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*Thursday AM AP Session 46 Catamaran*

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**Remote Sensing**

*J. S. Verdi and D. Farina*

- 8:40 A Wide-Band Six-Port Polarimetric Measurement System  
*T-J. Chen, Chung Shan Institute of Science and Technology, T-H. Chu\*, National Taiwan University*
- 9:00 VHF Propagation Experiment Measurement System Description  
*D. Farina\*, J. Bull, Flam & Russell, J. Wilcox, J. Vance, Science Application Int. Corp.*
- 9:20 VHF Propagation Experiment - Polarization Dependence of Forward Sea Scatter Near Grazing Incidence  
*J.J. Wilcox\*, J. Vance, Science Applications Int. Corp., D. Farina, J. Bull, Flam & Russell*
- 9:40 Computer-Aided Location and Identificaiton of Discharge Sources  
*S. Mathini, Royal Institute of Technology*





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**Thursday AM AP Session 47 Catamaran**

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**Random Media and Rough Surface Scattering**

*K. Sarabandi and C. H. Chan*

- 10:20 Experimental Studies of Dense Media Scattering  
*John R. Kendra\*, Kamal Sarabandi, Fawwaz T. Ullaby, University of Michigan*
- 10:40 A Sparse-Matrix Canonical-Grid Method for Scattering by Many Randomly Located Cylindrical Scatterers  
*C. H. Chan\*, L. Tsang, University of Washington*
- 11:00 Full Wave Transmission Scatter Cross Sections for Random Rough Surfaces - Comparisons with Numerical Solutions  
*Ezekiel Bahar, Bom Son Lee, University of Nebraska-Lincoln*
- 11:20 Double Scatter Radar Cross Sections from Two Dimensional Random Rough Surfaces-High Frequency Approximation  
*M. El-Shenawee\*, Electronics Research Institute, Cairo, E. Bahar, University of Nebraska-Lincoln*
- 11:40 Scatter Cross Sections for Sea Surfaces Characterized by Pearson-Moskowitz Spectral Density Function A New Unified Full Wave Approach  
*Ezekiel Bahar, Yuzhi Zhang, University of Nebraska-Lincoln*



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**Thursday AM AP Session 48 Salon 4**

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**Antenna Measurements**

*M. S. Gatti and D. Geen*

- 8:20 Experimental Demonstration of the Effects of an Electric Thruster Plasma Plume on Microwave Propagation  
*K. M. Lambert, Analex Corporation, A. J. Zaman\*, F. M. Curran, NASA Lewis Research Center*
- 8:40 Design, Construction and Performance of a Small, Low Cost Anechoic Measuring System for Research Applications  
*D. Geen\*, D. Smith, University of Northumbria*
- 9:00 Phase-Cetner Effects on WIdE-Band Horn Pattern Measurements in Small Anechoic Chambers  
*P. Ramanujam\*, L. F. Lopez, L. R. Fermelia, R. L. Reynolds, Hughes Space and Communications Company*
- 9:20 Input Impedance Measurements of Helical Antennae in the L-Band  
*E. Vassilikos, S. H. Al-Charchafchi, Cranfield University*





- 9:40 A Radio Telescope for the Calibration of Radio Sources at 32 GHz  
*Mark Gatti\*, Scott R. Stewart, James G. Bowen, Eric B. Paulsen, Jet Propulsion Laboratory*

10:00 BREAK

- 10:20 Test Jigs and Measurements for the Scanning Antenna System of the Multifrequency Imaging Microwave Radiometer M.I.M.R.  
*Fabio Massimo Marinelli, Alenia Spazio S.p.A.*

- 10:40 An Analysis of Range DIstance Requirements for Large ANtenna Measurements by the Use of the Transient Characteristics  
*S. Skulkin\*, Yu. Sorpov, Radiophysical Research Institute, Russia*

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**Thursday AM AP Session 49      Salon C**

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**Nonplanar Microstrip Antennas**  
**D. T. Auckland and R. C. Hall**



- 8:20 A Procedure to Calculate the in-situ Contribution to Body Scattering Caused by Conformal Cavity-Backed Apertures  
*D. T. Auckland\*, M. Gosse, Atlantic Aerospace Electronics Corp.*

