], R. Lynch[7,7], B. Marcote[11], M. A. McLaughlin[8], Z. Paragi[11], S. M. Ransom[7], M. Rupen[1], A. Seymour[15], S. P. Tendulkar[10]

[1]National Research Council of Canada, Canada; [2]Max-Planck-Institut fur Radioastronomie, Germany; [3]ASTRON, Netherlands; [4]University of Amsterdam, Netherlands; [5]Columbia University, USA; [6]Academia Sinica Institute of Astronomy and Astrophysics, USA; [7]National Radio Astronomy Observatory, USA; [8]West Virginia University, USA; [9]Cornell University, USA; [10]McGill University, Canada; [11]Joint Institute for VLBI ERIC, Netherlands; [12]Leiden University, Netherlands; [13]University of California, USA; [14]California Institute of Technology, USA; [15]Arecibo Observatory, USA

10:20 J30-3 A SEARCH FOR FAST RADIO BURSTS WITH THE GBNCC PULSAR SURVEY

P. Chawla, *McGill University, Canada*

10:40 J30-4 SUPERNOVA REMNANT FRBS, LOGN-LOGS, AND THE CHIME PATHFINDER

L. D. Connor, *ASTRON / University of Amsterdam, Holland*

Thursday, August 24, 2017 **09:40-10:40** **516AB**

K17 Latest Development in Measurement and Applications of Dielectric Spectroscopy (2)

Session Chairs: Theodoros Samaras, Niels Kuster

09:40 K17-1 DIELECTRIC MEASUREMENTS OF SAMPLES AVAILABLE IN LIMITED SIZE OR VOLUME

F. Muranyi[1], F. Bomholt[2], N. Kuster[1]

[1]Foundation for Research on Information Technologies in Society, Switzerland; [2]Schmid & Partner Engineering AG, Switzerland

10:00 K17-2 DUAL FREQUENCY DIELECTROPHORESIS STUDY OF SINGLE CELLS UNDER CONTROLLED STARVATION

S. Afshar, E. Salimi, A. Fazelkhah, K. Braasch, M. Butler, D. Thomson, G. Bridges, *University of Manitoba, Canada*

10:20 K17-3 ON-CHIP MICROVOLUME DIELECTRIC SPECTROSCOPY SUPPORTED BY MOLECULAR DYNAMICS

M. Cifra, D. Havelka, O. Krivosudsky, J. Prusa, *Institute of Photonics and Electronics, Czech Academy of Sciences, Czechia*

Thursday, August 24, 2017 **11:00-12:00** **511AD**

A15 A-Tutorial Dr. Judah Levine: "Distributing Time and Frequency Data: Requirements and Methods

Session Chair: Yasuhiro Koyama

11:00 A15-1 (Invited) DISTRIBUTING TIME AND FREQUENCY DATA: REQUIREMENTS AND METHODS

J. Levine, *National Institute of Standards and Technology, United States*

Thursday, August 24, 2017 **11:00-12:00** **510AC**

B27 Novel Mathematical Methods in Electromagnetics (3)

Session Chairs: Kazuya Kobayashi, Yury Shestopalov

11:00 B27-1 (Invited) ON SOME MATHEMATICAL ASPECTS OF HIGH-FREQUENCY DIFFRACTION BY STRONGLY ELONGATED SPHEROIDS

I. V. Andronov, *University of St.Petersburg, Russian Federation*; B. P. Belinskiy, *University of Tennessee at Chattanooga, USA*

11:20 B27-2 (Invited) PULSE REFLECTION RESPONSES FROM TWO DISPERSION MEDIA WITH CONDUCTING STRIPS

R. Ozaki, T. Yamasaki, *Nihon University, Japan*

11:40 B27-3 SUPER-ALGEBRAICALLY CONVERGENT ALGORITHM FOR 2D TM WAVE SCATTERING FROM DIELECTRIC CYLINDERS WITH SMOOTHLY PARAMETRIZED CROSS SECTION BOUNDARIES

E. Sever, Y. A. Tuchkin, F. Dikmen, *Gebze Technical University, Turkey*

Thursday, August 24, 2017 **11:00-12:00** **513C**

B28 Advanced Antenna Concepts (4)

Session Chairs: Ahmed Kishk, Dejan Filipovic

11:00 B28-1 FLEXIBLE MICROSTRIP ANTENNA FOR EPIDERMAL ELECTRONIC DEVICES

A. Sabouni, Y. Yasser, *Wilkes University, United States*

11:20 B28-2 SUBSTRATE INTEGRATED H-PLANE HORN ANTENNA WITH DOUBLE LEVEL GAP WAVEGUIDE CONFIGURATION

N. Bayat-Makou, A. A. Kishk, *Concordia University, Canada*

11:40 B28-3 BANDWIDTH ENHANCEMENT OF OMNIDIRECTIONAL CIRCULARLY POLARIZED SLOTTED ANTENNA FOR SATELLITE COMMUNICATION

C. Turkmen, M. Secmen, *Yasar University, Turkey*

Thursday, August 24, 2017 **11:00-12:00** **514A**

C28 Radio Signal Processing and Radar Systems (3)

Session Chairs: Shilong Pan, Daiyin Zhu

11:00 C28-1 DIGITAL SYNCHRONIZATION SYSTEM DESIGN AND IMPLEMENTATION FOR RADIO INTERFEROMETER

E. H. Ait Mansour[1], K.-L. Klein[2], B. Da-Silva[1], S. Bosse[1]

[1]Station de Radioastronomie de Nançay, France; [2]Observatoire de Meudon, LESIA, France

11:20 C28-2 DYNAMIC RANGE IMPROVEMENT OF SIX-PORT INTERFEROMETER RECEIVERS

B. Mnasri[1], T. Djerafi[2], S. Tatu[2], K. Wu[1]

[1]Université de Montréal-École Polytechnique, Canada; [2]INRS-EMT, Canada

11:40 C28-3 MIMO RADAR SIMULATION USING SIMULINK

J. N. Bathurst, M. Hefnawi, J. R. Bray, Y. M. Antar, *Royal Military College of Canada, Canada*

Thursday, August 24, 2017 **11:00-12:00** **513B**

D24 Plasmonics and Metamaterials (2)

Session Chair: Christoph Lienau

11:00 D24-1 VISIBLE TO INFRARED POLARIZER BASED ON ONE-DIMENSIONAL ALUMINIUM GRATINGS

G. Behera, *Royal Military College of Canada, Canada*; S. A. Ramakrishna, *Indian Institute of Technology, India*

11:20 ~~D24-2 SIMULATION OF NANO HOLE ARRAYS BASED PLASMONIC GAS SENSOR~~

Y. Zhao, M. Zaghloul, *George Washington University, United States* (paper withdrawn)

11:40 D24-3 SENSITIVITIES OF PLANAR NANOPLASMONIC STRUCTURES FOR REFRACTIVE-INDEX SENSING APPLICATIONS

T.-Y. Hsiao, H.-C. Chang, *National Taiwan University, China (SRS)*

Thursday, August 24, 2017 **11:00-12:00** **513EF**

EB25 Chaos and Complexity (1)

Session Chairs: Gabriele Gradoni, Ari Shivola, Gregor Tanner

11:00 EB25-1 STATISTICS OF FLUCTUATION IN THE RESPONSE OF CAVITIES EXCITED BY NOISY SOURCES

S. C. Creagh, J. Blackburn, G. Gradoni, T. Hartmann, S. Phang, G. Tanner, *University of Nottingham, United Kingdom*

11:20 EB25-2 (Invited) WAVE-FIELD SHAPING IN CAVITIES: WAVES TRAPPED IN A BOX WITH CONTROLLABLE BOUNDARIES

M. Dupré, P. del Hougne, M. Fink, F. Lemoult, G. Lerosey, *Institut Langevin, ESPCI Paris, France*

11:40 EB25-3 3D REGULAR ELECTROMAGNETIC CAVITY MADE CHAOTIC THROUGH SPATIAL MICROWAVE MODULATORS

J.-B. Gros, P. del Hougne, *CNRS UMR 7587, ESPCI Paris, PSL Research University, France*; U. Kuhl, O. Legrand, F. Mortessagne, G. Lerosey, *Université Côte d'Azur, CNRS UMR 7010, France*

Thursday, August 24, 2017 11:00-12:00 510BD

F27 Remote Sensing from Nanosatellites (3)

Session Chairs: Steven Reising, Jaan Praks

11:00 F27-1 (Invited) AALTO-1 EARTH OBSERVATION NANOSATELLITE MISSION STATUS AND IN ORBIT EXPERIMENTS

J. Praks[1], A. Kestilä[1], T. Tikka[2], A. Näsilä[3], B. Riwanto[1], N. Jovanovic[1], P. Niemela[1], N. Silva[1], R. Vainio[4], P. Janhunen[5]

[1]Aalto University, Finland; [2]Reaktor Space Lab, Finland; [3]VTT Technical Research Centre of Finland, Finland; [4]University of Turku, Finland; [5]Finnish Meteorological Institute, Finland

11:20 F27-2 (Invited) MINIATURIZED REMOTE SENSING INSTRUMENTS BASED ON FABRY-PÉROT INTERFEROMETERS

A. Näsilä, H. Saari, A. Rissanen, C. Holmlund, R. Mannila, K. Viherkanto, A. Akujärvi, H. J. Ojanen, I. Näkki, T. Antila, I. Stuns, H. Toivanen, T. Havia, O. Viljamaa, *VTT Technical Research Centre of Finland Ltd, Finland*

11:40 F27-3 (Invited) ESTCUBE-2 MISSION ANALYSIS: EARTH OBSERVATION IMAGER SYSTEM

J. Dalbins[1,2], I. Iakubivskyi[1,2], H. Ehrpais[1,2,3], H. Kuuste[1,2,3], I. Su¨nter[1,2], E. Ilbis[3], E. Oro[2], J. Ku¨tt[1], P. Janhunen[4], M. Merisalu[2], J. Sate[5], R. Trops[5], A. Slavinskis[1,3]

[1]Tartu Observatory, Estonia; [2]University of Tartu, Estonia; [3]Estonian Student Satellite Foundation, Estonia; [4]Finnish Meteorological Institute, Finland; [5]Ventspils University College, Latvia

Thursday, August 24, 2017 11:00-12:00 511BE

G33 GNSS Applications in Radio Science (3)

Session Chairs: Matthew Angling, Seebany Datta-Barua

11:00 G33-1 (Invited) ADVANCES IN IONOSPHERE REMOTE SENSING USING NEW GNSS SIGNALS

Y. Morton, H. Bourne, B. Breitsch, Y. Jiao, I. Collett, G. Myer, S. Taylor, J. Wang, D. Xu, C. Rino, *Colorado State University, United States*

11:20 G33-2 COMPARISON OF SOFTWARE DERIVED SLANT TEC VERSUS HARDWARE PRODUCED SLANT TEC

R. Calfas, J. Little, T. Gaussiran, D. Munton, A. Fleischmann, *The University of Texas, United States*

11:40 G33-3 INVERSE MODELING OF IONOSPHERIC IRREGULARITIES OBSERVED USING GPS SCINTILLATIONS AT POKER FLAT, AK

K. Deshpande[1], S. Datta-Barua[2], G. Bust[3], Y. Su[2]

[1]Embry Riddle Aeronautical University, United States; [2]Illinois Institute of Technology, United States; [3]The Johns Hopkins University Applied Physics Laboratory, United States

Thursday, August 24, 2017 **11:00-12:00** **513D**

G34 Ionospheric Space Weather (3)

Session Chairs: Sandro Radicella, Anthea Coster, Patricia Doherty

11:00 G34-1 GAINING THE MOST UTILITY FROM OUR GEOSPACE OBSERVATIONAL SYSTEM: NETWORK ANALYSIS OF TOTAL ELECTRON CONTENT AS A MEANS TO UNDERSTAND SPACE WEATHER TO THE POINT OF PREDICTION

R. M. McGranaghan[1,2], A. Mannucci[2], O. Verkhoglyadova[2], N. Malik[3]

[1]Cooperative Programs for the Advancement of Earth System Science (CPAESS), United States; [2]NASA Jet Propulsion Laboratory, California Institute of Technology, United States; [3]Dartmouth College, United States

11:20 G34-2 MONITORING SHORTWAVE FADEOUT (SWF) BASED ON DAYTIME SUPERDARN GROUND-SCATTER OBSERVATIONS

S. Chakraborty, J. Ruohoniemi, J. Baker, *Virginia Tech, Virginia*

11:40 G34-3 IONOSPHERIC STORM MONITORING SYSTEM USING GNSS-TEC OBSERVATIONS

T. Tsugawa, M. Nishioka, H. Jin, M. Ishii, *NICT, Japan, Japan*

Thursday, August 24, 2017 **11:00-12:00** **514B**

HJ27 Solar, Planetary, and Heliospheric Radio Emissions (3)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

11:00 HJ27-1 CYCLOTRON MASER EMISSION IN SOLAR AND STELLAR FLARES

D. B. Melrose, *University of Sydney, Australia*

11:20 HJ27-2 LOFAR OBSERVATIONS OF THE QUIET SOLAR CORONA

C. Vocks, G. Mann, F. Breitling, *Leibniz-Institut für Astrophysik Potsdam, Germany*

Thursday, August 24, 2017 **11:00-11:40** **511CF**

H28 Remote Sensing and Modeling of the Earth's Plasmasphere and Plasmapause (1)

Session Chairs: Anders Jorgensen, Viviane Pierrard, Balazs Heilig

11:00 H28-1 DYNAMICAL SIMULATIONS OF THE PLASMAPAUSE AND THE PLASMASPHERE

V. Pierrard[1,2]

[1]Royal Belgian Institute for Space Aeronomy, Belgium; [2]Université Catholique de Louvain, Belgium

11:20 H28-2 AN EMPIRICAL PLASMAPAUSE MODEL BASED ON SWARM OBSERVATIONS

B. Heilig, *Geological and Geophysical Institute of Hungary, Hungary*; H. Lühr, *GFZ German Research Centre for Geosciences, Germany*

Thursday, August 24, 2017 **11:00-12:00** **516DE**

J31 Detection of Short-Duration Transients and Pulsars (3)

Session Chairs: Joeri van Leeuwen, Vicky Kaspi, Ben Stappers

11:00 J31-1 A SEARCH FOR PULSARS AND TRANSIENT SIGNALS IN M33 USING ARECIBO

F. Crawford, *Franklin and Marshall College, United States*; J. M. Cordes, *Cornell University, United States*

11:20 J31-2 TOWARDS PREDICTIVE MODELLING OF INTERSTELLAR SCATTERING

D. Simard, U.-L. Pen, *University of Toronto, Canada*

11:40 J31-3 A NEW LOOK INTO PULSAR MICROSTRUCTURE WITH THE GMRT

K. De[1,2], Y. Gupta[3], P. Sharma[2]

[1]California Institute of Technology, United States; [2]Indian Institute of Science, India; [3]National Centre for Radio Astrophysics, India

Thursday, August 24, 2017 **11:00-12:00** **516AB**

K18 Electromagnetic Inversion for Biomedical, Geophysical, Non-destructive Testing, and Antenna Characterization Applications (2)

Session Chairs: Puyan Mojabi, Aria Abubakar

11:00 K18-1 (Invited) AN EXPERIMENTAL STUDY OF MICROWAVE REMOTE SENSING OF OIL-CONTAMINATED YOUNG SEA ICE

N. Firoozy[1], T. Neusitzer[1], D. Desmond[1], T. Tiede[1], M. Lemes[1], J. Landy[2], G. Stern[1], P. Mojabi[1], S. Rysgaard[1], D. G. Barber[1]

[1]University of Manitoba, Canada; [2]University of Bristol, United Kingdom

11:20 K18-2 (Invited) 3D PDE-BASED CONTRAST SOURCE INVERSION FOR BIOMEDICAL AND AGRICULTURAL APPLICATIONS

I. Jeffrey, J. LoVetri, K. Brown, N. Geddert, M. Asefi, K. Nemez, A. Baran, G. Faucher, *University of Manitoba, Canada*

11:40 K18-3 BREATH DETECTION USING SHORT-TIME FOURIER TRANSFORM ANALYSIS IN ELECTRICAL IMPEDANCE TOMOGRAPHY

D. Khodadad[1], S. Nordebo[1], N. Seifnaraghi[2], A. D. Waldmann[3], B. Müller[3], R. Bayford[2]

[1]Linnaeus University, Sweden; [2]Middlesex University, United Kingdom; [3]Swisstom AG, Switzerland

Thursday, August 24, 2017 **13:40-14:40** **511AD**

A16 Education and Training in Electromagnetic Metrology (1)

Session Chairs: Demetrios Matsakis, Patrizia Tavella, Parameswar Banerjee

13:40 A16-1 (Invited) QUANTITATIVE EXPERIMENTS FOR HANDS-ON TRAINING IN RF AND EMC MEASUREMENTS

C. Carobbi, *University of Florence, Italy*

14:00 A16-2 (Invited) ANTENNA MEASUREMENTS THROUGH PLANAR NEAR FIELD APPARATUS: AN EDUCATIONAL PARADIGM LINKING ELECTROMAGNETIC THEORY, SAMPLING TECHNIQUES, AND FFT

Y. Rahmat-Samii, J. M. Kovitz, *University of California Los Angeles, USA*

14:20 A16-3 LOW-COST ANECHOIC CHAMBER CONSTRUCTION AND ITS APPLICATIONS FOR EDUCATIONAL PURPOSES

T. K. Vo Dai, O. Kilic, *The Catholic University of America, USA*

Thursday, August 24, 2017 **13:40-14:40** **510AC**

B29 Recent Advances in Metamaterials (1)

Session Chairs: Ari Sihvola, Ismo Lindell

13:40 B29-1 PARAMETER STUDIES ON OPTIMAL ABSORPTION AND ELECTROPHORETIC RESONANCES IN LOSSY MEDIA

S. I. Nordebo, M. Dalarsson, Y. Ivanenko, *Linnaeus University, Sweden*; D. Sjöberg, *Lund University, Sweden*; R. Bayford, *Middlesex University, United Kingdom*

14:00 B29-2 TRANSMISSION-LINE MODEL FOR A NON-LINEAR AND DISPERSIVE PARITY-TIME (PT) SYMMETRIC STRUCTURE

S. Phang, G. Gradoni, A. Vukovic, S. C. Creagh, T. M. Benson, *University of Nottingham, United Kingdom*

14:20 B29-3 ELECTROMAGNETIC NONRECIPROCITY, AMPLIFICATION AND MIXING IN DISPERSION-ENGINEERED SPACE-TIME-VARYING SYSTEMS

N. Chamanara, C. Caloz, *Polytechnique Montreal, Canada*

Thursday, August 24, 2017 **13:40-14:40** **513A**

C29 Wireless Communications for the Future Transportation Systems (1)

Session Chairs: David Matolak, Ruisi He

13:40 C29-1 MINIATURIZED SHARK-FIN ROOFTOP ANTENNA WITH INTEGRATED DSRC COMMUNICATION MODULE FOR CONNECTED VEHICLES

C.-Y. Liou, S.-G. Mao, *National Taiwan University, China (CIE)*

14:00 C29-2 OBSERVATIONS OF 5.9 GHZ RADIO WAVE PROPAGATION AND 802.11P NETWORK PERFORMANCE AT ROAD JUNCTIONS

J. Clayton, A. J. Stocker, D. Hassan, *University of Leicester, United Kingdom*; T. Edwards, D. Mearns, *HORIBA MIRA Ltd., United Kingdom*

14:20 C29-3 A NOVEL POWER WEIGHTED MULTIPATH COMPONENT TRACKING ALGORITHM

C. Huang, R. He, D. Zhang, *Beijing Jiaotong University, China (CIE)*

Thursday, August 24, 2017 **13:40-14:40** **514A**

C30 Massive MIMO (1)

Session Chair: ian Glover

13:40 C30-1 (Invited) MASSIVE MIMO: CONCEPTS, PRACTICAL ISSUES AND FUTURE PROSPECTS

A. G. Burr, M. Bashar, Q. Huang, *University of York, United Kingdom*

14:00 C30-2 (Invited) LARGE MIMO SYSTEMS WITH COST 2100 CHANNEL MODEL

M. Bashar, A. G. Burr, K. Cumanan, *University of York, Yorkshire*

14:20 C30-3 METAMATERIALS FOR MIMO

R. Seviour, A. Hopper, *University of Huddersfield, United Kingdom*

Thursday, August 24, 2017 **13:40-14:40** **513B**

DB25 Fibers and Waveguide Optics (1)

Session Chairs: Günter Steinmeyer, Vincenzo Galdi

13:40 DB25-1 (Invited) SINGLE-STEP VISIBLE CONTINUUM FOR 2D SPECTROSCOPY FROM 130FS TI:SAPPH PULSES VIA HOLLOW-FIBER

H. Seiler[1], S. Palato[1], B. E. Schmidt[2], P. Kambhampati[1]

[1]McGill University, Canada; [2]few-cycle Inc., Canada

14:00 DB25-2 (Invited) OPTICAL NONLINEAR PROPAGATION DYNAMICS IN SILICON PHOTONIC WIRE WAVEGUIDES

S.-P. Gorza, C. Ciret, F. Leo, N. Poulvellarie, *Universite libre de Bruxelles, Belgium*; B. Kuyken, G. Roelkens, *Ghent University-IMEC, Belgium*

14:20 DB25-3 (Invited) NONLINEAR SPATIOTEMPORAL DYNAMICS IN MULTIMODE FIBERS

S. Wabnitz, *University of Brescia, Italy*

Thursday, August 24, 2017 **13:40-14:40** **513C**

DJ26 Special Session on Gravitational Wave Detection (1)

Session Chairs: Willem Baan, Roman Schnabel, Lisa Borsotti

13:40 DJ26-1 (Invited) ADVANCED LIGO AND THE DETECTION OF GRAVITATIONAL WAVES

J. R. Sanders, *Syracuse University, United States*

14:00 DJ26-2 (Invited) ASTRONOMICAL SOURCES OF GRAVITATIONAL WAVES

B. S. Sathyaprakash, *Penn State, United States*

Thursday, August 24, 2017 **13:40-14:40** **513EF**

EB26 Chaos and Complexity (2)

Session Chairs: Gabriele Gradoni, Ari Shivola, Gregor Tanner

13:40 EB26-1 PHASE DISTRIBUTION OF THE RESPONSE IN CHAOTIC REVERBERATION CHAMBERS

J.-B. Gros, *CNRS UMR 7587, ESPCI Paris, PSL Research University, France*; U. Kuhl, O. Legrand, F. Mortessagne, *Université Côte d'Azur, CNRS UMR 7010, France*; E. Richalot, *Universite´ Paris-Est,UPEMLV, ESIEE-Paris, CNAM, France*

14:00 EB26-2 FULL WAVE ANALYSIS OF CHAOTIC REVERBERATION CHAMBERS

L. Bastianelli[1,2], G. Gradoni[2,2], F. Moglie[1], V. Mariani Primiani[1]

[1]Universita` Politecnica delle Marche, Italy; [2]University of Nottingham, United Kingdom

14:20 EB26-3 (Invited) CONNECTIVITY OF NETWORKS IN COMPLEX GEOMETRIES

C. P. Dettmann, *University of Bristol, United Kingdom*

Thursday, August 24, 2017 **13:40-14:40** **510BD**

F28 F-Tutorial Dr. Luca Baldini: Modeling Rain Medium for Weather Radar and Propagation

Session Chair: Simonetta Paloscia

13:40 F28-1 (Invited) MODELING RAIN MEDIUM FOR WEATHER RADAR AND PROPAGATION

L. Baldini, *CNR - Institute of Atmospheric Sciences and Climate, Italy*

Thursday, August 24, 2017 **13:40-14:40** **511BE**

G35 Design and Application of HF and OTH Radar Systems (1)

Session Chairs: Manuel Cervera, J Michael Ruohoniemi, Richard Parris

13:40 G35-1 (Invited) PROGRESS IN MODELING AND SIMULATION OF HF RADAR PROPAGATION

L. J. Nickisch, S. V. Fridman, M. A. Hausman, G. L. Bullock, *NorthWest Research Associates, United States*

14:00 G35-2 OBSERVATIONS AND MODELING OF TRAVELING IONOSPHERIC DISTURBANCE SIGNATURES FROM AN AUSTRALIAN NETWORK OF OBLIQUE ANGLE-OF-ARRIVAL SOUNDERS

A. J. Heitmann[1,2], M. A. Cervera[1,2], R. S. Gardiner-Garden[1], D. A. Holdsworth[1,2], A. D. MacKinnon[2], I. M. Reid[2], B. D. Ward[1,2]

[1]Defence Science and Technology Group, Australia; [2]The University of Adelaide, Australia

14:20 G35-3 AN ADAPTIVE DIRECT VARIATIONAL APPROACH TO PROPAGATION THROUGH TIDS

C. J. Coleman, *The University of Adelaide, Australia*

Thursday, August 24, 2017 **13:40-15:20** **513D**

G36 Ionospheric Space Weather (4)

Session Chairs: Sandro Radicella, Anthea Coster, Patricia Doherty

13:40 G36-1 NOW-CASTING SPACE WEATHER USING CONJUGATE POINT OBSERVATIONS

C. Martinis, M. Mendillo, D. Hickey, J. Baumgardner, J. Wroten, B. Alford, *Boston University, United States*

14:00 G36-2 STRONG CHANGES IN H+ FRACTION AND UPPER TRANSITION HEIGHT INDUCED BY MINOR GEOMAGNETIC STORM OF SEPTEMBER 23-26, 2016

D. V. Kotov[1], P. G. Richards[2], P. J. Erickson[3], L. P. Goncharenko[3], O. V. Bogomaz[1], V. Truhlík[4], M. O. Shulha[1], M. M. Siusiuk[5], I. F. Domnin[1]

