

## MONDAY, JULY 9, 2001 - AM

Monday Morning

AP/URSI B

Special Session

Commonwealth  
Session 1

### Historical Overview of Development of Wireless

- 8:00 A Chronology of Developments of Wireless Communication and Electronics from 1831-1920  
T. Sarkar\*, Syracuse University, M. Salazar-Palma, Universidad Politecnica de Madrid, D. Sengupta, University of Detroit at Mercy
- 8:20 A Chronology of Developments of Wireless Communication and Electronics from 1921-1940  
M. Salazar-Palma\*, Universidad Politecnica de Madrid, T. Sarkar, Syracuse University, D. Sengupta, University of Detroit at Mercy
- 8:40 Early Proposals of Wireless Telegraphy. Francesco Salva Campillo, Amos Dolbear and Its Relation to Marconi  
J. Romeu\*, A. Elias, Universitat Politecnica de Catalunya (UPC)
- 9:00 Wireless Before Marconi  
I. Lindell\*, Helsinki University of Technology
- 9:20 Maxwell, Hertz, The Maxwellians and The Early History of Electromagnetic Waves  
D. Sengupta\*, University of Michigan, T. Sarkar, Syracuse University
- 9:40 Marconi and First Microwave Link  
O. Ricci\*
- 10:00 A Radioscientists's Reaction to Marconi's First Transatlantic Wireless Experiment Revisited  
J. Belrose\*, Communications Resource Centre Canada
- 10:20 The Authenticity of the "Newman" Notebook and Its Reference to the "Yagi Antenna"  
S. Usami\*, Komazawa Women's University, G. Sato, Antenna Giken Co., Ltd.
- 10:40 Radar At Fort Monmouth 1940 Through 2010  
A. Tarbell\*, US Army, W. Kenneally, Mitre Corporation
- 11:00 Antenna Developments of the 1950s to the 1980s  
A. Schell\*

Monday Morning

AP

Fairfax A  
Session 2

### FDTD Theory I

- 8:00 A Multilevel Subgridding Scheme for Two-Dimensional Finite-Difference Time-Domain Method  
C. Chang\*, S. Jeng, National Taiwan University
- 8:20 Modeling of Near-Field Sources in the Finite-Difference Time-Domain (FDTD)  
M. Potter\*, M. Stuchly, University of Victoria, M. Okoniewski, University of Calgary
- 8:40 Modeling Chiral Media Using a New Dispersive FDTD Technique  
A. Akyurtlu\*, D.H. Werner, Pennsylvania State University
- 9:00 FDTD Computation of Dispersive Effects for a Body of Revolution  
J. Grando\*, ONERA
- 9:20 FDTD Formulation for Bi-Anisotropic Medium  
X. Bao, W. Zhang\*, Southeast University, L. Li, The National University of Singapore,
- 9:40 Accuracy Improvement Technique Applied to Non-Uniform FDTD Cells Using High-Order Implicit Scheme  
T. Namiki, Fujitsu Limited, K. Ito\*, Chiba University
- 10:00 Efficient Non-Uniform Orthogonal Mesh Generation Algorithm for Cylindrical FDTD Applications  
G. Zhou\*, Hefei University of Technology, Y. Chen, University of South Carolina, G. Shen, Hong Kong Polytechnic Institute
- 10:20 A Linear Bicharacteristic FDTD Method  
J. Beggs\*, NASA/Langley Research Center
- 10:40 An Implicit LU/AF FDTD Method  
J. Beggs\*, W. Briley, NASA/Langley Research Center
- 11:00 A Comparison of the Dispersion Error of Higher-Order Finite-Difference Time-Domain Schemes with Daubechies' Multi-Resolution Time-Domain  
K. Shlager\*, Space Systems Loral, J. Schneider, Washington State University

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- 11:20 On the Convergence of Simple FDTD Feed Models for Antennas  
T.W. Hertel\*, G. Smith, Georgia Institute of Technology
- 11:40 FDTD Analysis of Leaky-Wave Vertical-Cavity Surface-Emitting Lasers  
T. W. Lee\*, S. Hagness, D. Zhou, L. Mawst, University of Wisconsin-Madison

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**Monday Morning**

**AP**

**Gardner**  
**Session 3**

## **Broadband Microstrip Antennas I**

- 8:00 Simulation of Bandwidth Enhancement on the Quarter-Wave Shorted Patch by Adding A Shorting Pin  
R. Chair\*, K. Luk, City University of Hong Kong, K. Lee, University of Mississippi
- 8:20 Small-Size Wide-Bandwidth Microstrip Patch Antennas  
A. Shackelford\*, University of Missouri-Columbia, K. Lee, University of Mississippi, D. Chatterjee, University of Missouri-Columbia, Y. Guo, K. Luk, R. Chair, City University of Hong
- 8:40 Design and Analysis of a Novel Wideband Microstrip Antenna  
S.C. Gao,\* L.W. Li, M.S. Leong, T.S. Yeo, The National University of Singapore
- 9:00 A Broadband Eccentric Annular Slot Antenna  
Y. H. Suh\*, I. Park, Ajou University
- 9:20 Analysis of Bandwidth and Radiation in Non-Centered Stacked Patches  
E. Rajo-Iglesias\*, G. Villaseca-Sanchez, C. Martin-Pascual, Universidad Carlos III de Madrid
- 9:40 Broadband Dual-Polarized Patch Antennas with Hybrid Feeds for 1800-MHz Band Operation  
H. T. Chen\*, Chinese Military Academy, T. W. Chiou, K.L. Wong, National Sun Yat-Sen University
- 10:00 Compact Broadband Gap-Coupled Shorted L-Shaped Microstrip Antennas  
A. Deshmukh, G. Kumar\*, I.I.T. Bombay
- 10:20 Band Broadening of Patch Antenna by Elementary Sub Tuners of Transmission Line  
Y. L. Chow\*, K.L. Wan, City University of Hong Kong
- 10:40 Design Considerations of Broadband Circular Microstrip Antennas with Embedded Reactive Loading  
J. Y. Jan\*, National Kaohsiung University of Applied Science
- 11:00 Harmonic Tuning Antennas Using Slots and Short-Pins  
S. Kwon\*, H.K. Yoon, Y.J. Yoon, Yonsei University
- 11:20 Improvement of the Three-Meter Ka-Band Inflatable Reflectarray Antenna  
J. Huang\*, V.A. Feria, H. Fang, Jet Propulsion Laboratory

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**Monday Morning**

**AP**

**Hampton**  
**Session 4**

## **Antenna Applications for Mobile Communications**

- 8:00 Output Power Maximization Algorithm Performance of Dual-Antenna for Personal Communication Handset Applications  
D. McNeil\*, Laval University, T. Denidni, INRS-Telecommunications, G. Delisle, Laval University
- 8:20 GPS Antenna Selection and Placement for Optimum Automotive Performance  
Y. Dai\*, T. Talty, L. Lanctot, Ford Motor Company
- 8:40 Up-Link Characterisation of Multi-Beam LMDS System with Perturbed Cell Plan  
U. Engstrom\*, M. Johansson, A. Derneryd, B. Johannesson, Ericsson Microwave Systems AB
- 9:00 Realization of a Printed-On-Display Antenna for Mobile Terminals  
C. F. Huang\*, L. Chen, Tatung University
- 9:20 An Improved Transmit Antenna Diversity Scheme for IS-2000 Systems  
H.G. Yoon\*, J. G. Yook, H.K. Park, Yonsei University
- 9:40 Performance Improvement for Very High-Speed DWDM Optical Metropolitan-Area Networks Using a Passive Star Topology  
H. Hussin\*, F. El-Halafawy, N. El-Fishawy, A. Aboul-Enein, Faculty of Electronic Engineering - Manouf

**Reconfigurable Antennas**

- 10:00 A Planar VHF Reconfigurable Slot Antenna  
D. Peroulis\*, K. Sarabandi, L. Katehi, University of Michigan
- 10:20 Stacked Reconfigurable Antenna Elements for Space-Based Radar Applications  
J. Bernhard\*, R. Wang, R. Clark, P. Mayes, University of Illinois at Urbana-Champaign
- 10:40 Self-Structuring Antenna for Television Reception  
B.T. Perry\*, C.M. Coleman, B.F. Basch, E.J. Rothwell, Michigan State University, J.E. Ross, John Ross & Associates
- 11:00 Tunable Antenna System for 1.9-GHz PCS Handsets  
H. Okabe\*, K. Takei, Hitachi, Ltd
- 11:20 A Wideband Monopole for Reconfigurable Multiband Radio Terminals  
M. Ammann\*, Dublin Institute of Technology
- 11:40 Electronic Beam Steering Using a Varactor-Tuned Impedance Surface  
D. Sievenpiper\*, J. Schaffner, B. Loo, G. Tangonan, R. Harold, J. Pikulski, R. Garcia, HRL Laboratories, LLC

**Future Research Directions in Finite Element Methods**

- 8:00 A Hierarchical Design Environmental for Coupled Electromagnetic, Thermal, Circuit and System Simulation  
Z. Cendes\*, Ansoft Corp
- 8:20 Orthogonal Tangential Vector Bases for Rapid Convergence with Multilevel Preconditioned Solvers  
D. K. Sun\*, Ansoft Corp, J. F. Lee, The Ohio State University, Z. Cendes, Ansoft Corp
- 8:40 Hybridization of Finite Methods with Other Techniques to Solve Complex Problems  
R. Lee\*, J.F. Lee, P. Pathak, The Ohio State University
- 9:00 Antenna Design Using Rigorous Hybrid Finite Element Computational Toolsets  
J. Volakis\*, Z. Li, Y. Erdemli, G. Kiziltas, University of Michigan
- 9:20 Multigrid Finite Element Methods for Electrodynamic Problems: A Critical Look at their Advantages and Shortcomings  
Y. Zhu\*, A. Cangellaris, University of Illinois at Urbana-Champaign
- 9:40 Wavelet Based Finite Element Method  
G. Pan\*, K. Wnag, Z. Zhang, B. Techentin, B. Gilbert, Arizona State University
- 10:00 Adaptive Mesh Refinement for Vector Finite Element Methods  
J. F. Lee\*, R. Lee, The Ohio State University
- 10:20 Different Forms....  
Bossavit\*
- 10:40 Time Domain FEM....  
J. M. Jin\*, University of Illinois at Urbana-Champaign

**High-Frequency Techniques**

- 8:00 Radiation of a Line Source Located at the Focal Line on the Convex Side of A Hyperbolic Cylinder  
P.L.E. Uslenghi\*, University of Illinois at Chicago
- 8:20 Formal and Computational Aspects of the Creeping-Ray Problem On a Singly Coated Doubly Curved Convex Surface  
P. Hussar\*, E. Smith-Rowland, IIT Research Institute
- 8:40 Physical Optics Scattering from a Plane Plate Illuminated by a Gaussian Beam in Terms of a Contour Integral  
P. Bolli, E. Martini, G. Pelosi, S. Selleri\*, University of Florence
- 9:00 An Efficient Hybrid Technique for Analyzing Scattering from Large Open-Ended Cavities with Complex Cylindrically Periodic Terminators  
T. W. Ang\*, T. T. Chia, DSO National Laboratories, R. Burkholder, The Ohio State University

- 9:20 Calculation of the RCS from the Double Reflection Between Plane Facets and Curved Surfaces  
F. Saez de Adana\*, S. Nieves, E. Garcia, I. Gonzalez, O. Gutierrez, M.F. Catedra, Universidad de Alcala
- 9:40 Evaluation of Surface Fields Within the Paraxial Region of a Source Excited Circular Cylinder with an Impedance Boundary Condition  
C. Tokgoz\*, R. Marhefka, P. Pathak, The Ohio State University
- 10:00 Heuristic Incremental Diffraction Coefficients for Dielectric Screens  
A. Toccafondi\*, A. Polemi, R. Tiberio, University of Siena
- 10:20 UAPO Diffraction Coefficients for an Anisotropic Dielectric Half-Plane: Oblique Incidence  
C. Gennarelli, University of Salerno, G. Pelosi, C. Pochini, University of Florence, G. Riccio\*, University of Salerno
- 10:40 A Numerical Comparison of UTD and MoM Solutions for the Scattering by an Object Buried in a Lossy Medium  
F. Bertoni\*, University of Pisa, R.G. Kouyoumjian, The Ohio State University, G. Manara, P. Nepa, University of Pisa
- 11:00 Fast Physical Optics (FPO) Algorithms for Multiple Bounce Scattering  
A. Boag\*, Tel Aviv University, E. Michielssen, University of Illinois at Urbana-Champaign
- 11:20 Cylindrical Luneburg Lens Geometry and Edge Illumination Analysis  
A. Boriskin\*, A.I. Nosich, The A. Usikov Institute of Radio-Physics and Electronics

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Monday Morning  
AP

Beacon A  
Session 8

## EM Theory

- 8:00 The Observation of Broadband Co-Seismic Electromagnetic Waves in VHF Band  
T. Yoshida\*, M. Nishi, Hiroshima City University
- 8:20 A Simplified 3D Plane Wave Time Domain (PWTD) Algorithm  
M. Lu\*, University of Illinois at Urbana-Champaign, J. Sarvas, University of Helsinki, E. Michielssen, University of Illinois at Urbana-Champaign
- 8:40 Spectral Green's Functions for Multilayered Bianisotropic Media  
L. Vegni\*, F. Bilotti, A. Toscano, University of "Roma Tre"
- 9:00 An Asymptotic Technique for the Far Field Pattern of a Dipole in an Infinite Stratified Medium  
J. Rockway\*, R. Marhefka, The Ohio State University, N. Champagne, University of California
- 9:20 Interaction of EM Waves with Bianisotropic Objects: Clarification of Magnetic Symmetry Groups  
W. Y. Yin\*, L.W. Li, O.B. Ooi, P.S. Kooi, M.S. Leong, The National University of Singapore
- 9:40 A New Method for Computational Electromagnetics, The Theory and Numerical Method of Rotational Operator  
S. Wen-Miao\*, Z. Xiao-Juan, X. Cheng, X. Feng, Chinese Academy of Science
- 10:00 Modifications of the Lorentz Force Law Invariant Under Galilean Transformations  
C. C. Su\*, National Tsinghua University
- 10:20 Modifications of Maxwell's Equations Invariant Under Galilean Transformations  
C. C. Su\*, National Tsinghua University
- 10:40 A Local-Ether Wave Equation and the Galilean-Invariant Electromagnetic Force Law  
C. C. Su\*, National Tsinghua University
- 11:00 Electromagnetic Field Calculation Inside the Dielectric Sphere with Inhomogeneous Insertion  
A.V. Alpatova\*, N.N. Kisel', Taganrog State University of Radio Engineering
- 11:20 Non-Linear Phenomena in Catastrophe Focusing  
A.S. Kryukovsky, Y. Saren\*, MIPT Institutsky per., 9, Dolgoprudny

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Monday Morning  
AP

Beacon B  
Session 9

## Medical Imaging and Treatment with Microwaves

- 8:00 Microwave Imaging of Biological Tissues  
A. Jostingmeier\*, T. Meyer, A.S. Omar, University of Magdeburg
- 8:20 A 2-Stage Gauss-Newton Reconstruction Technique for Improved Object Detection in Microwave Imaging  
P. Meaney\*, N. Yagnamurthy, D. Li, Dartmouth College, E. Demidenko, Dartmouth-Hitchcock Medical Center, K. Paulsen, Dartmouth College
- 8:40 Microwave Imaging for Breast Tumor: 2D Forward and Inverse Methods  
Z.Q. Zhang\*, Q. H. Liu, Duke University
- 9:00 Breast Skin Parameters: Their Effect on a Microwave Breast Cancer Detection System and Obtaining Their

Values - 2-D FDTD Analysis  
M. Popovic\*, A. Taflove, Northwestern University

- 9:20 FDTD Analysis of Planar and Cylindrical Antenna-Array Configurations for 3D Breast Tumor Localization using Confocal Microwave Imaging  
X. Li\*, S. Hagness, University of Wisconsin, E. Fear, M.A. Stuchly, University of Victoria
- 9:40 Confocal Microwave Imaging for Breast Tumor Detection: Comparison of Immersion Liquids  
E. Fear\*, M. Stuchly, M.A. Stuchly, University of Victoria
- 10:00 Volume Sensing Properties of Open-Ended Coaxial Probes fro Dielectric Spectroscopy of Breast Tissue  
D. Popovic\*, M. Okoniewski, University of Calgary, D. Hagl H. Booske, S. Hagness, University of Wisconsin
- 10:20 A Multiresolution Impedance Method for Bioelectromagnetic Problems  
M. Eberdt\*, G. Lazzi, North Carolina State University
- 10:40 Use of Boundary Conditions to Truncate Biological Models in Electromagnetic Simulations Based on Integral Equation Formulation  
E. Bleszynski\*, M. Bleszynski, T. Jaroszewicz, Monopole Research
- 11:00 Conformal K Band 5 Element Waveguide Array for Near-Field Applications  
N. Karnik\*, B. P. Kumar, California State University-Sacramento, G.R. Branner, University of California, Davis
- 11:20 Control of Phased-Arrays for Hyperthermia Using Tomographic Temperature Feedback  
M. Kowalski\*, J. M. Jin, University of Illinois at Urbana-Champaign
- 11:40 Prediction and Optimization of Transient Temperature Fields in Electromagnetic Hyperthermia  
M. Kowalski\*, J. M. Jin, University of Illinois at Urbana-Champaign