- 8:40 Analysis of the Spherical-Circular Microstrip Antenna with an Annular-Ring Parasitic Patch  
*Hong-Twu Chen\*, Horng-Dean Chen, Tsurng-Jeng Chang, Yuan-Tung Cheng, Chinese Military Academy*

- 9:00 Dual Patch Microstrip Antenna on a Conical Surface  
*Wagner Gones Barbose, Attilio Jose Giarola\*, State University of Campinas*

- 9:20 Mixed Potential Green's Functions for Cylindrical Microstrip Structures  
*R. C. Hall\*, C. H. Thng, Boulder Microwave Technologies, Inc., D. C. Chang, Polytechnic University of Brooklyn*

- 9:40 Radiation Efficiency of Conformal Microstrip Antennas on Cylindrical Surfaces  
*G. Gottwald\*, W. Wiesbeck, University of Karlsruhe*

10:00 BREAK

- 10:20 Analysis of Microstrip Open-end and Gap Discontinuities on a Cylindrical Body  
*Hua-Ming Chen\*, Kin-Lu Wong, National Sun Yat-Sen University*

- 10:40 Analysis of Cylindrical Printed Slot and Slot-coupled Microstrip Antennas  
*Ruenn-Bo Tsai\*, Kin-Lu Wong, National Sun Yat-Sen University*





- 11:00 Input Impedance Calculation of Cylindrical Rectangular Microstrip Antenna Using GTLM Theory  
*Chih-Yu Huang\*, Yu-Hua Liu, Kin-Lu Wong, National Sun Yat-Sen University*
- 11:20 Input Impedance of a Slot-coupled Multilayered Hemispherical Dielectric Resonator Antenna  
*Nan-Cheng Chen\*, Kin-Lu Wong, National Sun Yat-Sen University*
- 11:40 Microstrip Antenna on a Spherical Surface: A New Formulation of the Problem  
*Probir K. Bondyopadhyay, NASA Johnson Space Center*

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***Thursday AM AP Session 50***

***Salon D***

**Antenna Arrays III**

*R. S. Chu and R. Haupt*



- 8:20 A Finite Array of Ring-Slot Elements in a Ground Plane  
*R. S. Chu, J. J. Lee, Hughes Aerospace and Electronics Co.*
- 8:40 Array Current Distributions to Generate Flat-Topped Beams  
*B. Preetham Kumar\*, G. R. Branner, UC Davis*
- 9:00 Analysis and Design of a Multi-Band Phased Array Using Multi-Feed Dipole Elements  
*Ruey S. Chu\*, Kuan M. Lee, Allen Wang, Hughes Aerospace & Electronics Co.*
- 9:20 Effects on Scan Blindness of Full and Partial Crosswalls between Notch Antenna Array Unit Cells  
*Gregory J. Wunsch\*, Daniel H. Schaubert, University of Massachusetts, Amherst*
- 9:40 Target Movement Simulation for Testing Mono-Pulse Radar  
*B.K. Sarkar\*, S.S. Kakatkar, A. Agarwal, IIT, Bombay*
- 10:00 BREAK
- 10:20 Optimisation of Aperture Distributions for Difference Patterns  
*F. Ares, A. Vieiro, E. Moreno, Universidad de Santiago, S. R. Rengarajan\*, CSUN*
- 10:40 Optimization of Subarray Amplitude Tapers  
*Randy Haupt, USAF Academy*
- 11:00 Extension of Orchard's Pattern Synthesis Technique for Overdetermined Systems  
*F. Ares, A. Vieiro, E. Moreno, Universidad de Santiago, S.R. Rengarajan\*, CSUN*
- 11:20 Simple Evaluation of Mutual Slot Couplings in a Slotted Waveguide Planar Array Antenna  
*K. Sakakibara\*, J. Hirokawa, M. Ando, N. Goto, Tokyo Institute of Technology*





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**Thursday AM AP Session 51** **Salon F**

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**Dielectric Properties Measurements**