[1]Institute of Ionosphere, Ukraine; [2]George Mason University, USA; [3]MIT Haystack Observatory, USA; [4]Institute of Atmospheric Physics, Czech Republic; [5]National Technical University 'Kharkiv Polytechnic Institute', Ukraine

14:20 G36-3 EFFECT OF SOLAR X-RAYS ON IONOSPHERE

D. W. Danskin, *Natural Resources Canada, Canada*

14:40 G36-4 NON-DIFFUSE POLAR TOPSIDE ELECTRON DENSITY PROFILES DURING GEOMAGNETIC STORMS

D. D. Rice, J. J. Sojka, J. V. Eccles, *Space Environment Corporation, United States*; H. G. James, *Natural Resources Canada Geomagnetic Laboratory, Canada*; R. F. Benson, *NASA/Goddard Space Flight Center, United States*

15:00 G36-5 IONOSPHERIC AND ELECTRODYNAMICAL RESPONSE TO THE 22-23 JUNE 2015 MAJOR GEOMAGNETIC STORM

E. Astafyeva[1], I. Zakharenkova[1], K. Watthanasangmechai[2], P. Alken[3], P. Coisson[1]

[1]IPGP, France; [2]NICT, Japan; [3]University of Colorado, USA

Thursday, August 24, 2017 **13:40-14:40** **511CF**

H29 Remote Sensing and Modeling of the Earth's Plasmasphere and Plasmapause (2)

Session Chairs: Anders Jorgensen, Viviane Pierrard, Balazs Heilig

13:40 H29-1 (Invited) IMAGING OF PLASMASPHERE BY CHANG'E 3

H. He[1,2], H. Wang[1,2], C. Shen[3,4], X. Zhang[5], B. Chen[6], J. Yan[1], Y. Zou[1], C. Li[1], A. M. Jorgensen[7], F. He[6], Y. Yan[1,2], X. Zhu[1,2], Y. Huang[4], R. Xu[4]

[1]National Astronomical Observatories, Chinese Academy of Sciences, China; [2]CAS Key Laboratory of Solar Activity, Chinese Academy of Sciences, China; [3]Harbin Institute of Technology Shenzhen Graduate School, China; [4]State Key Laboratory of Space Weather and National Space Science Center, Chinese Academy of Sciences, China; [5]National Center for Space Weather, China Meteorological Administration, China; [6]Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences, China; [7]New Mexico Institute of Mining and Technology, USA

14:00 H29-2 (Invited) IMPROVED WHISTLER INVERSION METHOD FOR MONITORING THE ELECTRON DENSITY IN THE PLASMASPHERE

J. Lichtenberger[1,2], D. Koronczay[2], C. Ferencz[1], P. Steinbach[3], M. Clilverd[4], C. Rodger[5], D. Sannikov[6], N. Cherneva[6]

[1]Eötvös University, Hungary; [2]Research Center for Astronomy ans Space Sciences, Hungary; [3]MTA-ELTE Research Group for Geology, Geophysics and Space Sciences, Budapest; [4]British Antarctic Survey, United Kingdom; [5]University of Otago, New Zealand; [6]Institute of Cosmophysical Research and Radio Wave Propagation, Russia

14:20 H29-3 ANALYSIS OF DUCTED VLF TRANSMITTER IMPULSES OBSERVED IN SPACE

D. Koronczay[1,2], J. Lichtenberger[2,1], L. Juhasz[2]

[1]Geodetic and Geophysical Institute, Hungarian Academy of Sciences, Hungary; [2]Eotvos University, Hungary

---

Thursday, August 24, 2017 **13:40-14:40** **514B**

HJ30 Solar, Planetary, and Heliospheric Radio Emissions (4)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

13:40 HJ30-1 (Invited) LONG WAVELENGTH OBSERVATIONS DURING CASSINI'S GRAND FINALE AT SATURN AND COMPARISONS WITH JUNO OBSERVATIONS AT JUPITER

W. S. Kurth[1], D. A. Gurnett[1], G. B. Hospodarsky[1], S. Y. Ye[1], J. D. Menietti[1], A. M. Persoon[1], A. Sulaiman[1], M. Imai[1], S. Tetrick[1], P. Zarka[2], L. Lamy[2], B. Cecconi[2], C. Louis[2], A. Lecacheux[2], W. M. Farrell[3], G. Fischer[4], J. E. Wahlund[5], M. Morooka[5], S. J. Bolton[6], J. E. P. Connerney[3], S. M. Levin[7]

[1]University of Iowa, United States; [2]Observatoire de Paris, France; [3]NASA/Goddard Space Flight Center, United States; [4]Austrian Academy of Sciences, Austria; [5]IRF-U, Sweden; [6]Southwest Research Institute, United States; [7]Jet Propulsion Laboratory, United States

14:20 HJ30-2 PLANNED MEASUREMENTS OF ELECTROMAGNETIC SIGNALS ON THE SURFACE OF MARS: EXOMARS 2020

O. Santolik[1,2], I. Kolmasova[1,2], A. Skalsky[3]

[1]Institute of Atmospheric Physics of the Czech Academy of Sciences, Czechia; [2]Charles University, Czechia; [3]Institute of Space Research, Russia

---

Thursday, August 24, 2017 **13:40-14:40** **516DE**

J32 Detection of Short-Duration Transients and Pulsars (4)

Session Chairs: Joeri van Leeuwen, Vicky Kaspi, Ben Stappers

13:40 J32-1 DETECTION OF RADIO EMISSION FROM FIREBALLS WITH THE MWA

X. Zhang, P. Hancock, R. B. Wayth, *International Centre for Radio Astronomy Research, Australia*

14:00 J32-2 PULSAR STUDIES WITH SHANGHAI TIAN MA RADIO TELESCOPE

Z. Yan[1,2], Z.-Q. Shen[1,2], Y.-J. Wu[1,2], R.-B. Zhao[1,2], Q.-H. Liu[1,2]

[1]*Shanghai Astronomical Observatory, Chinese Academy of Sciences, China (CIE);* [2]*Key Laboratory of Radio Astronomy, Chinese Academy of Sciences, China (CIE)*

14:20 J32-3 CHARACTERIZING THE HOST GALAXY OF THE REPEATING FAST RADIO BURST FRB 121102

S. P. Tendulkar[1], C. Bassa[2], J. M. Cordes[3], G. C. Bower[4], C. J. Law[5], S. Chatterjee[3], E. A. K. Adams[2], S. Bogdanov[6], S. Burke-Spolaor[7,8,8], B. J. Butler[7], P. Demorest[7], J. W. T. Hessels[2,9], V. M. Kaspi[1], T. J. W. Lazio[10], N. Maddox[2], B. Marcote[11], M. A. McLaughlin[8,8], Z. Paragi[11], S. M. Ransom[7], P. Scholz[12], A. Seymour[13], L. G. Spitler[14], H. J. van Langevelde[11,15], R. S. Wharton[3]

[1]*McGill University, Canada;* [2]*ASTRON, The Netherlands;* [3]*Cornell University, USA;* [4]*Academia Sinica Institute of Astronomy and Astrophysics, USA;* [5]*University of California Berkeley, USA;* [6]*Columbia University, USA;* [7]*National Radio Astronomy Observatory, USA;* [8]*West Virginia University, USA;* [9]*University of Amsterdam, The Netherlands;* [10]*California Insitute of Technology, USA;* [11]*Joint Institute for VLBI ERIC, The Netherlands;* [12]*National Research Council of Canada, Canada;* [13]*Arecibo Observatory, USA;* [14]*Max-Planck-Institut für Radioastronomie, Germany;* [15]*Leiden Observatory, The Netherlands*

Thursday, August 24, 2017 **13:40-14:40** **516AB**

K19 EMF Exposure Assessment and Dosimetry and EMC for WBAN and Implanted Devices (1)

Session Chairs: Jianqing Wang, Ping Jack Soh

13:40 K19-1 POWER TO TEMPERATURE TRANSFER FUNCTION DERIVATION FOR AIMD LOCAL TISSUE HEATING

A. Yao[1,2], E. Zastrow[1], N. Kuster[1,2]

[1]*IT'IS Foundation, Switzerland;* [2]*ETH Zurich, Switerland*

14:00 K19-2 OPTIMIZATION-BASED STRATEGY IN MULTIPLE-CHANNEL MAGNETIC RESONANCE SYSTEMS OPERATING AT 128 MHZ TO REDUCE RADIOFREQUENCY HEATING INDUCED BY ACTIVE IMPLANTABLE MEDICAL DEVICES

J. Córcoles[1], E. Zastrow[2], N. Kuster[2,3]

[1]*Universidad Autónoma de Madrid, Spain;* [2]*IT'IS Foundation, Switzerland;* [3]*Swiss Federal Institute of Technology of Zurich, Switzerland*

14:20 K19-3 AN APPROACH TO IMMUNITY TESTING OF WEARABLE DEVICES SUCH AS MYOELECTRIC ARTIFICIAL ARM

J. Wang, R. Nakaya, K. Sato, D. Anzai, O. Fujiwara, *Nagoya Institute of Technology, Japan*

Thursday, August 24, 2017 **14:40-15:40** **511AD**

A17 Education and Training in Electromagnetic Metrology (2)

Session Chairs: Demetrios Matsakis, Patrizia Tavella, Parameswar Banerjee

14:40 A17-1 EDUCATION IN METROLOGY: THE EXPERIENCE IN INRIM AND POLITECNICO OF TORINO

P. Tavella, *INRIM, Italy*

15:00 A17-2 A WEB PAGE FOR ELECTROMAGNETIC METROLOGY TRAINING RESOURCES

D. Matsakis, *US Naval Observatory, United States*; C. Bunting, *Oklahoma State, United States*; B. Davis, *Virginia Tech, United States*; T. Loh, *National Physical Laboratory, UK, United Kingdom*; A. Motevasselian, *LEAX Arkivator Telecom, Sweden*; P. Tavella, *Istituto Nazionale di Ricerca Metrologica, Italy*; Y. Koyama, *National Institute of Information and Communications Technology, Japan*; C. Wang, *Key Laboratory of Electronic Equipment Structure, China*

15:20 A17-3 INDIAN EFFORT IN SENSITIZING THE IMPORTANCE OF METROLOGY IN SOCIETY AT LARGE

P. Banerjee, *Former Scientist National Physical laboratory, New Delhi India, India*; V. N. Ojha, *Scientist National Physical laboratory, New Delhi India, India*

Thursday, August 24, 2017 **14:40-15:40** **510AC**

B30 Recent Advances in Metamaterials (2)

Session Chairs: Ari Sihvola, Ismo Lindell

14:40 B30-1 BROADBAND, WIDE ANGLE AND POLARIZATION-INDEPENDENT RCS REDUCTION BASED ON RANDOM COMBINATORIAL PHASE GRADIENT METASURFACE

Y. Zhuang, G. Wang, *Air Force Engineering University, China*; Q. Zhang, *South University of Science and Technology of China, China*

15:00 B30-2 (Invited) DESIGN STRATEGIES FOR METAMATERIAL QUADRATURE POWER DIVIDERS IN CP ANTENNAS: ARE TWO CRLH-LOADED LINES NECESSARY?

J. M. Kovitz, Y. Rahmat-Samii, *University of California Los Angeles, USA*

15:20 B30-3 GENERAL SCATTERING CHARACTERISTICS OF RESONANT CORE-SHELL SPHERES

D. C. Tzarouchis, A. Sihvola, *Aalto University, Finland*

Thursday, August 24, 2017 **14:40-15:40** **513A**

C31 Wireless Communications for the Future Transportation Systems (2)

Session Chairs: David Matolak, Ruisi He

14:40 C31-1 BAYESIAN MULTI-ARMED BANDIT FRAMEWORK FOR MULTI-BAND AUCTION BASED DYNAMIC SPECTRUM ACCESS IN MULTI-USER DECENTRALIZED NETWORKS

A. Unnam, *Delhi Technological University, India*; S. J. Darak, *IIIT-Delhi, India*

15:00 C31-2 WEAK GPS L1 BAND SIGNAL TRACKING THROUGH LOW COST DUAL POLARIZATION ANTENNA FOR VEHICULAR COMMUNICATION

J. Yin, R. Tiwari, *Newcastle univerity, UK*; A. Ahmed, *Sukkur IBA, Pakistan*

15:20 C31-3 REAL-TIME NARROW-BAND FREQUENCY-SHIFT KEYING (FSK) RECEIVER

M. Klissarov, L. Zou, C. Caloz, *Polytechnique Montreal, Canada*

Thursday, August 24, 2017 **14:40-15:20** **514A**

C32 Massive MIMO (2)

Session Chair: ian Glover

14:40 C32-1 TRANSMIT ANTENNA SELECTION FOR MASSIVE MIMO SYSTEMS

R. Husbands, *University of Kent, United Kingdom*; Q. Z. Ahmed, F. Khan, P. Lazaridis, I. Glover, *University of Huddersfield, United Kingdom*

15:00 C32-2 (Invited) MASSIVE DIVERSITY FOR 5G AND BEYOND

A. Sibille, *Telecom ParisTech, University Paris-Saclay, France*

Thursday, August 24, 2017 **14:40-15:40** **513B**

DB27 Fibers and Waveguide Optics (2)

Session Chairs: Günter Steinmeyer, Vincenzo Galdi

14:40 DB27-1 EFFECT OF ZERO-NONLINEARITY POINT ON OPTICAL EVENT HORIZON IN DEFOCUSED NONLINEAR MEDIA

S. Bose[1,2], R. Chattopadhyay[3], M. Pal[1], S. K. Bhadra[3]

[1]CSIR-Central Glass and Ceramaic Research Institute, India; [2]Academy of Scientific and Innovative Research, India; [3]Indian Association for the Cultivation of Science, India

15:00 DB27-2 (Invited) PHOTONIC SKIN-DEPTH ENGINEERING FOR TRANSPARENT SUB-DIFFRACTION PHOTONICS

J. Atkinson[1,2], S. Jahani[2], Z. Jacob[2,3]

[1]University of Waterloo, Canada; [2]University of Alberta, Canada; [3]Purdue University, USA

15:20 DB27-3 THERMAL INDUCED DYNAMICS OF GAIN COMPETITION IN YB-DOPED SYMMETRY-FREE PHOTONIC CRYSTAL FIBERS

K. Tragni[1], C. Molardi[1], F. Poli[1], L. Rosa[2], A. Cucinotta[1], S. Selleri[1]

[1]University of Parma, Italy; [2]Swinburne University of Technology, Australia

---

Thursday, August 24, 2017 **14:40-15:20** **513C**

DJ28 Special Session on Gravitational Wave Detection (2)

Session Chairs: Willem Baan, Roman Schnabel, Lisa Borsotti

14:40 DJ28-1 (Invited) SQUEEZED-LIGHT ENHANCEMENT: GEO600 AND PROSPECTS FOR OTHER GRAVITATIONAL WAVE DETECTORS

H. Grote, *MPI for Grav. Physics (AEI) Hannover, Germany*

15:00 DJ28-2 RECENT RESULTS FROM THE NORTH AMERICAN NANOHERTZ OBSERVATORY FOR GRAVITATIONAL WAVES

P. Demorest, *National Radio Astronomy Observatory, United States*

Thursday, August 24, 2017 **14:40-15:20** **513EF**

EB27 Chaos and Complexity (3)

Session Chairs: Gabriele Gradoni, Ari Shivola, Gregor Tanner

14:40 EB27-1 RESONANT BRIGHT AND DARK MODES ON PLASMONIC NANOSCATTERERS: CHARACTERISTIC MODES FOR PLATONIC SOLIDS

D. C. Tzarouchis, P. Ylä-Oijala, A. Sihvola, *Aalto University, Finland*

15:00 EB27-2 (Invited) FUSION OF FIRST-PRINCIPLES AND STATISTICAL ANALYSES IN COMPLEX ELECTRONICS SYSTEMS

S. Lin, Z. Peng, *University of New Mexico, United States*; T. Antonsen, *University of Maryland College Park, United States*

Thursday, August 24, 2017 **14:40-15:40** **510BD**

F29 Commission F Open Session/Discussion

Session Chairs: Simonetta Paloscia, Chandrasekar V Chandra

Thursday, August 24, 2017 **14:40-15:40** **511BE**

G37 Design and Application of HF and OTH Radar Systems (2)

Session Chairs: Manuel Cervera, J Michael Ruohoniemi, Richard Parris

14:40 G37-1 DIRECTION OF WAVES PROPAGATING FROM GROUND RADIO TRANSMITTERS DETECTED BY THE ORBITING E-POP RADIO RECEIVER INSTRUMENT

H. G. James, *Retired, Canada*; T. B. Leyser, *Swedish Institute of Space Physics, Sweden*

15:00 G37-2 (Invited) DEVELOPMENT OF SUPERDARN RADARS TO ENABLE STUDIES OF WAVE POLARIZATION

W. A. Bristow, T. E. Theurer, J. Klein, M. Guski, *University of Alaska Fairbanks, United States*

15:20 G37-3 THE IMPORTANCE OF ELEVATION ANGLE MEASUREMENTS IN HF RADAR INVESTIGATIONS OF THE IONOSPHERE

R. A. Greenwald, *Virginia Tech, United States*; N. Frissell, *New Jersey Inst. Tech, United States*; S. de Larquier, *Netflix, United States*

Thursday, August 24, 2017 **14:40-15:40** **511CF**

H31 Remote Sensing and Modeling of the Earth's Plasmasphere and Plasmapause (3)

Session Chairs: Anders Jorgensen, Viviane Pierrard, Balazs Heilig

14:40 H31-1 (Invited) AN ANALYSIS OF PLASMA MASS DENSITY MEASUREMENTS IN THE INNER MAGNETOSPHERE INFERRED BY FIELD LINE RESONANCE FREQUENCIES DETECTED AT THE EUROPEAN MAGNETOMETER NETWORK EMMA

M. Vellante[1], A. Del Corpo[1], B. Heilig[2], J. Reda[3], E. Pietropaolo[1], A. M. Jorgensen[4], J. Lichtenberger[5]

[1]University of L'Aquila, Italy; [2]Geological and Geophysical Institute of Hungary, Hungary; [3]Institute of Geophysics Polish Academy of Sciences, Poland; [4]New Mexico Institute of Mining and Technology, United States; [5]Eötvös University, Hungary

15:00 H31-2 (Invited) PLASMASPHERE MODELING WITH THE SHIELDS FRAMEWORK

V. K. Jordanova, C. A. Jeffery, *Los Alamos National Laboratory, United States*; M. H. Denton, *Space Science Institute, United States*

15:20 H31-3 ASSIMILATION OF GROUND-BASED OBSERVATIONS INTO A PLASMASPHERE MODEL

A. M. Jorgensen, *New Mexico Tech, United States*; J. Lichtenberger, *Eoetvoes University, Hungary*; B. Heilig, *Geological and Geophysical Institute of Hungary, Hungary*; M. Vellante, *University of L'Aquila, Italy*; P. J. Chi, *University of California, United States*

Thursday, August 24, 2017 **14:40-15:20** **514B**

HJ32 Solar, Planetary, and Heliospheric Radio Emissions (5)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

14:40 HJ32-1 JUPITER FINE RADIO SPECTRAL STRUCTURES OBSERVED IN DAM.

M. Panchenko, *Space Research Institute, Austrian Academy of Sciences, Austria*; H. O. Rucker, J. Schiemel, S. Rošker, *Commission for Astronomy, Austrian Academy of Sciences, Austria*; A. I. Brazhenko, *Institute of Geophysics, Gravimetric Observatory, Ukraine*; A. A. Konovalenko, *Institute of Radio Astronomy, Ukraine*

15:00 HJ32-2 SATURN'S NEW MAGNETIC FIELD MODEL FROM CASSINI RADIO OBSERVATIONS AND MAGNETOMETERS MEASUREMENTS

P. H. M. Galopeau, *LATMOS-CNRS, France*

Thursday, August 24, 2017 **14:40-15:40** **516DE**

J33 Detection of Short-Duration Transients and Pulsars (5)

Session Chairs: Joeri van Leeuwen, Vicky Kaspi, Ben Stappers

14:40 J33-1 THE PALFA PIPELINE AND SENSITIVITY TO SINGLE PULSES.

C. Patel, *McGill University, Canada*

15:00 J33-2 CHIME FRB: AN APPLICATION OF FFT BEAMFORMING FOR A RADIO TELESCOPE

C. Ng[1], K. Vanderlinde[2,2], A. Paradise[2], P. Klages[2], K. Masui[1], K. Smith[3], K. Bandura[4,4], P. J. Boyle[5], M. Dobbs[5,6], V. Kaspi[5,6], A. Renard[2], J. R. Shaw[1], I. Stairs[1,6], I. Tretyakov[2]

[1]*University of British Columbia, Canada;* [2]*University of Toronto, Canada;* [3]*Perimeter Institute for Theoretical Physics, Canada;* [4]*West Virginia University, USA;* [5]*McGill University, Canada;* [6]*Canadian Institute for Advanced Research, Canada*

15:20 J33-3 REAL-TIME SEARCHES FOR FAST TRANSIENTS WITH APERTIF AND LOFAR

Y. Maan[1], J. van Leeuwen[1,2]

[1]*ASTRON, Netherlands Institute for Radio Astronomy, The Netherlands;* [2]*Astronomical Institute Anton Pannekoek, University of Amsterdam, The Netherlands*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

A16P POSTERS - Education and Training in Electromagnetic Metrology

Session Chairs: Demetrios Matsakis, Patrizia Tavella, Parameswar Banerjee

A16P-1 TRAINING ACTIVITIES OF NICT FOR TIME AND FREQUENCY METROLOGY IN THE REGION OF ASIA PACIFIC

Y. Koyama, H. Nezu, *NICT, Japan*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

A18P POSTERS - Microwave Frequency Standards and Applications

Session Chairs: Amitava Sen Gupta, Fang Fang

A18P-1 IMPROVEMENT OF H-MASER PERFORMANCE DUE TO INCREASE OF POWER RADIATED BY ATOMIC BEAM

M. Aleynikov, A. Boyko, I. Blinov, Y. Domnin, *FGUP VNIIFTRI, Russian Federation*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

B22P POSTERS - Advanced Antenna Concepts

Session Chairs: Yahia Antar, Sembiam Rengarajan

B22P-1 NEW PHYSICAL INSIGHT INTO UNDERSTANDING AND CONTROLLING CROSS-POLAR RADIATIONS OF A PROBE-FED MICROSTRIP PATCH

C. Sarkar, D. Guha, *University of Calcutta, India*; C. Kumar, *Indian Space Research Organisation, India*; Y. M. M. Antar, *Royal Military of Canada, Canada*

B22P-2 CONFORMAL AXIAL-DIRECTION PIFA ON A SMALL CYLINDER

R. Zabihi, R. G. Vaughan, *Simon Fraser University, Canada*

B22P-3 APERTURE FIELD TRANSFORMATION IN RESONANT CAVITY ANTENNAS BY TRANSVERSE PERMITTIVITY GRADIENT SUPERSTRATES

R. M. Hashmi, K. P. Esselle, *Macquarie University, Australia*

B22P-4 MAGNETIC CURRENT SYNTHESIS USING CAVITY STRUCTURES

Y. Li, Z. Zhang, Z. Feng, *Tsinghua University, China (CIE)*

B22P-5 SUBSTRATE INTEGRATED HORN ANTENNAS WITH IMPROVED APERTURE EFFICIENCY

N. Bayat-Makou, A. A. Kishk, *Concordia University, Quebec*

B22P-6 WIDE-BAND CIRCULARLY POLARIZED CAVITY BACKED CROSSED DIPOLE ANTENNA

K. Saurav, D. Sarkar, K. V. Srivastava, *Indian Institute of Technology, Kanpur, India*

B22P-7 GEOMETRY PERTURBATION OF DIELECTRIC RESONATOR FOR SAME FREQUENCY OPERATION AS RADIATOR AND FILTER

T. T. Pramiti, M. A. Moharram, A. A. Kishk, *Concordia University, Canada*

B22P-8 TRUNCATION OF NEAR- AND FAR-FIELDS IN DIRECTIVITY ESTIMATION

M. Razmhosseini, R. G. Vaughan, *Simon Fraser University, Canada*

B22P-9 MEASUREMENT, SIMULATION AND OPTIMIZATION OF WIDEBAND LOG-PERIODIC ANTENNAS

K. K. Mistry, P. I. Lazaridis, I. A. Glover, V. Holmes, F. Khan, Q. Ahmed, *University of Huddersfield, United Kingdom*; Z. D. Zaharis, T. D. Xenos, *Aristotle University of Thessaloniki, Greece*

B22P-10 SUM AND DIFFERENCE BEAM PATTERNS IN RESONANT SLOTTED-WAVEGUIDE ARRAY

Y. Chen, R. G. Vaughan, *Simon Fraser University, Canada*

B22P-11 DIRECTIVITY AND BANDWIDTH OF A DUAL-SIDED SLOTTED WAVEGUIDE ARRAY

M. Razmhosseini, R. G. Vaughan, *Simon Fraser University, Canada*

B22P-12 TIME DOMAIN RESPONSE OF TRANSMITTING AND RECEIVING UWB CIRCULAR DISC MONOPOLE ANTENNA

J. Y. Siddiqui, N. Bhattacharyya, *University of Calcutta, India*; Y. M. M. Antar, *Royal Military College of Canada, Canada*