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**Monday Morning**  
**URSI A**

**Beacon C**  
**Session 10**

### **Measurements for Material & Field Communication**

- 8:00 Investigation of Different Metallisation Alloys For Planar Antennas on Glass Substrate  
M. Bourry\*, M. Drissi, National Institute of Applied Sciences, M. Sarret, University of Rennes
- 8:20 Measurements of Thin Radar Absorbing Materials  
T. Williams\*, M.A. Stuchly, University of Victoria, P. Saville, Defence Research Establishment Atlanta
- 8:40 Fundamental Study of Wave Absorber Using Resistive-Film at 700GHz Band  
M. Hanazawa\*, Aoyama Gakuin University, Y. Abe, National Defense Academy, O. Hashimoto, Aoyama Gakuin University, Y. Yasuoka, National Defense Academy, K. Wada, Aoyama Gakuin University
- 9:00 Imbedded Antennas for Measurement of the Electrical Properties of Materials  
N. Madan\*, C. Furse, Utah State University
- 9:20 New Phase Shifter Designs Based on Multilayer Ferro-electric Materials Technology  
Z. Zhang\*, Y. Muralidhar, M.F. Iskander, Z. Yun, University of Utah
- 9:40 Optimized Resistive Dipoles for Field Strength Measurements  
J. Waldmann\*, J. Kantz, F. Landstorfer, University of Stuttgart
- 10:00 Test Zone Field Compensation Using Planar Data  
P. Rousseau\*, The Aerospace Corporation
- 10:20 Prediction of Shielding Degradation Arising from Variation in Contact Impedance of Inter-Metallic Junctions  
L. Li\*, O. Ramahi, University of Maryland – James Clark School of Engineering
- 10:40 Detection of Chafed Insulation in Aging Aircraft Wiring  
B. Waddoups\*, C. Furse, Utah State University
- 11:00 Passive Intermodulation on Large Reflector Antennas  
P. Bolli\*, P. Pelacchi, G. Pelosi, S. Selleri, University of Florence

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**Monday Morning**  
**AP**

**TECC 2**  
**Session 11**

### **Novel EM Applications**

- 8:00 Nonlinear Analysis and Design of an Active Multiplier Antenna Array  
S.D. Yang, T. H. Chu\*, National Taiwan University
- 8:20 Analysis of the Properties of Large-Angle Zone Plate Antennas

J. Wiltse\*, Georgia Institute of Technology

- 8:40 Fast and Accurate Evaluation of the Antenna Directivity Via Sampling Expansion  
C. Gennarelli, G. Riccio\*, University of Salerno, C. Savarese, Instituto Universitario Navale
- 9:00 A New Algorithm for the Reconstruction of Band-Pass Signals  
A. Ramadan\*, A. S. Omar, University of Magdeburg
- 9:20 Performance of the 140 GHz Prototype Transmission System for ECRH on the Stellarator W7-X  
W. Kasparek\*, L. Empacher, Institut Fuer Plasmaforschung, V. Erckmann, Max-Planck-Institut fur Plasmaphysik, G. Ganterbein, Institut Fuer Plasmaforschung, G. Hollmann, Max-Planck-Institut fur Plasmaphysik, P.G. Schuller, K. Schworer, Institut Fuer Plasmaforschung. M. WeiBgerber, Max-Planck-Institut fur Plasmaphysik
- 9:40 Phase Characterization of Gyrotron Beams from Intensity Measurements Using the Moment Method  
J. Anderson\*, M.A. Shapiro, R.J. Temkin, D.R. Denison, Massachusetts Institute of Technology
- 10:00 An Electromagnetic Tracking System Using Printed-Circuit Coils  
P. Anderson\*, Visualization Technology Inc.
- 10:20 Phase Integration for Two Dimensional Radar Image Formation  
R. Bonneau\*, Air Force Research Laboratory/SNRT
- 10:40 Efficient Computation of the Quasi-Static Effective Permittivity for Non-Cubical Periodic Lattices  
M. Silveirinha\*, C. Fernandes, Instituto Superior Tecnico
- 11:00 Reconstruction of Roughness Profile of Fractal Surface with a Gaussian Beam Incidence at Low Grazing Angle  
Q. Jin\*, Z. Li, Fudan University Center for Wave Scattering and Remote Sensing
- 11:20 Simulation of Radar Echo from a Ship in Ocean Clutter Using the GFBM/SAA Method  
Q. Jin\*, Z. Li, Fudan University Center for Wave Scattering and Remote Sensing

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**Monday Morning**

**URSI A/B**

**TECC 3**

**Session 12**

## **Dielectric and Lens Antennas**

- 8:00 Green's Function for EM Field in a Microstrip Environment with Imperfectly Conducting Walls Using a Hertzian-Potential Impedance Boundary Condition  
M. Havrilla\*, D. Nyquist, Michigan State University
- 8:20 Gain Enhancement of a Dielectric Resonator Antenna Using A Finite Size Superstrate  
A. Ittipiboon\*, A. Petosa, R. Siushansian, Communications Research Centre
- 8:40 Analytical Solution for Gap-Excited, Leaky Slot Antenna Printed at the Interface Between Two Semi-Infinite Dielectrics  
A. Neto\*, California Institute of Technology/JPL, S. Maci, University of Siena
- 9:00 A 3-Beam, MEMS-Actuated, Leaky Wave Antenna  
A. Zaman\*, R. Lee, NASA Glenn Research Center
- 9:20 Radiation from an Arbitrarily Oriented Hertzian Dipole Over Two-Layered Anisotropic Medium with a Tilted Optic Axis  
A. Eroglu\*, J.K. Lee, Syracuse University
- 9:40 An Approximate Green's Function for a Finite Grounded Dielectric Slab  
L. Alatan\*, O. A. Civi, Middle East Technical University, G. Ogucu, University of Gaziantep,
- 10:00 Using Scattering Data to Estimate the Radiation Characteristics of Spherically Symmetrical Lenses  
A. Parfitt\*, N. Nikolic, CSIRO Telecommunications & Industrial Physics
- 10:20 An Improved Evaluation of Radiation Pattern for Dielectric Lens Antennas  
D. Pasqualini\*, F. Capolino, A. Toccafondi, S. Maci, University of Siena
- 10:40 The Dome-Like Fresnel-Zone Antennas  
H. Hristov\*, R. Feick, Universidad Tecnica Federico Santa Maria
- 11:00 Analysis of Performance of a Class of Broadband Geodesic Lens with Steering Capabilities  
L. Sampaio\*, L. Costa da Silva, Catholic University of Rio de Janeiro
- 11:20 2-D Model of an Arbitrary-Shaped Dielectric Rod Antenna  
A. Boriskin\*, A.I. Nosich, The A. Usikov Institute of Radio-Physics and Electronics, A. Altintas, Bilkent University

## **Elements and Electronics**

- 8:00 Numerical Analysis of Stacked Cylindrical Dielectric Resonator Antennas Excited by Coaxial Probes  
A. Kishk\*, X. Zhang, A. Glisson, University of Mississippi
- 8:20 Analysis of a Hemispherical Dielectric Resonator Antenna with Very High Permittivity  
S. M. Jang, Syracuse University, B. Kolundzija\*, University of Belgrade, T. Sarkar, Syracuse University
- 8:40 An Integrated Broadband Bowtie Antenna for THz Detection with a Double Quantum Well  
M. Khodier\*, C. Christodoulou, University of New Mexico, J. Simmons, Sandia National Laboratories
- 9:00 Characterization of Multiple-Via Interconnections for Multilayer Chip and Module Designs  
C. W. P. Huang\*, S. Hammadi, J. Lott, S. Al-Kuran, Anadigics Inc.
- 9:20 Radiation by Cavity-Backed Antennas on an Elliptic Cylinder  
C. W. Wu\*, L. Kempel, E.J. Rothwell, Michigan State University
- 9:40 Dielectric Slab Based Leaky-Wave Antennas for Millimeter-Wave Applications  
T. Teshirogi\*, Y. Kawahara, A. Yamamoto, Y. Sekine, N. Baba, M. Kobayashi, Anritsu Corporation
- 10:00 A RF Mass-Sensitive SAW Sensor with U-Groove Structure  
D. Zhu\*, Zhejiang University, J. Zhu, Motorola Inc
- 10:20 A CMOS IC for RF Programmable Surface Acoustic Wave Filter  
D. Zhu\*, Zhejiang University, J. Zhu, Motorola Inc
- 11:00 Optimisation of UHF Ferroelectric antenna Parameters by Means of Genetic Algorithm: A Broad Based Tutorial Paper  
C. Das Gupta, Indian Institute of Technology
- 11:20 Experimental Study of Cassegrarian antenna Unit of Fan-Beam Structure With Plannar Metal-Dielectric Feeder  
C. Das Gupta, Indian Institute of Technology

## **RF Coil Design and Simulation for High Field Magnetic Resonance Imaging**

- 8:00 RF Coil Modeling and Analysis in High Field MRI: Lessons Learned  
R. Lee\*, T. Ibrahim, The Ohio State University
- 8:20 A Numerical Study of the Field Dependence of Signal-to-Noise Ratio in High Field MRI  
M. Kowalski\*, J. M. Jin, University of Illinois at Urbana-Champaign
- 8:40 Design of Radiofrequency Coils for Magnetic Resonance Imaging Applications at High Fields: Technological and Physical Feasibility Issues  
T. Ibrahim\*, R. Lee, B. Baertlein, P.M. Robitaille, The Ohio State University
- 9:00 SAR and Induced Current Densities for RF and Gradient Magnetic Fields Used for MRI  
O.P. Gandhi\*, The University of Utah
- 9:20 Measuring RF Field Distributions in MR Coils with IR Sensors  
T. Ibrahim\*, R. Gilbert, A. Abjuljalil, R. Lee, B. Baertlein, P. M. Robitaille, The Ohio State University
- 9:40 Volume Coils for Highest Field MRI  
T. Vaughan\*, M. Garwood, K. Ugurbil, University of Minnesota
- 10:00 A Model for MR Image Shading in Multi-Mode Resonators  
J. Tropp\*, GE Medical Systems
- 10:20 Using Electromagnetic Field Calculations to Understand the Complexity of Magnetic Resonance Imaging (MRI) at High Magnetic Field Strength  
M. Smith\*, C. Collins, Q. Yang, J. Wang, W. Liu, The Pennsylvania State University

## **EM Education**

- 8:00 Virtual Laboratory Instruments and Simulations Remotely Controlled via the Internet  
M. Joler\*, C. Christodoulou, University Of New Mexico
- 8:20 Computer-Aided Simulation of Guided Waves in Dielectric and Optical Waveguides  
R.M. Shubair\*, E.M. Alardi, Etisalat College of Engineering - Emirates Telecom
- 8:40 A Special "Missing" Singularity Integral and its Applications in Electromagnetic Education  
A. Inan\*, P. Osterberg, University of Portland
- 9:00 A Dirac-Like Inference of Maxwell's Equations  
D. Sterc\*, University of Osijek, Z. Sipus, University of Zagreb
- 9:20 On The Correct Way of Taking the Surface Limit in the Integral Equation Formulations of Electromagnetics  
A. Kucharski\*, Wroclaw University of Technology, K. Michalski, Texas A&M University
- 9:40 Radar Prehistory, Soviet Side: Three-Coordinated-Band Pulse Radar Developed in Ukraine in the Late 30s  
A. .A. Kostenko\*, A.I. Nosich, I. A. Tishchenko, The A. Usikov Institute of Radio-Physics and Electronics

## **MONDAY, JULY 9, 2001 - PM**

<b>Monday Afternoon</b>	<b>Special Session</b>	<b>Commonwealth Session 16</b>
<b>AP</b>		

### **Mobile Antenna Systems**

- 1:00 A Wide-Band Electromagnetic Coupler for Thru-Glass Applications  
S. Zeilinger\*, J. Mockus, Andrew Corporation, W. Darden, Molex Corporation
- 1:20 A Thin Broadband Cavity-Backed Slot Spiral Antenna for Automotive Applications  
D.S. Filipovic\*, E.S. Siah, K. Sertel, V.V. Liepa, J. Volakis, , The University of Michigan
- 1:40 Multiple-Input Multiple-Output (MIMO) Radio Channel Measurements  
C. Martin\*, J. Winters, N. Sollenberger, AT&T Research Labs
- 2:00 A Space Division Multiple Access Receiver  
C. Ung\*, TR Labs, R. Johnston, University of Calgary
- 2:20 Mobile Antennas for Reception of S-SARS  
N. Haller\*, Sirius Satellite Radio, Inc
- 2:40 Automotive Antennas Trends and Future Requirements  
T. Talty\*, Y. Dai, L. Lanctot, Ford Motor Company
- 3:00 Artificial Dielectrics for Mobile Antenna Design  
T. Ozdemir\*, K.F. Sabet, P. Frantzis, T. Chan, EMAG Technologies, K. Sarabandi, L. Katehi, University of Michigan, J.F. Harvey, Army Research Office
- 3:20 Propagation and Capacities of Multi-element Transmit and Receive Antennas  
D. Chizhik\*, G. Foschini, M. Gans, R. Valenzuela, Bell Labs-Lucent Technologies

<b>Monday Afternoon</b>
<b>URSI B</b>

<b>Fairfax A Session 17</b>
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### **Numerical Benchmarking, Strategies, and Applications**

- 1:00 Electromagnetic Code Consortium Benchmark Development  
A. Greenwood\*, Air Force Research Laboratory-Kirtland AFB
- 1:20 What is Model Order Reduction?  
R. D. Slone\*, J. F. Lee, The Ohio State University
- 1:40 IS Semi-Inversion Always Advantageous?  
G. Fikioris\*, National Technical University of Athens
- 2:00 Strategy for Modeling Objects Obstructed by Foliage Above a Penetrable Ground: Spectral and Higher-Order Methods  
Q. H. Liu\*, X. Xu, Z. Q. Zhang, G. Zhao, Duke University
- 2:20 Comparison of Slot Modeling Techniques in the Frequency and Time Domain  
J. Kotulski\*, W.A. Johnson, R.E. Jorgenson, L.K. Warne, D.J. Riley, Sandia National Laboratories
- 2:40 A Hybrid Technique for the Simulations of the Field Scattered by a Finite Dielectric Shield Around a Phased Microstrip Antenna Array  
Q. Rao\*, H. Hashiguchi, S. Fukao, Kyoto University
- 3:00 The Application of SDA to Boxed Planar Structures with Complex Materials  
F. Mesa\*, F. Medina, G. Plaza, Universidad de Sevilla
- 3:20 Wave Scattering by Non Linear Ferromagnetic Materials  
P. Joly\*, INRIA Rocquencourt, O. Vacus, Cea/CESTA BP2,
- 3:40 TDIE-MoM Solutions for Scattering by Thin-Wire Antenna Using Spatio-Temporal Wavelet-Packet Expansions  
Y. Shifman\*, Y. Levitan, Technion - Israel Institute of Technology
- 4:00 Modeling Frequency Selective Surfaces by the Finite Element Method  
I. Bardi\*, R. Remski, D. Perry, Z. Cendes, Ansoft Corporation
- 4:20 Quasi-Static Analysis of Fringe Capacitances for Horizontal and Vertical Annular Frills  
H. Y. Chao\*, W. C. Chew , University of Illinois at Urbana-Champaign