*S. Bringhurst and E. Walton*

- 8:20 Thin Sample Dielectric Properties Measurement using Open-Ended Coaxial Probes and FDTD Calculations  
*Shane Bringhurst\*, Magdy F. Iskander, University of Utah*
- 8:40 Dielectric Constant Measurements of Dielectric Substrates at Cryogenic Temperature  
*G. Mascolo, R. Flamini, Alenia Spazio S.p.A*
- 9:00 Synthetic Dielectric Material for Broadband-Selective Absorption and Reflection  
*William A. Janos, Huntington Beach, CA*
- 9:20 Antenna Applications of 3M Thin Film Artificial Dielectric  
*E. Walton\*, H-W Tseng, L.W. Henderson, The Ohio State University*
- 9:40 Conductivity Estimation by Neural Network  
*Wai L. Ko, Raj Mittra, University of Illinois*
- 10:20 Measurements and Theory of Reflection and Transmission in Biaxotropic Omega Composites  
*S. A. Tretyakov\*, T. G. Kharina, A. A. Sochava, St. Petersburg State Technical University, S. Bolioli, ONERA-CERT*



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**Thursday AM AP Session 52 Schooner/Sloop**

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**Wideband Antennas**

*W. Stutzman and T. Milligan*

- 8:20 Electronically Steerable Yagi-UDA Micro Strip Patch Antenna Array  
*Derek Gray, Jun Wei Lu, David V. Thiel\*, Griffith University, Nathan, Australia*
- 8:40 Characteristics of Ice-Covered for Yagi-Uda Antenna  
*Haruo Kawakami\*, Gentei Sato, Antenna Giken Co. Ltd., Shozo Sumihiko, Shibaura Institute of Technology*
- 9:00 One-Point-Fed Circularly Polarized Yagi-Uda Loop Array  
*Y. Ojiro\*, K. Hirasawa, University of Tsukuba*
- 9:20 Analysis of Normal Mode Helical Antenna on Finite Ground Plane  
*S. H. Zainud-Deen\*, Riyadh College of Telecommunication, K. H. Awadalla, Jeddah College of Telecommunication, H. A. Sharshar, Menoufia University*





- 9:40 Polarization Losses in Normal Mode Helical Antenna  
*S. H. Zainud-Deen, Riyadh College of Telecommunications*

10:00 BREAK

- 10:20 Experimental and Theoretical Studies of a DR Loaded Helical Antenna  
*H.T. Hui\*, E.K.N. Yung, Y.M Bo, City University of Hong Kong*

- 10:40 Closed Form Solution for the Asymmetrical T-Antenna  
*A. I. Bahnacy, Menoufia University, M. N. I. Fahmy, Cairo University, S. H. Zainud-Deen, Riyadh College of Telecommunication, K. H. Awadalla, Jeddah College of Telecommunication*

- 11:00 Combining a Biconical with a Polarizer to Expand Bandwidth  
*Liang Tiesheng\*, Chen Yipeng\*, Fend Yan, Electromagnetic Science Institute*

- 11:20 On the Problem of Dielectric-Coated Thin-Wire Antennas  
*S. A. Adekola\*, A. I. Mowete, University of Lagos, Nigeria*

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### ***Thursday AM AP Session 53 Trimaran/Brigantine***

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#### **Scattering III**

*H. Ling and J. L. Volakis*



- 8:20 Multi-Aspect Range Profile Interpolation for the Shooting and Bouncing Ray Technique  
*R. Bhalla, H. Ling\*, The University of Texas, Austin*

- 8:40 3D Scattering Center Extraction from Xpatch  
*R. Bhalla, H. Ling\*, The University of Texas, Austin*

- 9:00 Radar Response of Missile-Shaped Targets  
*S. Kashyap\*, J. Stanier, G. Painchaud, Defence Research Establishment, A. Louie, S&S Software*

- 9:20 Generation of Point Scatterer Models Using PTD/SBR Technique  
*Shuen-Yih Wang, Shyh-Kang Jeng\*, National Taiwan University*

- 9:40 RCS Calculations, Transformations & Comparisons Under Spherical & Plane Wave Illumination  
*Zhang Hai Ying, Gateway Technologies Pte Ltd.*

10:00 BREAK

- 10:20 Ellipsoidal Surface Characterization for Validating the UTD Formulation  
*R. Choudhury, R. M. Jha, National Aerospace Laboratories*