B22P-13 AN ADVANCED DESIGN METHOD FOR TSA ELEMENTS

C.-L. Li, M.-W. Chen, C.-S. Lin, *Tamkang University, China (SRS)*

B22P-14 ANALYSIS OF DIMENSIONAL INVARIANCE IN U-SLOT MICROSTRIP PATCH VIA SEGMENTATION METHOD

M. Khan, D. Chatterjee, *University of Missouri Kansas City, United States*

B22P-15 SMALL BROADBAND PATCH ANTENNA DESIGN FOR L-BAND APPLICATIONS

M. Latrach, *ESEO-IETR, France*; S. Islam, *ESEO, France*

B22P-16 PANELED CENTER-FED REFLECTARRAY FOR BANDWIDTH ENHANCEMENT

M. M. Tahseen, A. A. Kishk, *Concordia University, Canada*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

B23P POSTERS - Novel Mathematical Methods in Electromagnetics

Session Chairs: Kazuya Kobayashi, Yury Shestopalov

B23P-1 NOVEL CAD MODELS OF PROPAGATION CHARACTERISTICS FOR NON-PLANAR CPS

P. Majumdar, *University of Delhi South Campus, India*

B23P-2 NEAR-FIELD GAIN MEASUREMENTS: SINGLE-PROBE DISTANCE AVERAGING IN A MULTIPATH SITE VERSUS MULTI-PROBE FIELD SCANNING INSIDE AN ANECHOIC CHAMBER

L. Anchidin, F. Bari, R. Tamas, *Constanta Maritime University, Romania*; L. Pometcu, A. Sharaiha, *University of Rennes 1, France*

B23P-3 PLANE WAVE DIFFRACTION BY A THIN MATERIAL STRIP: THE CASE OF E POLARIZATION

T. Nagasaka, K. Kobayashi, *Chuo University, Japan*

B23P-4 THE ACGF-SEM APPROACH TO ELECTROMAGNETIC RADIATION WITH APPLICATIONS IN RADAR AND INVERSE MODELING

A. M. Alzahed[1], S. M. Mikki[2], Y. M. M. Antar[1], M. Clénet[3], S. Jovic[3]

[1]Royal Military College of Canada, Canada; [2]University of New Haven, USA; [3]Defense Research and Development Canada, Canada

B23P-5 COOPERATIVE SPECTRUM SENSING BY COMBINING P VALUES IN COGNITIVE RADIO NETWORK

J. Y. Siddiqui, *University of Calcutta, India*; S. Bagchi, *RCC Institute of Information Technology, India*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

B29P POSTERS - Recent Advances in Metamaterials

Session Chairs: Ari Sihvola, Ismo Lindell

B29P-1 OPTIMAL PLASMONIC RESONANCES FOR SMALL ARBITRARILY SHAPED PARTICLES IN LOSSY MEDIA

M. Dalarsson, S. Nordebo, *Linnaeus University, Sweden*; D. Sjöberg, *Lund University, Sweden*

B29P-2 TRANSISTOR-LOADED ISOLATOR BASED ON BOTH FRUSTRATED PROPAGATION AND FIELD CANCELLATION MECHANISMS

Y. Yokohama, T. Kodera, *Meisei University, Japan*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

B31P POSTERS - Scattering and Diffraction

Session Chairs: Ludger Klinkenbusch, Giuliano Manara

B31P-1 SCATTERING BY A COATED CYLINDER TRUNCATED BY A METAL PLANE

P. L. E. Uslenghi, M. D. Poort, *University of Illinois at Chicago, United States*

B31P-2 STUDY ON SCATTERING PROPERTIES BETWEEN SLIGHTLY ROUGH WAFER AND MULTI-BODY DEFECTS PARTICLES

G. Lei, *Xi'an Technological University, China*; W. Zhensen, G. Chengxian, *Xidian University, China*

B31P-3 SCATTERING OF AN EVANESCENT WAVE FROM THE END-FACE OF AN ORDERED WAVEGUIDE SYSTEM

A. Komiyama, *Osaka Electro-Communication University, Japan*

B31P-4 ENHANCEMENT OF MICROWAVE ABSORPTION PROPERTIES OF SOFT –SKIN RADAR ABSORBING MATERIALS

A. Teber[1], R. Bansal[1], K. Cil[1], T. Yilmaz[1], B. Eraslan[2], D. Uysal[2], G. Surucu[3], A. Baykal[2]

[1]University of Connecticut, United States; [2]Gebze Technical University, Turkey; [3]Gazi University, Turkey

B31P-5 REFLECTION AND TRANSMISSION OF SHAPED VORTEX BEAMS FROM MULTILAYERED MEDIA

H. Li[1,2], Z. Wu[1], F. Honary[2], L. Bai[1], Q. Shang[1], G. Zhang[1]

[1]Xidian University, China; [2]Lancaster University, U.K.

B31P-6 WIDEBAND RCS SUPPRESSION BASED ON FSS STRUCTURES FOR MILLIMETER APPLICATIONS

F. Samadi[1], M. Akbari[1], M. Chaharmir[2], A. Sebak[1]

[1]Concordia university, Canada; [2]Communications Research Centre, Canada

B31P-7 ANALYSIS OF THE UNIFORM THEORY OF DIFFRACTION (UTD) FORMULATION IN THE HIGH FREQUENCY PLANAR LIMIT

W. B. Larsen, *Honeywell Federal and Manufacturing & Technologies, United States*; D. Chatterjee, *University of Missouri at Kansas City, United States*

B31P-8 OVERVIEW OF CONVERGENCE AND ACCURACY PROPERTIES OF ITERATIVE PHYSICAL OPTICS.

S. C. Pavone[1], L. Pandolfo[2], M. Bercigli[2], M. Albani[1]

[1]University of Siena, Italy; [2]Ingegneria dei Sistemi S.p.A., Pisa, Italy, Italy

B31P-9 ELECTROMAGNETIC RESONANCE THROUGH NARROW SLOTS IN A TRANSMISSION CAVITY IN A THICK CONDUCTING SCREENS

J. G. Yoo, Y. K. Cho, *Kyungpook National University, South Korea*; S. H. Lee, *Agency for Defense Development, South Korea*

B31P-10 SCATTERING BEHAVIOR OF AMC CHESSBOARD FOR RCS REDUCTION APPLICATION

F. Samadi[1], M. Akbari[1], M. Chaharmir[2], A. Sebak[1]

[1]Concordia university, Canada; [2]Communication Research Centre, Canada

B31P-11 MULTI-OBJECTIVE ANALYSIS OF MULTI-LAYERED CORE-SHELL NANOPARTICLES

S. D. Campbell, J. Nagar, P. L. Werner, D. H. Werner, *The Pennsylvania State University, USA*

B31P-12 HIGH FREQUENCY PLANE WAVE SCATTERING ANALYSIS FROM DIELECTRIC CUBOIDS – TM POLARIZATION –

H. N. Quang, H. Shirai, *Chuo University, Japan*

B31P-13 SCATTERING PROPERTIES OF A FINITE ARRAY OF MAGNETIZED PLASMA CYLINDERS AT THE SURFACE PLASMON RESONANCES

A. V. Ivoninsky, A. V. Kudrin, V. A. Es'kin, *University of Nizhny Novgorod, Russian Federation*

B31P-14 ELECTROMAGNETIC SCATTERING BY SEVERAL 2-D RED BLOOD CELL MODELS

P. Goktas[1], I. O. Sukharevsky[2], A. Altintas[1]

[1]Bilkent University, Turkey; [2]Technical University of Munich, Germany

Thursday, August 24, 2017 **16:00-19:00** **517AB**

B33P POSTERS - Small Antennas from Nano to Macro Scales

Session Chairs: Richard Ziolkowski, Samel Arslanagic

B33P-1 ON-CHIP MICROSTRIP PATCH REFLECTARRAY

S. Abd Elhamied, *Faculty of Electronic Eng., Menoufia University, Egypt, Egypt*; H. A. Malhat, S. H. Zainud-Deen, *Faculty of Electronic Engeering- Menoufia University, Egypt*

B33P-2 V-BAND LINEAR TAPERED SLOT ANTENNA ARRAY USING GLASS-BASED INTEGRATED PASSIVE DEVICE TECHNOLOGY

Y.-Z. Lee, Y.-S. Lin, *National Central University, China (SRS)*

B33P-3 DUAL-BAND MONOPOLE ANTENNA AND CONDITIONING CIRCUIT FOR WIRELESS ENERGY HARVESTING

C. Liu, S. Zhou, J. Zhang, Z. Wu, *Wuhan University of Technology, China (CIE)*; K. Yang, *Xiangtan Electric Manufacturing Group Co., Ltd, China (CIE)*; J. Wu, *Huazhong Institude of Electro-Optics, China (CIE)*

B33P-4 DESIGN OF A WIDEBAND SUPERDIRECTIVE ENDFIRE ANTENNA ARRAY USING CHARACTERISTIC MODES OPTIMIZATION

H. Jaafar, A. Sharaiha, S. Collardey, *Université de Rennes 1/ IETR, France*

B33P-5 STORED ENERGY IN DISPERSIVE AND PIECEWISE HOMOGENOUS MEDIA

C. Ehrenborg, M. Gustafsson, *Lund University, Sweden*

B33P-6 GOING BEYOND CHU HARRINGTON LIMIT: ULF RADIATION WITH A SPINNING MAGNET ARRAY

S. P. Mysore Nagaraja, Y. Huang, Y. E. Wang, *University of Caifornia, Los Angeles, United States*

B33P-7 A MONOPOLE ANTENNA WITH NOTCH-FREQUENCY FUNCTION FOR UWB APPLICATION

M. Dashti Ardakani, J. Pourahmadazar, S. O. Tatu, *Institut National de la Recherche Scientifique (INRS), Canada*

B33P-8 EFFECTS OF SPLIT RING ARRANGEMENT AND SLIT LOCATION ON THE MINIATURIZATION PERFORMANCE OF SPLIT RING LOADED DIELECTRIC RESONATOR ANTENNAS

Y. Liu, L. Shafai, C. Shafai, *University of Manitoba, Canada*

B33P-9 SIMPLE HIGH IMPEDANCE SURFACE FOR ENHANCED RADIATION FROM LOW PROFILE ANTENNAS OVER SURFACES WITH FINITE CONDUCTIVITY

P. Hansen, *Peder Hansen Consultant, United States*; A. Rodriguez, *Naval Post Graduate School, United States*

B33P-10 SIZE REDUCTION AND BANDWIDTH ENHANCEMENT OF APERTURE COUPLED BASED MICROSTRIP ANTENNA BY USING MEANDER LINE SLOT

P. H. Mukti, H. Schreiber, H. Paulitsch, A. Gruber, W. Bosch, *Graz University of Technology, Austria*

B33P-11 **V-BAND DIPOLE PHASED ARRAY ANTENNAS ON EXTENDED HEMISPHERICAL DIELECTRIC LENSES**

J. Pourahmadazar, M. Dashti Ardakani, S. O. Tatu, T. A. Denidni, *Institut National de la Recherche Scientifique (INRS), Canada*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

B35P POSTERS - High-Resolution Electromagnetic Sensing and Imaging

Session Chair: Natalia Nikolova

B35P-1 **ADVANCED MULTIPLE INPUT MULTIPLE OUTPUT (MIMO) SAR ALGORITHM FOR HIGH-RESOLUTION 3D RECONSTRUCTION IMAGING**

X. Wu, *Tongji University, China (CIE)*

B35P-2 **STUDY OF SCANNING SCHEMES FOR THZ HOLOGRAPHIC IMAGING**

M. Zhou, Y. Alfadhl, X. Chen, *Queen Mary, University of London, United Kingdom*

B35P-3 **MUSIC LOCALIZATION OF RADIO-FREQUENCY SOURCES USING FIELD DISTRIBUTIONS MEASURED BY METASURFACE ABSORBER**

N. Tonooka, R. Kanaura, S. Yagitani, T. Imachi, M. Ozaki, *KanazawaUniversity, Japan*; Y. Yoshimura, H. Sugiura, *Industrial Research Institute of Ishikawa, Japan*

B35P-4 **MULTIPLE TARGET IMAGING USING A SINGLE MONOSTATIC ULTRA-WIDEBAND DOPPLER RADAR BASED ON TIME DOMAIN ADAPTIVE SIGNAL PROCESSING**

S. Okumura[1], A. Ueshina[1], T. Sakamoto[1,2], T. Sato[1]

[1]Kyoto University, Japan; [2]University of Hyogo, Japan

Thursday, August 24, 2017 **16:00-19:00** **517AB**

BD36P POSTERS - Advances in Antennas for RFID

Session Chair: Smail Tedjini

BD36P-1 **DESIGN OF ELECTRICALLY SMALL 3D WIRE ANTENNAS FOR UHF RFID APPLICATIONS USING GENETIC ALGORITHM**

F. Benmahmoud, P. Lemaitre Auger, S. Tedjini, *Grenoble Alpes University, France*

BD36P-2 **ANTENNA DESIGN FOR COMPACT RFID SENSORS DEDICATED TO METALLIC ENVIRONMENTS**

K. Zannas[1], H. El Matbouly[1], Y. Duroc[2], S. Tedjini[1]

[1]Grenoble-Alpes University, France; [2]University of Lyon, France

BD36P-3 **CHIPLESS TAG PRINTED WITH COMMON OFF THE SHELF INKJET PRINTER AND AIR DRY CONDUCTIVE INK**

E. Perret, *University of Grenoble Alpes - LCIS, France*; Y. Hebrard, *SKF Aerospace, France*; P.-J. Cottinet, *INSA-LYON - LGEF, France*

BD36P-4 **COMPACT AND SMALL SIZE ANTENNA FOR AN UHF RFID TAG PLACED OVER A METALLIC THING**

T. Andriamiharivolamena, S. Tedjini, *Grenoble - INP - LCIS, France*

BD36P-5 **EXPLOITING 3D-PRINTING IN PASSIVE UHF RFID ELECTROMAGNETIC PROJECTS**

L. Catarinucci, R. Colella, L. Tarricone, *University of Salento, Italy*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

C25P POSTERS - Radio Signal Processing and Radar Systems

Session Chairs: Shilong Pan, Daiyin Zhu

C25P-1 **MICRO-DOPPLER SIGNATURE OF ROTATING TARGETS IN SAR-GMTI SYSTEM USING CSI TECHNIQUE**

X. Wu, S. Salous, *Durham University, Durham*

C25P-2 **TUNABLE C-SECTION PHASER FOR DYNAMIC ANALOG SIGNAL PROCESSING**

X. Wang, L. Zou, C. Caloz, *Polytechnique Montreal, Canada*

C25P-3 **COOPERATIVE GAME-THEORETIC POWER ALLOCATION ALGORITHM FOR TARGET DETECTION IN RADAR NETWORK**

C. Shi[1], S. Salous[2], J. Zhou[1], F. Wang[1]

[1]Nanjing University of Aeronautics and Astronautics, United Kingdom; [2]University of Durham, United Kingdom

C25P-4 **HIGH RESOLUTION EXTRACTION OF RADAR MICRO-DOPPLER SIGNATURE USING SPARSE TIME-FREQUENCY DISTRIBUTION**

X. L. Chen, J. Guan, Y. He, *Naval Aeronautical and Astronautical University, China (CIE)*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

C29P POSTERS - Wireless Communications for the Future Transportation Systems

Session Chairs: David Matolak, Ruisi He

C29P-1 **PATH LOSS CHARACTERISTICS FOR VEHICLE-TO-INFRASTRUCTURE CHANNEL IN URBAN AND SUBURBAN SCENARIOS AT 5.9 GHZ**

M. Yang, B. Ai, R. He, D. Yao, J. Li, B. Zhang, Q. Wang, D. Fei, M. Ni, *Beijing Jiaotong University, China (CIE)*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

C33P POSTERS - 5G Small Cell Networks

Session Chairs: Jie Zhang, Andres Glazunov, Xiaoli Chu

C33P-1 **Q-LEARNING BASED WI-FI DIRECT GROUPING ALGORITHM CONSIDERING OPTICAL BACKHAUL**

W. Lim, *Kumoh National Institute of Technology, South Korea*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

C37P POSTERS - Commission C Open Session

Session Chairs: Sana Salous, Amir Zaghloul

C37P-1 MILLIMETER WAVE SPREAD IN DELAY AND AZIMUTH FOR SMALL CELL PROPAGATION CHANNEL AT 60 GHZ

M. Ghoraishi, *University of Surrey, United Kingdom*; S. Salous, *Durham University, United Kingdom*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

C99P POSTERS - Application of Machine Learning in Radio Communications

C99P-1 A TWO-CYLINDER BASED POLARIZED MIMO CHANNEL MODEL

R. He[1], G. L. Stüber[2], B. Ai[1], Z. Zhong[1]

[1]Beijing Jiaotong University, China (CIE); [2]Georgia Institute of Technology, USA

Thursday, August 24, 2017 **16:00-19:00** **517AB**

D34P POSTERS - Commission D Open Session: Recent Advances in Electronics and Photonics

Session Chairs: Günter Steinmeyer, Apostolos Georgiadis

D34P-1 LINEARITY CHARACTERIZATION OF RF-INPUT CHIREIX OUTPHASING POWER AMPLIFIER

H. Q. Nguyen, T. W. Barton, *University of Colorado Boulder, United States*

D34P-2 FULLY PASSIVE CONDUCTIVE-BRIDGING SOLID STATE RF SWITCH

J. Methapettyparambu Purushothama[1], A. Vena[2], B. Sorli[2], E. Perret[1,3]

[1]Université Grenoble Alpes - LCIS, France; [2]Université de Montpellier 2, France; [3]Institut Universitaire de France, France

D34P-3 TIME-DOMAIN WAVEFORM CHARACTERIZATION OF A 100 GHZ ULTRAFAST PHOTODETECTOR BASED ON ASYNCHRONOUS ELECTRO-OPTIC SAMPLING

P. Gong, C. Yang, W. Xie, B. Chen, H. Ma, H. Jiang, Y. Chen, *Beijing Institute of Radio Metrology and Measurement, China (CIE)*; S. Wen, *Beijing Institute of Radio Measurement, China (CIE)*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

E23P POSTERS - EMC in Wired and Wireless Systems

Session Chairs: Jacob Gavan, Frank Gronwald

E23P-1 2D MODELING OF BULK CURRENT INJECTION PROBE AND VALIDATION WITH MEASUREMENTS

M. S. Diop, E. Clavel, *G2ELab, France*; H. Cheaito, C. Vollaire, *Ampère, France*; E. Vialardi, *Altair, France*

E23P-2 STUDY OF THE IMPACTION BY LIGHTNING STRIKE ON COMMUNICATION CABLE BASED ON TIME-DOMAIN FINITE ELEMENT METHOD

H. Ma, W. Zhang, X. Liu, *North China Electric Power University, China (CIE)*

E23P-3 THE ACCELERATION OF THE SHOOTING AND BOUNCING RAY TRACING METHOD ON GPUS

D. Shi, *Beijing University of Posts and Telecommunications, China (CIE)*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

E99P POSTERS - Solar Power Satellites

Session Chairs: Motti Haridim, Jacob Gavan

E99P-1 LONG DISTANCE WIRELESS POWER TRANSMISSION: AN OLD IDEA COMING OF AGE

J. Gavan, A. Tsaliovith,, M. Haridim, *HIT-Holon Institute of Technology, Israel*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

EFGH28P POSTERS - Natural Electromagnetic Noise and Radio Sensing Applications in Terrestrial and Planetary Environments

Session Chairs: Yasuhide Hobara, Colin Price, Tomoo Ushio, Martin Fullekrug

EFGH28P-2 3D BATTLE-FIELD RADAR DETECTION RANGE MODULARITY METHOD RESEARCH

Y. Gao, Z. Wang, S. Guo, F. Ge, *Northwestern Polytechnical University, P.R.China*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

F34P POSTERS - Outdoor Propagation and Channel Modeling in Built-Up Areas, with Special Interest in the Effects of Vegetation

Session Chairs: Robert Bultitude, Saul Torrico

F34P-1 ANALYSIS OF PROPAGATION IN BOTH BOTTOM- AND SIDE-WALL ENVIRONMENT

S. Oh, J.-W. Choi, H.-C. Lee, *Chosun University, South Korea*; Y.-C. Lee, *Mokpo National Maritime University, South Korea*; D. Choi, S. W. Park, *Radio Research Agency, South Korea*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G29P POSTERS - GNSS Applications in Radio Science

Session Chairs: Matthew Angling, Seebany Datta-Barua

G29P-1 STUDIES ON RELATIVE PERFORMANCE OF DIFFERENT SATELLITE-BASED NAVIGATION SYSTEMS DURING ADVERSE IONOSPHERIC CONDITIONS FROM EQUATORIAL IONIZATION ANOMALY CREST LOCATION

A. Paul, S. Goswami, *University of Calcutta, India*

G29P-2 COMPARISON OF GLOBAL TEC BETWEEN IRI TEC AND GPS TEC IN THE SPRING OF 2006

X. Wang[1], Q. Wan[1], T. Maruyama[1,2], G. Ma[1], J. Li[1], J. Fan[1]

[1]National Astronomical Observatories, Chinese Academy of Sciences, China; [2]Space Environment Group, National Institute of Information and Communications Technology, Japan

G29P-3 TEC STORM ON 13 OCTOBER 2016 AT 40ON LATITUDE DERIVED FROM GPS RECEIVERS

Q. Wan, G. Ma, T. Maruyama, J. Li, X. Wang, J. Fan, *National Astronomical Observatories, Chinese Academy of Sciences, China*

G29P-4 USE OF GNSS SIGNALS FOR PLASMASPHERIC REMOTE SENSING

Y. Hao[1], J. Huang[1], W. Liu[2], D. Zhang[1], Z. Xiao[1]

[1]Peking University, China (CIE); [2]Beihang University, China (CIE)

G29P-6 DETERMINATION OF GNSS INSTRUMENTAL BIASES FOR TOTAL ELECTRON CONTENT STUDY USING ISOLATED SINGLE RECEIVER

T. Maruyama, *National Institute of Information and Communications Technology, Japan*; G. Ma, *National Astronomical Observatories, China*

G29P-8 THE IONOSPHERE PREDICTION SERVICE PROJECT

C. Cesaroni[1], F. Rodriguez[2], G. De Franceschi[1], M. Aquino[3], F. Berrilli[4], M. Hutchinson[5], G. L. Gopalakrishnan[6], S. Veettil[3], L. Spogli[1], V. Romano[1], R. Ronchini[2], S. Di Rollo[2], D. Del Moro[4]

[1]Istituto Nazionale di Geofisica e Vulcanologia, Italy; [2]TELESPAZIO, Italy; [3]University of Nottingham, UK; [4]University of Tor Vergata, italy; [5]Nottingham Scientific Limited, UK; [6]TELESPAZIO VEGA, DE

G29P-9 STUDY OF RELATIVE SIGNAL CHARACTERISTICS OF NAVIC AND GNSS FROM A ANOMALY CREST LOCATION

P. Banerjee, *Amity University, India*; S. Goswami, A. Paul, *University of Calcutta, India*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G30P POSTERS - Ionospheric Space Weather

Session Chairs: Anthea Coster, Sandro Radicella

G30P-1 HEMISPHERIC ASYMMETRIES IN THE IONOSPHERIC RESPONSE TO ST. PATRICK'S DAY STORM EVENT 2015 AND THE GLOBAL NUMERICAL MODELING EFFORTS

M. Foerster[1], B. Prokhorov[1], E. Astafyeva[2], E. Doornbos[3], I. Zakharenkova[2]

[1]GFZ German Research Centre for Geosciences, Helmholtz Centre Potsdam, Germany; [2]Institut de Physique du Globe de Paris, France; [3]Delft University of Technology, The Netherlands

G30P-2 IONOSPHERIC EFFECTS NEAR THE EIA CREST UNDER EXTREME SPACE WEATHER CONDITIONS

D. Jana, S. Pal, *University of Calcutta, India*; S. K. Chakraborty, *Maharaja Srischandra College, India*

G30P-3 REAL-TIME SIMULATION OF HF SIGNAL COVERAGE IN THE POLAR REGIONS

N. C. Rogers, F. Honary, *Lancaster University, United Kingdom*; M. Warrington, *University of Leicester, United Kingdom*

G30P-4 ESTIMATES OF IONOSPHERE STATE OVER MEXICO WITH TEC DATA

M. A. Sergeeva[1,2], O. A. Maltseva[3], J. A. Gonzalez-Esparza[1], V. De la Luz[1,2], P. Corona-Romero[1,2]

[1]Institute of Geophysics, Unidad Michoacan, Universidad Nacional Autonoma de Mexico, Mexico; [2]Instituto de Geofisica, Unidad Michoacan, Universidad Nacional Autonoma de Mexico, Mexico; [3]Institute for Physics, Southern Federal University, Russia

G30P-5 CHARACTERIZATION OF SHORTWAVE FADEOUT (SWF) SEEN IN DAYTIME SUPERDARN GROUND-SCATTER

S. Chakraborty, J. Ruohoniemi, J. Baker, *Virginia Tech, United States*

G30P-6 SIGNATURES OF MODERATE (M-CLASS) AND EXTREME (X-CLASS) SOLAR ARES ON IONOSPHERIC SCINTILLATION AND TEC AT AN EQUATORIAL LATITUDE

J. B. Ackah, O. K. Obrou, Z. K. Zaka, M. N. Mene, *Université FHB, Cote d'Ivoire*; K. Groves, *Institute for Scientific Research, USA*

G30P-7 EMPIRICAL MODELLING AND PREDICTION OF AURORAL ABSORPTION DURING INTERPLANETARY CORONAL MASS EJECTION (ICME) EVENTS.