## **Wide Band Antennas**

- 1:00 Wide Band Antenna Optimization CAD Tool  
Y. C. Chung\*, R. Haupt Utah State University
- 1:20 Two Novel, Ultra-Wide Bandwidth, Dual Linearly-Polarized Dielectric Antenna Designs  
P. Diez\*, C.C. Chen, W.D. Burnside, The Ohio State University
- 1:40 A New Microstrip Horn Antenna for Ultra-Wideband Applications  
C. Nguyen\*, J.S. Lee, J.S. Park, Texas A&M University
- 2:00 Wide-Band Patch Antennas with Asymmetric Microstrip Excitation  
A. Faraone\*, Q. Balzano, Motorola Labs
- 2:20 Bandwidth Enhancement Techniques for Printed Cloverleaf Antennas  
S. Silva\*, H. Foltz, Virginia Polytechnic Institute and State University, C. Dietrich, R. Nealy, University of Texas - Pan American
- 2:40 Broadband Application of High Impedance Ground Planes  
K.J. Golla\*, P.J. Collins , S. Schneider, A.J. Terzuoli, Air Force Institute of Technology and Research
- 3:00 A Wideband U-Slot Patch Antenna with Photonic Bandgap Structure  
R. Lee\*, A. Zaman, NASA Glenn Research Center
- 3:20 The Conical Spiral Antenna Probe for Underground Object Detection  
H. Raemer\*, C. Rappaport, Northeastern University
- 3:40 Gabor-Frame Phase-Space Beam Summation Formulation for Wideband Radiation from Apertures **Sources**  
A. Shlivinski\*, E. Heyman, A. Boag, Tel Aviv University, D. Lugara, C. Letrou, I.N.T.
- 4:00 Broadband Printed Quadrifilar Helical Antenna with Variable Wire Width  
J.C. Louvigne\*, A. Sharaiha, D. Thouroude, Universite de Rennes I
- 4:20 Impedance Matching of Microstrip Antennas with a Parallel Resonant Circuit  
D.M. de Haaij\*, J. Joubert, J. W. Odendaal, , University of Pretoria

## **Array Analysis and Design**

- 1:00 Sparse Array Realization of Collimated Short Pulse Beam Fields  
A. Shlivinski\*, E. Heyman, Tel Aviv University
- 1:20 Application of Two-Level Evolutionary Algorithms to Self-Structuring Antennas  
C.M. Coleman\*, E.J. Rothwell, Michigan State University, J.E. Ross, John Ross & Associates
- 1:40 Array Pattern Synthesis in the Presence of a Mounting Tower Using the Genetic Algorithm  
T. Su\*, K. Dandekar, H. Ling, The University of Texas at Austin
- 2:00 The Selection of Starting Points for Array Synthesis Using the Method of Generalised Projections  
E. Botha\*, University of Pretoria, D. McNamara, University of Ottawa
- 2:20 The Range Increase of Adaptive Versus Phased Arrays in Mobile Radio Systems: Interface Included  
M. da Silveira\*, J.W. Odendaal, J. Joubert, University of Pretoria
- 2:40 Ultra Broadband Antenna Array for Mobile/Wireless Communications, Square-Kilometer-Array Telescope and Other Applications  
T.B. Vu\*, City University of Hong Kong
- 3:00 Comparison of Beamforming Techniques for W-CDMA Communication System  
H. J. Li\*, T. Y. Liu, National Taiwan University
- 3:20 A Two Dimensional Coupled Oscillator Array with MMIC Frequency Multipliers  
J. Shen\*, L.W. Pearson, Clemson University
- 3:40 Precise Analysis of Commercial Log-Periodic Dipole Arrays Using Wire-Antenna Algorithms  
A. Djordjevic\*, A. Zajic, B. Kolundzija, University of Belgrade, T. Sarkar, Syracuse University
- 4:00 Ray Analysis of the Radiation from a Large Finite Phased Array of Antennas on a Grounded Material Slab  
P. Janpugdee\*, P. Pathak, The Ohio State University, P. Nepa, University of Pisa, O. A. Civi, Middle East Technical University, H.T. Chou, Yuan Ze University

- 4:20 Applications of Forward-Backward Method in the Fast Analysis of Two-Dimensional Array Structures  
H. T. Chou\*, H.K. Ho, Yuan Ze University

**Monday Afternoon**  
**URSI B**

**Fairfax B**  
**Session 20**

## Scattering

- 1:00 Scattering of a Plane Wave by Two Perfectly Conducting Coalescing Spheres  
R. MacPhie\*, T. Lo, University of Waterloo
- 1:20 The Backscattering Characteristics of Wires Actively Loaded with Negative Impedance Elements  
B.R. Long\*, D.H. Werner, The Pennsylvania State University
- 1:40 Plane Wave Diffraction by a Grounded Semi-Infinite Dielectric Slab  
B. Polat\*, Technical University of Denmark, L.W. Pearson, Clemson University
- 2:00 Floquet Wave Diffraction Theory for the Truncated Phased Dipole Array Green's Function on an Infinite Grounded Dielectric Slab  
S. Maci\*, A. Polemi, A. Toccafondi, University of Siena, L. Felsen, Boston University
- 2:20 Theoretical Model for the Backscatter Response of Roadside Pebbles at Millimeter-Wave Frequencies  
E. Li\*, National Chi Nan University, K. Sarabandi, University of Michigan
- 2:40 Backscatter From Inhomogeneities Illuminated by a Focused Beam  
J. Schultz\*, E. Hopkins, R. Moore, Georgia Tech Research Institute, M. Kessler, J. Maloney, Photonex Corporation
- 3:00 Near-Field Probe Study of Scattering from Simple Inhomogeneities  
J. Schultz\*, E. Hopkins, E. Kuster, Georgia Tech Research Institute
- 3:20 A Fast Method to Calculate The Radar Cross Section of Cavities  
O. Gutierrez\*, F. Saez de Adana, P. Lozano, E. Garcia, L. Lozano, I. Gonzalez, M. Catedra, Universidad de Alcala
- 3:40 Effect of Target Size on the Detection of Buried Objects Using Microwave Radiometry  
B. U. Ungan\*, J.T. Johnson, The Ohio State University
- 4:00 Investigation of the Scattering Characteristics of Subsurface UXO for Classification  
K. H. Lee\*, C.C. Chen, R. Lee, The Ohio State University
- 4:20 Use of PCA and Quadratic TFR Techniques in Electromagnetic Target Classification from Scattered Data  
G. Turhan-Sayan\*, M. Karaduman, Middle East Technical University

**Monday Afternoon**  
**URSI G**

**Special Session**

**Berkeley**  
**Session 21**

## Space Weather: System Effects

- 1:00 On Effects of Ionospheric Weather on Communication and Navigation System  
J. S. Guo\*, Chinese Academy of Sciences, J. Wu, Beijing Center of China Institute of Radiowave
- 1:20 Stormtime Ionospheric Perturbations at Sub-Auroral Latitude: GPS Effects  
J.C. Foster\*, MIT Haystack Observatory, A. Coster, MIT Lincoln Laboratory, F.J. Rich, Air Force Research Laboratory, Hanscom AFB
- 1:40 Effects of Ionospheric Irregularities on GPS-Based Navigation Systems  
X. Pi\*, Jet Propulsion Laboratory, A. Iijima, A. Mannucci, JPL/California Institute of Technology
- 2:00 Equatorial Ionospheric Scintillations and Their Effect on GPS Signals  
P. Kintner\*, Cornell University
- 2:20 The Impact of Solar Maximum on GPS Performance in the Equatorial Region  
S. Skone\*, University of Calgary
- 2:40 Specification and Forecasting of Scintillations in Communication/Navigation Links: Current Status and Future Plans  
S. Basu\*, K.M. Groves, Air Force Research Laboratory-Hanscom AFB, S. Basu, National Science Foundation, P. Doherty, Boston College
- 3:00 Radar Auroral Clutter Maps: A Mission-Tailored Graphical Product for DoD Warfighters  
S. Quigley\*, G. Bishop, Air Force Research Laboratory-Hanscom AFB, E. Holeman, D. Madden, Boston College, P. Citrone, K. Scro, R. Wilkes, Space & Missile Systems Center
- 3:20 Operational Effects at ALTAIR Due to Ionospheric Disturbances  
S. Close\*, A. Coster, S. Hunt, MIT Lincoln Laboratory
- 3:40 VLF Remote Sensing of Lower Ionospheric Variability

U.S. Inan\*, Stanford University

- 4:00 Recent Validation Results for Selected HF Propagation Prediction Programs Using Space Weather Data  
R. Hunsucker\*, RP Consultants

- 4:20 OpSEND: Tailored Space Weather Impact Maps for Specific Radio-Based Systems  
G. Bishop\*, S. Quigley, K. Groves, T. Bullett, Air Force Research Laboratory-Hanscom AFB, P. Doherty, Boston College, P. Citrone, K. Scro, R. Wilkes, Space & Missile Systems Center

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## Monday Afternoon

### URSI B

### Beacon A Session 22

## Electromagnetic Theory

- 1:00 Time-Domain Analysis of the Evanescent Fields Associated with Ultrafast X-Wave Tunneling Through a Planar Slab  
A. Shaarawi The American University in Cairo, I. Besieris\*, Virginia Polytechnic Institute and State University, B. Tawfik, Cairo University, Fayoum Campus
- 1:20 Ultra-Fast Transmission of a Transverse-Electric X-Wave Tunneling Through a Multilayered Structure  
A. Shaarawi The American University in Cairo, I. Besieris\*, Virginia Polytechnic Institute and State University, B. Tawfik, Cairo University, Fayoum Campus
- 1:40 Analytical and Numerical Evaluation of the Explicit Form of the Electromagnetic Field Propagator  
R.D. Nevels\*, C. Shin, Texas A&M University
- 2:00 Image Theory for the Prolate Spheroid  
I. Lindell, K.I. Nikoskinen, Helsinki University of Technology, G. Dassios\*, University of Patras,
- 2:20 Spiral as an Electronically Controlled Polarization Transformer  
K. Karkkainen\*, M.A. Stuchly, University of Victoria
- 2:40 Scattering by Truncated Periodic Arrays of Narrow Strips: A Wiener-Hopf Formulation  
F. Capolino\*, M. Albani, Universita di Seina
- 3:00 Construction and Properties of Scattering Expansions for Magnetic and Electric Cavity Green's Functions  
F. Gronwald\*, J. Nitsch, S. Tkachenko, Otto-von-Guericke-University Magdeburg
- 3:20 The Homogenization Method and Its Application to Designing Frequency Selective Structures  
G. Kiziltas\*, H. Syed, Z. Li, J. Volakis, N. Kikuchi, The University of Michigan
- 3:40 Finite-Element-Method Computation of Zero-Sequence Impedance of Three-Phase Underground Pipe-Type Cables  
X.B. Xu\*, Clemson University, G. Liu, Comtech Communication Inc.
- 4:00 Theoretical Study of a Model Scatter-Probe Optical Microscope  
C.I. Valencia\*, E.R. Mendez, Centro de Investigacion Cientifica y de Educacion, A.A. Maradudin, T.A. Leskova, University of California-Irvine
- 4:20 Singularities of Space-Time Focusings in Non-Stationary Media  
D.N. Chystyakov, A.S. Kryukovsky, D.S. Lukin\*, MIPT, Institutsky per., 9, Dolgoprudny

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## Monday Afternoon

### AP

### Beacon B Session 23

## Propagation Theory

- 1:00 Application of the Reciprocity Theorem to Complex Propagation Problems  
C. Coleman\*, Adelaide University
- 1:20 Stochastic Modeling of Correlation Radiometer Signals  
B. Davis\*, University of Arizona, E. Kim, J. Piepmeier, NASA Goddard Space Flight Center
- 1:40 Scattering From a Land/Sea Transition  
M. Casciato\*, K. Sarabandi, University of Michigan
- 2:00 Three Dimensional Simulation of Wave Propagation into a Comet Nucleus in the Frame of the CONSERT Experiment  
M. Bennia\*, Observatoire Midi-Pyrenees, A. Piot, Laboratoire de Planetologie de Grenoble, J. P. Barriot, W. Kofman, Laboratoire de Planetologie de Grenoble
- 2:20 A MFIE-Based Predication for UHF Vertically-Polarized Wave Propagation over Irregular Terrains  
F. Moreira\*, Federal University of Minas Gerais
- 2:40 New Computationally Efficient 2.5D and 3D Ray Tracing Algorithms for Modeling Propagation Environments

Z. Zhang\*, Z. Yun, M. Iskander, University of Utah

- 3:00 Development of a New Shooting-and-Bouncing Ray (SBR) Tracing Method That Avoids Ray Double Counting  
Z. Yun\*, M. Iskander, Z. Zhang, University of Utah
- 3:20 A Method for Multiple Diffracted Ray Sampling in Forward Ray Tracing  
E. Di Giampaolo\*, Universita dell'Aquila, F. Bardati, D.I.S.P. Universita di Roma,
- 3:40 Confirmation of Random Matrix Model for the Antenna Array Channel by Indoor Measurements  
R. Muller, H. Hofstetter\*, Forschungszentrum Telekommunikation Wien
- 4:00 Estimation of Propagation Structure by Means of Hopfield Neural Network  
T. Maruyama\*, Y. Kuwahara., Shizuoka University
- 4:20 FM Pulses Propagating in Focal Regions of Catastrophe Types  
E. Ipatov\*, A. Kryukovsky, D. Lukin, D. Rastyagaev, D. Chystyakov, MIPT, Institutsky per., 9, Dolgoprudny

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#### Monday Afternoon

AP

Beacon C  
Session 24

### Microstrip Antenna Analysis

- 1:00 Effect of Feeding Symmetry on Resonances in Patch and Capacitor Structures  
E. Semouchkina\*, W. Cao, R. Mittra, M. Lanagan, The Pennsylvania State University
- 1:20 Investigation on Phase Properties of Circular Microstrip Antenna  
M. Daneshmand\*, L. Shafai, P. Mousavi, The University of Manitoba
- 1:40 FDTD Analysis of a Compact, H-Shaped Microstrip Patch Antenna  
S.C. Gao\*, L.W. Li, M.S. Leongand, T.S. Yeo, The National University of Singapore
- 2:00 Temperature Effects in Multilayered (An)isotropic Superstrate-Substrates on the Characteristics of Packaged Multiconductor Microstrip Devices  
W.Y. Yin\*, M. Miao, L.W. Li, B.L. Ooi, P.S. Kooi, M.S. Leong, T.S. Yeo, The National University of Singapore
- 2:20 Analysis of a Square Microstrip Antenna with an Eccentric Slot  
M. Hurtado\*, H.E. Lorente, C.H. Muravchik, Universidad Nacional de La Plata
- 2:40 Irregularly Shaped Patch as Perturbation of Regularly Shaped Patch  
Y. Sun\*, Y. L. Chow, D.G. Fang, City University of Hong Kong

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#### Monday Afternoon

URSI B

Beacon C  
Session 25

### Methods for Layered & Stratified Media

- 3:00 Application of the Locally Corrected Nystrom Method to Planar Layered Problems in Packaging  
F. Caliskan\*, A. Peterson, Georgia Institute of Technology
- 3:20 Lattice Sum Approach to Scattering by Periodic Layered Structures  
J. Thomas\*, A. Ishimaru, University of Washington
- 3:40 Study of the Scalar Potentials Arising in Stratified Media  
T. Grzegorczyk\*, Research Laboratory of Electronics, MIT, J.R. Mosig, Ecole Polytechnique Federale de Lausanne
- 4:00 Multilayered Media MPIE Green's Functions  
J. Sarvas\*, P. Yla-Oijala, M. Taskinen, University of Helsinki
- 4:20 Efficient Evaluation of the Half-Space Green's Function for Fast-Multipole Scattering Models  
Z. Liu\*, L. Carin, Duke University
- 4:40 Dielectric Resonator Antenna on a Slotted Ground Plane  
K. L. Wong\*, National Sun Yat-Sen University, C. Y. Huang, Yung-Ta Institute of Technology

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#### Monday Afternoon

URSI B

TECC 2  
Session 26

### Antenna Design Optimization

- 1:00 Shape Optimization of Microstrip Antennas Using Genetic Algorithm  
H. Choo\*, A. Hutani, H. Ling, University of Texas at Austin
- 1:20 Patch Antenna Size Reduction by Combining Inductive Loading and Short Points Technique

- L. Desclos\*, S. Reed, Y. Mahe, G. Poilasne, S. Toutain, Ecole Polytechnique de Nantes-IRCCYN Div. SETRA
- 1:40 Mutual Coupling Between Microstrip Line Fed Printed Antennas on Large Coated Cylinder  
V.B. Erturk, Bilkent University, K.W. Lee, R.G. Rojas\*, The Ohio State University
- 2:00 Analysis of Microstrip Patch Antenna Elements Using Several Software Packages  
C. Peixeiro, C. Fernandes\*, Technical University of Lisbon
- 2:20 Improved Electrically Small Planar Microstrip Antenna  
C.S. Lee\*, A. Mahmood, Southern Methodist University
- 2:40 Localized Heating by Using a Coaxial-Slot Antenna with Two Slots for Microwave Coagulation Therapy  
K. Saito\*, S.Y. Okabe, T. Taniguchi, H. Yoshimura, K. Ito, Chiba University