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- 10:40 Parallelization Strategies for the UTD Codes  
*K. J. Vinoy, R. M. Jha, National Aerospace Laboratories*
- 11:00 Parameters of the Generalized Symmetry and Linearity for Radar Target  
*J. Yang\*, C. W. Su, S.M. Lin, Northwestern Polytechnical University*
- 11:20 Computation of RCS from a Flat Plate Covered with Radar Absorbing Materials  
*L.C. Wu, W.X. Zhang\*, Southeast University, M.G. Wang, Xidian University*

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**Thursday AM URSI-B Session 23 Salon 1/2**

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**Integral Equation Techniques**

*D. R. Wilton and S. M. Rao*

- 8:20 An Efficient Preconditioner for Iterative Solution of Dense Matrices in Electromagnetics  
*V. Varadarajan, Raj Mittra\*, University of Illinois, John Murphy, Nick Jennings, British Aerospace Ltd.*
- 8:40 Extrapolation Technique for Solving Large Body Scattering Problems and Its Application to Bodies of Revolution  
*Zwi Altman\*, Raj Mittra, University of Illinois, Daniel Bouche, CEA*
- 9:00 Fast Integral Equation Solver Using Plane-Wave Basis Representation Along the Steepest Descent Path  
*E. Michielssen\*, W. C. Chew, University of Illinois*
- 9:20 A New Technique to Generate Sparse Matrix Using the Method of Moments - Application to Two-Dimensional Problems  
*G. K. Gzohard\*, S. M. Rao, Auburn University*
- 9:40 A New Technique to Generate Sparse Matrix Using the Method of Moments - Wire Scattering Problems  
*Sadesiva M Rao\*, Griffin K. Gothard, Auburn University*
- 10:00 BREAK
- 10:20 Surface Integral Formulation for Calculating Conductor and Dielectric Losses of Dielectric Filled Waveguides  
*Tanmoy Roy, Tapan K. Sarkar\*, Syracuse University, Madhavan Swaminathan, IBM*
- 10:40 New Uncoupled Integral Equations for the Radially-Graded Dielectric Sphere  
*M. S. Viola, University of Akron*





- 11:00 Electrostatic Solution for Three-Dimensional Arbitrarily-Shaped Inhomogeneous Bodies in an Impressed Field Using FIT/MEI  
*John H. Henderson\*, S. M. Rao, Auburn University*
- 11:20 Effects of Laminated Ground Plane on Resonance Frequencies of Wraparound Patch Resonator  
*Jean-Fu Kiang\*, Chung-Yuan Kung, National Chung-Hsing University*
- 11:40 Implementation of a Parallel Processing Computational Electromagnetic Code Based on a Method of Moments Approach  
*D. I. Kaklamani, V. Kouloulias, A. Marsh, N. K. Uzunoglu\*, National Technical University of Athens*
- 12:00 Approximate Method of Solution of the Input Impedance of Wideband Chopped Conical Dipole by Means of Moment Method  
*Chinmoy Das Gupta\*, P. C. Das, A. C. Trivedi, Indian Institute of Technology*

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**Thursday AM    URSI-F       Session 24              Salon 3**

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**Propagation Modeling and Measurements for Mobile/  
Personal Comm. Services**

*J. C. Webster and E. R. Westwater*



- 8:20 L-band Propagation Measurement at Very Low Altitude and Comparison to SEKE Propagation Model  
*Sean W. Gilmore\*, John C. Eidson, MIT Lincoln Laboratory*
- 8:40 A Comparison of the Longley-Rice and SEKE Propagation Models  
*John C. Eidson, M.I.T. Lincoln Laboratory*
- 9:00 Prediction of VHF/L-Band Radio Wave Propagation in Urban and Suburban Environment  
*N. Blaunstein, Ben Gurion University of the Negev, M. Levin, Tadiran Ltd.*
- 9:20 Near Range Radio Wave Propagation Prediction in Urban Area  
*Hing-On Ngai\*, Wong-Hing Lam, The University of Hong Kong*
- 9:40 Harmonic Signal's Level and Phase Cross Correlation Analytical Description by Electromagnetic Ground Wave Propagation  
*Valery V. Pechenin\*, Alexey A. Andrejev, Kharkov Aviation Institute*
- 10:00 BREAK
- 10:20 PCS System Design Issues in the Presence of Microwave POFS  
*Solyman Ashrafi\*, Tom Tran, A. Richard Burke, Moffet, Larson & Johnson, Inc.*
- 10:40 Field Simulator for Reproduction of Propagation Environment  
*Hiroyuki Arai, Yokohama National University*