O. Ogunmodimu[1], F. Honary[2], N. Rogers[2], I. G. Richardson[3,4]

[1]National Space Research and Development Agency, Nigeria, Nigeria; [2]Lancaster University, United Kingdom, United Kingdom; [3]NASA, USA; [4]University of Maryland, USA

G30P-8 A NEW MODEL FOR FORECASTING THE SUB-AURORAL POLARIZATION STREAM (SAPS)

B. S. R. Kunduri, J. M. Ruohoniemi, J. B. H. Baker, *Virginia Tech, United States*; E. G. Thomas, S. G. Shepherd, *Dartmouth College, United States*

G30P-9 MODELLING THE SPATIAL-TEMPORAL VARIABILITY OF THE IONOSPHERE OVER TURKEY USING A GPS NETWORK

S. D. Yenen, U. Sezen, F. Arikan, *Hacettepe University, Turkey*

G30P-10 A NEURAL NETWORK BASED FOF2 MODEL FOR A SINGLE STATION IN THE POLAR CAP

R. Athieno, P. T. Jayachandran, D. Themens, *University of New Brunswick, Canada*

G30P-11 MODELING WEATHER IN THE IONOSPHERE USING THE NAVY'S HIGHLY INTEGRATED THERMOSPHERE AND IONOSPHERE DEMONSTRATION SYSTEM (NAVY-HITIDES)

S. E. McDonald, F. Sassi, K. Zawdie, J. McCormack, C. Coker, *Naval Research Laboratory, United States*

G30P-12 TEC BASED PHASE JITTER FOR GNSS RECEIVERS TO MITIGATE IONOSPHERIC THREAT

R. Tiwari, *Newcastle University, United Kingdom*

G30P-13 SUPERDARN SOLAR FLARE DETECTION

M. A. Hill, E. G. Thomas, S. G. Shepherd, *Dartmouth College, United States*

G30P-14 **MEASUREMENT OF IONSOPHERE OVER THE WESTERN PACIFIC OCEAN**

M. Ishii, H. Jin, T. Yokoyama, T. Tsugawa, M. Nishioka, T. Maruyama, *National Institute of Information and Communications Technology, Japan*

G30P-15 **IDENTIFICATION OF STRONG GRADIENTS AND TRAVELLING IONOSPHERIC DISTURBANCES IN THE IONOSPHERE USING MULTIPLE INSTRUMENTATION TYPES DURING AN IONOSPHERIC STORM**

C. Cooper[1,2], C. Wright[1], C. Mitchell[1], D. Jackson[1,2], G. Bust[3], A. Chartier[3]

[1]Univeristy of Bath, United Kingdom; [2]UK Met Office, United Kingdom; [3]Johns Hopkins University Applied Physics Laboratory, USA

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G35P POSTERS - Design and Application of HF and OTH Radar Systems

Session Chairs: Manuel Cervera, J Michael Ruohoniemi, Richard Parris

G35P-1 **A HF SURFACE WAVE RADAR SIMULATOR**

Y. Beniguel, *IEEA, France*

G35P-2 **COMPACT WAY OF THE IONOSPHERE LAYERS CRITICAL FREQUENCY DETECTION**

K. Yusupov, A. Akchurin, O. Sherstyukov, *Kazan Federal University, Russian Federation*

G35P-3 **HF AND GNSS-TEC DIAGNOSTIC OF WAVELIKE IONOSPHERIC DISTURBANCES OVER THE ANTARCTIC PENINSULA**

A. V. Koloskov[1], Y. M. Yampolski[1], A. V. Zalizovski[1], A. S. Kashcheyev[1,2], S. B. Kashcheyev[1], A. O. Sopin[1], Y. M. Zanimonskiy[1], E. Mishin[3], V. Paznukhov[4]

[1]Institute of Radio Astronomy National Academy of Sciences of Ukraine, Ukraine; [2]Abdus Salam International Centre for Theoretical Physics, Italy; [3]Air Force Research Laboratory, USA; [4]Boston College, USA

G35P-4 **THE PROGRAM COMPLEX FOR INTERPRETATION OF IONOSPHERIC BACKSCATTER SOUNDING DATA**

M. S. Penzin, S. N. Ponomarchuk, V. P. Grozov, V. I. Kurkin, *Institute of Solar-Terrestrial Physics SB RAS, Russian Federation*

G35P-5 **IMPROVED FITTED DATA AND ERRORBARS FOR SUPERDARN**

A. S. Reimer[1,2], G. C. Hussey[1], K. A. McWilliams[1]

[1]University of Saskatchewan, Canada; [2]SRI International, USA

G35P-6 **FIRST RESULTS OF BISTATIC HF OBSERVATIONS OF IONOSPHERIC IRREGULARITIES IN ANTARCTIC PENINSULA REGION**

V. Paznukhov[1], K. Groves[1], K. Kraemer[1], Y. Yampolski[2], A. Kashcheyev[3], A. Sopin[2], S. Kashcheyev[2], A. Zalizovsky[2]

[1]Boston College, United States; [2]Institute of Radio Astronomy, Ukraine; [3]The Abdus Salam International Centre for Theoretical Physics, Italy

G35P-7 ON MEASURING ELEVATION ANGLE OF RETURNS WITH SUPERDARN HF RADARS

K. T. Sterne, J. M. Ruohoniemi, R. A. Greenwald, *Virginia Tech, United States*

G35P-8 RADAR SENSITIVITY BUDGET ANALYSIS FOR A NETWORK OF SKYWAVE OVER-THE-HORIZON RADARS

D. B. Francis[1], M. A. Cervera[1,2], G. J. Frazer[1]

[1]Defence Science and Technology Group, Australia; [2]The University of Adelaide, Australia

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G39P POSTERS - International Beacon Satellite Studies

Session Chairs: Patricia Doherty, Bruno Nava, Andrzej Krankowski

G39P-1 EVALUATING DIFFERENT GPS CALIBRATION TECHNIQUES IN THE EQUATORIAL IONIZATION ANOMALY REGION

D. Bilitza[1], S. Radicella[2], L. Ciraolo[2], F. J. Azpilicueta[3], G. K. Seemala[4], X. O. Villamide[2]

[1]George Mason University, United States; [2]2Abdus Salaam International Centre of Theoretical Physics, Italy; [3]Universidad Nacional de La Plata, Argentina; [4]Indian Institute of Geomagnetism, India

G39P-2 IGS ROTIPOLARMAP: PRODUCT, SERVICE AND APPLICATIONS

I. Cherniak[1], A. Krankowski[1], I. Zakharenkova[1,2]

[1]University of Warmia and Mazury, Poland; [2]Inistitute De Physique Du Globe De Paris, France

G39P-3 TEC MEASUREMENTS USING SATELLITE RADIO BEACONS AND GROUND-BASED RECEIVERS OVER THE PERUVIAN REGION

E. Pacheco, J. Chávez, J. Gómez, F. Villanueva, *Instituto Geofisico del Peru, Peru*; C. Valladares, *The University of Texas at Dallas, USA*

G39P-4 CHARACTERISTICS OF THE IONOSPHERIC IRREGULARITIES MONITORED OVER CHINA: A LONG-TERM ANALYSIS DURING 2000-2014

N. Wang[1], Z. Li[2], K. Kotulak[3], Y. Yuan[1], A. Krankowski[3]

[1]Institute of Geodesy and Geophysics, Chinese Academy of Science, PR China; [2]Academy of Opto-Electronics, Chinese Academy of Sciences, PR China; [3]Space Radio-Diagnostics Research Center, University of Warmia and Mazury, Poland

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G44P POSTERS - Radio Studies of Mid and Low Latitude Aeronomy

Session Chair: A Rabiu

G44P-1 DC ELECTRIC FIELD MEASUREMENTS NEAR THE SQ CURRENT SYSTEM BY S-310-44 SOUNDING ROCKET

K. Ishisaka, *Toyama Prefectural University, Japan*; T. Abe, *JAXA/ISAS, Japan*; A. Kumamoto, *Tohoku University, Japan*; M. Tanaka, *Tokai University, Japan*; A. Yoshikawa, H. Matsushita, *Kyushu University, Japan*

G44P-2 DC ELECTRIC FIELD MEASUREMENT IN THE MID-LATITUDE IONOSPHERE BY S-520-26 SOUNDING ROCKET

A. Yamamoto, K. Ishisaka, *Toyama Prefectural University, Japan*; M. Tanaka, *Tokai University, Japan*; M. Yamamoto, *RISH, Kyoto University, Japan*; T. Abe, *ISAS/JAXA, Japan*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G46P POSTERS - International Reference Ionosphere -- Improvement, Validation and Usage

Session Chairs: Dieter Bilitza, David Themens

G46P-1 RESPONSE OF EQUATORIAL IONOSPHERIC ANOMALY DURING GEOMAGNETIC STORM EVENTS: A COMPARISON WITH IRI MODEL PREDICTIONS.

E. O. Oyeyemi, O. S. Bolaji, A. O. Adewale, A. O. Akala, B. Olugbon, *University of Lagos, Nigerai*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

G47P POSTERS - Commission G Open Session and Recent Results

Session Chairs: Iwona Stanislawska, Patricia Doherty, John Mathews

G47P-1 ATMOSPHERIC GRAVITY WAVES PRODUCED BY AURORAL SOURCES: A LINK BETWEEN THE UPPER AND LOWER ATMOSPHERE

P. Prikryl[1,2], R. Bruntz[3], D. B. Muldrew[4], B. S. R. Kunduri[5]

[1]University of New Brunswick, Canada; [2]Natural Resources Canada, Canada; [3]Johns Hopkins University Applied Physics Laboratory, USA; [4]Communications Research Centre, Canada; [5]Virginia Tech, USA

G47P-2 APPLICATION OF TWO -DIMENSIONAL TEC PERTURBATION MAPS DURING THE MODIFIED IONOSPHERE BY SURA POWERFUL RADIO WAVE EMITTING

R. Sherstyukov[1], V. Frolov[1,2], A. Akchurin[1], O. Sherstyukov[1]

[1]Kazan Federal University, Russian Federation; [2]Radiophysical Research Institute, Russian Federation

G47P-3 D-REGION IONOSPHERE CHARACTERIZATION WITH VLF PROPAGATION MODEL INVERSION

F. W. Gasdia, R. A. Marshall, *University of Colorado Boulder, United States*

G47P-4 FINE-SCALE STRUCTURE IN THE MID-LATITUDE IONOSPHERE: BROADBAND OBSERVATIONS OF SCINTILLATION USING LOFAR

R. Fallows, *ASTRON - the Netherlands Institute for Radio Astronomy, Netherlands*; B. Forte, *University of Bath, UK*; A. Krankowski, *University of Warmia and Mazury in Olsztyn (UWM), Poland*

G47P-5 ANALYSIS OF PROPAGATION CHARACTERISTIC OF MF BAND RADIO WAVES OBSERVED BY S-310-40 SOUNDING ROCKET

D. Oka, K. Ishisaka, *Toyama prefectural university, Japan*; T. Abe, *ISAS / JAXA, Japan*; A. Kumamoto, *Tohoku University, Japan*

G47P-6 EFFECT OF ALTITUDE-DEPENDENT TIMES OF SUNRISE AND SUNSET IN IONOSPHERIC MODELLING

T. G. W. Verhulst, S. M. Stankov, *Royal Meteorological Institute Belgium, Belgium*

G47P-7 S BAND SCINTILLATIONS STUDIES NEAR THE EIA CREST OF INDIAN ZONE

D. Jana[1], S. K. Chakraborty[2], S. Banerjee[1], A. Dasgupta[3]

[1]RPMC, University of Calcutta, India; [2]Maharaja Srischandra College, India; [3]S.K.Mitra Centre for Research in Space Environment, India

G47P-8 LIGHTNING DISTANCE ESTIMATION USING MACHINE-LEARNED MODELS OF LIGHTNING RADIO SIGNALS

A. L. Antunes de Sá, R. A. Marshall, *University of Colorado Boulder, United States*

G47P-9 THE EMPIRICAL CANADIAN HIGH ARCTIC IONOSPHERIC MODEL (E-CHAIM): NMF2

D. R. Themens, T. P. Jayachandran, *University of New Brunswick, Canada*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

H33P POSTERS - Macro/Micro-Scale Kinetic Processes at Natural Boundary Layers in Terrestrial and Planetary Environments

Session Chair: Bertrand Lembège

H33P-1 A MECHANISM FOR EVOLUTION OF ELECTROSTATIC SOLITARY WAVES IN THE LUNAR WAKE

R. R., S. V. Singh, G. S. Lakhina, *INDIAN INSTITUTE OF GEOMAGNETISM, India*

H33P-2 FILLING OF QUASI PERPENDICULAR ION FORESHOCK : 2D FULL-PARTICLE AND TEST-PARTICLES SIMULATIONS

P. Savoini, *LPP - Ecole Polytechnique - UPMC, France*; B. Lembege, *LATMOS - UVSQ - CNRS, France*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

H41P POSTERS - Commission H Open Session

Session Chairs: O. Santolik, János Lichtenberger

H41P-1 VLF ELECTROMAGNETIC EMISSIONS IN THE INNER MAGNETOSPHERE: LONGITUDINAL DEPENDENCE

J. Záhlava[1], F. Nemec[1], O. Santolík[2,1], I. Kolmašová[2,1], G. B. Hospodarsky[3], M. Parrot[4], W. S. Kurth[3], C. Kletzing[3], N. Cornilleau-Wehrlin[5,6]

[1]Charles University, Czech Republic; [2]Czech Academy of Sciences, Czech Republic; [3]University of Iowa, USA; [4]LPC2E/CNRS, France; [5]CNRS, France; [6]Observatoire de Meudon, France

H41P-2 SUBSTORM RELATED ULF WAVES OBSERVED IN THE SOLAR WIND AND ON THE GROUND

M. Alimaganbetov, A. V. Streltsov, *Embry-Riddle Aeronautical University, United States*

H41P-3 DEVELOPMENT OF THE ASIC WAVEFORM RECEIVER FOR THE SS 520-3 SOUNDING ROCKET EXPERIMENT

Y. Tokunaga[1], T. Zushi[2], M. Ozaki[1], S. Yagitani[1], H. Kojima[2]

[1]Kanazawa Univ., Japan; [2]RISH, Kyoto Univ., Japan

H41P-4 NEW TYPE OF SPECTRUM PLASMA WAVE RECEIVER USING ONE-CHIP ANALOG-DIGITAL MIXED ASIC

T. Zushi[1], H. Kojima[1], M. Ozaki[2], Y. Kasahara[2], S. Yagitani[2], Y. Tokunaga[2], T. Takahashi[2], H. Yamakawa[1]

[1]Kyoto University, Japan; [2]Kanazawa University, Japan

H41P-5 RHEOMETRY EXPERIMENT OF ADVANCED WIRE ANTENNAS ABOARD SCIENTIFIC SATELLITE

T. Kita[1], T. Imachi[1], S. Yagitani[1], M. Ozaki[1], R. Higashi[2], F. Kondo[1]

[1]Kanazawa University, Japan; [2]National Institute of technology, Ishikawa College, Japan

H41P-6 NOVEL DEEP DRILLING TECHNOLOGY BASED ON ELECTRIC PLASMA DEVELOPED IN SLOVAKIA

V. Stofanik[1,2], I. Kocis[2], T. Kristofic[2], M. Gebura[2], G. Horvath[2], M. Gajdos[2]

[1]FEI STU, Slovakia; [2]GA Drilling, Slovakia

Thursday, August 24, 2017 **16:00-19:00** **517AB**

HJ24P POSTERS - Solar, Planetary, and Heliospheric Radio Emissions

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian

HJ24P-1 SHADOW EFFECTS IN THE JOVIAN DECAMETER EMISSION

G. V. Litvinenko, A. A. Konovalenko, V. V. Zakharenko, I. Y. Vasilieva, *Institute of Radio Astronomy, Ukraine*; M. Panchenko, *Space Research Institute, Austria*; V. E. Shaposhnikov, *National Research University High School of Economics, Russia*; P. Zarka, *LESIA, Observatoire de Paris, UMR CNRS, France*; H. O. Rucker, *Commission for Astronomy, Austrian Academy of Sciences, Austria*

HJ24P-2 STREAM STRUCTURE OF SOLAR WIND BEYOND EARTH'S ORBIT BY IPS OBSERVATIONS WITH LOW FREQUENCY UKRAINIAN RADIO TELESCOPES UTR-2, URAN AND GURT

M. Kalinichenko[1], M. Olyak[1], O. Konovalenko[1], H. Rucker[2], R. Fallows[3], P. Zarka[4], A. Lecacheux[4], I. Bubnov[1], S. Yerin[1], A. Brazhenko[5], O. Ivantishin[6], V. Koshovy[6], O. Lytvynenko[1]

[1]Radio Astronomy institute, Ukraine; [2]Space Research Institute, Austria; [3]ASTRON – the Netherlands institute for Radio Astronomy, The Netherlands; [4]LESIA– Observatore de Paris, France; [5]Gravimetrical observatory of Geophysical institute, Ukraine; [6]Institute of Physics and Mechanics, Ukraine

HJ24P-3 SOLAR SYSTEM LOW-FREQUENCY RADIO EMISSION STUDIES WITH THE UTR-2, URAN AND GURT RADIOTELESCOPES

Y. Volvach[1], A. Konovalenko[1], P. Zarka[2], H. Rucker[3], V. Zakharenko[1], O. Ulyanov[1], M. Sidorchuk[1], S. Stepkin[1], V. Melnik[1], N. Kalinichenko[1], A. Stanislavsky[1], P. Tokarsky[1], V. Koliadin[1], V. Shepelev[1], V. Dorovskyy[1], I. Bubnov[1], S. Yerin[1], A. Reznichenko[1], G. Litvinenko[1], A. Koval[1], N. Shevchuk[1], I. Vasylieva[1], K. Mylostna[1],

A. Skoryk[1], A. Shevtsova[1], E. Vasylkovsky[1], V. Ryabov[4], A. Lecacheux[2], L. Denis[5], M. Panchenko[3], G. Fischer[3], M. Imai[6], J.-M. Griessmeier[7], G. Mann[8], O. Litvinenko[1]

[1]Institute of Radioastronomy of NAS of Ukraine, Ukraine; [2]LESIA, UMR CNRS 8109, Observatoire de Paris, France; [3]Space Research Institute, Austrian Academy of Sciences, Austria; [4]Future University-Hakodate, Japan; [5]Station de Radioastronomie de Nancay, Observatoire de Paris, 18 Nancay, France; [6]Department of Physics and Astronomy, University of Iowa, USA; [7]LPC2E - Universite d'Orleans/CNRS, France; [8]Leibniz-Institut fur Astrophysik Potsdam, Germany

HJ24P-4 THE POLARIZATION LEAKAGE OF MINGANTU SPECTRAL RADIOHELIOGRAPH

C. Su, Y. Yan, W. Wang, *National Astronomical Observatories, Chinese Academy of Sciences, China*

HJ24P-5 TWO NEW 3-BAND SOLAR RADIO POLARIMETERS

G. Lihong[1,1], C. Tan[1,1], J. Dun[2], H. Zhang[3], Y. Jia[3], Z. Yan[1,1], Z. Chen[1,1], S. Ma[1,4], D. Liu[1,1], J. Du[1,1], C. Su[1,1]

[1]NAOC, China (CIE); [2]NSMC, China (CIE); [3]CETC, China (CIE); [4]Shandong University, China (CIE)

HJ24P-6 IONOSPHERIC SCINTILLATION AND SOLAR WIND MONITORING WITH LOFAR STATION PL610

H. Rothkaehl, M. Pozoga, B. Matyjasiak, D. Przepiórka, R. Wronowski, M. Grzesiak, *Space Research Center Polish Academy of Sciences, Poland*

HJ24P-7 EXTENDED RADIO SOLAR IMAGE PROCESSING FOR MUSER

D. Liu, Y. Yan, W. Wang, *National Astronomical Observatories, Chinese Academy of Sciences, China (CIE)*

HJ24P-8 ON THE INFLUENCE OF THE ANTENNA RPW/SOLAR ORBITER TILT ANGLE AND THERMAL BENDING TO THE RADIO DIRECTION FINDING CAPABILITIES

V. Krupar[1,2], M. Maksimovic[3], M. Panchenko[4], O. Kruparova[2], O. Santolik[2,5], J. Soucek[2]

[1]NASA Goddard Space Flight Center, United States; [2]Institute of Atmospheric Physics CAS, Czech Republic; [3]Observatoire de Paris, France; [4]Space Research Institute, Austria; [5]Charles University, Czech Republic

HJ24P-9 SOLAR RADIO IMAGING WITH MINGANTU SPECTRAL RADIOHELIOGRAPH (MUSER)

L. Chen, W. Wang, Y. Yan, D. Liu, *National Astronomical Observatories, Chinese Academy of Sciences, China*

HJ24P-10 DECAMETER RADIO MANIFESTATION OF BEHIND-LIMB CME

V. N. Melnik[1], A. I. Brazhenko[2], G. Mann[3], A. A. Konovalenko[1], V. V. Dorovskyy[1], A. V. Frantzusenko[2], H. O. Rucker[4], M. Panchenko[5], T. Zaqarashvili[5,6]

[1]Institute of Radio Astronomy of National Academy of Sciences of Ukraine, Ukraine; [2]Poltava Gravimetric Observator, Ukraine; [3]Leibniz-Institut für Astrophysik Potsdam, Solare Radiophysik, Germany; [4]Commission for Astronomy, Austria; [5]Space Research Institute, Austria; [6]IGAM, Institute of Physics, University of Graz, Austria

HJ24P-11 THE DECAMETER SPIKES AS A TOOL FOR THE CORONAL PLASMA PARAMETERS DETERMINATION

M. V. Shevchuk[1], V. M. Melnik[1], S. Poedts[2], V. V. Dorovskyy[1], J. Magdalenic[3], A. A. Konovalenko[1], A. I. Brazhenko[4], C. Briand[5], A. V. Frantsuzenko[4], H. O. Rucker[6], P. Zarka[5]

[1]Institute of Radio Astronomy, Ukraine; [2]Catholic University of Leuven, Belgium; [3]Royal Observatory of Belgium, Belgium; [4]Institute of Geophysics, Gravimetrical Observatory, Ukraine; [5]Observatoire de Paris, France; [6]Space Research Institute, Austria

Thursday, August 24, 2017 **16:00-19:00** **517AB**

J29P POSTERS - Detection of Short-Duration Transients and Pulsars

Session Chairs: Joeri van Leeuwen, Vicky Kaspi, Ben Stappers

J29P-1 AN INSTRUMENTATION DESIGN FRAMEWORK TO DETECT FAST RADIO BURSTS

P. R. Sanghavi, K. M. Bandura, *West Virginia University, United States*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

J34P POSTERS - Latest News and Observatory Reports

Session Chairs: Richard Bradley, Willem Baan

Thursday, August 24, 2017 **16:00-19:00** **517AB**

K15P POSTERS - Electromagnetic Inversion for Biomedical, Geophysical, Non-destructive Testing, and Antenna Characterization Applications

Session Chairs: Puyan Mojabi, Aria Abubakar

K15P-1 FMCW GPR RADAR FOR ARCHAEOLOGICAL APPLICATIONS: FIRST ANALYTICAL AND MEASUREMENT RESULTS

S. Alvarez, H. J. Martinez, A. C. Canelo, M. A. Yarlequé, *PUCP, Peru*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

K16P POSTERS - EMF Exposure Assessment and Dosimetry for New Technologies (WPT)

Session Chairs: Teruo Onishi, Samyoung Chung

K16P-1 ESTIMATION OF THE THRESHOLDS FOR CORNEAL EPITHELIUM DAMAGE INDUCED BY MILLIMETER-WAVE ELECTROMAGNETIC FIELD EXPOSURE WITH A MATHEMATICAL MODEL BASED ON CEM43°C CRITERION

Y. Suzuki[1], M. Kojima[2], T. Tasaki[2], M. Mizuno[3], T. Okuno[1], M. Taki[1], J. Chakarothai[3], K. Sasaki[3], K. Wake[3], S. Watanabe[3], H. Sasaki[2]

[1]Tokyo Metropolitan University, Japan; [2]Kanazawa Medical University, Japan; [3]National Institute of Information and Communications Technology, Japan

K16P-2 EXPOSURE INDUCED BY SMART METERS

J.-B. Agnani, E. Conil, *Agence nationale des fréquences, France*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

K19P POSTERS - EMF Exposure Assessment and Dosimetry and EMC for WBAN and Implanted Devices

Session Chairs: Ping Jack Soh, Jianqing Wang

K19P-1 ROBUST EXPERIMENTAL EVALUATION METHOD FOR THE SAFETY ASSESSMENT OF IMPLANTS WITH RESPECT TO RF-INDUCED HEATING DURING MRI

A. Yao[1,2], E. Zastrow[1], N. Kuster[1,2]

[1]Foundation for Research on Information Technologies in Society (IT'IS), Switzerland; [2]ETH Zurich, Switerland

Thursday, August 24, 2017 **16:00-19:00** **517AB**

K20P POSTERS - Biomedical Applications and EMF Exposure of IoT

Session Chairs: Nam Kim, Shoogo Ueno

K20P-1 INKJET-PRINTED SMART BANDAGE FOR WIRELESS CHRONIC WOUND MONITORING

M. F. Farooqui, A. Shamim, *King Abdullah University University of Science and Technology (KAUST), Makkah*

Thursday, August 24, 2017 **16:00-19:00** **517AB**

K23P POSTERS - Commission K Open Session

Session Chairs: Joe Wiart, Samyoung Chung

K23P-1 MAXIMUM ALLOWABLE DATA THROUGHPUT AND ERROR PERFORMANCE OF ON-BODY MEDICAL BODY AREA NETWORKS (MBANS)

N. N. El-Maradny, H. Shaban, M. Abou El-Nasr, *Arab Academy of Science and Technology, Egypt*

Friday, August 25, 2017

Friday, August 25, 2017 **07:40-09:20** **514A**

F30 Remote Sensing in Complex and Random Media (Volumetric - 1)

Session Chairs: Saba mudaliar, Akira Ishimaru

07:40 F30-1 POROUS MEDIA, CONDUCTIVITY, AND PERMITTIVITY

A. Ishimaru, Y. Kuga, *University of Washington, Seattle, United States*

08:00 F30-2 SNOWPACK SCATTERING AND EMISSION BASED ON NUMERICAL SOLUTION OF MAXWELL'S EQUATIONS IN 3D

S. Tan, J. Zhu, L. Tsang, *University of Michigan, United States*; S. V. Nghiem, *California Institute of Technology, United States*