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**Monday Afternoon**  
**AP**

**TECC 2**  
**Session 27**

### **Random Media and Rough Surfaces**

- 3:00 Resistive Treatment of Edges in Numerical LGA Scattering from Rough Surfaces  
J. West\*, Oklahoma State University
- 3:20 Polarization Ratios Anomalies of 3D Rough Surface Scattering as Second Order Effects  
A. Sei\*, M. Caponi, TRW, O. Bruno, California Institute Of Technology
- 3:40 Effective Permittivity Calculation for 2-D Pseudo-Random Composite Media  
F. Wu\*, K. Whites, University of Kentucky
- 4:00 Modeling Shadow Region Due to Propagation Through Discrete Random Media  
R. Guinvarc'h\*, B. Uguen, G. Chassay, LCST/FRE CNRS-URER – INSA Rennes
- 4:20 Scattering of the Radiation with Continuous Spectrum on Irregularities of a Plane Plasma Layer  
G. Jandieri\*, Zh.M. Diasamidze, M.R. Diasamidze, V.G. Jandieri, Georgian Technical University
- 4:40 Statistical Characteristics of Alfvén and Hydromagnetic Gradient Waves in a Randomly Inhomogeneous Plasma  
G. Jandieri\*, Zh.M. Diasamidze, V.G. Jandieri, M.R. Diasamidze, Georgian Technical University

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**Monday Afternoon**  
**AP**

**TECC 3**  
**Session 28**

### **Reflector Analysis and Synthesis**

- 1:00 The Geometrical Theory of Aberrations of Classical Offset Dual-Reflector Antennas  
S. Chang\*, A. Prata, University of Southern California
- 1:20 A Design Procedure for Classical Offset Inverse Cassegrain Antennas with Circular Apertures  
S. Chang\*, A. Prata, University of Southern California
- 1:40 Analysis of Large Reflector Antenna Systems Using Iterative Hybrid Techniques  
D.H. Han\*, A.C. Polycarpou, C.A. Balanis, Arizona State University
- 2:00 Offset Parabolic Cylindrical Antennas: Effects of Random Surface Errors on Gain and Sidelobes  
Y. Rahmat-Samii\*, S. Sinton, University of California, Los Angeles
- 2:20 Transient Far-Fields of Offset Reflector Antenna  
S. Skulkin\*, Vrije Universiteit Brussel, V. Turchin, Institute of Applied Physics Russian Academy of Science
- 2:40 A Proposed Definition of Antenna Efficiency for Contoured Coverages  
A. Keith\*, Boeing Space Systems, A. Prata, University of Southern California
- 3:00 Radiation Pattern of a Satellite Antenna Located in a Clutter Environment  
H. T. Migliozzi\*, C. Parini, M. Rayner, University of London
- 3:20 On the Use of FFT in Surface Shaping of Contoured Beam Antennas  
S. Sorensen\*, M. Lumholt, H.H. Viskum, TICRA
- 3:40 Synthesis of Reflector Antennas with Near-Field Constraints  
O.M. Bucci\*, A. Capozzoli, G. D'Elia, Universita di Napoli "Federico II"
- 4:00 A Study on Pattern Synthesis Method for Array-Fed Reflector Antenna for Advanced Direct Broadcasting Satellites  
S. Tanaka\*, T. Yamada, T. Murato, NHK Science and Technical Research
- 4:20 Gabor-Based Narrow-Waisted Gaussian Beam Algorithm for Transmission Through a Spherically Layered Radome

## **Diverse Waveguiding Structures**

- 1:00 Analysis of Impedance Characteristics of a Probe Fed Rectangular Cavity-Backed Slot Antenna  
T. Lertwiriyaprapa\*, C. Phongcharoenpanich, S. Kosulvit, M. Krairiksh, King Mongkut's Institute of Technology
- 1:20 Radiation Extraction for Transmission-Line Interconnects  
Y.W. Liu\*, K.K. Mei, J.S. Hong, City University of Hong Kong
- 1:40 Influence of Depleted Layers on the Propagation Characteristics and on the Couplings in Multilayer Silicon ICs with Buried Diffusions  
S. Wane\*, ENSEEIHT, D. Bajon, SUPAERO, H. Baudrand, ENSEEIHT, P. Gamand, Philips Semiconductors
- 2:00 Design of an Elevated CPW for High-Speed Digital Circuit Applications  
Y.J. Hwang\*, J.G. Yook, Y.J. Kim, H.K. Park, The Yonsie University
- 2:20 Reflection and Propagation of Short Electromagnetic Pulse in Plasma Half-Space and Semi-Infinite Wave Guide  
A.L. Gutman\*, Voronezh State Forestry Engineering Academy
- 2:40 Simulation of Cutoff Frequencies in TEM Cells by Boundary Scaling Functions  
M. Tanigaki\*, H. Echigo, Tohoku Gakuin University, M. Kamiyama, Sendai National College of Technology
- 3:00 Beam Array Scattering by Wedges and Rectangular Cylinders  
H. Cheung\*, E. Jull, University of British Columbia
- 3:20 Coupling at Cross, T and L Junctions in Tunnels  
J. Lee\*, Advanced Telecom Research Lab-LG Electronics, H. Bertoni, Polytechnic University
- 3:40 Berenger and Leaky Modes in Lossy Microstrip Substrates Terminated by a Perfectly Matched Layer  
H. Rogier\*, D. De Zutter, INTEC-University of Gent
- 4:00 The Complete Set of Electromagnetic Dyadic Green's Functions of the Cylindrical Chrowaveguide  
H.T. Hui\*, E.K.N. Yung, City University of Hong Kong
- 4:20 Topological Asymptotic for Waveguide Optimization  
P. Mader\*, Alcatel Space Industries, M. Masmoudi, CNRS-Universite Paul Sabatier, C. Mangenot, Alcatel Space Industries

## **Antenna Measurements and Calibration**

- 1:00 Calibration of Large Phased Arrays Including Monopulse Ratios  
R. Rotman\*, Y. Oz, A. Benaiash Elta Electronics Industries IAI
- 1:20 Design of An L-Band Test Range Validation Antenna  
L. Foged\*, L. Duchesne, P.O. Iversen, SATIMO, J. Lemanczyk, European Space Agency, ESTEC
- 1:40 Minimization of the Truncation Impact on Measured Radiation Pattern in Spherical Near-Field Antenna Test Ranges  
L. Foged\*, L. Duchesne, Ph. Garreau, P.O. Iversen, SATIMO, J-Ch. Bolomey, SUPELEC
- 2:00 Precision Dipoles for Antenna Test Range Validation  
L. Duchesne\*, M. Le Goff, P.O. Iversen, SATIMO
- 2:20 Active Measurements of Wireless Devices in a Spherical Near Field Test Range  
A. Gandois\*, P. Garreau, G. Barone, SATIMO
- 2:40 Microwave Measurements of the Complex Permittivity of the Construction Materials Using Fresnel Reflection Coefficients and Reflection Ellipsometry  
F. Sagnard\*, C. Vignat, V. Montcourtois, E. Rolland, Universite de Marne-la-Vallée

**Tuesday, July 10, 2001**

<b>Tuesday Morning AP</b>	<b>Room Session 31</b>
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### **Microstrip Antennas for Wireless**

- 8:00 A Dual Polarized Aperture Coupled Microstrip Patch Antenna with High Isolation for RFID Applications  
S.K. Padhi\*, N.C. Karmakar, C.L. Law, Nanyang Technological University, S. Aditya, ITT Delhi
- 8:20 Design of "Chip-Scale" Patch Antennas for 5-6GHz Wireless Microsystems  
J. Zhao\*, S. Raman, Virginia Tech
- 8:40 Low-Cost Design of Stacked Microstrip Array Antenna for DBS Application  
Y.B. Jung\*, S.O. Park, Information and Communications University
- 9:00 Dual Linear Polarization Patch Antenna Array with High Isolation  
K.L. Lau\*, K.M. Luk, City University of Hong Kong
- 9:20 A Low-Cost L-Probe Patch Antenna Array  
H. Wong\*, H.W. Lai, K.M. Luk, City University of Hong Kong
- 9:40 A Dielectric-Resonator-On-Patch (DROP) Antenna for Broadband Wireless Applications: Concept and Results  
K. Esselle\*, Macquarie University
- 10:00 Progressive Development of Portable VSAT Antennas for ST1 and Intelsat  
N.C. Karmaker\*, S.K. Padhi, C.T. Han, S. Sivakumar, Nanyang Technological University, S. Aditya, ITT Delhi
- 10:40 Development of Broadband Circular Polarized Planar Antenna for "EROS" Leo Satellite  
V. Rojansky\*, M. Winebrand, Israel Aircraft Industries Ltd.
- 11:00 Compact Size IMT-2000 Microstrip Antenna for Repeater and Base Stations  
Y. Choi\*, B. Lee, Kyunghee University
- 11:20 Compact Size Dual-Polarized Diversity Microstrip Antenna for IMT-2000 Base-Station  
S Kwon\*, B. Lee, Kyunghee University, J. Choi, Sunwoo Communication Co., Ltd.

<b>Tuesday Morning AP/URSI B</b>	<b>Special Session</b>	<b>Fairfax A Session 32</b>
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### **Grand Challenges in CEM**

- 8:00 Opening Remarks  
K. Hill, Wright Laboratory-Dayton OH
- 8:10 Some Grand Challenges in Computational Electromagnetics  
R. Mittra\*, The Pennsylvania State University
- 8:20 Future Directions in Electromagnetic Modeling of Antennas and Scatterers  
D.R. Wilton\*, University of Houston, R. Adams, Virginia Tech, R.D. Graglia, Dip. Elettronica C. Duca Abruzzi, A. Peterson, Georgia Institute of Technology
- 8:40 MacroBasis Functions and MultiLevel Algorithms for Printed Antennas  
J.R. Mosig\*, Ecole Polytechnique Federale de Lausanne, J. Rius, Universitat Politecnica de Catalunya
- 9:00 Monte Carlo Simulation of Random Rough Surfaces: A Grand-Challenge Class Electromagnetic Scattering Problem  
S.Q. Li, City University of Hong Kong, M. Xia, Chinese Academy of Sciences, C.H. Chan\*, City University of Hong Kong
- 9:20 Developments and Research Challenges in Frequency Domain Computational Electromagnetics  
J. Volakis\*, K. Sertel, University of Michigan, T.F. Eibert, T-Nova Deutsche Telekom
- 9:40 Large-Scale Design and Optimization Using Cluster Computers  
T. Cwik\*, G. Klimeck, F. Villegas, California Institute of Technology / JPL
- 10:00 Fast Time Domain Integral Equation Solvers: Trends and Challenges  
E. Michielssen\*, K. Aygun, M. Lu, K. Yegin, University of Illinois at Urbana-Champaign, B. Shanker, Iowa State University, D. Weile, University of Delaware
- 10:20 Grand Challenges in Analyzing EM Band-Gap Structures: An FDTD/Prony Technique Based on the Split-Field Approach

H. Mosallaei\*, Y. Rahmat-Samii, University of California, Los Angeles

**10:40 FEM-Based Reduced-Order Modeling of Electromagnetic Systems**

A. Cangellaris, Y. Zhu, University of Illinois at Urbana-Champaign

**11:00 Detection and Classification of Complex Targets in Foliage**

L. Carin\*, Duke University

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**Tuesday Morning**

**AP**

**Gardner  
Session 33**

**EM Health Effects of Cellular Phone Radiation**

**8:00 Estimation of an Error of the SAR Caused by Inaccurate Electric Constants of the Biological Tissue-Equivalent Phantom**

H. Kawai\*, H. Yoshimura, K. Ito, Chiba University

**8:20 SAR Simulations for Compliance and Trend Analysis**

J. Svilaj\*, N. Buris, Motorola Inc.

**8:40 Statistical Analysis and Characterization of Spatial Distribution of Absorbed Power of GSM Mobile Phones**

N. BenDjebara\*, J. Wiart, France Telecom-FTR&D DMR/IIM, W. Tabbara, Supelec, C. Dale, France Telecom-FTR&D DMR/IIM

**9:00 A Practical Method for Compliance Testing of Base Stations for Mobile Communications with Exposure Limits**

C. Olivier\*, L. Martens, Ghent University

**9:20 A High-Precision Real Human Phantom for EM Evaluation of Handheld Terminals in a Talk Situation**

K. Ogawa\*, T. Matsuyoshi, H. Iwai, Matsushita Electric Industrial Co. Ltd. N. Hatakenaka, Research Institute of Human Engineering for Quality Life

**9:40 Simulated Temperature Increase in a Head/Eye Model Containing an Intraocular Retinal Prosthesis**

G. Lazzi\*, S. DeMarco, W. Liu, NC State University, M. Humayun, Wilmer Eye Institute-Johns Hopkins University

**10:00 FDTD Calculation of SAR for the Monopole Antenna on the Conducting Box in Terms of the Structure Near by Feed**

J. Byun\*, J. Lee, Samsung Electronics Co., Ltd.

**10:20 FDTD Calculation of SAR for the Monopole Antenna on the Conducting Box with the Metallic Folder**

J. Lee\*, J. Byun, Samsung Electronics Co., Ltd., S. Nam, Seoul National University

**10:40 EMF Effects in Human Eye Exposed to High Frequency Electromagnetic Fields**

S. Loskovska\*, L. Ololoska-Gagoska, L. Janev, University "Sts. Kiril and Metodij"

**11:00 Biological Effect of Mobile Telephone Inside The Human Brain**

A.I. Hassanin\*, Menufia University

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**Tuesday Morning**

**URSI B**

**Hampton  
Session 34**

**Array Design Including Mutual Coupling**

**8:00 DOA Estimation for Nonuniformly Spaced Arrays Incorporating Mutual Coupling**

K. Kim\*, T. Sarkar, Syracuse University

**8:20 Analysis and Design of a Open Ended Waveguide Array Considering the External Mutual Coupling**

E. Arnold, M. Boeck, F. Holtzhausen, P. Ruetzel\*, EADS Deutschland GmbH

**8:40 Mutual Coupling in Dual-Polarized Microstrip Patch Arrays for 2D Synthetic Aperture Microwave Radiometry at L-Band**

K. Carver\*, S. Kadambala, H. Zhu, J. Bertram, University of Massachusetts at Amherst

**9:00 Mutual Coupling Effects and Compensation for Cylindrical Null-Steering Microstrip Patch Arrays**

P. Niemand\*, J.W. Odendaal, J. Joubert, University of Pretoria

**9:20 Analysis of a Phased Array of Rectangular Waveguides Feeding a Parallel Plate Waveguide**

S. Rengarajan\*, California State University

**9:40 Post-Wall Waveguide Slot Array with a 4-Way Planar Butler Matrix for Base Station Antennas in Wireless Communications**

J. Hirokawa\*, S. Yamamoto, M. Ando, Toyko Institute of Technology

- 10:00 Full Scan Coverage Spherical Conformal Spiral Antenna Array  
A. Vallecchi\*, University of Salerno, A. Mazzei, G. Gentili, University of Florence
- 10:20 A Five by Five Element S-Band Coupled Oscillator Array with Diagnostic System  
R. Pogorzelski\*, California Institute of Technology / JPL
- 10:40 Novel Techniques for Analysis of Array Antennas  
K. Takamizawa\*, W. Davis, W. Stutzman, Virginia Polytechnic Institute and State University
- 11:00 Spectral Containment Using Integer Wavelength Time Delays in Phased Arrays  
J.D. Kramer\*, E. Ostroff, S. Parisi, MITRE Corporation
- 11:20 Field Analysis Of A Ultra Broadband Wide Scan Dual Polarized Array Of Ridge Elements  
K. K. Chan\*, Chan Technologies Inc, B.T. Toland, TRW Inc.