- 11:00 Dipole Antenna Radiation Patterns in a Concrete Building at 800 to 2900 MHz for Indoor Wireless Communications  
*Hsing-Yi Chen\*, Yeou-Jou Hwang, Yuan-Ze Institute of Technology*
- 11:20 Modeling of 3D In-Building Propagation by Ray Tracing Technique  
*Gong Ke, Xu Rui, Tsinghua University*

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**Thursday AM    URSI-E    Session 25    Salon 5**

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**Noise and Interference Control**

*J. L. Drewniak and E. Asari*

- 8:20 EMI Sources Resulting from Finite Impedance Reference Structures  
*J. L. Drewniak\*, T. H. Hubing, T. P. Van Doren, University of Missouri-Rolla, J. D. Shaw, Allison Transmission - Division of General Motors*
- 8:40 Modelling and Simulation of Weibull Distributed Radar Clutter by Means of Stochastic Differential Equation  
*Valerii Kontorovich, Centro de Investigacion y de Estudios Avanzados del I. P. N., Vladimir Lyandres, Sergey Primak\*, Ben-Gurion University of the Negev, Margarita Horenian\*, Library of the Russian Academy of the Science*
- 9:00 Modelling and Simulation of K-Distributed Radar Clutter by Means of Stochastic Differential Equation  
*Valerii Kontorovich, Centro de Investigacion y de Estudios Avanzados del I. P. N., Vladimir Lyandres, Sergey Primak \*, Ben-Gurion University of the Negev, Margarita Horenian\*, Library of the Russian Academy of the Science*
- 9:20 Enhanced Skynoise Mitigation via Adaptive Beamforming  
*Gary A. Somers\*, Allan O. Steinhardt, Lincoln Laboratory, Massachusetts Institute of Technology*
- 9:40 Detecting Technologies and Characteristics of Meteorological Noises Related with Weather  
*Eikichi Asari, Hokkaido College of Arts and Sciences*
- 10:00 BREAK
- 10:20 Receiving Communication Signals in the Presence of Man-Made Noises with Nonlinear Blind Spatial Separation  
*P. V. Gorev, The Joint Laboratory of NPP "Polyot" and Radiophysical Research Institute*
- 10:40 Fast Adaptive Algorithms for Compensation of Time-Varying Interferences in Arrays  
*Boris B. Pospelov\*, Alexander Yu. Zaitsev, Kharkov Aviation Institute*



- 11:00 A Combined Reference Method for Adaptive Spatial Processing of Communication Signals in the Presence of Man-Made and Noisy Interferences  
*P. V. Gorev, The Joint Laboratory of NPP "Polyot" and Radiophysical Research Institute*

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**Thursday AM    URSI-B    Session 26    Salon A**

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**Special Session**

**PML Absorbing Boundary Conditions for Time and Frequency Domains**

**K. S. Yee and R. Mittra**

- 8:20 Opening Remarks  
*Kane Yee, Lockheed Palo Alto Research Laboratory, Raj Mittra, University of Illinois*
- 8:40 Extension of FD-TD Simulation Capabilities using the Berenger PML ABC  
*Daniel S. Katz, Cray Research, Inc., Christopher E. Reuter, Rome Laboratory/ERST, Eric T. Thiel, University of Colorado, Rose M. Joseph, Allen Tafove, Northwestern University*
- 9:00 Applying Berenger's Perfectly Matched Layer (PML) Boundary Condition to Non-Orthogonal FDTD Analyses of Planar Microwave Circuits  
*Stephen D. Gedney\*, Alan Roden, University of Kentucky*
- 9:20 Numerical Investigations of the PML Layer for Mesh Truncation in FDTD  
*Jonathon C. Veihl\*, Raj Mittra, University of Illinois*
- 9:40 Experiments on the Perfectly Matched Layer Boundary Condition in Modeling Wave Propagation in Waveguide Components  
*Zhonghua Wu\*, Jiayuan Fang, State University of New York at Binghamton*
- 10:00 BREAK
- 10:20 FDTD/PML Modeling of HIRF Interactions with Embedded Cavity-Backed Apertures  
*Richard W. Ziolkowski, David C. Wittwer\*, The University of Arizona*
- 10:40 Analysis of Perfectly-Matched Layers Using Lattice EM Theory in a Discretized World  
*W. C. Chew\*, J. M. Jin, University of Illinois*
- 11:00 Performance Characterization of a Perfectly Matched Anisotropic Absorber for Frequency Domain FEM Applications  
*D. Kingsland, R. Dyczij-Edlinger\*, J. F. Lee, R. Lee, Worcester Polytechnic Institute*