08:20 F30-3 FRESNEL REFLECTION AND TRANSMISSION COEFFICIENTS FOR COMPLEX MEDIA

K. E. Oughstun, *University of Vermont, United States*; C. L. Palombini, *Applied Physical Sciences Corporation, United States*

08:40 F30-4 (Invited) A FOKKER-PLANCK APPROACH TO SIGNAL PROPAGATION THROUGH TURBULENT FLOW

S. Mudaliar, *Air Force Research Laboratory, United States*

09:00 F30-5 SCATTERING FROM FIELD-ALIGNED PLASMA IRREGULARITIES IN THE LOW LATITUDE E-REGION

S. J. Anderson, *University of Adelaide, South Australia*

Friday, August 25, 2017 **08:00-09:20** **511AD**

A18 Microwave Frequency Standards and Applications (1)

Session Chairs: Amitava Sen Gupta, Fang Fang

08:00 A18-1 THE PROGRESS OF THE NIM6 FOUNTAIN CLOCK

F. Fang, W. Chen, T. Li, *National institute of metrology, China*

08:20 A18-2 (Invited) CONSTRUCTION OF MULTIPLE CS FOUNTAIN CLOCKS FOR USE IN TIME AND FREQUENCY METROLOGY LABORATORIES

K. Szymaniec, R. Hendricks, F. Ozimek, *National Physical Laboratory, United Kingdom*; P. Dunst, B. Nagorny, J. Nawrocki, *Space Research Centre, Poland*; S. Beattie, B. Jian, *National Research Council, Canada*; K. Gibble, *The Pennsylvania State University, USA*; W. Chen, *National Institute of Metrology, China*

08:40 A18-3 SPACE RUBIDIUM CLOCKS AND THE LIGHT-SHIFT EFFECT

V. Formichella[1,2]

[1]*Istituto Nazionale di Ricerca Metrologica, Italy;* [2]*Politecnico di Torino, Italy*

09:00 A18-4 A NEW TIME DISSEMINATION SERVICE WITH AN ACCURACY OF ± 10 MS OVER PUBLIC SWITCHED TELEPHONE NETWORK

A. Sen Gupta, *The NorthCap University, Gurgaon, India*; P. Arora, A. Acharya, S. Yadav, V. N. Ojha, *CSIR-National Physical Laboratory, India*

Friday, August 25, 2017 **08:00-09:20** **510AC**

B31 Scattering and Diffraction (1)

Session Chairs: Ludger Klinkenbusch, Giuliano Manara

08:00 B31-1 (Invited) DIFFRACTION OF A PLANE ELECTROMAGNETIC WAVE BY A UNIFORMLY MOVING, ANISOTROPIC IMPEDANCE WEDGE

N. Y. Zhu, *University of Stuttgart, Germany*; M. A. Lyalinov, *University of St. Petersburg, Russia*

08:20 B31-2 (Invited) COMPLEX SOURCE DIFFRACTION BY A CONE: EXACT AND ASYMPTOTIC SOLUTIONS

M. Katsav, E. Heyman, *Tel Aviv University, Israel*; L. Klinkenbusch, *Kiel University, Germany*

08:40 B31-3 PECULIARITIES OF HIGH-FREQUENCY DIFFRACTION BY ELONGATED BODIES

I. V. Andronov, *University of St.Petersburg, Russian Federation*

09:00 B31-4 (Invited) FULL-WAVE ANALYSIS OF ARTIFICIAL 2D EBG WAVEGUIDES: REAL AND COMPLEX MODAL SOLUTIONS

V. Jandieri, *University of Duisburg-Essen, Germany*; P. Baccarelli, *Sapienza University of Rome, Italy*; S. Ceccuzzi, C. Ponti, G. Schettini, *Roma Tre University, Italy*

Friday, August 25, 2017 **08:00-09:20** **513B**

DBC29 Wireless Power Transmission (2)

Session Chairs: Apostolos Georgiadis, Naoki Shinohara

08:00 DBC29-1 ANALYSIS OF WIRELESS POWER TRANSFER SYSTEM IN HALF DIELECTRIC SPACE USING EQUIVALENT CURRENT

Y. G. Kim, *Hanwha Thales, Korea*; S. Nam, *Seoul National University, Korea*

08:20 DBC29-2 PROPOSAL OF INVERSE DOHERTY RECTIFIER TOLERANT OF DC LOAD FLUCTUATION

N. Sakai, *Toyohashi University of Technology, Japan*

08:40 DBC29-3 CHALLENGES AND LIMITATIONS IN WIRELESS POWER TRANSFER EFFICIENCY SYSTEM OPTIMIZATION

A. Georgiadis, *Heriot-Watt University, United Kingdom*

09:00 DBC29-4 (Invited) AN EFFICIENT RECTIFIER FOR AN RDA WIRELESS POWER TRANSMISSION SYSTEM OPERATING AT 2.4 GHZ

S. A. Rotenberg, P. D. Hilario Re, S. K. Podilchak, G. Goussetis, *Heriot-Watt University, United Kingdom*; J. Lee, *Samsung Advanced Institute of Technology, Korea*

Friday, August 25, 2017 **08:00-09:20** **513EF**

EFGH28 Natural Electromagnetic Noise and Radio Sensing Applications in Terrestrial and Planetary Environments (1)

Session Chairs: Yasuhide Hobara, Colin Price, Tomoo Ushio, Martin Fullekrug

08:00 EFGH28-1 (Invited) THE WORLD WIDE LIGHTNING LOCATION NETWORK (WWLLN): UPDATE ON NEW DATASET AND IMPROVED DETECTION EFFICIENCIES

C. J. Rodger[1], J. B. Brundell[1], R. H. Holzworth[2], E. Douma[1], S. Heckman[3]

[1]University of Otago, New Zealand; [2]University of Washington, USA; [3]Earth Networks Inc., USA

08:20 EFGH28-2 (Invited) 3D IMAGING OF WINTER LIGHTNING AND WINTER LIGHTNING CHARGE STRUCTURE

S. Yoshida[1], E. Yoshikawa[2], K. Kusunoki[1], T. Adachi[1], H. Inoue[1], S. Hayashi[1]

[1]Meteorological Research Institute, Japan; [2]Japan Aerospace Exploration Agency, Japan

08:40 EFGH28-3 SPATIAL DISTRIBUTIONS OF LIGHTNING ELECTRICAL PROPERTIES OVER EASTERN PART OF JAPAN BY ELF AND LLP OBSERVATIONS

Y. Hobara[1,1,1], J. Yamashita[1], R. Murai[1], T. Narita[2], H. Mitsuzuka[3]

[1]The University of Electro-Communications, Japan; [2]Shonan Institute of Technology, Japan; [3]Tokyo Electric Power Grid Company, Japan

09:00 EFGH28-4 SPATIAL AND TEMPORAL IONOSPHERIC MONITORING USING BROADBAND SFERIC MEASUREMENTS

J. C. McCormick, M. B. Cohen, *Georgia Institute of Technology, United States*

Friday, August 25, 2017 **08:00-09:20** **510BD**

F31 Radio-frequency Interferences (RFI) in Passive Microwave Remote Sensing (1)

Session Chairs: Paolo de Matthaeis, Y. Kerr

08:00 F31-1 (Invited) MANAGING THE SPECTRUM FOR SCIENTIFIC SERVICES

J. Judge, *University of Florida, United States*; L. van Zee, *Indiana University, USA*; W. Blackwell, *MIT Lincoln Laboratory, USA*; S. Cruz-Pol, *University of Puerto Rico-Mayagüez, USA*; T. Gaier, *Jet Propulsion Laboratory, California Institute of Technology, USA*; N. Kassim, *Naval Research Lab, USA*; D. LeVine, *NASA-Goddard Space Flight Center, USA*; A. Lovell, *Agnes Scott College, USA*; J. Moran, *Harvard-Smithsonian Center for Astrophysics, USA*; S. Ransom, *National Radio Astronomy Observatory, USA*; G. Rebeiz, *11University of California-San Diego, USA*; P. Siqueira, *12University of Massachusetts, Amherst, USA*

08:20 F31-2 (Invited) SMOS AND RFI: A LONG STORY

Y. H. Kerr[1], P. Richaume[1], R. Oliva-Balaguer[2], F. Cabot[1], E. Anterrieu[1]

[1]CESBIO, France; [2]ESA, Spain

08:40 F31-3 (Invited) SMOS RFI IN THE 1400-1427 MHZ PASSIVE BAND: ESA APPROACH IN RFI DETECTION, MONITORING AND REPORTING PROCESS

E. Daganzo Eusebio[1], R. Oliva[2], M. Castillo[2], A. LLorente[2], E. Uranga[2], M. Martin Neira[1], S. Mecklenburg[3]

[1]European Space Agency ESA-ESTEC, Netherlands; [2]European Space Agency ESA-ESAC, Spain; [3]European Space Agency ESA-ESRIN, Italy

09:00 F31-4 (Invited) ACCURATE GEOLOCATION OF RFI SOURCES FROM SMOS INTERFEROMETRIC DATA

E. Anterrieu, A. Khazaal, F. Cabot, Y. H. Kerr, *CESBIO, France*

Friday, August 25, 2017 08:00-09:20 511BE

G38 Design and Application of HF and OTH Radar Systems (3)

Session Chairs: Manuel Cervera, J Michael Ruohoniemi, Richard Parris

08:00 G38-1 (Invited) SUPERDARN INTERFEROMETRY

S. G. Shepherd, E. G. Thomas, *Dartmouth College, United States*

08:20 G38-2 CALCULATING THE ABSORPTION OF HF RADIO WAVES IN THE IONOSPHERE

K. A. Zawdie, D. P. Drob, D. E. Siskind, C. Coker, *Naval Research Laboratory, United States*

08:40 G38-3 CLIMATOLOGICAL MODEL OF OVER-THE-HORIZON RADAR (CMOR)

M. A. Cervera[1,2], D. B. Francis[1], G. J. Frazer[1]

[1]Defence Science and Technology Group, Australia; [2]The University of Adelaide, Australia

09:00 G38-4 EXPANDING CAPABILITIES OF SUPER DUAL AURORAL RADAR NETWORK IN MONITORING SPACE WEATHER AT HIGH LATITUDES

P. Ponomarenko, J.-P. St.-Maurice, *University of Saskatchewan, Canada*

Friday, August 25, 2017 08:00-09:20 513C

G39 International Beacon Satellite Studies (1)

Session Chairs: Patricia Doherty, Andrzej Krankowski, Bruno Nava

08:00 G39-1 (Invited) UPC REAL-TIME GLOBAL IONOSPHERIC MAPS: RECENT IMPROVEMENTS AND PERFORMANCE

D. Roma-Dollase[1,2], M. Hernández-Pajares[2], A. García-Rigo[2]

[1]IonSAT-UPC, Spain; [2]Dept. Electronics - UB, Spain

08:20 G39-2 (Invited) UNDERSTANDING SPACE WEATHER EFFECTS IN THE UPPER ATMOSPHERE USING GLOBAL MAP OF IONOSPHERIC IRREGULARITIES AND SCINTILLATION

X. Pi, A. J. Mannucci, *Jet Propulsion Laboratory, California Institute of Technology, United States*; Y. Zhang, *Applied Physics Laboratory, Johns Hopkins University, United States*

08:40 G39-3 (Invited) SPACE BASED PLASMASPHERE MODELLING AND RELATIONS TO GROUND BASED GNSS MEASUREMENTS

N. Jakowski, M. M. Hoque, *German Aerospace Center, Germany*

09:00 G39-4 FIELD DEPLOYMENT OF THE RADIO ARRAY OF PORTABLE INTERFEROMETRIC DEVICES (RAPID) FOR STUDIES OF THE EQUATORIAL IONOSPHERE

G. Allan, A. Carlton, R. Volz, A. Coster, K. Cahoy, F. Lind, *Massachusetts Institute of Technology, USA*; M. Milla, *Instituto Geofisico del Peru, Peru*

Friday, August 25, 2017 **08:00-09:20** **511CF**

H33 Macro/Micro-Scale Kinetic Processes at Natural Boundary Layers in Terrestrial and Planetary Environments (1)

Session Chairs: Bertrand Lembège, Iku Shinohara, Gurbax Lakhina

08:00 H33-1 THE QUASI-MONOCHROMATIC ULF WAVE BOUNDARY IN THE VENUSIAN FORESHOCK: COMPARISON WITH TERRESTRIAL RESULTS

C. Mazelle[1], K. Meziane[2], L. Shan[3,4], N. Romanelli[5]

[1]IRAP UPS-CNRS, France; [2]University of New Brunswick, Canada; [3]Chinese Academy of Sciences, China; [4]Key Laboratory of Lunar and Deep Space Exploration, China; [5]LATMOS CNRS-UPMC, France

08:20 H33-2 SURVEY OF LANGMUIR AND BEAM-MODE WAVES OBSERVED BY WHISPER INSTRUMENTS ON CLUSTER SPACECRAFT INSIDE TERRESTRIAL FORESHOCK

D. Pisa[1], J. Soucek[1], O. Santolik[1,2]

[1]Institute of Atmospheric Physics CAS, Prague, Czech Republic, Czech Republic; [2]Faculty Mathematics and Physics, Charles University, Czech Republic

08:40 H33-3 (Invited) A UNIQUE CONSTELLATION OF SPACECRAFT TO STUDY KHI IN 2017-2020: MMS, CLUSTER AND THEMIS

A. Masson[1], K. Nykyri[2], P. Escoubet[3], H. Laakso[1]

[1]European Space Agency (ESA/ESAC), Spain; [2]Embry-Riddle University, USA; [3]European Space Agency (ESA/ESTEC), The Netherlands

09:00 H33-4 (Invited) PARTICLE ACCELERATION AT THE EARTH'S BOW SHOCK: RECENT RESULTS FROM MMS MISSION

M. I. Desai[1], J. L. Burch[1], S. A. Fuselier[1], K. Genestreti[2], R. Torbert[3], R. E. Ergun[4], C. T. Russell[5], H. Y. Wei[5], B. Giles[6], T. Phan[7], L. J. Chen[6], S. Wang[6], B. Mauk[8], H. Lai[5], J. Roll[9]

[1]Southwest Research Institute, United States; [2]Austrian Academy of Sciences 2.C.3,, Austria; [3]University of New Hampshire, United States; [4]University of Colorado, United States; [5]University of California Los Angeles, United States; [6]Goddard Space Flight Center, United States; [7]University of California Berkeley, United States; [8]Applied Physics Laboratory, United States; [9]University of Texas at San Antonio, United States

Friday, August 25, 2017 **08:00-09:20** **514B**

HJ34 Solar, Planetary, and Heliospheric Radio Emissions (6)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

08:00 HJ34-1 (Invited) THE MINGANTU SPECTRAL RADIOHELIOGRAPH (MUSER): SYSTEM AND OBSERVATIONS

F. Liu, Y. Yan, W. Wang, L. Chen, Z. Chen, L. Geng, S. Li, D. Liu, *National Astronomical Observatories, Chinese Academy of Sciences, China*

08:20 HJ34-2 IMAGE RESTORATION FOR MUSER

W. Wang[1], Y. Yan[1], F. Wang[2], L. Chen[1], D. Liu[1], J. Du[1]

[1]National Astronomical Observatories, Chinese Academy of Sciences, China (CIE); [2]Kunming University of Science and Technology, China (CIE)

08:40 HJ34-3 FREQUENCY DEPENDENCE OF VLF CHORUS POYNTING FLUX IN THE SOURCE REGION: THEMIS OBSERVATIONS AND A MODEL

A. G. Demekhov[1,2], U. Taubenschuss[3], O. Santolík[3,4]

[1]Institute of Applied Physics, Russian Academy of Sciences, Russian Federation; [2]Polar Geophysical Institute, Russian Federation; [3]Institute of Atmospheric Physics, The Czech Academy of Sciences, Czech Republic; [4]Faculty of Mathematics and Physics, Charles University, Czech Republic

09:00 HJ34-4 DATA COMPRESSION FOR MINGANTU SPECTRAL RADIOHELIOGRAPH

L. Xu, Y. Yan, J. Cheng, *National Astronomical Observatories, Chinese Academy of Sciences, China*; L. Ma, *Tencent AI Lab, China*

Friday, August 25, 2017 **08:00-09:20** **516DE**

J34 The Square Kilometer Array (1)

Session Chairs: Douglas Bock, Robert Braun, Justin Jonas

08:00 J34-1 (Invited) ASKAP AND PHASED ARRAY FEEDS IN RADIOASTRONOMY

D. McConnell, *CSIRO, Australia*

08:20 J34-2 A HIGH RESOLUTION, HIGH SENSITIVITY, LOW RADIO FREQUENCY VIEW FOR SEVERAL LEGACY DIFFUSE, LOW-SURFACE BRIGHTNESS TARGETS, INCLUDING COMA CLUSTER USING UPGRADED GMRT AND THE ROLE OF SKA

D. V. Lal, C. H. Ishwara-Chandra, R. Kale, *National Centre for Radio Astrophysics (Tata Institute of Fundamental Research), India*

08:40 J34-3 RESULTS FROM PROTOTYPING OF THE SKA SIGNAL AND DATA TRANSPORT SYSTEMS

K. J. B. Grainge, *University of Manchester, United Kingdom*

09:00 J34-4 ANALYSIS OF BASELINE-DEPENDENT AVERAGING FOR THE SQUARE KILOMETER ARRAY

A. G. Willis, *National Research Council of Canada, Canada*; S. J. Wijnholds, *ASTRON, Netherlands*; S. Salvini, B. Mort, F. Dulwich, *Oxford University, United Kingdom*; J. Stil, *University of Calgary, Canada*

Friday, August 25, 2017 **09:40-10:20** **511AD**

A19 Microwave Frequency Standards and Applications (2)

Session Chairs: Amitava Sen Gupta, Fang Fang

09:40 A19-1 ALL DIGITAL IMPLEMENTATION OF DUAL MIXER TIME DIFFERENCE TECHNIQUE FOR PRECISE PHASE AND FREQUENCY MEASUREMENT

A. Acharya, P. Arora, *CSIR-National Physical Laboratory, India*; A. S. Gupta, *The NorthCap University, India*

10:00 A19-2 STATUS OF THE ATOMIC FOUNTAIN CLOCK NRC-FCS2 AT THE NATIONAL RESEARCH COUNCIL CANADA

S. Beattie, B. Jian, A. J. Alcock, J. Bernard, M. Gertsvolf, *National Research Council, Canada*; R. Hendricks, F. Ozimek, K. Szymaniec, *National Physical Laboratory, UK*; K. Gibble, *The Pennsylvania State University, USA*

Friday, August 25, 2017 **09:40-10:40** **510AC**

B32 Scattering and Diffraction (2)

Session Chairs: Ludger Klinkenbusch, Giuliano Manara

09:40 B32-1 (Invited) SPHERICAL-MULTIPOLE EXPANSION OF AN INHOMOGENEOUS ELECTROMAGNETIC PLANE WAVE IN LOSSLESS MEDIA

H. Bruens, L. Klinkenbusch, *Kiel University, Germany*; G. Manara, *University of Pisa, Italy*

10:00 B32-2 SPACE-TIME (ST) REFLECTION FOCUSING IN DISPERSION-ENGINEERED MEDIUM

Z.-L. Deck-Leger, N. Chamanara, M. Skorobogatiy, C. Caloz, *Polytechnique Montréal, Canada*

10:20 B32-3 SCATTERING BY AN ISOREFRACTIVE ELLIPTIC CYLINDER TRUNCATED BY A METAL PLANE

P. L. E. Uslenghi, *University of Illinois at Chicago, United States*

Friday, August 25, 2017 **09:40-10:40** **513B**

DBC30 Wireless Power Transmission (3)

Session Chairs: Apostolos Georgiadis, Naoki Shinohara

09:40 DBC30-1 BROADBAND RECTENNA FOR AMBIENT RF ENERGY HARVESTING APPLICATIONS

J. Tissier, M. Latrach, *ESEO-IETR, France*

10:00 DBC30-2 SIDE-LOBE REDUCTION WITH A GAN ACTIVE ANTENNA TECHNIQUE

N. Hasegawa, N. Shinohara, *Kyoto University, Japan*

10:20 DBC30-3 CIRCULARLY POLARIZED RECTIFYING REFLECTARRAY ANTENNA AT C-BAND

H. A. Malhat[1], H. A. El-Araby[2], S. H. Zainud-Deen[1]

[1]Faculty of Electronic Engeering- Menoufia University, Egypt; [2]Ministry of Electricity and Energy, Egypt, Egypt

---

Friday, August 25, 2017 **09:40-10:40** **513EF**

E29 E-Tutorial William Radasky: “EMC Aspects in Smart Grids

Session Chair: Dave Giri

09:40 E29-1 (Invited) EMC ASPECTS IN SMART GRIDS

W. A. Radasky, *Metatech Corporation, United States*

Friday, August 25, 2017 09:40-10:20 510BD

F32 Radio-frequency Interferences (RFI) in Passive Microwave Remote Sensing (2)

Session Chairs: Paolo de Matthaeis, Y. Kerr

09:40 F32-1 (Invited) LOCALIZATION OF L-BAND RFI SOURCES FROM SMAP DATA

Y. Soldo[1,2], P. de Matthaeis[1,2], D. M. Le Vine[1]

[1]NASA GSFC, United States; [2]GESTAR, United States

10:00 F32-2 (Invited) THE ULTRA-WIDEBAND SOFTWARE DEFINED MICROWAVE RADIOMETER (UWBRAD) FOR ICE SHEET SUBSURFACE TEMPERATURE SENSING: RFI ALGORITHMS AND PERFORMANCE

M. J. Andrews, H. Li, J. Johnson, A. Bringer, *Ohio State University, United States*

Friday, August 25, 2017 09:40-10:40 514A

F33 Remote Sensing in Complex and Random Media (Volumetric - 2)

Session Chairs: Saba mudaliar, Akira Ishimaru

09:40 F33-1 (Invited) A SPACETIME ADAPTIVE APPROACH TO CHARACTERIZE COMPLEX DISPERSIVE MEDIA

R. Abedi, *University of Tennessee Space Institute, United States*; S. Mudaliar, *Wright-Patterson Air Force Base, United States*

10:00 F33-2 CALCULATION OF TARGETS LASER RCS IN RANDOM MEDIA FOR H-WAVE POLARIZATION

H. El-Ocla, *Lakehead University, Canada*

10:20 F33-3 (Invited) RADIATIVE TRANSFER IN TURBULENT FLOW USING SPACETIME DISCONTINUOUS GALERKIN FINITE ELEMENT METHOD

S. Mudaliar, *Air Force Research Laboratory, United States*; P. Clarke, R. Abedi, *University of Tennessee Space Institute, United States*

Friday, August 25, 2017 09:40-10:40 511BE

G40 Design and Application of HF and OTH Radar Systems (4)

Session Chairs: Manuel Cervera, J Michael Ruohoniemi, Richard Parris

09:40 G40-1 HF RADAR SIGNATURES OF TERRESTRIAL LANDFORMS

S. J. Anderson, *University of Adelaide, Australia*

10:00 G40-2 HF RADAR FOR LARGE AREA SEA MAPPING WITH GROUND-IONOSPHERE-OCEAN-SPACE (GIOS)

P. A. Bernhardt, C. L. Siefring, S. C. Briczinski, *Naval Research Laboratory, United States*; A. Howarth, G. James, *University of Calgary, Canada*; J. Bryant, *Raytheon, United States*

10:20 G40-3 CHARACTERISTICS OF TRANS-IONOSPHERIC RADIO WAVES DETECTED WITH THE ENHANCE POLAR OUTFLOW PROBE

D. W. Danskin[1], G. C. Hussey[2], R. G. Gillies[3], H. G. James[1,3]

[1]Natural Resources Canada, Canada; [2]University of Saskatchewan, Canada; [3]University of Calgary, Canada

Friday, August 25, 2017 09:40-10:40 513C

G41 International Beacon Satellite Studies (2)

Session Chairs: Patricia Doherty, Andrzej Krankowski, Bruno Nava

09:40 G41-1 (Invited) IONOSPHERIC WEATHER PROBED BY RADIO OCCULTATION OF FORMOSAT-3/COSMIC

J.-Y. Liu, S.-P. Chen, *National Central University, China (SRS)*

10:00 G41-2 STUDY OF IONOSPHERE OVER JAPAN BY USING THREE-DIMENSIONAL GPS-TEC TOMOGRAPHY

M. Yamamoto[1], R. Mizuno[1], S. Saito[2], A. Saito[1]

[1]Kyoto University, Japan; [2]Electronic Navigation Research Institute, Japan

10:20 G41-3 A PCA BASED STUDY OF THE TEC OVER A SINGLE STATION

F. Azpilicueta[1], B. Nava[2], B. Claudio[1]

[1]Universidad Nacional de La Plata - CONICET, Argentina; [2]The Abdus Salam International Centre for Theoretical Physics,, Italy

Friday, August 25, 2017 09:40-10:40 511CF

H35 Macro/Micro-Scale Kinetic Processes at Natural Boundary Layers in Terrestrial and Planetary Environments (2)

Session Chairs: Bertrand Lembège, Iku Shinohara, Gurbax Lakhina

09:40 H35-1 MICROTURBULENCE WITHIN THE FOOT OF QUASI-PERPENDICULAR SUPERCRITICAL SHOCKS: POYNTING FLUX ANALYSIS OF WHISTLER INSTABILITIES WITH PIC SIMULATIONS

L. Muschietti[1,2], B. Lembege[2]

[1]SSL, University of California at Berkeley, United States; [2]LATMOS-UVSQ-IPSL-CNRS, France

10:00 H35-2 GENERATION OF INTERMITTENT ION ACOUSTIC WAVES IN WHISTLER TURBULENCE

S. Saito[1], Y. Nariyuki[2], T. Umeda[1]

[1]Nagoya University, Japan; [2]University of Toyama, Japan

10:20 H35-3 (Invited) MARTIAN ELECTRON FORESHOCK: NEW RESULTS FROM MAVEN AND COMPARISON WITH TERRESTRIAL ELECTRON FORESHOCK

C. X. Mazelle, *IRAP UPS-CNRS, France*; K. Meziane, *University of New Brunswick, Canada*; N. Romanelli, *LATMOS CNRS - UPMC, France*; D. L. Mitchell, *SSL University of California, USA*

Friday, August 25, 2017 **09:40-10:40** **514B**

HJ36 Solar, Planetary, and Heliospheric Radio Emissions (7)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

09:40 HJ36-1 ULTRA-LONG WAVELENGTH DIGITAL RADIO ARRAY-PATHFINDER

L. Chen, Y. Yan, Z. Chen, W. Wang, L. Geng, *National Astronomical Observatories, Chinese Academy of Sciences, China (CIE)*

10:00 HJ36-2 AUTOMATIC DETECTION AND RECOGNITION OF MAJOR SOLAR RADIO BURST EVENTS OF TYPE (II III AND IV).