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Tuesday Morning  
AP

Fairfax B  
Session 35

### Multi-Band Antennas

- 8:00 Multi-Band and Broadband Coaxial CTS Array Design  
R. Isom, M. Iskander\*, Z. Zhang, Z. Yun, University of Utah
- 8:20 The Compact Patch  
L. Parad\*, MIT Lincoln Laboratory
- 8:40 Branch Number and Height Effects on the Multi-Branch Tri-Band Monopole Antenna Resonance  
D. Liu\*, T.J. Watson Research Center
- 9:00 Volume Considerations in the Design of Dual-Band Handset Antennas  
M. Martinez-Vazquez\*, M. Geissler, D. Heberling, IMST GmbH
- 9:20 Dual-Band and Wide-Band PIFA with U- and Meanderline-Shaped Slots  
P. Salonen\*, M. Keskilammi, M. Kivikoski, Tampere University of Technology
- 9:40 A Compact Multiband Terminal Antenna  
P. Kabacik\*, Wroclaw University of Technology
- 10:00 A Compact Dual-Band Microstrip-Fed Monopole Antenna  
H.M. Chen\*, Y. F. Lin, C.C. Kuo, K.C. Huang, National Kaohsiung University of Applied Sciences
- 10:20 A Wideband Monopolar Plate-Patch Antenna  
J. S. Row\*, Chien Kuo Institute of Technology, S.H. Yeh, K.L. Wong, National Sun Yat-Sen University
- 10:40 Waveguide-Excited Dielectric Resonator Antenna  
K. W. Leung\*, K. K. So, City University of Hong Kong
- 11:00 A Planar Triple-Band Antenna for GSM/DCS/GPS Operations  
S.T. Fang\*, J. W. Sheen, Industrial Technology Research Institute
- 11:20 A Coplanar Waveguide-Fed Printed Slot Antenna for Dual-Frequency Operation  
W. S. Chen\*, Chien Kuo Institute of Technology, K. L. Wong, National Sun Yat-Sen University

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Tuesday Morning  
AP

Berkeley  
Session 36

### Propagation in a Multipath Environment

- 8:00 Multipath Scattering Model for LMDS  
I. Jouny\*, Lafayette College
- 8:20 Outdoor/Indoor Propagation Modeling for Wireless Communications Systems  
M. Iskander\*, Z. Yun, Z. Zhang, University of Utah
- 8:40 A Hierarchical Time-Domain Modulation Scheme for Widband Communications in a Dispersive Multipath Channel  
K. Sarabandi\*, I. S. Koh, University of Michigan
- 9:00 Improving Indoor Signal Coverage by Use of Through-Wall Passive Repeaters  
H. Hristov\*, R. Feick, W. Grote, Universidad Tecnica Federico Santa Maria
- 9:20 The Impact of Multipath Propagation on the Performance of Smart Antennas in Micro-and Pico-Cellular CDMA Environments

- A. Khjehnasiri, S. Safavi-Naeini\*, University of Waterloo, Y. Wang, Com Dev Ltd
- 9:40 A Plane Wave Model Approach to Understanding Propagation in an Intra-Chip Communication System  
K. Kim, W. Bomstad\*, K.O. Kenneth, University of Florida
- 10:00 Loss Characteristics in Urban Environment with Different Buildings' Overlay Profiles: Option 2  
N. Blaunstein\*, D. Katz, D. Censor, University of the Negev
- 10:20 Microwave Propagation Characteristics Depending on Base-Station Antenna Height in an Urban Area  
K. Sakawa\*, H. Masui, M. Ishii, H. Shimizu, T. Kobayashi, YRP Mobile Telecommunications Key Technology Research Labs, Co., Ltd.
- 10:40 Effects of Road Traffic on Portability Distributions of Path Loss in an Urban Microcellular Environment  
K. Sakawa\*, H. Masui, M. Ishii, K. Sakawa , T. Kobayashi, YRP Mobile Telecommunications Key Technology
- 11:00 Joint Angle and Delay Spread Statistics for 1920 MHz Peer-to-Peer Wireless Channels  
G. Durgin\*, V. Kukshya, T. Rappaport, Virginia Polytechnic Institute and State University
- 11:20 Comparison Between Path-Loss Prediction Models for Wireless Telecommunication System Design  
M. Jeong\*, B. Lee, Kyunghee University

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**Tuesday Morning**  
**AP****Beacon A**  
**Session 37****EM Scattering**

- 8:00 The Dual Surface Combined Field Integral Equation for Scattering From Three-Dimensional Objects  
V.V.S.Prakash\*, R. Mittra, Pennsylvania State University
- 8:20 A New Theory of Receiving Antennas  
C.T.Tai\*, University of Michigan
- 8:40 Impulsive Pyramid-Vertex and Double-Wedge Diffraction Coefficients  
F. Capolino\*, M. Albani, University of Siena
- 9:00 Diffraction by a Curved Impedance Wedge of Arbitrary Angle  
J.M.L. Bernard\*, C.E.A / Bruyeres le Chatel
- 9:20 Diffraction by a Planar Junction Between a Perfectly Conducting Half Plane and a Resistive Sheet Illuminated by a Dipole Close to its Edge  
A. Vallecchi\*, University of Salerno
- 9:40 Electromagnetic Scattering by A Multilayer Gyrotropic Bianisotropic Cylinder  
M. Zhang\*, L.W. Li, T. S. Yeo, M. S. Leong, National University of Singapore
- 10:00 Contribution of the Triple Effects to the Monostatic RCS of Arbitary Targets Modeled by Plane Facets  
F. Saez de Adana\*, S. Nieves, P. Lozano, I. Gonzalez, O. Gutierrez, M.F. Catedra, Universidad de Alcala
- 10:20 A Direct Spatial-Domain Representation for the Fields Excited by an Arbitrary Incident Field at a Planar Dielectric Interface  
R. Adams, B. Davis\*, Virginia Tech
- 10:40 Scattering From Spherical Objects Loaded With Conducting Strips Using Asymptotic Boundary Conditions  
A. Kishk\*, A. Elsherbeni, University of Mississippi
- 11:00 A Time-Domain Uniform Asymptotic Solution for Scattered Field by a Thin Cylindrically Curved Conducting Strip  
T. Ishihara\*, National Defense Academy -Japan, K. Goto, Signal School of the Japan Ground Self-Defense, A. Imase, National Defense Academy -Japan
- 11:20 Sidelobe Apodization for High Resolution of Scattering Centres in ISAR Images  
G. Thomas\*, J. Lo Vetri, University of Manitoba, W. Chamma, S. Kashyap, A. Louie, Defence Research Estalishment Ottawa

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**Tuesday Morning**  
**URSI A****Beacon B**  
**Session 38****Calibration Techniques & Package Structures**

- 8:00 Calibration of the C-Probe for NDE of Concrete Structures  
A. Al-Derbas, Kuwait University, Y. Khalaf, S. Riad\*, Virginia Polytechnic Institute and State University
- 8:20 Antenna Gain Measurement Using TRL Calibration Method  
H. C. Lu\*, T. H. Chu, National Taiwan University

- 8:40 Cluster Computing in Printed Circuit Board Simulation  
F. Liu\*, J.E. Schutt-Aine, University of Illinois at Urbana-Champaign, J. Chen, Motorola, Inc.
- 9:00 Analysis of Electromagnetic Emissions from IC Package Lead-Frames in Automotive Applications  
U. Navsariwala\*, N. Buris, J. Meyerhoff, Motorola Inc.
- 9:20 Design of Narrow-Band Filters Based on Photonic Waveguides  
A. Boag\*, B. Steinberg, R. Lictsin, Tel Aviv University
- 9:40 Electromagnetic Coupling to a Wire Residing Inside a Rectangular Cavity with Apertures Due to External Radiating Sources  
M. Deshpande\*, NASA Langley Research Center

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Tuesday Morning  
URSI A

Beacon B  
Session 39

## Transient & Ultra-Wideband Measurements

- 10:00 Time-Domain Measurements for Path-Loss Prediction on a Scaled Model of an Urban Environment  
D. Ericolo\*, P.L.E. Uslenghi, University of Illinois at Chicago
- 10:20 Impulsive Field Computation and Measurement  
M. Morgan\*, Naval Post Graduate School
- 10:40 Progress of Ultra-Wideband Fully-Polarimetric GPR Classification of Subsurface Unexploded Ordnance  
M. Higgins\*, C.C. Chen, Ohio State University, K. O'Neill, US Army Corps of Engineers Research & Development Center
- 11:00 A New Subnano-Second Pulsed Oscillator for Ultra-Wideband Applications  
J. S. Lee\*, C. Nguyen, T. Scullion, Texas A&M University
- 11:20 E-Pulse Diagnostics for Layered Materials  
G.J. Stenholm, E.J. Rothwell\*, D.P. Nyquist, L.C. Kempel, K.M. Chen, Michigan State University

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Tuesday Morning  
AP

Beacon C  
Session 40

## Waveguiding Structures

- 8:00 Rigorous Analysis of the Temperature Characteristics for Ferrite Phase Shifter in Grooved Waveguide  
W. Che\*, E.K. Yung, City University of Hong Kong, J. Ma, Xidian University
- 8:20 A Modified E-Plane Tri-Furcation and its Application to Broadband Triplexers  
J.M. Rebollar\*, J. Esteban, Universidad Politecnica de Madrid
- 8:40 Space-Qualifying a Lightweight Corrugated Horn with Low Sidelobes for Global-Earth Coverage  
C. Granet, T. Bird\*, CSIRO Telecommunications and Industrial Physics
- 9:00 Analysis of the Internal Scattering Field Distribution in an Oversized Rectangular Slotted Waveguide  
H. Kai\*, J. Hirokawa, M. Ando, Toyko Institute of Technology
- 9:20 A Millimeter-Wave Radial Line Slot Antenna Fed by a Rectangular Waveguide Through a Ring Slot  
K. Sudo\*, A. Akiyama, J. Hirokawa, M. Ando, Toyko Institute of Technology
- 9:40 Analysis of a Waveguide Matching Crossed Slot by the Method of Moments Using Numerical Eigenmode Basis Functions  
T. Hirano\*, J. Hirokawa, M. Ando, Toyko Institute of Technology
- 10:00 Millimeter Wave Antennas Fed by High Permittivity LSE-NRD Guide  
F. Kuroki\*, M. Yamaguchi, Kure National College of Technology, T. Yoneyama, Tohoku Institute of Technology
- 10:20 Multipaction Analysis and Power Handling Evaluation in Waveguide Components for Satellite Antenna Applications  
M. Ludovico\*, G. Zarba, L. Accatino, CSELT, D. Raboso, ESA-ESTEC, Noordwijk
- 10:40 A Simple and Effective Method to Analyze Field Distribution in Curved Dielectric Waveguides  
M. Kaiyu\*, X. Shanjia, University of Science & Technology of China
- 11:00 Loss Characteristics of Flexible Cylindrical Dielectric Waveguides in Millimeter Wave Bond  
K.Y.Kim\*, J. Sohn, H.S. Tae, J.H. Lee, Kyungpook National University
- 11:20 Improved Waveguide Filters For Applications Involving Circular Polarization

## Applications of Numerical Methods

- 8:00 Broadband Dispersion Compensation Scheme for FDTD in Anisotropic, Layered Media  
C. Moss\*, MIT, F.L. Texeira, The Ohio State University, A. Kong, MIT
- 8:20 FDTD Analysis of Microstrip Antennas Immersed in Anisotropic Space Plasma  
J. Ward\*, C. Furse, C. Swenson, Utah State University
- 8:40 Thin Wire Hybrid FETD/FDTD Broadband Antenna Prediction  
N. Montgomery\*, R. Hutchins, TRW S&ITG, D.J. Riley, Sandia National Laboratories
- 9:00 Analysis of Scattering from a Large Arbitrary-Shaped Conducting Cylinder by Iterative FEM with Fast Multipole Updates  
J. Park\*, J. Lee, H. Chae, S. Nam, Seoul National University
- 9:20 Pulsed Radiation by Periodic Structures via a Combined (Time Domain-Floquet Wave) - (FDTD) Algorithm  
F. Capolino\*, Universita di Seina, G. Marrocco, D.I.S.P. Universita di Roma
- 9:40 ALPEN - A Versatile FDTD Tool for Analyzing Microstrip PCB Circuits  
F. Rivas\*, Universidad de Jaen, I. Gonzalez, Universidad de Alcala, W. Yu, N. Farahat, R. Mittra, Pennsylvania State University, F. Saez de Adana, O. Gutierrez, Universidad de Alcala, J.P. Roa, Universidad de Jaen, M.F. Categra, Universidad de Alcala
- 10:00 Numerical Modeling of Electromagnetic Wave Scattering by Multi Parametrical Structures  
A. Perov\*, Institute of Radiophysics & Electronics, M. Monod, R. Rouveure, M. Chanet, CEMAGREF
- 10:20 Highly Efficient Numerical Analysis of an Open Hemispherical Resonator  
M. Rewienski\*, MIT, M. Mrozowski, Technical University of Gdansk
- 10:40 Low Complexity Model Order Reduction for FDTD/FIT Systems  
T. Wittig\*, I. Munteanu, R. Schuhmann, T. Weiland, Darmstadt University of Technology
- 11:00 FDTD Simulation of Subsurface Water Conductivity Mapping  
D. Sullivan\*, M. Kerschbaum, University of Idaho, J. Morrison, Bechtel BBWI
- 11:20 Macromodeling of Transmission Line Networks in the FDTD Technique Using the Equivalent Source Method  
I. Rumsey\*, M. Piket-May, University of Colorado at Boulder

## Reflector and Feed Designs

- 8:00 Reflector Antenna Solutions for Multisatellite DBS Reception  
A. G. Pino\*, E.T.S.I. Telecommunicacion. Campus Universitario, F. Ares, Universidade de Santiago de Compostela,
- 8:20 Comparison of Two Flat Relector-Type Designs for Dual-Polarization, Dual-Band Operation  
S. Duffy\*, S. Targonski, MIT Lincoln Laboratory
- 8:40 Design of Terrestrial Sector-Beam antennas Using Advanced Spacecraft Contoured Beam Synthesis Software  
H.H. Viskum\*, TICRA
- 9:00 A Dual-Band Feed System for the Parkes Radio Telescope  
C. Granet, H.Z. Zhang, K.J. Greene, G.L. James, A.R. Forsyth, T.S. Bird\*, Telecommunications & Industrial Physics, R.N. Manchester, M.W. Sinclair, P. Sykes, Australia Telescope National Facility
- 9:20 Multibeam Earth Station Antenna for a European Teleport Application  
S.G. Hay, S.J. Barker, C. Granet, A.R. Forsyth, T.S. Bird\*, M.A. Sprey, K.J. Greene, CSIRO Telecommunications and Industrial Physics
- 9:40 Design and Experimental Validations of a New FSS Conformal Subreflector Structure for Cassegrain Systems  
M.G. Floreani, R. Zich\*, Politecnico di Milano, G. Aulizio, Telesystem, P. Besso, CSELT, A. Somma, COMELIT
- 10:00 Simple Design Method of Feed Cluster for Array-Fed Reflector Type Multi-Spot Beam Antennas  
I. Naito\*, S. Makino, N. Miyahara, Mitsubishi Electric Corporation
- 10:20 Multi-Moded Horns in Reflector Antenna Systems Exemplified by the Planck Telescope  
T. Bondo\*, S. Sorensen, P. Nielsen, K. Pontoppidan, TICRA
- 10:40 Ultra-Wide Band Corrugated Gaussian Profiled Horn Antenna Design

- J. Teniente-Vallinas\*, R. Gonzalo-Garcia, C. del-Rio-Bocio, Public University of Navarre
- 11:00 A Compact Low-Cross-Polarization Horn Antenna with Serpentine-Shaped Taper  
H. Deguchi\*, M. Tsuji, H. Shigesawa, Doshisha University, S. Matsumoto, Mitsubishi Electric Corporation
- 11:20 85 - 115 GHz Corrugated Conical Horn Antenna for the Radio Telescope System  
T. Son\*, Soonchunhyang University, S.T. Han, Korea Astronomy Observatory, B. Lee, Soonchunhyang University
- 11:40 Genetic Algorithm Synthesis of a Shaped Dual-Reflector Antenna  
A. Armogida, G. Manarra, A. Monorchio, PL. Nepa, G. Rossi, University Of Pisa, E. Pagana, Antenna Consultant

Tuesday Morning AP	Special Session	TECC 4 Session 43
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## Conformal Antennas