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- 11:20 A Finite Element Frequency Domain (FEFD) Formulation with Perfectly Matched Layer (PML) for Mesh Truncation  
*U. Pekel\*, R. Mittra, University of Illinois*
- 11:40 Improving the PML Absorbing Boundary Condition with Optimal Complex Mapping of the Normal Coordinate  
*Carey M. Rappaport, Northeastern University*
- 12:00 Discussion

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**Thursday AM    URSI-B    Session 27    Salon B**

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**Inverse Scattering**

*T. M. Habashy and W. C. Chew*

- 8:20 Different Spatial Iterative Methods for Microwave Inverse Scattering  
*P. Lobel, CNRS/Universite de Nice-Sophia Antipolis, R. Kleinman, University of Delaware, Ch. Pichot\*, L. Blanc-Feraud, M. Barlaud, CNRS/Universite de Nice-Sophia Antipolis*
- 8:40 The Reconstruction of Scattering Potentials from Incomplete Data: A New Look at the Fundamental Theorem of Diffraction Tomography  
*Tarek Habashy\*, Schlumberger-Doll Research, Emil Wolf, University of Rochester*
- 9:00 Processing of Ultrasonic Data with Electromagnetic Inverse Algorithm  
*W. C. Chew\*, C. C. Lu, University of Illinois, G. P. Otto, ThermoTrex Corporation*
- 9:20 Processing Experimental Data with Local Shape Function Method and Distorted Born Iterative Method  
*C. C. Lu\*, W. C. Chew, University of Illinois*
- 9:40 Bistatic Polarimetric Extension of GO/PO and GTD/PTD Inverse Scattering Theories to Aerial RCS Analyses in Wideband POL-SAR Image Interpretation  
*Wolfgang-M. Boerner, University of Illinois at Chicago, Frederic A. Molinet, Societe Mothesim*
- 10:00 BREAK
- 10:20 A Modified Approach in Input Waveform Shaping for Target Identification  
*Gonul Turhan Sayan\*, Kemal Leblebicioglu, Serhat Inan, Middle East Technical University*
- 10:40 Simulation of Inverse Scattering by Clouds and Precipitation for 10 GHz Pulse Airborne Radar  
*Felix J. Yanovsky, Kiev International University of Civil Aviation*



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**Thursday AM      URSI-B      Session 28      Salon E**

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**Wavelets in Electromagnetics II**

*R. D. Nevels and F. X. Canning*

- 8:20 A Wavelet Multilevel Formulation for Electromagnetic Scattering  
*Gaofeng Wang, Tanner Research, Inc.*
- 8:40 Wavelet Basis Allows Diagonal Preconditioners for the EFIE  
*Francis X. Canning, James Scholl, Rockwell Science Center*
- 9:00 A Comparison of Several Method of Moments Wavelet Basis Sets for Electromagnetic Scattering  
*R. D. Nevels\*, J. C. Goswami, A. K. Chan, C. K. Chui, Texas A&M University*
- 9:20 A Computationally Efficient Method Using Intervallic Wavelets for the Solution of Surface Integral Equations  
*Guangwen Pan, University of Wisconsin, Milwaukee*
- 9:40 Analysis of Coplanar Waveguide Using Wavelet-Like Basis Functions  
*Subba R. Kunasani\*, Cam Nguyen, Texas A&M University*