H. Salmane, R. Weber, K. Abed-meraim, *University of Orleans, PRISME Laboratory, France*; K.-L. Klein, X. Bonnin, *Observatory of Paris, LESIA-UMR 8109 CNRS, France*

10:20 HJ36-3 EFFECTIVE LENGTH OF A RECEIVING ANTENNA IN CASE OF SPACECRAFT OBSERVATIONS OF QUASI-ELECTROSTATIC CHORUS EMISSIONS

E. A. Shirokov[1], A. G. Demekhov[1,2], Y. V. Chugunov[1], A. V. Larchenko[2]

[1]Institute of Applied Physics of the Russian Academy of Sciences, Russian Federation; [2]Polar Geophysical Institute, Russian Federation

---

Friday, August 25, 2017 **09:40-11:00** **516DE**

J35 The Square Kilometer Array (2)

Session Chairs: Douglas Bock, Robert Braun, Justin Jonas

09:40 J35-1 HIGH-COMPRESSION BASELINE DEPENDENT AVERAGING

S. Salvini, *Oxford e-Research Centre, UK*; S. J. Wijnholds, *ASTRON, Netherlands*

10:00 J35-2 THE HYDROGEN EPOCH OF REIONIZATION ARRAY (HERA)

D. R. DeBoer, *University of California, United States*; H. Collaboration, *HERA Collaboration, USA*

10:20 J35-3 RADIO TELESCOPE COST MODELLING USING PERFORMANCE MEASURES, COST SCALING RULES, AND TOTAL COST CONSTRAINTS

A. J. Boonstra, R. J. Nijboer, *ASTRON, Netherlands*

10:40 J35-4 SELF-CALIBRATION OF HIGHLY-REDUNDANT LOW-FREQUENCY ARRAYS -- INITIAL RESULTS WITH HERA

B. Nikolic[1], C. Carilli[2,1]

[1]University of Cambridge, United Kingdom; [2]National Radio Astronomy Observatory, USA

Friday, August 25, 2017 **11:00-12:00** **517CD**

L2 General Lecture 3: Bahram Jalali - 'Analog Computing with Optical Rogue Waves'

11:00 L2-1 (Invited) ANALOG OPTICAL COMPUTING

B. Jalali, D. Solli, *ucla, United States*

Friday, August 25, 2017 **13:40-14:40** **511AD**

A20 Linear and Nonlinear Measurements for Communications Systems (1)

Session Chairs: Pedro Cruz, Nuno Borges Carvalho

13:40 A20-1 TEST BENCH FOR BEAMFORMING NETWORK IMPACT ASSESSMENT ON ANTENNA ARRAYS

P. M. Cruz, M. Jordão, N. B. Carvalho, *Institute of Telecommunications - Aveiro, Portugal*

14:00 A20-2 SOURCE RECONSTRUCTION USING FAST ARRAY-BASED NEAR-FIELD MEASUREMENT

A. Kiaee[1], R. Patton[2], P. Mousavi[1]

[1]University of Alberta, Canada; [2]EMSCAN Corporation, Canada

14:20 A20-3 PHASE REFERENCE / STANDARD WITH ARBITRARILY EXTENDABLE BANDWIDTH BASED ON MULTISINE SIGNALS

J. Huang, X. Guo, Z. He, L. Wang, W. Zhao, Z. Zhang, Y. Zhang, *National Institute of Metrology, China (CIE)*

Friday, August 25, 2017 **13:40-14:40** **510AC**

B33 Small Antennas from Nano to Macro Scales (1)

Session Chairs: Richard Ziolkowski, Samel Arslanagic

13:40 B33-1 (Invited) METAMATERIAL-INSPIRED NEAR-FIELD RESONANT PARASITIC PARADIGM: ELECTRICALLY SMALL ANTENNAS FROM MICROWAVES TO OPTICS

R. W. Ziolkowski[1,2]

[1]University of Technology Sydney, Australia; [2]University of Arizona, United States

14:00 B33-2 (Invited) SYMMETRIC AND ASYMMETRIC 3D ACTIVE COATED NANO-PILLS AS NANO ANTENNAS

R. E. Jacobsen, S. Arslanagic, *Technical University of Denmark, Denmark*

14:20 B33-3 (Invited) PLASMONIC NANOANTENNAS AS A NANOSCALE PLATFORM TO ENHANCE LIGHT-MATTER INTERACTIONS

C. Argyropoulos, *University of Nebraska-Lincoln, United States*

Friday, August 25, 2017 **13:40-14:40** **513A**

C33 5G Small Cell Networks (1)

Session Chairs: Jie Zhang, Andres Glazunov, Xiaoli Chu

13:40 C33-1 (Invited) OTA METHODS FOR 5G BTS TESTING – SURVEY OF POTENTIAL APPROACHES

M. Gustafsson, T. Jämsä, M. Högberg, *Huawei Technologies, Sverige*

14:00 C33-2 PROBABILISTIC CACHING STRATEGY IN COLLABORATIVE SMALL CELL NETWORKS

Y. Zhou[1,2], Y. Louet[1], H. Zhang[2]

[1]CentraleSupelec, France; [2]Zhejiang University, China

14:20 C33-3 (Invited) ENHANCING SMALL CELL CAPACITY WITH IN-BAND WIRELESS BACKHAUL

Y. Wu[1], R. Tao[2], Y. Zhu[1], X. Chu[2], J. Zhang[2]

[1]East China University of Science and Technology, China (CIE); [2]University of Sheffield, United Kingdom

Friday, August 25, 2017 **13:40-14:40** **513B**

DC31 Optical Telecommunications (1)

Session Chairs: Mohamad Asghari, Jose Azana

13:40 DC31-1 (Invited) DYNAMIC MICROWAVE FREQUENCY MEASUREMENT SYSTEM BASED ON SILICON PHOTONICS

M. Burla[1,2], X. Wang[3], M. Li[4], L. Chrostowski[3], J. Azaña[1]

[1]Institut National de la Recherche Scientifique, Canada; [2]Institute of Electromagnetic Fields, ETH Zurich, Switzerland; [3]University of British Columbia, Canada; [4]Institute of Semiconductors, Chinese Academy of Sciences, China

14:00 DC31-2 (Invited) INTEGRATED OPTICAL ANALOG SIGNAL PROCESSING

M. Li, *Institute of Semiconductors, Chinese Academy of Sciences, China (CIE)*

14:20 DC31-3 (Invited) GENERATION AND PROCESSING OF RF WAVEFORMS IN PHOTONIC FREQUENCY-SHIFTING LOOPS

H. Guillet de Chatellus, *LIPhy, CNRS/Université Grenoble Alpes, France*

Friday, August 25, 2017 **13:40-14:40** **513EF**

EFGH30 Natural Electromagnetic Noise and Radio Sensing Applications in Terrestrial and Planetary Environments (2)

Session Chairs: Yasuhide Hobara, Colin Price, Tomoo Ushio, Martin Fullekrug

13:40 EFGH30-1 PERFORMANCE IMPROVEMENT OF DIGITAL BEAMFORMING FOR PHASED ARRAY WEATHER RADAR

H. Kikuchi, T. Ushio, *Osaka University, Japan*; F. Mizutani, M. Wada, *Toshiba Corporation, Japan*

14:00 EFGH30-2 EXPLORATION VISUALIZATION ANALYSIS OF RADAR DETECTION RANGE UNDER COMPLEX ELECTROMAGNETIC ENVIRONMENT

S. Guo, B. Yan, Y. Gao, Z. Wang, *Northwestern Polytechnical University, P.R.China*

14:20 EFGH30-3 (Invited) IONOSPHERIC REMOTE SENSING USING LIGHTNING-GENERATED VLF/LF SFERICS IN SPACE AND TIME

J. C. McCormick, M. B. Cohen, *Georgia Institute of Technology, United States*

Friday, August 25, 2017 **13:40-14:40** **510BD**

F34 Outdoor Propagation and Channel Modeling in Built-Up Areas (1)

Session Chairs: Robert Bultitude, Saul Torrico

13:40 F34-1 EFFICIENT WIRELESS LINK MODELING FOR MARINE DRONE APPLICATION UNDER HARSH OFFSHORE ENVIRONMENT

Z. O. Zaw, V. P. Bui, C. E. Png, *Institute of High Performance Computing, Singapore*

14:00 F34-2 A RAY-TRACING MODEL FOR MILLIMETER-WAVE RADIO PROPAGATION IN DENSE-SCATTER OUTDOOR ENVIRONMENTS

J. C. Silva, E. P. O. Costa, *CETUC PUC-Rio, Brazil*

14:20 F34-3 (Invited) WIRELESS URBAN PROPAGATION MEASUREMENTS AT 2.44, 5.8, 14.8 & 58.68 GHZ

J. Medbo, D. Sundman, H. Asplund, N. Jalden, S. Dwivedi, *Ericsson, Sweden*

Friday, August 25, 2017 **13:40-14:40** **514A**

F35 Remote Sensing in Complex and Random Media (Surface - 1)

Session Chairs: Saba mudaliar, Akira Ishimaru

13:40 F35-1 APPLICATION OF ELECTROMAGNETIC MODELS FOR SEA NEAR-SURFACE WIND SPEED RETRIEVAL FROM C-BAND SAR IMAGES

T. V. La, A. Khenchaf, F. Comblet, *ENSTA Bretagne, France*; C. Nahum, *General Directorate for Armament (DGA), France*

14:00 F35-2 PERIODOGRAM-BASED DERIVATION OF FIRST-ORDER POWER SPECTRAL DENSITY FROM REMOTE SENSING OF THE OCEAN SURFACE BY HF-DOPPLER RADAR

R. Shahidi, E. W. Gill, *Memorial University of Newfoundland, Canada*

14:20 F35-3 A PARALLEL EFFICIENT PARTITIONING ALGORITHM FOR THE BACKSCATTERING COEFFICIENT FROM MULTI-SCALE OCEAN SURFACE AT LOW GRAZING ANGLE

Z. S. Wu, T. Wu, X. X. Zhang, *Xidian University, China (CIE)*

Friday, August 25, 2017 **13:40-14:00** **511BE**

G42 G-Tutorial Tim Fuller-Rowell: “Will we Ever be Able to Model and Forecast the Ionosphere Well Enough to Support the Needs of the Radio Wave Users?"

Session Chair: Iwona Stanislawska

13:40 G42-1 (Invited) WILL WE EVER BE ABLE TO MODEL AND FORECAST THE IONOSPHERE WELL ENOUGH TO SUPPORT THE NEEDS OF THE RADIO WAVE USERS?

T. Fuller-Rowell, *CIRES University of Colorado, United States*

Friday, August 25, 2017 **13:40-14:40** **513C**

G43 International Beacon Satellite Studies (3)

Session Chairs: Patricia Doherty, Andrzej Krankowski, Bruno Nava

13:40 G43-1 IMPROVED MODELLING OF EQUATORIAL PLASMA BUBBLES

E. Blanch[1], D. Altadill[1], J. M. Juan[2], A. Camps[2,3], J. Barbosa[4], G. González[2], G. Vazquez[2], J. Riba[2], J. Sanz[2], R. Orús[5]

[1]Observatori de l'Ebre (OE); Universitat Ramon Llull - CSIC, Spain; [2]Universitat Politècnica de Catalunya & IEEC/CTE-UPC, Spain; [3]Institut d'Estudis Espacials de Catalunya IEEC/UPC, Spain; [4]RDA -Research and Development in Aerospace GmbH, Switzerland; [5]ESTEC, The Netherlands

14:00 G43-2 IMPACT OF ADVERSE IONOSPHERIC EVENTS ON TRANSIONOSPHERIC SATELLITE SIGNALS

B. Roy, S. Ray, A. Paul, *University of Calcutta, India*

14:20 G43-3 SCINTILLATION MONITORING, MITIGATION. AND MODELLING IN THE GPS ERA - WHAT WENT WRONG IN THE LAST 60 YEARS?

J. P. Thayyil, A. McCaffrey, H. Mezaoui, A. Hamza, P. Prikryl, *University of New Brunswick, Canada*

Friday, August 25, 2017 **13:40-14:40** **511CF**

H37 Macro/Micro-Scale Kinetic Processes at Natural Boundary Layers in Terrestrial and Planetary Environments (3)

Session Chairs: Bertrand Lembège, Iku Shinohara, Gurbax Lakhina

13:40 H37-1 (Invited) CASSINI OBSERVATIONS OF SATURN'S HIGH-MACH NUMBER BOW SHOCK

A. H. Sulaiman[1], A. Masters[2], D. Burgess[3], N. Sergis[4], L. Stawarz[5], M. Fujimoto[6], A. J. Coates[7], M. K. Dougherty[2]

[1]University of Iowa, United States; [2]Imperial College London, United Kingdom; [3]Queen Mary University of London, United Kingdom; [4]National and Kapodistrian University of Athens, Greece; [5]Jagiellonian University, Poland; [6]ISAS/JAXA, Japan; [7]University College London, United Kingdom

14:00 H37-2 (Invited) MAGNETOSHEATH HIGH-SPEED JETS DOWNSTREAM OF QUASI-PARALLEL SHOCKS

F. Plaschke, *Austrian Academy of Sciences, Austria*

14:20 H37-3 (Invited) DYNAMICS OF THE CUSP AT MERCURY'S MAGNETOSPHERE

D. Schriver[1], P. M. Travnicek[2,3], P. Hellinger[3], R. L. Richard[1], D. Perkins[1], J. Raines[4]

[1]UCLA, United States; [2]UC Berkeley, United States; [3]ACSR, Czech Republic; [4]University Michigan, United States

Friday, August 25, 2017 13:40-14:40 514B

HJ38 Solar, Planetary, and Heliospheric Radio Emissions (8)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

13:40 HJ38-1 RADIO AND PLASMA WAVE OBSERVATIONS IN THE INTERSTELLAR MEDIUM WITH VOYAGER 1

D. A. Gurnett, W. S. Kurth, *University of Iowa, United States*; E. C. Stone, *California Inst. of Technology, United States*; S. M. Krimigis, R. B. Decker, *Applied Physics Laboratory/JHU, United States*; N. F. Ness, *University of Delaware, United States*; L. F. Burlaga, *NASA/Goddard Space Flight Center, United States*

14:00 HJ38-2 ALMA TOMOGRAPHY OF STELLAR CHROMOSPHERES

R. Liseau[1], V. De la Luz[2], E. O'Gorman[3], E. Bertone[4], C. Miguel[4], F. Tapia[2]

[1]Earth and Space Sciences, Chalmers University of Technology, Sweden; [2]Universidad Nacional Autonoma de Mexico, Mexico; [3]Dublin Institute for Advanced Studies, Astronomy and Astrophysics Secton, Ireland; [4]Instituto Nacional de Astrofísica, Mexico

14:20 HJ38-3 EXTRASOLAR SPACE WEATHER MONITORING WITH THE OVRO-LWA

M. M. Anderson, G. Hallinan, *Caltech, United States*

Friday, August 25, 2017 13:40-14:40 516DE

J36 Historical Radio Astronomy (1)

Session Chairs: Richard Schilizzi, Ken Kellermann, Richard Wielebinski

13:40 J36-1 (Invited) THE NOBEYAMA MILLIMETER ARRAY

M. Ishiguro, *National Astronomical Observatory of Japan, Japan*

14:00 J36-2 (Invited) THE ROLE OF IRAM IN MILLIMETRE RADIOASTRONOMY: AN HISTORICAL PERSPECTIVE

P. Cox, *Joint ALMA Observatory, Chile*

14:20 J36-3 (Invited) ALMA: LESSONS FROM CONSTRUCTION

A. Beasley, *National Radio Astronomy Observatory, United States*

Friday, August 25, 2017 **13:40-14:20** **516AB**

K20 Biomedical Applications and EMF Exposure of IoT (1)

Session Chairs: Shoogo Ueno, Nam Kim

13:40 K20-1 (Invited) EXPOSURE ASSESSMENT OF RF FIELDS EMITTED BY IOT DEVICES

T. Onishi, *NTT DOCOMO INC., Japan*

14:00 K20-2 (Invited) VARIABILITY IN TDCS ELECTRIC FIELDS: EFFECTS OF ELECTRODE SIZE AND CONFIGURATION

I. Laakso[1], S. Tanaka[2], M. Mikkonen[1], S. Koyama[3], A. Hirata[4]

[1]Aalto University, Finland; [2]Hamamatsu University School of Medicine, Japan; [3]Fujita Health University, Japan; [4]Nagoya Institute of Technology, Japan

Friday, August 25, 2017 **14:40-15:40** **511AD**

A21 Linear and Nonlinear Measurements for Communications Systems (2)

Session Chairs: Pedro Cruz, Nuno Borges Carvalho

14:40 A21-1 MIXED-SIGNAL SOC CHARACTERIZATION FOR DPD FEEDBACK LOOP COMPENSATION

M. D. C. Jordão, P. M. Cruz, N. B. Carvalho, *Instituto Telecomunicacoes - Universidade Aveiro, Portugal*

15:00 A21-2 (Invited) CLOUD-BASED RF INFOTAINMENT TESTING SYSTEM FOR THE AUTOMOTIVE INDUSTRY

F. Leite[1], M. Jordão[2], P. Cruz[2], C. Pereira[1]

[1]Controlar – Innovating Industry, Portugal; [2]Instituto de Telecomunicações - Universidade de Aveiro, Portugal

15:20 A21-3 (Invited) NOVEL MATERIALS FOR NEXT GENERATION PHOTONIC DEVICES

M. Lipson, *Columbia University, United States*

Friday, August 25, 2017 **14:40-15:40** **510AC**

B34 Small Antennas from Nano to Macro Scales (2)

Session Chairs: Richard Ziolkowski, Samel Arslanagic

14:40 B34-1 (Invited) STRUCTURED LIGHT TO REVEAL NANOSCALE MAGNETISM AND CHIRALITY

M. Albooyeh, M. D. Varcheie, M. Kamandi, M. Hanifeh, M. Veysi, F. Capolino, *University of California Irvine, United States*

15:00 B34-2 (Invited) NONRECIPROCAL NANOANTENNAS BASED ON TIME MODULATION

A. Alu, D. L. Sounas, *The University of Texas at Austin, United States*

15:20 B34-3 (Invited) MULTI-OBJECTIVE TRADEOFF STUDIES OF DIRECTIVITY ACHIEVABLE BY ELECTRICALLY SMALL NANOLOOPS

J. Nagar, S. D. Campbell, P. L. Warner, D. H. Werner, *Penn State University, United States*

Friday, August 25, 2017 **14:40-15:40** **513A**

C34 5G Small Cell Networks (2)

Session Chairs: Jie Zhang, Andres Glazunov, Xiaoli Chu

14:40 C34-1 (Invited) ENERGY EFFICIENCY AND PING-PONG HANDOVER OPTIMIZATION IN TWO-TIRE HETEROGENEOUS NETWORKS

B. Zhang, H. Hu, Q. Hong, J. Zhang, *University of Sheffield, United Kingdom*

15:00 C34-2 COMPARISON OF 5G WAVEFORM CANDIDATES IN HIGH SPEED SCENARIO

Q. Zheng[1], F. Wang[1], X. Chen[2], Y. Liu[1], D. Miao[3], Z. Zhao[3]

[1]State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University, China (CIE); [2]Beijing Engineering Research Center of High-speed Railway Broadband Mobile Communications, China (CIE); [3]Nokia Beijing Bell Lab, China (CIE)

15:20 C34-3 CHARACTERIZATION OF INDOOR MASSIVE MIMO CHANNEL AT 11 GHZ

J. Li[1], B. Ai[1,2], R. He[1], M. Yang[1], Y. Zhang[1], X. Liu[1], Z. Zhong[1]

[1]Beijing Jiaotong University, China; [2]Engineering University of Armed Police Force, China

Friday, August 25, 2017 **14:40-15:40** **513B**

DC32 Optical Telecommunications (2)

Session Chairs: Mohamad Asghari, Jose Azana

14:40 DC32-1 (Invited) ON-CHIP FREQUENCY COMBS FOR GENERATING COMPLEX ENTANGLED QUANTUM STATES

M. Kues[1,2], C. Reimer[1], P. Roztocki[1], B. Wetzel[1,3], F. Grazioso[1], B. E. Little[4], S. T. Chu[5], T. Johnston[1], Y. Bromberg[6], L. Caspani[7], D. J. Moss[8], R. Morandotti[1,9]

[1]Institut national de la recherche scientifique – Energie Matériaux Télécommunications, Canada; [2]School of Engineering, University of Glasgow, UK; [3]Department of Physics and Astronomy, University of Sussex, UK; [4]State Key Laboratory of Transient Optics and Photonics, Xi'an Institute of Optics and Precision Mech, China; [5]Department of Physics and Materials Science, City University of Hong Kong, China; [6]Racah Institute of Physics, The Hebrew University of Jerusalem, Israel; [7]Institute of Photonics, Department of Physics, University of Strathclyde, UK; [8]Center for Micro-Photonics, Swinburne University of Technology, Australia; [9]Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of C, China

15:00 DC32-2 (Invited) RECONFIGURABLE PHOTONIC INTEGRATED CIRCUIT FOR OPTICAL SIGNAL PROCESSING AND MICROWAVE SIGNAL GENERATION

J. Yao, *Univ. Ottawa, Canada*

15:20 DC32-3 (Invited) FBG-BASED OPTICAL SIGNAL PROCESSORS

A. Carballar, *Universidad de Sevilla, Spain*; M. R. Fernández-Ruiz, *Universidad de Alcalá, Spain*

Friday, August 25, 2017 **14:40-15:40** **513EF**

EFGH31 Natural Electromagnetic Noise and Radio Sensing Applications in Terrestrial and Planetary Environments (3)

Session Chairs: Yasuhide Hobara, Colin Price, Tomoo Ushio, Martin Fullekrug

14:40 EFGH31-1 THE LOW FREQUENCY ELECTROMAGNETIC NOISE ENVIRONMENT - COMPARISON OF RADIO QUIESCENCE IN SOUTH AFRICA AND EUROPE

M. Fullekrug[1], N. Ogechukwu[2,3], M. Kosch[2], K. Koh[1], Z. Liu[1], M. Stock[4]

[1]University of Bath, United Kingdom; [2]South African National Space Agency, South Africa; [3]University of Capetown, South Africa; [4]EarthNetworks, United States

15:00 EFGH31-2 (Invited) SHORT-TERM VARIABILITY OF THE LOWER IONOSPHERE FROM VLF NARROWBAND RADIO OBSERVATIONS

I. Silber[1,2], C. Price[1]

[1]Tel Aviv University, Israel; [2]Penn State University, USA

15:20 EFGH31-3 MULTI STEP AHEAD PREDICTION OF NIGHTTIME VLF AMPLITUDE SIGNAL FOR LOW-, MID-AND HIGH-LATITUDE PATHS

H. Santosa[1,2], Y. Hobara[1,1,1]

[1]The University of Electro-Communications, Japan; [2]Bengkulu University, Indonesia

Friday, August 25, 2017 **14:40-15:40** **510BD**

F36 Outdoor Propagation and Channel Modeling in Built-Up Areas (2)

Session Chairs: Robert Bultitude, Saul Torrico

14:40 F36-1 (Invited) EVALUATION OF LARGE-SCALE PARAMETERS IN URBAN MICROCELLS AT 3.8 GHZ

C. Oestges, N. Dementieva, E. Vinogradov, *Université catholique de Louvain, Belgium*

15:00 F36-2 (Invited) STATISTICAL MODELLING OF THROUGH WALL ATTENUATION AND DEPOLARIZATION AT 10 AND 30 GHZ

D. G. Michelson, A. Bhardwaj, S. Bonyadi-Ram, *University of British Columbia, Canada*; G. Guo, *University of Electronic Science and Technology of China, China*; Y. Liu, *Northwestern Polytechnical University, China*

15:20 F36-3 (Invited) A COMPARISON OF RADIO PROPAGATION CHARACTERISTICS IN A SMALL ROOM AT CENTRE FREQUENCIES BETWEEN 2 GHZ AND 30 GHZ

R. J. C. Bultitude, M. Alkadamani, *Carleton University, Canada*

Friday, August 25, 2017 **14:40-15:40** **514A**

F37 Remote Sensing in Complex and Random Media (Surface - 2)

Session Chairs: Saba mudaliar, Akira Ishimaru

14:40 F37-1 MICROWAVE SCATTERING FROM SUBMERGED OBJECT INDUCED WAKE OVER ROUGH SEA SURFACE

M. Zhang, J. Wang, *Xidian University, China (CIE)*

15:00 F37-2 A COMPARATIVE STUDY OF ANALYTIC MODELLING, NUMERICAL SIMULATIONS, AND EXPERIMENTAL MEASUREMENTS FOR ROUGH SOIL SURFACE SCATTERING AND EMISSION