- 8:00 Radiation from Conformal Antennas on Prolate Spheroids Using the Finite Element Boundary Integral Method  
L. Kempel\*, C. Macon, S. Schneider, Michigan State University
- 8:20 Reconfigurable Conformal Slot Arrays on Artificial Substrates  
Y. Erdemli\*, J. Volakis, University of Michigan, D. Wright, R. Gilbert, Sanders, A Lockheed Martin Company
- 8:40 An Analysis of Mutual Coupling on Doubly Curved Convex Surfaces  
L. Josefsson, P. Persson\*, Royal Institute Of Technology
- 9:00 Cylindrical Waveguide Array Covered by Dielectric Layers  
K. Idal\*
- 9:20 Reduced Complexity Analysis of Microstrip Patch Arrays, Conformally Mounted to a Cylindrical Conducting Surface  
H. Anastassiou, A. Kostaridis, C. Biniaris\*, D. Kaklamani, National Technical University of Athens
- 9:40 Low Cost Conformal Phased Array Antenna Using High Integrated SiGe-Technology  
D. Loffler\*, W. Wiesbeck, Universitat of Karlsruhe, M. Eube, IMST GmbH, K.B. Schad, University of Ulm, E. Ohnmacht, STN-Atlas Electronic
- 10:00 Analysis of a Conformal Cavity-Backed Patch Antenna Using a Hybrid MoM/FEM Technique  
S. Baudou\*, AD2M Universite Paul Sabatier, P. Borderies, ONERA/CERT/DEMR, P. Combes, AD2M Universite Paul Sabatier, R. Mittra, Pennsylvania State University
- 10:20 Enabling Technologies for Future Structurally Integrated Conformal Apertures  
S. Schneider\*, C. Bozada, R. Dettmer, J. Tenbarge, Air Force Research Laboratory – Wright-Patterson Air Force Base
- 10:40 Application of FDTD Method to Conformal Patch Antennas  
W. Yu\*, N. Farahat, R. Mittra, Pennsylvania State University
- 11:00 A Radiation Pattern Synthesis Technique for Conformal Antenna Arrays on PEC Circular Cylinders of Finite Length  
R.J. Allard\*, D.H. Werner, P.L. Werner, Pennsylvania State University
- 11:20 Moment Method Analysis of Circular-Cylindrical Array of Waveguide Elements Covered with a Radome  
Z. Sipus\*, University of Zagreb, M. Lanne, Ericsson Microwave Systems, S. Rupcic, University J.J. Strossmayer of Osijek, L. Josefsson, Ericsson Microwave Systems

Tuesday Morning AP	Clarendon Session 44
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## Time Domain Antennas

- 8:00 Narrow-Waisted Gaussian Beam Discretization for Pulsed Radiation from 2D Large Apertures  
V. Galdi\*, L. Felsen, D. Castanon, Boston University
- 8:20 Time Domain Analysis of Pulse-Excited Reflector Antennas - UAT Approach  
C. Rego\*, DELT UFMG, F. Hasselmann, CETUC - PUC RJ
- 8:40 Time-Domain Green's Functions for the Source of HMD in Multi-layered Structures  
S.Q. Li\*, C.H. Chan, M.Y. Xia, Y. Xu, City University of Hong Kong
- 9:00 Transient Analysis of a Canted Sector Antenna with the Modeling of Fine Feed Features  
N.W. Chen\*, K. Aygun, E. Michielssen, University of Illinois at Urbana-Champaign

- 9:20 Estimation of the Waveform of Voltage Exciting a Monopole Antenna to Confirm Magnetic Field Measurement  
L. Hamada\*, N. Otonari, T. Iwasaki, University of Electro-Communications
- 9:40 A New Time Domain Field Computation Due to Vertical Magnetic Dipole in the Vicinity of a Planar Dielectric Interface Based on Approximation Method  
G. Rafi\*, Zanjan University, R. Moini, Amirkabir University of Technology, R. Faraji-Dana, University of Tehran
- 10:00 Transient Response of a Thin Wire Buried in a Real Ground  
D. Poljak\*, V. Roje, University of Split
- 10:20 Pulsed Communications Between Dipoles  
C. Bantin\*, C.C. Bantin & Associates Ltd
- 10:40 The Development of Electromagnetic Pulse Well Logging System and Its Experiment Studies  
P. Jin\*, Y. Yongfu, N. Zaiping, Y. Deqiang, University of Electronic Science and Technology of China
- 11:00 Pulsed Radiation by a Phased Semi-Infinite Periodic Planar Array of Dipoles  
F. Capolino\*, Universita di Siena, L. Felsen, Boston University
- 11:20 DOA Finding of a Single Short Pulse by the Waveform Reconstruction Using Three Dipole Antennas  
M. Ishii\*, . Iwasaki, University of Electro-Communications

## Tuesday, July 10, 2001 - PM

Tuesday Afternoon AP/URSI	Special Tribute	Commonwealth Session 45
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### Tribute to Professor R.W.P. King

- 1:00 Sixty Years at Harvard: The Career of Professor Ronold W.P. King  
S. Long\*, University of Houston
- 1:20 Scattering of a Plane Wave by a Conducting Grounded Half-Cylinder and by a Periodic Surface  
C.T. Tai\*, University of Michigan
- 1:40 A Review of Genetic Antennas  
E. Altshuler\*, Air Force Research Laboratory
- 2:00 Some Thoughts on Teaching Antenna Analysis at the Introductory Level  
G. Smith\*, Georgia Institute of Technology
- 2:20 Inductance of a Practical Shielded Coil  
C. Butler\*, Clemson University
- 2:40 A Novel Microwave Beacon For Coastal Navigation  
R. King\*, Harvard University
- 3:00 Comment on Professor King's Mircrowave Beacon for Coastal Navigation  
T.T. Wu\*, Harvard University
- 3:20 Wideband Subarray Systems: Evolution of a Research Area  
R. Mailloux\*, Air Force Research Laboratory – Hanscom AFB
- 3:40 Simulation of Electromagnetic Well Logging Tools  
L. Shen\*, University of Houston
- 4:00 Submarine Towed Communication Antennas: Past, Present and Future  
D. Rivera, Naval Undersea Warfare Center, R. Bansal\*, University of Connecticut

Tuesday Afternoon URSI A
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Fairfax A Session 46
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### Wireless Antennas & Base Station Design

- 1:00 Switched-Beam Antennas Performance Evaluation in UMTS Vehicular Environments  
, R. Martinez, D. Martinez, L. de Haro\*, M. Calvo, Universidad Politecnica de Madrid
- 1:20 Characterization of Conductor-Backed CPW-Fed Slot Antenna with Two-Layered Dielectric Substrate  
J.P. Jacobs\*, J. Joubert, J.W. Odendaal, University of Pretoria
- 1:40 Multiple Spot Beam Spherical Antenna for High Capacity Fixed Wireless Local Loop  
S. Guerouni\*, Radiophysics Measurement Institute, A. Cardiasmenos, L-3 Communications ESSCO
- 2:00 A Biocompatible Antenna for Communication with Implantable Medical Devices  
C. Furse\*, R. Mohan, A. Jakayar S. Kharidehal, B. McCleod, S. Going, Utah State University
- 2:20 Methods for Optimizing the Location of a Base Station for Indoor Wireless Communications  
Z. Ji\*, T. Sarkar, Syracuse University, B.H. Li, Shanghai Jiao Tong University
- 2:40 Effects of the Human Head and Handset on Antenna Radiation Patterns: A Simplified Model and Fast Algorithm  
Y. Huang\*, R. Narayanan, University of Nebraska, G. Kadambi, Centurion Wireless Technologies, Inc.
- 3:00 Application of Characteristic Modes to Antenna Placement on Portable Wireless Devices  
D. Strohschein\*, K. Sivaprasad, University of New Hampshire, J. Bernhard, University of Illinois at Urbana-Champaign
- 3:20 Analysis and Measurements of Compact-Size DRA with CPW-Feed  
M.S. Al Salameh\*, Hashemite University, Y.M.M. Antar, Royal Military College of Canada, G. Seguin, Canadian Space Agency, A. Petosa, Communication Research Center
- 3:40 NRD Guide Compatible Pyramidal Horn Antenna for Multiple Access Wireless LAN at 60GHz  
F. Kuroki\*, A. Takada, M. Eguchi, Kure National College of Technology, T. Yoneyama, Tohoku Institute of Technology
- 4:00 A GSM Fully-Adaptive Antenna System Test-Bed: Unlink Trials  
G.F. Cazzatello\*, M. Crozzoli, D. Disco, L. Ferrero, CSELT
- 4:20 Smart Antennas at Wireless Mobile Computer Terminals and Mobile Stations  
J. Lu\*, T. Ohira, ATR Adaptive Communications Research

## Wideband Array Antennas

- 1:00 Integrated Multi-Frequency Phased Array Antenna  
R.S Tahim\*, RST Scientific Research, Inc., J. Foshee, USAF/AFRL Wright-Patterson AFB, K. Chang, Texas A&M University
- 1:20 Single-Polarized, Dielectric-Free, Vivaldi Tapered Slot Phased Array: Performance Prediction  
A. Boryssenko\*, D. Schaubert, University of Massachusetts
- 1:40 Element for Wide-Band and Very Wide-Angle Phased Arrays  
H. Holter\*, Royal Institute of Technology
- 2:00 4.5:1 Bandwidth Microstrip Notch Array Measured Performance  
W. Mohuchy, ITT Industries, P. Beyerle\*, A. MacFarland , Mission Research Corporation,
- 2:20 Wideband Double-Slot Cross-Notch Antenna  
Y. Choung\*, TRW Space & Electronics Group
- 2:40 Broadband TEM Horn Array for FOPEN Radar  
J.S. Herd\*, P.S. Kao, MIT Lincoln Laboratory
- 3:00 A New Design of Frequency Invariant Beamformers  
Q. Zeng\*, D. O'Shaughnessy, INRS-Telecommunications-University of Quebec
- 3:20 Design for the Circularly Polarized Wideband Cross Dipole Array Antennas  
K.S. Min\*, D.C. Kim, H.G. Lim, Korea Maritime University, H. Arai, Yokohama National University, S. Kim, Korea Institute of Industrial Technology Evaluation and Planning
- 3:40 A Dual-Polarised Wideband Planar Array for X-Band Synthetic Aperture Radar  
A. Parfitt\*, N. Nikolic, CSIRO Telecommunications & Industrial Physics
- 4:00 Broadband Printed High Gain Antenna with Wide Angle Radiation in Azimuth  
D. Nesic\*, IMTEL, IHTM-CMTM, V. Brankovic, D. Kruzevic, M. Ratni, GmbH, Stuttgart, Sony International
- 4:20 Ultra-Wideband Antenna Arrays  
K. Heidary\*, Alabama A&M University

## PBG Structures, Photonic Control

- 1:00 Mutual Coupling Reduction of Microstrip Antennas Using Electromagnetic Band-Gap Strucure  
F. Yang\*, Y. Rahmat-Samii, University of California, Los Angeles
- 1:20 Step-Like Structure and EBG Structure to Improve the Performance of Patch Antennas on High Dielectric Substrate  
F. Yang\*, C.S. Kee Y. Rahmat-Samii , University of California, Los Angeles
- 1:40 Wide-Band Microstrip Patch Antenna with Planar PBG Structure  
M. Rahman\*, M. Stuchly, University of Victoria
- 2:00 A New PBG Diplexer for a Multi-Band Transceiver Antenna System  
T.Y. Yun\*, K. Chang, Texas A&M University
- 2:20 Planar PBG Structures and Their Applications to Antennas  
M. Mollah\*, N. Karmakar, Nanyang Technological University
- 2:40 Enhanced Performance of an Aperture-Coupled Rectangular Microstrip Antenna on a Simplified Unipolar Compact Photonic Bandgap (UC-PBG) Structure  
S. Sharma\*, L. Shafai, University of Manitoba
- 3:00 A Novel Multilayer Photonic Band-Gap (PBG) Structure for Microstrip Circuits and Antennas  
C. Caloz\*, C.C. Chang, Y. Qian, T. Itoh, , University of California Los Angeles
- 3:20 Photonic Band-Gap for a Rectangular Array of Metallic Rods  
M.A. Alvarez-Cabannillas\*, Instituto Politecnico Nacional
- 3:40 A Novel Microstrip Bandpass Filter With Two Cascaded PBG Structures  
R. Qiang\*, Y. Wang, D. Chen, Southeast University
- 4:00 Optically CW-Mode Controlled Microwave Switches with Carrier-Confinement on a Coplanar Waveguide  
S.I. Lee\*, S.W. Lee, U. Ketprom, Y. Kuga, University of Washington

- 4:20 Optical Control on HEMT Devices  
H. Lim\*, A. Alphones, National University of Singapore

**Tuesday Afternoon**  
**URSI F**

**Fairfax B**  
**Session 49**

## Propagation Effects in Satellite & Urban Environments

- 1:00 On the Spectral Properties of Rain Attenuation Dynamics  
A.D. Panagopoulos\*, G. Fikoris J.D. Kanellopoulos, National Technical University of Athens
- 1:20 A Comparison of Empirical and Physical Models for Attenuation and Depolarization Due to Rain  
N. Terril\*, F. Hastings, ITT Industries
- 1:40 Calculation of Interface Levels Due to Rain Scatter on a High-Altitude Platform Link  
C. Spillard\*, J. Thornton, D. Grace, T. Tozer, The University of York
- 2:00 Propagation Effects in a Low Altitude Radio Link for Interactive Services at 2.4GHZ  
M. Ozdemir\*, F. Retnasothie, C. Lumbreras, Philips Broadband Networks, E. Arvas, Syracuse University
- 2:20 Spatio-Temporal Fade Characteristics on a Millimetre-Wave Terrestrial Path  
M. Evans\*, Radio Science & Propagation Group
- 2:40 Infrared Satellite Communication Comparisons  
P. Christopher\*, PFC Associates
- 3:00 Direction-of-Arrival Statistics of Urban Propagation Channel at 1.9 GHz Based on Measurement and Ray Tracing  
T. Su\*, H. Ling, The University of Texas at Austin, H. Foltz, The University of Texas At Pan American
- 3:20 Loss Characteristics in Urban Environment with Different Buildings' Overlay Profiles  
N. Blaunstein\*, D. Censor, D. Katz, University of the Negev
- 3:40 Design of Microcells for Mobile Communications Using Genetic Algorithms  
I. Gonzalez\*, J.A. de Prado, F. Saez de Adana, O. Gutierrez, M.F. Catedra, Universidad de Alcala
- 4:00 Performance of the V-BLAST Space-Time Coding Algorithm Using Measured Wireless Channel Characteristics  
M. Morris, J. Wallace, M. Jensen\*, Brigham Young University

**Tuesday Afternoon**  
**AP**

**Berkeley**  
**Session 50**

## Multi-Resolution and Higher Order Basis Function Methods

- 1:00 The Method of Auxiliary Sources for Analysis Low Frequency EM Field Scattering From Composite Object  
F. Shubitidze\*, K. O'Neill, K. Paulsen, Dartmouth College
- 1:20 Galerkin-MoM Analysis for Dielectric Scatters by Using Sinusoidal Reaction Technique  
D. Koizumi\*, Q. Chen, K. Sawaya, Tohoku University
- 1:40 Interpolatory Basis for Two-Dimensional Scattering Problems  
V.V.S. Prakash\*, R. Mittra, Pennsylvania State University
- 2:00 High-Order Method of Moment Method with Point-Based Discretization  
S. Gedney\*, University of Kentucky
- 2:20 Point-Based High-Order Moment Method for Thin Wire Scattering and Antenna Analysis  
A. Zhu\*, S. Gedney, K. Whites, University of Kentucky
- 3:00 Numerical Integrations in Higher Order Loop-Star Method of Moments for Computational Electromagnetics  
J.F. Lee\*, R. Burkholder, P. Pathak, R. Lee, Ohio State University
- 3:20 The Condition Number Issue for EFIE-MoM: Spectral and MR Considerations  
P. Pirinoli\*, G. Vecchi, Politecnico di Torino
- 3:40 Analysis of Arrays of Printed Antennas with A 2D Multiresolution Method of Moment  
R. Loison\*, R. Gillard, J. Citeme, IRER / UMR CNRS, INSA, G. Piton, National Center for Spatial Studies, H. Legay, Alcatel Space Industries
- 4:00 Fast, High-Order Solution of Surface Scattering Problems  
O. Bruno\*, L. Kunyansky, California Institute Of Technology
- 4:20 Electromagnetic Scattering by an Array of Conducting Spheres Each Coated with a Dielectric Layer  
A-K Hamid\*, University of Sharjah, M. Hamid, University of South Alabama