J. Zeng, K.-S. Chen, *Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China (CIE)*

15:20 F37-3 INVESTIGATION OF ELECTROMAGNETIC SCATTERING CHARACTERISTICS FROM DYNAMIC SEA SURFACE WITH BREAKING WAVES

X. Zhang, Z. Wu, *Xidian University, China*; X. Su, *China Academy of Space Technology, China*

Friday, August 25, 2017 **14:40-15:40** **511CF**

H39 Macro/Micro-Scale Kinetic Processes at Natural Boundary Layers in Terrestrial and Planetary Environments (4)

Session Chairs: Bertrand Lembège, Iku Shinohara, Gurbax Lakhina

14:40 H39-1 3D OUTFLOW JETS ORIGINATED FROM COLLISIONLESS MAGNETIC RECONNECTION

K. Fujimoto, *University of Tokyo, Japan*

15:00 H39-2 NUMERICAL SIMULATIONS OF WAVE-MODE CONVERSION IN MAGNETOSPHERIC PLASMA

M. Horky[1,2], Y. Omura[2], O. Santolik[1,3]

[1]Institute of Atmospheric Physics, Czech Academy of Sciences, Czech Republic; [2]RISH, Kyoto University, Japan; [3]Faculty of Mathematics and Physics, Charles University in Prague, Czech Republic

15:20 H39-3 EFFECTS OF THE MAGNETIC FIELD AND DENSITY INHOMOGENEITY ON THE ELECTRON HOLE EVOLUTION

I. Kuzichev[1], I. Vasko[2,1], O. Agapitov[2,3], F. Mozer[2], A. Artemyev[2,1]

[1]Space Research Institute, Russian Federation; [2]University of California, USA; [3]National Taras Shevchenko University of Kiev, Ukraine

---

Friday, August 25, 2017 **14:40-15:00** **514B**

HJ40 Solar, Planetary, and Heliospheric Radio Emissions (9)

Session Chairs: Gottfried Mann, Helmut Rucker, Patrick Galopeau, Yihua Yan, Timothy Bastian, Stephen White

14:40 HJ40-1 PROPERTIES THE SOLAR S-BURSTS STORM OBSERVED ON 9 JULY 2013 AT FREQUENCIES 9-32 MHZ

V. V. Dorovskyy[1], V. N. Melnik[1], A. A. Konovalenko[1], A. I. Brazhenko[2], S. Poedts[3], H. O. Rucker[4], M. V. Shevchuk[1], M. Panchenko[5]

[1]*Institute of Radio Astronomy of National Academy of Sciences of Ukraine, Ukraine;* [2]*Poltava Gravimetric Observatory, Ukraine;* [3]*KU Leuven, Belgium;* [4]*Commission for Astronomy of Austrian Academy of Sciences, Austria;* [5]*Space Research Institute of Austrian Academy of Sciences, Austria*

Friday, August 25, 2017 **14:40-15:40** **516DE**

J37 Historical Radio Astronomy (2)

Session Chairs: Richard Schilizzi, Ken Kellermann, Richard Wielebinski

14:40 J37-1 (Invited) THE VERY LARGE ARRAY - ORGIN, DESIGN, AND CONSTRUCTION

S. Weinreb, *California Institute of Technology, USA*

15:00 J37-2 (Invited) THE AUSTRALIA TELESCOPE COMPACT ARRAY

D. C. C-J. Bock, R. D. Ekers, *CSIRO Astronomy and Space Science, Australia*; R. H. Frater, *Macquarie University, Australia*

15:20 J37-3 (Invited) THE GIANT METREWAVE RADIO TELESCOPE

Y. Gupta, G. Swarup, *National Centre for Radio Astrophysics, India*

Friday, August 25, 2017 **14:40-15:40** **516AB**

K21 Biomedical Applications and EMF Exposure of IoT (2)

Session Chairs: Shoogo Ueno, Nam Kim

14:40 K21-1 MECHANISM INVESTIGATION, DEVICE DEVELOPMENT, AND TREATMENT PERSONALIZATION USING ANATOMICAL MODELS FUNCTIONALIZED WITH ELECTROPHYSIOLOGICAL NEURON MODELS

A. M. Cassara[1], E. Neufeld[1], H. Montanaro[1,2], N. Kuster[1,2]

[1]*IT'IS Foundation for Research on Information Technologies in Society, Switzerland;* [2]*Swiss Federal Institute of Technology (ETHZ), Switzerland*

15:00 K21-2 (Invited) DEEP TRANSCRANIAL MAGNETIC STIMULATION WITH IMPROVED FOCALITY USING FIGURE-OF-EIGHT AND HALO COILS

M. Lu, *Lanzhou Jiaotong University, China (CIE)*; S. Ueno, *Kyushu University, Japan*

15:20 K21-3 (Invited) EFFECTS OF RADIO-FREQUENCY FIELDS ON IRON CAGE PROTEINS: DYNAMICS AND IRON CHEMISTRY

O. Cespedes[1,2], S. Ueno[2,3]

[1]*University of Leeds, United Kingdom;* [2]*Kyushu University, Japan;* [3]*University of Tokyo, Japan*

Friday, August 25, 2017 **16:00-17:20** **511AD**

A22 Mode-Stirred Chambers

Session Chairs: Luk Arnaut, Tian Hong Loh

16:00 A22-1 INVESTIGATION OF BANDPASS FILTERS IN THE TIME DOMAIN SIGNAL ANALYSIS OF REVERBERATION CHAMBER

Q. Xu[1], Y. Huang[2], Y. Zhao[1], L. Xing[1], Z. Tian[2], T. Loh[3]

[1]Nanjing University of Aeronautics and Astronautics, China (CIE); [2]The University of Liverpool, UK; [3]National Physical Laboratory, UK

16:20 A22-2 EXPERIMENTAL INVESTIGATION OF THE UNIFORMITY OF ROOT-MEAN-SQUARE DELAY SPREAD SIMULATED IN REVERBERATION CHAMBER

X. Guo, Z. He, Y. Zhang, L. Wang, X. Zhou, *National Institute of Metrology, NIM, China (CIE)*

16:40 A22-3 ROUTING AND LINK PERFORMANCE ASSESSMENT OF A WIRELESS SENSOR NETWORK IN A REVERBERATION CHAMBER WITH DIFFERENT ABSORBER LOADING CONDITIONS

T. H. Loh, *National Physical Laboratory, United Kingdom*; K. Liu, *National Institute of Metrology, P. R. China*

17:00 A22-4 MICROSTRIP PATCH ANTENNA DESIGN AT 2.45 GHZ AND EFFICIENCY MEASUREMENT USING REVERBERATION CHAMBER

N.-W. Kang[1], A. N. Bakti[2], D.-J. Lee[1,2], J.-Y. Kwon[1,2]

[1]Korea Research Institute of Standards and Science, South Korea; [2]University of Science and Technology, South Korea

---

Friday, August 25, 2017 **16:00-17:40** **510AC**

B35 High-Resolution Electromagnetic Sensing and Imaging

Session Chairs: Alexander Yarovoy, Natalia Nikolova

16:00 B35-1 (Invited) SUPER-RESOLUTION ARRAY RADAR IMAGING OF HUMAN BODIES FOR HEARTBEAT MONITORING

T. Sakamoto[1], P. J. Aubry[2], A. G. Yarovoy[2], S. Okumura[3], H. Taki[4], T. Sato[3]

[1]University of Hyogo, Japan; [2]Delft University of Technology, The Netherlands; [3]Kyoto University, Japan; [4]Tohoku University, Japan

16:20 B35-2 (Invited) MICROWAVE COMPUTATIONAL IMAGING: SIMPLIFYING RF ARCHITECTURES WITH CAVITIES AND METASURFACES

T. Fromenteze[1,2], C. Decroze[1], O. Yurduseven[2], D. R. Smith[2]

[1]Xlim Research Institute, University of Limoges, France; [2]Duke University, USA

16:40 B35-3 (Invited) DUAL-POLARIZATION COHERENCE FACTOR FOR CLUTTER REDUCTION IN FORWARD-LOOKING GROUND PENETRATING RADAR IMAGING

D. Comite[1], F. Ahmad[2], T. Dogaru[3], M. G. Amin[1]

[1]Villanova University, United States; [2]Temple University, United States; [3]Army Research Lab, United States

17:00 B35-4 (Invited) OBSERVATIONS ON PHANTOM STABILITY AND ANTENNA ARRANGEMENT FOR MICROWAVE TRACKING OF BREAST TISSUE CHANGES

M. Popovic, L. Kranold, M. Kezzo, *McGill University, Canada*

17:20 B35-5 (Invited) AUTOFOCUS COMPRESSED SENSING IMAGING BASED ON NONLINEAR CONJUGATE GRADIENT

T. Jin, *National University of Defense Technology, China (CIE)*

Friday, August 25, 2017 **16:00-17:40** **514B**

BD36 Advances in Antennas for RFID

Session Chairs: Smail Tedjini, Ville Viikari, Apostolos Georgiadis

16:00 BD36-1 DESIGN OF A CHIPLESS RFID TAG LOADED WITH SQUARE SPIRAL RESONATOR

J. Y. Siddiqui, *University of Calcutta, India*; S. Datta, *Heritage Institute of Technology, India*

16:20 BD36-2 SENSITIVITY ENHANCEMENT BY PARITY-TIME SYMMETRY IN WIRELESS TELEMETRY SENSOR SYSTEMS

P.-Y. Chen, *Wayne State University, United States*

16:40 BD36-3 (Invited) ALTERNATIVE IMPLEMENTATIONS OF SMALL ALL-PLATFORM UHF RFID TRANSPONDERS

K. Jaakkola, *VTT Technical Research Centre of Finland Ltd., Finland*

17:00 BD36-4 (Invited) ON THE TAG DETECTION IN NEAR-FIELD UHF RFID APPLICATIONS

A. Michel[1], M. Pino[2], P. Nepa[1], G. Manara[1]

[1]University of Pisa, Italy; [2]University of Oviedo, Spain

17:20 BD36-5 ON THE TRANSFORMATION OF SYMBOLS AND FIGURES TO RFID TAGS

A. Abdelnour[1], A. Rennane[2], D. Kaddour[1], S. Tedjini[1]

[1]Université Grenoble Alpes - LCIS, France; [2]Instrumentation Laboratory, FEI USTHB University, Algeria

---

Friday, August 25, 2017 **16:00-17:40** **513A**

C35 5G Small Cell Networks (3)

Session Chairs: Jie Zhang, Andres Glazunov, Xiaoli Chu

16:00 C35-1 (Invited) A PROPOSED ELEVATION ANGLE MODEL FOR SMALL CELL ENVIRONMENTS

Q. Hong, H. Hu, H. Li, H. Zheng, B. Zhang, J. Zhang, *The university of Sheffield, UK*

16:20 C35-2 MILLIMETER WAVE WIDEBAND HIGH GAIN ANTENNA BASED ON GAP WAVEGUIDE TECHNOLOGY

A. U. Zaman, A. A. Glazunov, *Chalmers University of Technology, Sweden*

16:40 C35-3 LOW-PAPR CONDITION FOR 5G-CANDIDATE WAVEFORMS

M. Ben Mabrouk, M. Chafii, Y. Louët, F. Bader, *CentraleSupélec, France*

17:00 C35-4 (Invited) SMALL CELL DEPLOYMENT OPTIMIZATION WITH A NEW PROPOSED PATHLOSS MODEL UNDER INDOOR SCENARIOS

H. Zheng[1], J. Zhang[2], Q. Hong[1], H. Li[1], H. Hu[1], J. Zhang[1]

[1]the University of Sheffield, United Kingdom; [2]Lanzhou University, China

17:20 C35-5 (Invited) SYSTEM-LEVEL PERFORMANCE OF MMWAVE CELLULAR NETWORKS FOR URBAN MICRO ENVIRONMENTS

N. Rupasinghe[1], Y. Kakishima[2], I. Guvenc[1]

[1]North Carolina State University, United States; [2]DOCOMO Innovations, Inc., United States

---

Friday, August 25, 2017 **16:00-17:40** **513B**

DA33 Optical Methods for Microwave Metrology

Session Chairs: Mark Bieler, Chuntao Yang

16:00 DA33-1 (Invited) MICROWAVE PHOTONICS RESEARCH AT KRISS

D.-J. Lee, Y.-P. Hong, J.-Y. Kwon, N.-W. Kang, *KRISS, South Korea*

16:20 DA33-2 (Invited) PHOTODIODE CALIBRATION COMPARISON BETWEEN ELECTRO-OPTIC SAMPLING AND HETERODYNE MEASUREMENTS UP TO 75 GHZ

A. Feldman, J. Jargon, T. Dennis, P. Hale, *National Institute of Standards and Technology, United States*

16:40 DA33-3 (Invited) OPTICAL FIBER LINK PORT EXTENDER FOR VECTOR NETWORK ANALYZER

S. Kurokawa, M. Hirose, *National Institute of Advanced Industrial Science and Technology (AIST), Japan*; Y. Toba, M. Onizawa, J. Ichijo, *Seiko Giken, Japan*

17:00 DA33-4 (Invited) MICROWAVE POWER MEASUREMENTS USING RYDBERG ATOMS

A. Michaud, *National Research Council, Canada, Canada*

17:20 DA33-5 (Invited) TRACEABLE MEASUREMENT OF TERAHERTZ POWER AND INTENSITY USING OPTICAL METHODS

Y. Deng, Q. Sun, *National Institute of Metrology, China*; M. Bieler, *Physikalisch-Technische Bundesanstalt, Germany*

Friday, August 25, 2017 **16:00-17:40** **513EF**

ECJ32 Spectrum Management

Session Chairs: Jose Pedro Borrego, Adrian Tiplady, Anil Shukla, Harvey Liszt

16:00 ECJ32-1 PROTECTION PROGRESS OF RADIO ASTRONOMY SERVICE IN CHINA

H. Zhang, *National Astronomical Observatories of CAS, China*

16:20 ECJ32-2 TIERED SPECTRUM MANAGEMENT, RESILIENCE AND SANDPITS – ARE THEY A WAY FORWARD

A. K. Shukla, *QinetiQ, United Kingdom*

16:40 ECJ32-3 AUTOMATED BANDWIDTH MEASUREMENTS USING ITU-R SM.443 AND GNU RADIO DEVICES

A. Navarro, L. Vargas, C. Urcuqui, J. Aristizabal, *Universidad Icesi, Colombia*; A. Arteaga, *Universidad de Chile, Chile*

17:00 ECJ32-4 (Invited) SUCCESSES AND CHALLENGES IN SPECTRUM MANAGEMENT FOR RADIO ASTRONOMY

H. Liszt, *NRAO, USA*

Friday, August 25, 2017 **16:00-17:40** **510BD**

F38 Outdoor Propagation and Channel Modeling in Built-Up Areas (3)

Session Chairs: Robert Bultitude, Saul Torrico

16:00 F38-1 (Invited) MAP-BASED CHANNEL MODEL FOR 5G WIRELESS COMMUNICATIONS

A. Hekkala[1], P. Kyösti[1], J. Dou[2], L. Tian[2], N. Zhang[2], W. Zhang[3], B. Gao[2]

[1]Keysight Technologies, Finland; [2]ZTE Corporation, China; [3]ZTE-TX Inc, USA

16:20 F38-2 (Invited) A FRAMEWORK FOR THE EVALUATION BACKHAUL/FRONTHAUL LINKS AT 300 GHZ

T. Kürner, S. Rey, A. Fricke, B. Peng, *TU Braunschweig, Germany*

16:40 F38-3 (Invited) POINT-TO-POINT SYSTEMS – PROPAGATION LOSS MODELS AND MEASUREMENTS AT 5.8GHZ AND 3.5GHZ

S. A. Torrico, *Comsearch, United States*; R. H. Lang, *The George Washington University, United States*

17:00 F38-4 (Invited) CHANNEL MODELING FOR GNSS. A PHYSICAL-STATISTICAL APPROACH

F. Perez-Fontan, *Iniversity of Vigo, Spain*; M. Kvicera, P. Pechac, *Czech Technical University, Czech Rep.*

17:20 F38-5 SHIP-TO-SHIP BEYOND LINE-OF-SIGHT COMMUNICATIONS: A COMPARISON BETWEEN RAY TRACING SIMULATIONS AND THE PETOOL

G. Dahman, F. Gagnon, *École de technologie supérieure, Canada*; G. Poitau, *Ultra Electronics TCS, Canada*

Friday, August 25, 2017 **16:00-17:20** **514A**

F39 Remote Sensing in Complex and Random Media (Complex)

Session Chairs: Saba mudaliar, Akira Ishimaru

16:00 F39-1 (Invited) ERROR ANALYSIS AND COMPARISON OF RIEMANN AND AVERAGE FLUXES FOR A SPACETIME DISCONTINUOUS GALERKIN ELECTROMAGNETIC FORMULATION

R. Abedi, *University of Tennessee Space Institute, United States*; S. Mudaliar, *Wright-Patterson Air Force Base, United States*

16:20 F39-2 PSEUDOANALYTICAL MODELING OF ELECTROMAGNETIC WELL-LOGGING SENSORS INSIDE DIRECTIONAL WELLS

G. S. Rosa, J. R. Bergmann, *PUC-Rio, Brazil*; F. L. Teixeira, *The Ohio State University, USA*

16:40 F39-3 DESIGN OF A FORWARD LOOKING SYNTHETIC APERTURE RADAR FOR AN AUTONOMOUS CRYOBOT FOR SUBSURFACE EXPLORATION OF EUROPA

O. Pradhan, S. Sandeep, A. J. Gasiewski, *University of Colorado, United States*; W. Stone, *Stone Aerospace, United States*

17:00 F39-4 (Invited) AN OPERATIONAL TECHNIQUE TO SCATTERING OF OBJECTS IN COMPLEX ENVIRONMENT

S. Mudaliar, *Air Force Research Laboratory, United States*

Friday, August 25, 2017 **16:00-17:20** **511BE**

G45 Radio Studies of Mid and Low Latitude Aeronomy

Session Chairs: Cesar Valladares, A Rabiu

16:00 G45-1 (Invited) RADAR INTERFEROMETER ESTIMATES OF F-REGION ZONAL IRREGULARITY DRIFTS IN THE BRAZILIAN SECTOR

F. S. Rodrigues, W. Zhan, *UT Dallas, United States*; E. R. de Paula, *INPE, Brazil*

16:20 G45-2 MODELING IONOSPHERIC DAILY VARIABILITY WITH SAMI3/WACCM-X

K. A. Zawdie, S. E. McDonald, D. P. Drob, F. Sassi, C. Coker, *Naval Research Laboratory, United States*

16:40 G45-3 EQUATORIAL SCINTILLATIONS ON THE DAYS OF CEJ EVENTS

S. K. Chakraborty, *Maharaja Srishchandra College, India*; D. Jana, *Raja Peary Mohan College, India*; A. Dasgupta, *S.K. Mitra Center for Research in Space Environment, India*

17:00 G45-4 INVESTIGATION OF THE EQUATORIAL IONOSPHERE USING THE RADIO ARRAY OF PORTABLE INTERFEROMETRIC DEVICES (RAPID) AT THE JICAMARCA RADIO OBSERVATORY

A. Carlton, G. Allan, A. Coster, R. Volz, K. Cahoy, F. Lind, *Massachusetts Institute of Technology, United States*; M. Milla, *Geophysical Institute of Peru, Peru*

Friday, August 25, 2017 **16:00-17:40** **513C**

G46 International Reference Ionosphere – Improvement, Validation and Usage

Session Chairs: Dieter Bilitza, David Themens

16:00 G46-1 IMPROVEMENTS, VALIDATION AND USAGE OF IRI – A REVIEW

D. Bilitza[1,2], D. Altadill[3], V. Truhlik[4], S. Watanabe[5], B. Reinisch[6,7], I. Galkin[6]

[1]George Mason University, United States; [2]NASA, Goddard Space Flight Center, United States; [3]Observatori de l'Ebre, [OE], CSIC, Spain; [4]Institute of Atmospheric Physics CAS, Czech Republic; [5]Hokkaido University, Japan; [6]University of Massachusetts Lowell, United States; [7]Lowell Digisonde International, LLC, United States

16:20 G46-2 FIRI-2017, AN UPDATED AND EXTENDED EMPIRICAL MODEL OF THE NON-AURORAL, LOWER IONOSPHERE

M. Friedrich[1], K. Torkar[2], C. Pock[1], D. Bilitza[3,4]

[1]Graz University of Technology, Austria; [2]Space Reseach Institute, Aastrian Academy of Sciences, Austria; [3]George Mason University, United States; [4]NASA, Goddard Space Flight Center, United States

16:40 G46-3 EXAMINING THE USE OF THE NEQUICK BOTTOMSIDE AND TOPSIDE PARAMETERIZATIONS AT HIGH LATITUDES

D. R. Themens, T. P. Jayachandran, *University of New Brunswick, Canada*

17:00 G46-4 UPDATE THE TOPSIDE IONOSPHERE OF IRI WITH FORMOSAT-3/COSMIC IONOSPHERIC OBSERVATIONS

J.-Y. Liu, S.-P. Chen, *National Central University, China (SRS)*

17:20 G46-5 MODELING OF PLASMASPHERE

S. Watanabe, *Hokkaido University, Japan*; Y. Kakinami, *National Institute of Technology, Japan*; A. Kumamoto, *Tohoku University, Japan*

Friday, August 25, 2017 **16:00-17:40** **511CF**

H41 Commission H Open Session (1)

Session Chairs: O. Santolik, János Lichtenberger

16:00 H41-1 (Invited) PROPAGATION AND LINEAR MODE CONVERSION OF MAGNETOSONIC AND ELECTROMAGNETIC ION CYCLOTRON WAVES IN THE EARTH'S RADIATION BELTS

R. B. Horne, *British Antarctic Survey, United Kingdom*; Y. Miyoshi, *Institute for Space Earth Environment Research, Japan*

16:20 H41-2 (Invited) MULTIPOINT OBSERVATIONS OF EQUATORIAL NOISE WITH A QUASIPERIODIC MODULATION

F. Nemec[1], S. A. Boardsen[2,3], O. Santolik[4,1], G. B. Hospodarsky[5], J. S. Pickett[5], N. Cornilleau-Wehrlin[6,7], W. S. Kurth[5], F. Darrouzet[8], C. Kletzing[5]

[1]Charles University, Czech Republic; [2]University of Maryland, USA; [3]NASA/GSFC, USA; [4]Czech Academy of Sciences, Czech Republic; [5]University of Iowa, USA; [6]Ecole Polytechnique, France; [7]Observatoire de Meudon, France; [8]Royal Belgian Institute for Space Aeronomy, Belgium

16:40 H41-3 DECAY OF NONLINEAR WHISTLER WAVES: 1D VERSUS 2D

T. Umeda[1], S. Saito[1,1], Y. Nariyuki[2]

[1]Nagoya University, Japan; [2]University of Toyama, Japan

17:00 H41-4 OBSERVATIONAL AND NUMERICAL STUDIES OF FREQUENCY CHIRPING RATE OF CHORUS WAVES

X. Tao, S. Teng, *University of Science and Technology of China, China (CIE)*

17:20 H41-5 CONJUGATE GROUND-SATELLITE ELF/VLF EMISSIONS OBSERVED WITH STRONG MAGNETOSPHERIC COMPRESSION.

C. Martinez-Calderon[1,2], K. Shiokawa[2], K. Keika[3], S. Kurita[2], M. Ozaki[4], I. Schofield[5], M. Connors[5], O. Santolik[6,7], W. S. Kurth[8]

[1]Tohoku University, Japan; [2]Instute for Space-Earth Environmental Research, Japan; [3]University of Tokyo, Japan; [4]Kanazawa University, Japan; [5]Athabasca University Observatories, Canada; [6]Charles University, Czech Republic; [7]Institute of Atmospheric Physics, Czech Republic; [8]University of Iowa, USA

Friday, August 25, 2017 **16:00-17:20** **516DE**

J38 Historical Radio Astronomy (3)

Session Chairs: Richard Schilizzi, Ken Kellermann, Richard Wielebinski

16:00 J38-1 (Invited) THE DEVELOPMENT OF E-MERLIN

S. Garrington, *University of Manchester, United Kingdom*

16:20 J38-2 (Invited) THE EVOLUTION OF EVN AND JIVE

H. J. van Langevelde, *JIVE, Netherlands/EU*

16:40 J38-3 (Invited) THE FIRST HALF-CENTURY OF SPACE VLBI

L. I. Gurvits[1,2]

[1]Joint Institute for VLBI ERIC, The Netherlands; [2]Delft University of Technology, The Netherlands

17:00 J38-4 THE DSN IN GLOBAL VLBI COLLABORATION

D. L. Jauncey, *CSIRO Astronomy and Space Science, Australia*; C. S. Jacobs, C. J. Naudet, R. A. Preston, *Jet Propulsion Laboratory, California Institute of Technology, USA*; J. Lovell, *University of Tasmania, School of Physical Sciences, Private Bag 37, Australia*; C. Garcia-Miro, *NASA Madrid Deep Space Communications Complex, INTA/ISDEFE, Spain*; S. Horiuchi, *CSIRO Astronomy, Canberra Deep Space Communication Complex, Australia*

Friday, August 25, 2017 **16:00-17:40** **516AB**

K22 EMF Exposure Assessment and Dosimetry and EMC for WBAN and Implanted Devices (2)

Session Chairs: Ping Jack Soh, Jianqing Wang

16:00 K22-1 EMC EVALUATION OF WEARABLE ECG/EMG FOR A 6.8 MHZ WIRELESS POWER TRANSFER SYSTEM

J. Shi, *Northeastern University, China*; W. Liao, *Shanghai University of Engineering Science, China*; J. Wang, *Nagoya Institute of Technology, Japan*

16:20 K22-2 PRACTICAL CONSIDERATIONS IN EXPERIMENTAL EVALUATIONS OF RF-INDUCED HEATING OF LEADED IMPLANTS

E. Zastrow, A. Yao, N. Kuster, *IT'IS Foundation, Switzerland*

16:40 K22-3 SAR INVESTIGATION FOR THE CARDIAC IMPLANTED ANTENNAS IN MEDRADIO

Q. Wang, D. Plettemeier, *Chair for RF and Photonics Engineering, Communication Laboratory, Germany*

17:00 K22-4 SAR FOR WEARABLE ANTENNAS WITH AMC MADE USING PDMS AND TEXTILES

M. N. Ramli[1], P. J. Soh[1,2], H. A. Rahim[1], M. F. Jamlos[1], F. N. Giman[1], E. F. N. Mohd Hussin[1], H. Lago[1], E. Van Lil[2]

[1]Universiti Malaysia Perlis, Malaysia; [2]KU Leuven, Belgium

17:20 K22-5 SAR COMPUTATION IN CYLINDRICAL SHAPED ENVIRONMENT

L.-R. Harris, *The University of the West Indies, Mona, Jamaica*

Saturday, August 26, 2017

Saturday, August 26, 2017 **08:00-09:20** **510AC**

B37 Inverse Scattering and Imaging (3)

Session Chairs: Matteo Pastorino, Lianlin Li

08:00 B37-1 (Invited) 3-D INVERSE SCATTERING ALGORITHM FOR RADAR IMAGING THROUGH MULTILAYERED MEDIA

W. Zhang, A. Hoorfar, *Villanova University, United States*

08:20 B37-2 (Invited) MULTI-RESOLUTION CONTRAST SOURCE INVERSION IN WAVELET DOMAIN

X. Song, M. Li, F. Yang, S. Xu, *Tsinghua University, China (CIE)*; A. Abubakar, *Schlumberger, USA*

08:40 B37-3 PROPAGATING BEAM FRAME: A NOVEL FORMULATION FOR LOCAL INVERSE SCATTERING

R. Tuvi, E. Heyman, *Tel Aviv University, Israel*; T. Melamed, *Ben-Gurion University of the Negev, Israel*

09:00 B37-4 (Invited) A SYSTEMATIC STUDY ON DIFFERENTIAL EVOLUTION OVER BENCHMARK ELECTROMAGNETIC INVERSE SCATTERING

A. Qing, *University of Electronic Science and Technology of China, China (CIE)*

Saturday, August 26, 2017 **08:00-09:20** **513A**

C36 Sub-Nyquist Sampling for Green Radio

Session Chairs: Yves LOUET, Sumit Darak

08:00 C36-1 (Invited) SUB-SAMPLING OF CHANNELS WITH TIME AND FREQUENCY SPARSITY ACCESS

Y. Louet, C. Moy, *CentraleSupelec, France*; V. Savaux, *B-Com, France*; A. Kountouris, *Orange-Labs, France*

08:20 C36-2 A NOVEL MATRIX OPTIMIZATION FOR COMPRESSIVE SAMPLING BASED SUB-NYQUIST OFDM RECEIVER IN COGNITIVE RADIO

H. Chen, C. H. Vun, *Nanyang Technological University, Singapore*

08:40 C36-3 (Invited) BENEFITS OF SPARSE SIGNALING IN ASYNCHRONOUS MULTI-ACCESS CHANNEL COMMUNICATION

S. Khan, J. Bajcsy, Y. Feng, *McGill University, Canada*

09:00 C36-4 (Invited) SUB-NYQUIST SAMPLING AND MACHINE LEARNING BASED ONLINE AUTOMATIC MODULATION CLASSIFIER FOR MULTI-CARRIER WAVEFORM

H. Joshi, S. J. Darak, *IIIT-Delhi, India*

Saturday, August 26, 2017 **08:00-10:20** **514A**

C37 Commission C Open Session

Session Chairs: Sana Salous, Amir Zaghloul

08:00 C37-1 (Invited) DESIGN OF MIMO ARRAY WITH LOW GRATING LOBES IN NEAR-FIELD IMAGING

W. Tian, Y. Li, J. Wang, C. Hu, T. Zeng, *Beijing Institute of Technology, China (CIE)*

08:20 C37-2 BEAMSPACE MIMO-NOMA FOR MILLIMETER-WAVE COMMUNICATIONS WITH LENS ANTENNA ARRAY

B. Wang, L. Dai, *Tsinghua University, China*

08:40 C37-3 AN LLR BASED COOPERATIVE SPECTRUM SENSING WITH HARD-SOFT COMBINING FOR COGNITIVE RADIO NETWORKS

S. Saha, A. Kumar, R. Bhattacharya, *National Institute of Technology Patna, India*

09:00 C37-4 (Invited) DEVELOPMENT AND APPLICATION OF A CHANNEL MODEL FOR INTRA-DEVICE COMMUNICATIONS AT 300 GHZ

A. Fricke, T. Kürner, *TU Braunschweig, Germany*

09:20 C37-5 ANALYSIS OF DUOBINARY ENCODING FOR CPM SIGNALS

R. Othman[1,2], Y. Louet[1], A. Skrzypczak[2]

[1]CentraleSupelec/IETR, France; [2]Zodiac Data Systems, France

09:40 C37-6 ADAPTIVE BEAMFORMING BASED ON SUBBAND STRUCTURE IN SMART ANTENNAS

Y. Zhao[1,2], B. Ai[1], D. Fei[1], Y. Liu[1], N. Li[3]

[1]Beijing Jiaotong University, China; [2]University of Jinan, China; [3]ZTE Corporation, China

10:00 C37-7 CHANNEL ANALYSIS FOR MILLIMETER-WAVE RAILWAY COMMUNICATIONS IN URBAN ENVIRONMENT

D. He[1], B. Ai[1], K. Guan[1], Z. Zhong[1,1], L. Tian[2], J. Dou[2]

[1]Beijing Jiaotong University, China (CIE); [2]ZTE Corporation, China (CIE)

Saturday, August 26, 2017 **08:00-09:20** **513B**

D34 Commission D Open Session: Recent Advances in Electronics and Photonics (1)

Session Chairs: Günter Steinmeyer, Apostolos Georgiadis

08:00 D34-1 (Invited) THE LASER-BASED VECTOR NETWORK ANALYZER PROJECT AT PTB

P. Struszewski, *Physikalisch-Technische Bundesanstalt, Germany*

08:20 D34-2 LOW POWER EMBEDDED PROCESSING OF SCINTILLATION EVENTS WITH SILICON PHOTO MULTIPLIERS

R. P. Haigh, D. W. Upton, P. J. Mather, M. J. N. Sibley, *University of Huddersfield, United Kingdom*

08:40 D34-3 3D PRINTING OF X BAND WAVEGUIDE RESONATORS AND FILTERS

G. Venanzoni, M. Dionigi, C. Tomassoni, D. Eleonori, R. Sorrentino, *University of Perugia, Italy*

09:00 D34-4 HIGHLY SENSITIVE MEASUREMENT OF THE OPTICAL KERR EFFECT IN AIR

G. Steinmeyer, P. Rustige, T. Feng, N. Raabe, *Max-Born-Institut, Germany*

Saturday, August 26, 2017 **08:00-08:40** **513EF**

EFGH33 Natural Electromagnetic Noise and Radio Sensing Applications in Terrestrial and Planetary Environments (4)

Session Chairs: Yasuhide Hobara, Colin Price, Tomoo Ushio, Martin Fullekrug

08:00 EFGH33-1 RESPONSE OF THE SUB-IONOSPHERIC VLF/LF SIGNALS TO THE MAJOR SSW EVENT OF 2009

S. Pal[1], Y. Hobara[2], S. K. Chakrabarti[1,3], P. W. Schnoor[4]

[1]Indian Centre for Sapce Physics, India; [2]University of Electro-Communication, Japan; [3]S N Bose National centre for Basic Sciences, India; [4]Christian-Albrechts-University, Germany

08:20 EFGH33-2 INVESTIGATION OF TELLURIC AND PLANETARY PROCESSES MITIGATION IN HIGH FREQUENCY MICROSEISMS STRUCTURE FOR GEOPHYSICAL MONITORING PROBLEMS

E. Pavlyukova, A. Nikolaev, V. Lavrov, A. Belyakov, *Schmidt Institute of Physics of the Earth RAS, Russian Federation*

Saturday, August 26, 2017 **08:00-09:20** **510BD**

F40 Remote Sensing of Sea Surface Salinity (1)

Session Chairs: Roger Lang, David Le Vine

08:00 F40-1 (Invited) STATUS OF REMOTE SENSING OF SALINITY BY AQUARIUS

D. M. Le Vine, *Goddard Space Flight Center, United States*; E. P. Dinnat, *Chapman University, United States*; S. T. Brown, *Jet Propulsion Laboratory, United States*; T. Meissner, F. Wentz, *Remote Sensing Systems, United States*; G. S. E. Lagerloef, *Earth and Space Research, United States*

08:20 F40-2 (Invited) SEA SURFACE SALINITY FROM SMOS SATELLITE MISSION: MAJOR ACHIEVEMENTS AFTER 7 YEARS IN ORBIT (2010-2017)

J. Boutin[1], N. Reul[2], T. Delcroix[3], A. SMOS-OCEAN team[1,2,3]

[1]LOCEAN/CNRS, France; [2]LOPS/IFREMER, France; [3]LEGOS/IRD, France

08:40 F40-3 (Invited) STATUS OF SALINITY REMOTE SENSING: SMAP

T. Meissner, F. Wentz, *Remote Sensing Systems, United States*

09:00 F40-4 (Invited) INTERCOMPARISON OF SEA SURFACE SALINITY PRODUCTS FROM SMOS, AQUARIUS AND SMAP SATELLITES

E. P. Dinnat[1,2], D. M. Le Vine[2], J. Boutin[3], T. Meissner[4]

[1]Chapman University, USA; [2]NASA GSFC, USA; [3]UPMC/CNRS, France; [4]Remote Sensing Systems, USA

Saturday, August 26, 2017 **08:00-09:20** **511BE**

G47 Commission G Open Session and Recent Results (1)

Session Chairs: Iwona Stanislawska, Patricia Doherty, John Mathews

08:00 G47-1 INITIAL FINDINGS OF LAGRANGIAN COHERENT STRUCTURES IN THE IONOSPHERE VIA SIMULATION

N. Wang, *Illinois Institute of Technology, United States*

08:20 G47-2 RECENT DEVELOPMENTS OF THE ALTERNATIVE TECHNIQUE TO ACCOUNT FOR IONOSPHERIC EFFECTS INTO RANGE MEASUREMENTS BY A SATELLITE SYSTEM

V. E. Gherm, N. N. Zernov, E. A. Danilogorskaya, *The University of St.Petersburg, Russian Federation*

08:40 G47-3 THE EMPIRICAL CANADIAN HIGH ARCTIC IONOSPHERIC MODEL (E-CHAIM): HMF2 AND BOTTOMSIDE

D. R. Themens, T. P. Jayachandran, *University of New Brunswick, Canada*

09:00 G47-4 ONLINE INTERNATIONAL REFERENCE IONOSPHERE EXTENDED TO PLASMASPHERE (IRI-PLAS) MODEL

U. Sezen[1], T. L. Gulyaeva[2], F. Arikan[1]

[1]Hacettepe University, Turkey; [2]IZMIRAN, Russia

Saturday, August 26, 2017 **08:00-09:20** **511CF**

H42 Commission H Open Session (2)

Session Chairs: O. Santolik, János Lichtenberger

08:00 H42-1 (Invited) RESONANT ULF WAVES IN THE MAGNETOSPHERE-IONOSPHERE SYSTEM

A. V. Streltsov, *Embry-Riddle Aeronautical University, United States*

08:20 H42-2 ULF WAVES IN THE IONOSPHERIC ALFVEN RESONATOR: OBSERVATIONS AND SIMULATIONS

B. Tulegenov, A. V. Streltsov, *ERAU, United States*

08:40 H42-3 IN-SITU OBSERVATIONS OF WHISTLER-MODE WAVES IN THE RECONNECTION DIFFUSION REGION

S. Y. Huang[1], H. S. Fu[2], Z. G. Yuan[1], A. Vaivads[3], Y. V. Khotyaintsev[3], A. Retino[4], M. Zhou[5], D. Graham[3], K. Fujimoto[6], F. Sahraoui[4], X. H. Deng[5], B. B. Ni[1], Y. Pang[5], S. Fu[1], D. D. Wang[1]

[1]Wuhan University, China; [2]Beihang University, China; [3]Swedish Institute of Space Physics, Sweden; [4]CNRS-Ecole Polytechnique-UPMC, France; [5]Nanchang University, China; [6]National Astronomical Observatory of Japan, Japan

09:00 H42-4 COMPARISON OF WHISTLER TRANSMISSION RATES AT VARIOUS GEOGRAPHIC LOCATIONS

D. Koronczay[1,2], J. Lichtenberger[2,1], P. Steinbach[2,3], C. Ferencz[2], M. Clilverd[4], C. Rodger[5], F. Darrouzet[6], D. Sannikov[7], N. Cherneva[7]

[1]Geodetic and Geophysical Institute, Hungarian Academy of Sciences, Hungary; [2]Eotvos University, Hungary; [3]Research Group for Geology, Geophysics and Space Sciences, Hungary; [4]British Antarctic Survey, UK; [5]University

of Otago, New Zealand; [6]Belgian Institute of Space Aeronomy, Belgium; [7]Institute of Cosmophysical Research and Radio Wave Propagation, Russia

Saturday, August 26, 2017 **08:00-09:25** **516DE**

J39 Latest News and Observatory Reports (3)

Session Chairs: Richard Bradley, Willem Baan

08:00 J39-1 PROGRESS AT MINGANTU OBSERVING STATION OF NAOC
Y. Yan, Z. Chen, L. Geng, W. Wang, F. Liu, B. Tan, *National Astronomical Observatories, Chinese Academy of Sciences, China*

08:15 J39-2 A NEW 40-M RADIO TELESCOPE IN CHINA
J. Luo, *National Time Service Center, CAS, China, China (CIE)*

08:35 J39-3 EARLY SCIENCE RESULTS FROM ASKAP
K. Lee-Waddell, *CSIRO Astronomy and Space Science, Australia*

08:50 J39-4 ALL THE SKY, ALL THE TIME: THE OVRO-LWA
G. Hallinan, M. Anderson, M. Eastwood, R. Monroe, *California Institute of Technology, United States*

09:05 J39-5 THE AUSTRALIA TELESCOPE NATIONAL FACILITY
D. C. C-J. Bock, *CSIRO Astronomy and Space Science, Australia*

Saturday, August 26, 2017 **08:00-09:20** **513CD**

J42 The Square Kilometer Array (3)

Session Chairs: Douglas Bock, Robert Braun, Justin Jonas

08:00 J42-1 (Invited) SKA1-LOW: DESIGN AND SCIENTIFIC OBJECTIVES
M. G. Labate, R. Braun, P. Dewdney, M. Waterson, J. Wagg, *SKA Organisation, United Kingdom*

08:20 J42-2 (Invited) THE MID-FREQUENCY TELESCOPE FOR THE SQUARE KILOMETRE ARRAY (SKA-MID)
P. E. Dewdney, *SKA Organisation, United Kingdom*

08:40 J42-3 (Invited) MEERKAT AND ITS SCIENCE PROGRAMME
J. L. Jonas, *Rhodes University, South Africa*; I. P. Theron, *EMSS Antennas, South Africa*

09:00 J42-4 (Invited) THE MURCHISON WIDEFIELD ARRAY (MWA): SCIENTIFIC RESULTS FROM THE FIRST 4 YEARS
R. B. Wayth, J.-P. Macquart, *ICRAR/Curtin University, Australia*

Saturday, August 26, 2017 **08:00-09:00** **516AB**

K23 Commission K Open Session

Session Chairs: Joe Wiart, Samyoung Chung

08:00 K23-1 SPECIFIC ABSORPTION RATE AND TEMPERATURE RISE IN THE ABDOMENS OF PREGNANT WOMAN MODELS EXPOSED TO A SMARTPHONE RADIATION

R. Takei[1], K. Nishino[1], T. Nagaoka[2], K. Saito[1], S. Watanabe[2], M. Takahashi[1]

[1]Chiba University, Japan; [2]National Institute of Information and Communications Technology, Japan

08:20 K23-2 TEMPERATURE AND SAR CALCULATIONS IN HUMAN FETUSES AT VARIOUS STAGES OF PREGNANCY DUE TO A DIPOLE ANTENNA AT 900 MHZ AND 2 GHZ

T. Nagaoka, S. Watanabe, *National Institute of Information and Communications Technology, Japan*

08:40 K23-3 VALIDATION AND APPLICATION OF THERMAL MODELING IN HUMAN FOR LOCALIZED HEAT EXPOSURE

K. Kojima, S. Kodera, A. Hirata, *Nagoya Institute of Technology, Japan*

Saturday, August 26, 2017 **09:40-10:40** **510AC**

B38 Inverse Scattering and Imaging (4)

Session Chairs: Matteo Pastorino, Lianlin Li

09:40 B38-1 (Invited) RAPID 2D INVERSION OF BOREHEOLE ELECTROMAGNETIC DATA TO DETERMINE ANISOTROPIC RESISTIVITY USING FRÉCHET DERIVATIVES WITH THE RECIPROCITY THEOREM

G. L. Wang, A. Abubakar, *Schlumberger, United States*

10:00 B38-2 (Invited) INCREASING DATA VARIATION USING DYNAMIC BOUNDARIES

M. Asefi, A. Baran, J. LoVetri, *University of Manitoba, Canada*

10:20 B38-3 (Invited) ENHANCED IMAGING FOR THROUGH-THE-WALL RADAR WITH NOISE POWER SPECTRUM ESTIMATION

Y. Song, H. Du, T. Jin, B. Lu, Z. Zhou, *College of Electronic Science and Engineering, National University of Defense Technology, China (CIE)*

Saturday, August 26, 2017 **09:40-10:40** **513B**

D35 Commission D Open Session: Recent Advances in Electronics and Photonics (2)

Session Chair: Günter Steinmeyer

09:40 D35-1 (Invited) DYNAMICS OF STRONGLY-DRIVEN PASSIVE KERR RESONATORS: FROM SPATIOTEMPORAL CHAOS TO SUPER CAVITY SOLITONS

M. Erkintalo[1], M. Anderson[1,2], Y. Wang[1], F. Leo[1,3], S. Coen[1], S. Murdoch[1]

[1]The University of Auckland, New Zealand; [2]Ecole Polytechnique Federale de Lausanne (EPFL), Swizerland; [3]Universite libre de Bruxelles, Belgium

10:00 D35-2 (Invited) BOOSTING THE TERAHERTZ NONLINEARITY OF GRAPHENE BY ORIENTATION DISORDER

I. H. Baek[1], F. Rotermund[2], Y. U. Jeong[1]

[1]*Korea Atomic Energy Research Institute, South Korea;* [2]*Korea Advanced Institute of Science and Technology, South Korea*

10:20 D35-3 (Invited) PRECISION MEASUREMENTS AND ULTRAFAST OPTICS IN MICROCAVITY FREQUENCY COMBS

S.-W. Huang, J. Yang, A. K. Vinod, J. Lim, C. W. Wong, *University of California Los Angeles, USA*

Saturday, August 26, 2017 **09:40-10:40** **513EF**

E34 Commission E Open Session

Session Chairs: Frank Gronwald, Dave Giri

09:40 E34-1 ANALOGUE DESIGN FOR DYNAMIC, BROADBAND RECEIVERS

A. R. Botha, J. Manley, P. S. Van der Mewer, A. J. Otto, *MESA Product Solutions, --- select state ---*

10:00 E34-2 FUNDAMENTAL LIMITATIONS OF PML OMNIDIRECTIONAL ELECTROMAGNETIC ABSORBERS AS EM RADIATION SHIELDS: SUMMARY OF RECENT FINDINGS

K. K. Sainath, *Sandia National Labs, USA*; F. L. Teixeira, *Ohio State University, USA*

10:20 E34-3 POSSIBLE CHANGES IN CONDUCTED EMISSIONS OF BIOTECHNOLOGICAL DEVICES AFTER REPEATED SWITCHING

L. O. Fichte[1], T. R. Almeida[2], A. P. Coimbra[2], F. Gronwald[3], M. Stiemer[1]

[1]*Helmut Schmidt University, Germany;* [2]*University of Coimbra, Portugal;* [3]*University of Siegen, Germany*

Saturday, August 26, 2017 **09:40-10:40** **510BD**

F41 Remote Sensing of Sea Surface Salinity (2)

Session Chairs: Roger Lang, David Le Vine

09:40 F41-1 (Invited) STATUS OF SALINITY REMOTE SENSING WITH FUTURE CHINESE MISSIONS

X. Dong[1], H. Liu[1], J. Shi[2], Z. Wang[1], Y. Du[3], J. Wu[1]

[1]*National Space Science Center, Chinese Academy of Sciences, China;* [2]*Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China;* [3]*Zhejiang University, China*

10:00 F41-2 (Invited) DIELECTRIC CONSTANT MEASUREMENTS FOR REMOTE SENSING OF SEAWATER SALINITY

Y. Zhou[1], R. H. Lang[1], E. Dinnat[2,3], D. M. Le Vine[2]

[1]*George Washington Uniiversity, United States;* [2]*NASA Goddard Space Flight Center, United States;* [3]*Chapman University, United States*

10:20 F41-3 (Invited) RAIN IMPACT ON NEAR-SURFACE SALINITY STRATIFICATION USING THE RAIN IMPACT MODEL (RIM)

W. L. Jones, *University of Central Florida, United States*; M. Jacob, *Universidad Nacional de Cordoba, Argentina*; K. Drushka, W. Asher, *University of Washington, United States*

Saturday, August 26, 2017 **09:40-10:40** **511BE**

G48 Commission G Open Session and Recent Results (2)

Session Chairs: Iwona Stanislawska, Patricia Doherty, John Mathews

09:40 G48-1 INSTANTANEOUS GLOBAL MAPS OF IONOSPHERIC CRITICAL FREQUENCY GIM-FOF2 FOR EVALUATION OF THE IONOSPHERIC WEATHER

I. Stanislawska[1], T. Gulyaeva[2], O. Grynyshyna-Poliuga[1], L. Pustovalova[2]

[1]Space Research Centre PAS, Poland; [2]IZMIRAN, Russia

10:00 G48-2 INITIAL RESULTS FROM THE ARECIBO HEATING EXPERIMENT (HEX)

N. K. Jackson-Booth, P. L. Martin, R. W. Penney, R. A. Buckland, *QinetiQ, United Kingdom*; P. A. Bernhardt, *NRL, USA*

10:20 G48-3 LOWER D-REGION HEIGHT AND SHARPNESS AT HIGH MID-LATITUDE

N. R. Thomson[1], M. A. Clilverd[2], C. J. Rodger[1]

[1]University of Otago, New Zealand; [2]British Antarctic Survey, United Kingdom

Saturday, August 26, 2017 **09:40-10:40** **511CF**

H43 Commission H Open Session (3)

Session Chairs: O. Santolik, János Lichtenberger

09:40 H43-1 (Invited) CLUSTER AND MMS MISSIONS : OPTIMAL ESTIMATION OF THE GRADIENT OF A FIELD

G. M. Chanteur, *CNRS - Ecole Polytechnique, France*

10:00 H43-2 A REVIEW OF KANNUSLEHTO ELF-VLF OBSERVATIONS DURING WINTERTIME CAMPAIGN IN 2016-2017

J. Manninen, T. Turunen, *University of Oulu, Finland*

10:20 H43-3 NUMERICAL MODELING OF SPACECRAFT POTENTIAL MODULATIONS DUE TO TIME-VARYING PLASMA WAVE FIELDS

Y. Miyake[1], T. Kiriyama[1], Y. Katoh[2], H. Usui[1]

[1]Kobe University, Japan; [2]Tohoku University, Japan

Saturday, August 26, 2017 **09:40-10:15** **516DE**

J40 Latest News and Observatory Reports (4)

Session Chairs: Richard Bradley, Willem Baan

09:40 J40-1 A JVLA SURVEY OF THE HIGH FREQUENCY RADIO EMISSION OF THE MASSIVE MAGNETIC B- AND O-TYPE STARS

S. Kurapati, P. Chandra, *Tata Institute of Fundamental Research, India*; G. Wade, *Royal Military College of Canada, Canada*

10:00 J40-2 THE GREENLAND TELESCOPE - STATUS

M.-T. Chen, *Academia Sinica, Taiwan*

Saturday, August 26, 2017 **09:40-10:40** **513CD**

J41 AstroPhotonics

Session Chairs: Peter Maat, Martin Roth, Stefano Minardi

09:40 J41-1 LOW COST, LONG DISTANCE RF OVER FIBER LINK TECHNOLOGY FOR RADIO TELESCOPE SYSTEMS

P. Maat, L. Goudbeek, R. H. Witvers, J. Idserda, *ASTRON, Netherlands*

10:00 J41-2 LOW COST RF OVER FIBER DISTRIBUTION FOR RADIO ASTRONOMY PHASED ARRAYS

R. J. Beresford, W. Cheng, P. Roberts, *CSIRO, Australia*

10:20 J41-3 RADIO ASTRONOMY L-BAND PHASED ARRAY FEED RFOF IMPLEMENTATION OVERVIEW

R. J. Beresford, *CSIRO, Australia*

Saturday, August 26, 2017 **09:40-10:20** **516AB**

K24 Biomedical Applications of Low Frequency EMF Including TMS, DBS, MRI and MP (3)

Session Chair: Frank Prato

09:40 K24-1 VISUALIZING HOTSPOTS AND THRESHOLDS IN THE BRAIN BY TRANSCRANIAL MAGNETIC STIMULATION

S. Aonuma[1], J. Gomez-Tames[1], I. Laakso[2], A. Hirata[1]

[1]Nagoya Institute of Technology, Japan; [2]Aalto University, Finland

10:00 K24-2 MRI AND GENETIC DAMAGE: WHAT DO WE KNOW NOW?

V. - Vijayalaxmi, *University of Texas Health Science Center, United States*

Author Index

A

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

U

V

W

X

Y

Z