## **Applications of Integral Equation Techniques**

- 1:00 Two Numerical Techniques for Analysis of Pyramidal Horn Antennas with Continuous Metallic Ridges  
B. Notaros, C. McCarrick\*, D. Kasilingam, University of Massachusetts Dartmouth
- 1:20 Adaptation Capabilities of a Wire Bow-Tie Antenna for Ground Penetrating Radar  
A.A. Lestari\*, A. Yarovoy, L.P. Ligthart , Delft University of Technology
- 1:40 Synthetic Function Analysis of Large Printed Structures: The Solution Space Sampling Approach  
L. Matekovits\*, G. Vecchi, G. Dassano, M. Orefice, Politecnico di Torino
- 2:00 Using Numerical Techniques in Solving Electromagnetic Problems on Complex Structures  
G. Migliozi, G. Sabba\*, D. Tarducci
- 2:20 A Fast Full-Wave Spatial Domain Analysis of Multi-Port Microstrip Structures Using Closed-Form Green's Function  
J.Y. Li\*, L.W. Li, B.L. Ooi, P.S. Kooi, M.S. Leong, National University of Singapore
- 2:40 Analysis of Leakage in Multilayered Microstrip Lines Using Complex Images  
J. Bernal\*, F. Mesa, F. Medina, Facultad de Fisica, Universidad de Sevilla
- 3:00 An Efficient Fringe Integral Equation Method for Optimizing the Antenna Location on Complex Bodies  
E. Jorgensen\* P. Meincke, O. Breinbjerg, Technical University of Denmark
- 3:20 Iterative Solvers in Frequency Analysis of Complex Structures Based on MoM Solution of Surface Integral Equations  
B. Kolundzija\*, University of Belgrade, T. Sarkar, Syracuse University
- 3:40 Optimal Wire-Grid Modeling Based on Conversion of Solid Surface Model  
B. Kolundzija\*, T. Miodrag, A. Djordjevic, University of Belgrade
- 4:00 Accuracy Enhancement in the Analysis of Microstrip Patch Antenna Using Integral Equation Moment Method  
E. Abdallah\*, Electronics Research Institute, H. Elsadek, University of California, E. Hashish, Cairo University
- 4:20 Numerical Modelling of Whispering Gallery Modes in Parallel-Plates Type Cylindrical Anisotropic Dielectric Resonators  
F. Akay\*, Cukurova University, Y. Prokopenko, S. Kharkovsky, Usikov Institute for Radiophysics & Electronics National Academy of Sciences

## **Antenna Measurement Techniques**

- 1:00 Large Active Phased Array Antenna Calibration Using MCM  
T. Gao\*, Y. Guo, J. Wang, X. Chen, Nanjing Research Institute of Electronics
- 1:20 Initial Calibration and Beamforming Results from the Thousand Element Phased-Array  
G.A. Hampson\*, J.G. bij de Vaate, ASTRON Technical Laboratory
- 1:40 An Integrated Probe for Planar Near-Field Only Intensity Measurements  
S. Costanzo\*, G. Di Massa, Universita' della Calabria
- 2:00 Planar NF-FF With Direct Optimization-Source Reconstruction Using Amplitude Only Data  
F. Las-Heras\*, Ciudad Universitaria, T. Sarkar, Syracuse University
- 2:20 Measurement of a Large Deployable Antenna for Radio Astronomy in Space  
T.Takano\*, S. Kuroda, Institute of Space and Astronautical Science, N. Kawaguchi, National Astronomical Observatory, E. Hanayama, Polytechnic University,
- 2:40 SAMS: Antenna Radiation Pattern Acquisition  
J. Korsakissok\*, SILICOM, D. Belot, CNES
- 3:00 A New and Efficient NF-FF Transformation with Spherical Spiral Scanning  
O.M. Bucci, University of Naples Federico II,, C. Gennarelli, F. D'Agostino\*, University of Salerno, C. Savarese, Instituto Universitario Navale
- 3:20 Resolution Enhancement in Antenna Pattern Measurements Using Pulse Modulated Averaging Technique  
O. Kilic\*, A. Zaghloul, M. Thai, LMGT COMSTAT Laboratories
- 3:40 A Robust Test Apparatus for Electromagnetic Compatibility Testing and Improvement Utilizing a Network Analyzer  
C.W. Paul Huang, Anadigics Inc, C. E. Smith\*, University of Mississippi
- 4:00 A Study of Existing Bistatic Calibration Techniques  
C.J. Bradley\*, P.J. Collins, M.A. Temple, A.J. Terzuoli,Jr., Air Force Institute of Technology, G. Nesti, J. Fortuny, G.D. Lewis, European Microwave Signature Laboratory
- 4:20 A New Measurement Method for Four-Port Scattering Matrix of a Dual-Polarization Antenna  
Y.J. Hwang\*, T.H. Chu, , National Taiwan University

## **Inverse Scattering: Techniques**

- 1:00 Reconstruction of Electrical Conductivity by EBA Enhanced CSI Method  
Z.Q. Zhang\*, Q.H. Liu, Duke University
- 1:20 Time-Domain Gradient-Type Methods for Inversion of the Subsurface  
R. F. Bloemenkamp\*, TNO Physics and Electronics Laboratory, P. M. van den Berg, Delft University of Technology
- 1:40 Full Three-Dimensional Multi-Frequency Electromagnetic Inversion  
A. Abubakar, P.M. van den Berg, R.F. Bloemenkamp\*, Delft University of Technology
- 2:00 2.5-D Far-Field Diffraction Tomography Inversion Scheme for GPR That Takes into Account the Planar Air-Soil Interface  
P. Meincke\*, Technical University of Denmark
- 2:20 A New Reconstruction Algorithm for Dielectric Cylinders Using FDTD and Design Sensitivity Analysis  
Y.S. Chung\*, University of Seoul, N.W. Kang, Seoul National University, C. Cheon, University of Seoul
- 2:40 Estimation of Inhomogeneous Permittivity Profiles of Spherical Objects from Noisy Scattering Measurement Data  
M.J. Akhtar\*, A.S. Omar, University of Magdeburg
- 3:00 An Effective Approach for Determining the Convex Envelope of Radiating or Scattering Systems  
O.M. Bucci\*, A. Capozzoli, G. D'Elia, University of Naples Federico II
- 3:20 Microwave Cylindrical Reflection Imaging Array for Structural Damage Detection  
Y. J. Kim\*, University of California-Irvine L. Jofre, Tech University of Catalonia, F. DeFlaviis, M. Feng, University of California-Irvine
- 3:40 Time-Domain Reconstruction of Moderately Rough Dielectric Interfaces via Quasi-Ray Gaussian Beams  
J. Pavlovich\*, V. Galdi, W. Karl, D. Castanon, L. Felsen, Boston University
- 4:00 Image Reconstruction of Impenetrable Cylinders Using Cubic B-Splines and Genetic Algorithms  
K. Barkeshli\*, M. Mokhtari, N. Mahdavi Amiri, Sharif University of Technology
- 4:20 A Generalized Regression Neural Network (GRNN) Scheme for Robust Estimation of Target Orientation Using Back-Scattered Data  
N. Sarshar\*, A. Kabiri, K. Barkeshli, Sharif University of Technology

## **Novel Designs for Compact Microstrip Antennas**

- 1:00 Compact Single-Arm Square Spiral Microstrip Antenna with Tuning Arms  
J. Bernhard\*, University of Illinois at Urbana-Champaign
- 1:20 Resonance Behavior of Single U-Slot and Dual U-Slot Antenna  
R. Bhalla\*, L. Shafai, University of Manitoba
- 1:40 Analysis of Quarter-Wave Shorted Patch Antenna  
M. Deshpande\*, NASA Langley Research Center
- 2:00 Simulation of a Probe-Fed Notched Patch Antenna with a Shorting Post  
A. Shackelford\*, S.Y. Leong, K. F. Lee, University of Missouri-Columbia
- 2:20 The Folded Patch Omnidirectional Antenna  
A. Faraone\*, D. McCoy, Motorola Labs
- 2:40 Experimental Investigation into an Electrically Small Printed Chakra (Wheel) Antenna  
N.C. Karmakar\*, S.K. Padhi, Nanyang Technological University
- 3:00 A Novel H-Shaped Patch Antenna  
A. Sheta\*, Cairo University, S. Mahmoud, Kuwait University
- 3:20 Compact Meander-Type Slot Antennas  
J.M Kim\*, J.G. Yook, Yonsei University, W.Y. Song, Y.J. Yoon, Chongju University, J.Y. Park, H.K. Park, LG Electronics Institute of Technology
- 3:40 A Compact Patch Antenna with an Inverted U-Shaped Radiating Patch  
K.L. Wong\*, H.C. Tung, National Sun Yat-Sen University
- 4:00 Designs of Compact Microstrip Antennas with a Slotted Ground Plane  
T.W. Chiou\*, K.L. Wong, National Sun Yat-Sen University

- 4:20 The Koch Island Fractal Microstrip Patch Antenna  
I. Kim\*, Yonsei University, T. Yoo, Dongyang Technical College, J.G. Yook, H. Park, Yonsei University

**Tuesday Afternoon**  
**AP**

**TECC 3**  
**Session 55**

## **Adaptive Reflector and Lens Antennas**

- 1:00 An Antenna Concept Integrated with Future Solar Sails  
B. Khayatian\*, Y. Rahmat-Samii, UCLA, R. Pogorzelski, Jet Propulsion Laboratory
- 1:20 A Directional Borehole Radar: Numerical and Experimental Verification  
K.W.A. van Dongen\*, T&A RADAR, P. M. van den Berg, J. T. Fokkema, Delft University of Technology
- 1:40 Performance of Offset Large Adaptive Reflector Cassegrain Configuration  
P. Mousav\*, L. Shafai, The University of Manitoba
- 2:00 Application of Gaussian Beam in Analysis of Large Adaptive Reflector Cassegrain Configuration  
P. Mousavi\*, L. Shafai, The University of Manitoba
- 2:20 Partially Adaptive Phased Array Fed Cylindrical Reflector Technique for High Performance Synthetic Aperture Radar System  
Z. Hussein\*, J. Hilland, California Institute of Technology/JPL
- 2:40 A Hemispheric Coverage Spherical Reflector Scanning Antenna System  
A. Monk\*, A. Cardiasmenos, L-3 Communications-ESSCO
- 3:00 A Zoom Reflector Antenna  
H. Luh\*, Space Systems/Loral
- 3:20 Analysis of Arbitrarily Shaped Dielectric Lens Antenna  
M. Taguchi, M. Masuda\*, Nagasaki University, H. Shimoda, TDK Co., K. Tanaka, Nagasaki University
- 4:00 Scaling and Focusing of the Rotman Lens  
J. Kim\*, F. Barnes, University of Colorado at Boulder
- 4:20 Layered Lens Antennas  
S. Datthancombat\*, A. Prata, University of Southern California, L.R. Amaro, J.A. Harrell, Jet Propulsion Laboratory

**Tuesday Afternoon**  
**AP**

**TECC 4**  
**Session 56**

## **Analysis of Microstrip Structures**

- 1:00 A Marching-on-in-Time Based Transient Electric Field Integral Equation Solver for Microstrip Structures  
M. Lu\*, E. Michielssen, University of Illinois at Urbana-Champaign
- 1:20 An Integrated Electromagnetic/Lumped Modeling Approach for the Simulation of Large Multi-Layer MCM Designs  
S. Hammadi\*, C.W.P. Huang, S. Al-Kuran, Anadigics Inc.
- 1:40 Hybrid MOM-High Frequency Analysis of Large Arrays of Printed Dipoles  
A. Polemi\*, A. Cucini, S. Maci, University of Siena
- 2:00 A Fast Method of Moments Based on A New Closed-Form Green's Function for Microstrip Structures  
Y. Ge, K. Esselle\*, Macquarie University
- 2:20 A Semi-Analytical Formulation for Investigating the Radiation Characteristics of Traveling Wave Slot Antennas  
N. Hojjati\*, University of Tehran, S. Safavi-Naeini, University of Waterloo
- 2:40 A Generalized Method for the Computation of the Outgoing-to-Local Multipole Translators  
Y. Pan\*, W. C. Chew, University of Illinois at Urbana-Champaign
- 3:00 A Hybrid UTD-MoM Approach for the Efficient Analysis of Radiation/Scattering from Large, Printed Finite Phased Arrays  
O. Aydin Civi\*, Middle East Technical University, V.B. Erturk, Bilkent University, P. Pathak, P. Janpugdee, Ohio State University  
H.T. Chou, Yuan Ze University
- 3:20 Parallel Computation in Microstrip Reflectarray  
K.W. Lam\*, C.H. Chan, City University of Hong Kong
- 4:00 Analysis of Microstrip Antennas with Finite-Sized Substrate  
Y.H. Pang\*, R.B. Wu, National Taiwan University
- 4:20 A Novel Pseudospectral Technique Based Method of Lines for Planar Circuits  
R.S. Chen\*, Nanjing University of Science and Technology, E. Yung, K.F. Tsang, City University of Hong Kong

## Rough Surfaces and Random Media

- 1:00 Applications of the Unified Full Wave Approach to Backscatter Cross Sections of Two-Scale Pierson-Moskowitz Type Random Rough Surfaces  
P. Crittenden\*, E. Bahar, University of Nebraska
- 1:20 An Improved Small-Contrast Perturbation Theory for the Coherent and Incoherent Scattering of X-Rays from a Randomly Rough Metal Surface  
T.A. Leskova\*, A.A. Maradudin, University of California - Irvine
- 1:40 2nd Order Statistical EFIE ("S"-EFIE) for Object in the Presence of a "Smooth" Rough Surface  
A. Ishimaru\*, Y. Kuga, S-W Lee, J.D. Rockway, University of Washington
- 2:00 Small-Slope Approximation and a Two-Scale Model  
A. Voronovich\*, NOAA/Environmental Technology Laboratory
- 2:20 Fast and Accurate Prediction of Scattering from Randomly Rough Ocean-Like Dielectric Surfaces via the Multi-Grid Method  
H. Ku\*, R. Awadallah, The Johns Hopkins University
- 2:40 Validity of Asymptotic Models to Simulate L-Band Scattering Over Sea Surface  
N. Flouri, G. Crone, G. Toso\* European Space Agency-ESA ESTEC
- 3:00 An Improved Method for Determination of Rough Surface Immittance at Very Low Grazing Angles at Microwave Frequencies  
R.M. Jha\*, R. Janaswamy, Naval Postgraduate School
- 3:20 Beam-Wave Propagation and Scattering in a Random Medium Half-Space for an Incident Diverging Beam-Wave Using Radiative Transfer Theory  
G. Whitman\*, New Jersey Institute of Technology, F. Schwering, US Army/CECOM, M. Wu, New Jersey Institute of Technology
- 3:40 Wave Interference Phenomena in Scattering From a Rough Surface of Layered Media  
I. Fuks\*, University of Colorado at Boulder
- 4:00 MLFMA Analysis of Scattering from a Three-Dimensional Rough Dielectric Surface Embedded in an Infinite Dielectric Half Space  
Z. Liu\*, L. Carin, , Duke University
- 4:20 Reference-Wave Solutions for the High-Frequency Fields in Random Media  
R. Mazar\* A. Bronshtein, Ben-Gurion, University of Negev
- 4:40 A Time Domain Signature Investigation for the GPR Detection of Plastic Land Mines Buried in Soils  
A. J. Dumanian\*, C. M. Rappaport, A. Morgenthaler, Northeastern University

## **Wednesday, 11 July 2001 – AM**

**Wednesday Morning**  
**URSI B**

**Commonwealth**  
**Session 58**

### **FDTD and Multi-Resolution Methods**

- 8:00 Construction of Fast 3D FDTD Boundary Kernels Using 1D Spectral Schemes  
K. Yegin\*, University of Illinois at Urbana-Champaign B. Shanker, Iowa State University, E. Michielssen, University of Illinois at Urbana-Champaign
- 8:20 Numerical Boundary Conditions at Material Interfaces for High-Order FDTD Schemes  
K.P. Hwang\*, A. Cangellaris, University of Illinois at Urbana-Champaign
- 8:40 Design of Perfectly Matched Absorbers for Low Frequency Scattering Problems  
M. Kuzuoglu\*, Middle East Technical University, R. Mittra, Pennsylvania State University,
- 9:00 Definition and Conservation of Energy in FDTD Schemes  
R. Schuhmann\*, T. Weiland, Darmstadt University of Technology
- 9:20 Comparison with the Algorithms for Near Zone to Far Zone Transformation in FDTD Computation  
Y. He\*, Osaka Electro-Communication University
- 9:40 Algorithm Study of ADI-FDTD  
S. Staker\*, M. Piket-May, University of Colorado at Boulder, C. Holloway, Nat'l Institute of Science & Technology-US Dept. of Commerce
- 10:00 Experience with ADI-FDTD Techniques on the Cray MTA Supercomputer  
M. ElHelbawy\*, S. Staker, M. Piket-May, S. Bokhari, H. Jordan, J. Sauer, University of Colorado at Boulder
- 10:20 Advances Towards Next Generation FDTD Modeling Capabilities  
N. Chavannes\*, H. Gerber, A. Christ, J. Frohlich, H. Songoro, N. Kuster, Swiss Federal Institute of Technology
- 10:40 The Finite Difference Multi-Resolution Time Domain (MRTD) in View of the Multi-Resolution Homogenization Theory (MRH)  
V. Lomakin\*, B. Steinberg, E. Heyman, Tel Aviv University
- 11:00 Multiresolution Time-Domain Modeling Using CDF Biothogonal Wavelet Expansion  
T. Dogaru, L. Carin\*, Duke University
- 11:20 Three-Dimensional MRTD Modeling of Time-Domain Radar Systems  
X. Zhu\*, L. Carin, Duke University

**Wednesday Morning**  
**AP**

**Fairfax A**  
**Session 59**

### **Fast Numerical Techniques for Integral Equations**

- 8:00 Analyzing the Waveguide Problems with a Relaxed Iterative Domain Decomposition Method  
H.Q. Zhu\*, Y. Long, Z.D. Wu, University of Electronic Science and Technology
- 8:20 Multi-Frontal Preconditioners for Iterative Solvers  
V.V.S. Prakash\*, R. Mittra, Pennsylvania State University
- 8:40 New Iterative OSMEI Technique to Decompose MoM Matrix of 3D Acoustic Scattering Problem  
J. Ma\*, Xidian University, W. Che, K.K. Mei, Y.W. Liu, City University of Hong Kong
- 9:00 A Fast Evanescent Wave Algorithm  
W. Chew, L.J. Jiang\*, S. Velampambil, University of Illinois at Urbana-Champaigne
- 9:20 Fast Capacitance Computation Using Three-Dimensional Second-Kind Integral Equation and AIM  
C.F. Wang\*, L.W. Li, B.L. Ooi, P.S. Kooi, M.S. Leong, National University of Singapore
- 9:40 A Precorrected-EFT Approach for Capacitance Extraction of General Three-Dimensional Structures  
X. Nie\*, L. Li, N. Yuan, National University of Singapore
- 10:00 Coverage Analysis Over Terrain Profiles Using an Adaption of the Spectral Accelerated Forward-Backward Method  
J.A.L Fernandez\*, M.R. Pino, F. Obelleiro, J.L. Rodriguez, Univeridade de Vigo
- 10:20 Crosstalks Between Lossy Conducting Structures  
J. Zhao\*, W.C. Chew, University of Illinois at Urbana-Champaign
- 10:40 A Generalized Forward-Backward Method for the Efficient Analysis of Large Array Problems  
H.T. Chou\*, H.K. Ho, Yuan-Ze University

- 11:00 Investigation of Electromagnetic Field Coupling to Wire Structures in Cavities  
S. Tkachenko\*, J. Nitsch, F. Gronwald, H.G. Krauthauser, T. Steinmetz, University of Magdeburg
- 11:20 On the Development of a Physical Integral Equation  
R. Adam\*, Virginia Tech

**Wednesday Morning**  
**AP**

**Gardner**  
**Session 60**

## **Environmental and Health Effects in Communication Antennas**

- 8:00 Effect of Ground Plane Shape on Microstrip Antenna Performance for Cell-Phone Applications  
V. Natarajan\*, D. Chatterjee, K-F Lee, University of Missouri-Columbia at Kansas City, R.D. Swanson, Honeywell Federal Manufacturing & Technologies
- 8:20 The Effect of Conformality on the Electrical Properties of Small Antennas  
P. Kabacik\*, A. Kucharski, Wroclaw University of Technology
- 8:40 Investigations on Radiation Q of Integrated Handset Antennas  
M. Geissler\*, M. Gerhrt, D. Heberling, P. Waldow, I. Wolff, IMST GmbH
- 9:00 Material Reflector for Cellular/PCS Antenna Applications  
R.G. Rojas\*, K.W. Lee, The Ohio State University
- 9:40 Cylindrical Non-Homogeneous Anisotropic Lenses Using Artificial Media  
M. Silveirinha\*, C. Fernandes, Instituto Superior Tecnico
- 10:00 Antenna-Radome Interaction of 2GHz Band 120 Degrees Beam Antenna  
H. Jiang\*, H. Arai, Yokohama National University, Y. Ebine, NTT DoCoMo Inc.
- 10:20 Chassis Influence on the Input Impedance and SAR Characteristics of Handset Antennas  
W. Dou\*, M.Y.W. Chia, National University of Singapore
- 10:40 Experimental Study of the Interactions Between Terminal Antennas and Operators  
A. Byndas\*, A. Kucharski, P. Kabacik, Wroclaw University of Technology
- 11:00 Estimation of the Radiation and SAR Characteristics of the NHA at 150 MHz by Use of the Cylindroid Whole Body Phantom  
Y. Koyanagi\*, Matsushita Communication Industrial Co., Ltd, H. Kawai, Chiba University, K. Ogawa, Matsushita Electric Industrial Co., Ltd. H. Yoshimura, K. Ito, Chiba University
- 11:20 Numerical Analysis of Absorption Mechanisms for Mobile Phones with Integrated Multiband Antennas  
D. Manteuffel\*, A. Bahr, IMST GmBH, P. Waldow, I. Wolff, Gerhard Mercator University Duisburg
- 11:40 Electromagnetic Field Coupling Between Cellular Phones Using FDTD Analysis  
A.K. Hamid\*, University of Sharjah, M. AlSunaidi, King Fahd University of Petroleum & Minerals

**Wednesday Morning**  
**AP**

**Hampton**  
**Session 61**

## **Characterization of Propagation Channels**

- 8:00 Experimental Characterization of the MIMO Wireless Channel  
J. Wallace\*, M. Jensen, Brigham Young University
- 8:20 Characteristics of Measured 4x4 and 10x10 MIMO Wireless Channel Data at 2.4-GHZ  
J. Wallace\*, M. Jensen, Brigham Young University
- 8:40 Spatio-Temporal Analysis of Rainfall Rate for the Prediction of Slant Fade Duration Statistics  
A.D. Panagopoulos\*, J.D. Kanellopoulos, National Technical University at Athens
- 9:00 Influence of Rain Attenuation Models on the Link Availability of Ka-Band Non-GSO FSS System  
J.H. Lee\*, Y.S. Kim, J.H. Kim, Y.S. Choi, J.K. Pack, Chungnam National University
- 9:20 Moderate Rain Rate Characterisation for Small Fade Margin Systems  
A. Rocha\* J. Neves, University of Aviero
- 9:40 Seasonal and Diurnal Effects on Ku-Band Site-Diversity Performance Measured in a Rainy Tropical Region  
Q.W. Pan\*, Manukau Institute of Technology, J.E. Allnutt, George Mason University
- 10:00 Measured Results of Urban Satellite-Diversity (Sat. D) and Space-Diversity (SD) Characteristics for Mobile Broadcast Geostationary Satellite System  
T. Hatsuda\*, Y. Yamada, J. Osada, T. Kobayashi, Hokkaido Institute of Technology, Y. Aoki, Hokkaido University, T. Kato, Mobile Broadcast Limited
- 10:20 Wireless Safety Personnel Radio Device for Collision Avoidance System of Autonomous Vehicles

Y. Chung\*, Utah State University, S. Olsen, Red Rock Analog Design, L. Wojcik, Wojcik Technical Services, Z. Song, C. He, S. Adamson, Utah State University

- 10:40 On The Self-Consistent Algorithm for Numerical Simulation of the Global Geomagnetic Disturbances and Associated Electric Current Spreading to Low  
L. Alperovich\*, Tel-Aviv University, B. Fidel, Ness Technology
- 11:00 Ionospheric Total Electron Content Measurements by Analyzing GPS Data of Ankara, Turkey  
C. Erol\*, P. Guven, Baskent University

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**Wednesday Morning**  
**AP**

**Fairfax B**  
**Session 62**

**Fractal Antennas**

- 8:00 Modified Sierpinski Gasket Patch Antenna for Multiband Applications  
J. Yeo, R. Mittra\*, Pennsylvania State University
- 8:20 Shorted Fractal Sierpinski Monopole Antenna  
P. Song, P.S. Hall\*, H. Ghafoori-Shiraz, University of Birmingham, I. Henning, Nanyang Technological University
- 8:40 A Modification of Small Loop Approximation for Fractal and Bent Wire Loop Antennas  
S. Best\*, Cushcraft Corporation
- 9:00 The Fractal Loop Antenna: A Comparison of Fractal and Non-Fractal Geometries  
S. Best\*, Cushcraft Corporation
- 9:20 Scaling Property of the Koch Fractal Dipole  
P. Tang\*, National Aeronautics and Space Administration, P. Wahid, University of Central Florida
- 9:40 A Modified Quasi-Yagi Planar Antenna with Wideband Characteristics in C-Band  
C. Ha\*, Kumoh National University of Technology, Y. Qian, T. Itoh, University of California, Los Angeles
- 10:00 Analysis of Fractal-Shaped Antennas Using the Multiperiodic Traveling Wave Vee Model  
C. Puente, J. Soler\*, FRACTUS, S.A.
- 10:20 Bowtie Microstrip Patch Antenna Based on The Sierpinski Fractal  
J. Anguera\*, C. Puente, C. Borja, R. Montero, FRACTUS, S.A.
- 10:40 A Rectangular Cavity Backed Slot Antenna with Parasitic Slots  
T. Kotani\*, K. Hirasawa, S. Shi, University of Tsukuba, Y. Chang, Union College

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**Wednesday Morning**  
**AP**

**Berkeley**  
**Session 63**

**Finite Element Methods**

- 8:00 Input Impedance Characteristics of Tapered Slot Antennas  
E. Topsakal\*, R. Kindt, K. Sertel, J. Volakis, University of Michigan
- 8:20 Optimal Coil Design for Well-Logging Applications  
J. Goswami\*, B. Underwood, D. Omeragic, J. Tabanou, Schlumberger Oilfield Services
- 8:40 Time-Domain Finite Element Modeling of Dispersive Media  
D. Jiao\*, J. M. Jin, University of Illinois at Urbana-Champaign
- 9:00 Systematic Method for Finding a Hierarchical Vector Finite Element of any Order Using the Nedelec Criteria and a Webb Basis  
R. D. Slone\*, J.F. Lee, R. Lee, Ohio State University
- 9:20 SSOR Preconditioned Conjugate Gradient Method for Solution of Large Sparse Linear Equations from Vector FEM  
R.S. Chen\*, Nanjing University of Science and Technology, E. Yung, University of Hong Kong,
- 9:40 Trilinear Hexahedral Finite Elements with Higher-Order Polynomial Field Expansions for Hybrid SIE/FE Large-Domain Electromagnetic Modeling  
M. Ilic\*, B. Notaras, University of Massachusetts Dartmouth
- 10:00 Third-Order Nedelec Tetrahedral Finite Element  
A.J. Ruiz Genoves, Universidad Politecnica de Madrid, L. Garcia-Castillo\*, Universidad de Alcala Escuela Politecnica, M. Salazar-Palma, Universidad Politecnica de Madrid, T. Sarkar, Syracuse University
- 10:20 Terminating the Iterative Process for the Galerkin Asymptotic Waveform Evaluation Model Order Reduction Technique  
D. Slone\*, J.F. Lee, R. Lee, Ohio State University

- 10:40 Three-Dimensional Orthogonal Vector Basis Functions for Time-Domain Finite Element Solution of Vector Wave Equations  
D. Jiao\*, J. M. Jin, University of Illinois at Urbana-Champaign,

**Wednesday Morning**  
**URSI B**

**Beacon A**  
**Session 64**

## **Guiding Structures and Circuits I**

- 8:00 The Nature of the Current Excited by a Source on Microstrip Line  
F. Mesa\*, University of Seville, D.R. Jackson, University of Houston
- 8:20 Hertz Potential Green's Function Representing a Volume Current Source in A Generalized stripline Structure  
D. Infante\*, The Aerospace Corporation, D. Nyquist, Michigan State University
- 8:40 Difficulties of the Quasi-TEM Extraction Model and Definition of a General Representation of Longitudinal and Transversal Couplings  
S. Wane\*, ENSEEIHT, D. Bajon, SUPAERO, H. Baudrand, ENSEEIHT, P. Gamand, Philips Semiconductors
- 9:00 The Electromagnetic Theory of Wave Propagation in Microstrip Structures  
T.A. Leskova\*, D.L. Mills, University of California, Irvine
- 9:20 Extrapolation Methods for a Class of Inverse Fourier Integrals  
A. Mathis\*, Ansoft Corporation
- 9:40 Field Distribution in Metal-Insulator-Semiconductor (MIS) Transmission Lines  
N. Wongkasem\*, T.C.K. Rao, University of Massachusetts, Lowell
- 10:00 Mode Coupling and Cutoff Behavior in Planar Anisotropic Dielectric Waveguides  
A. Yakovlev\*, University of Mississippi, G. Hanson, University of Wisconsin-Milwaukee
- 10:20 Steepest Descents Evaluation of Asymmetric Planar Dielectric Waveguide Field  
J. Lee\*, D. Nyquist, Michigan State University
- 10:40 Ultra Low Loss Ceramic Ribbon Waveguides for Millimeter/Submillimeter Wave  
C. Yeh\*, F. Shimabukuro, California Institute of Technology/JPL
- 11:00 Characteristic Impedance Calculation of Microstrip Line on Ferrite-Dielectric Substrate Using the Method of Lines  
I. Barseem\*, E. Abdallah, Electronics Research Institute, E. Hashish, M. EL-Said, Cairo University, H. Taher, Electronics Research Institute
- 11:20 An Analytic Approach for the Linvill Method  
W.N. Amaral Pereira\*, M. Silveira, INATEL

**Wednesday Morning**  
**AP**

**Beacon B**  
**Session 65**

## **Array Systems and Applications**

- 8:00 Full Wave CAD Oriented Technique for the Analysis of Airborne Flat Plate Arrays  
S. Chiarandini\*, Elettronica Aster S.p.A., A. Morini, Universita di Ancona
- 8:20 Graphical Representations of Radiation Patterns of Phased Arrays Using Digital Phase Shifters  
M. Clenet\*, G.A. Morin, Defence Research Establishment Ottawa
- 8:40 Optical SCM Transmission Multiplexing IF and Local Signals for Adaptive Array  
O. Shibata\*, I. Seto, S. Obayashi, H. Shoki, Toshiba Corporation
- 9:00 DBF Array Antenna Systems at 8.45 GHz  
K. Mori\*, Y. Inoue, M. Kim, K. Ichige, H. Arai, Yokohama National University
- 9:20 Collocated-Antenna Arrays: Application to Digital Communications in HF  
A. Bisiaux\*, D. Lemur, L. Bertel, University of Rennes
- 9:40 An Apply of Hybrid GA for Array Pattern Control of Quasi-Zenithal Satellite's Earth Station Antenna  
A. Miura\*, M. Tanaka, Communications Research Laboratory

**Wednesday Morning**  
**URSI B**

**Special Session**

**Beacon B**  
**Session 66**

## **Rough Surface Scattering I**

- 10:00 Diffuse Intensities of Electromagnetic Waves in a Layer of Randomly Inhomogeneous Medium Bounded by Randomly Rough Surfaces  
S. Mudalier\*, Arcon Corp.

- 10:20 Non Local Small Slope Approximation Technique TE and TM Solutions Including The Grazing Angles  
G. Berginc\*, Thales Optronique, Y. Beniguel, IEEA, France
- 10:40 Backscattering Enhancement Study with the Non Local Small Slope Approximation Method for Scattering of Vector Waves from Randomly Rough  
A. Soubret\*, G. Berginc, Thomson-CSF Optronique, C. Bourrelly, Centre de Physique, CNRS-Luminy
- 11:00 Scattering by Two-Dimensional Rough Surfaces: Comparison Between Moment Method and Small Slope Approximation  
G. Soriano\*, C-A. Guerin, M. Saillard, Institut Fresnel
- 11:20 Iterative PE Techniques for Rough Surface Scattering  
M.F. Levy\*, Rutherford Appleton Laboratory, UK
- 11:40 An Improved FB/NSA Algorithm for the Computation of Scattering from Two-Dimensional Extremely Large-Scale Perfectly Conducting Rough Surfaces  
D. Torrungrueng\*, J.T. Johnson, Ohio State University

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**Wednesday Morning**  
**AP**

**Beacon C**  
**Session 67**

### **Mutual Coupling, Surface Waves, and Conformal Microstrip Antennas**

- 8:00 Electric Green's Dyadics for Modeling Resonance and Surface Wave Effects in a Waveguide-Based Aperture-Coupled Patch Array  
A. Yakovlev\*, University of Mississippi, S. Ortiz, M. Ozkar, A. Mortazawi, M. Steer, North Carolina State University
- 8:20 CPW Slot Antenna for TM Slab Mode Excitation  
H.F. Hammad, A.P. Freundorfer Queen's University, Y.M.M. Antar\*, Royal Military College of Canada
- 8:40 A Mutual Coupling Study of Circular Polarized Microstrip Antennas With Applications to Diversity Combining Mobile Communications  
R. Ramirez\*, F. De Flavis, University of California, Irvine
- 9:00 Mutual Coupling Between Reduced Surface Wave Antennas in an Array  
R.L. Chen\*, D.R. Jackson, J.T. Williams, S.A. Long, University of Houston
- 9:20 Efficient Technique for Mutual Coupling Calculations Between Apertures on a PEC Circular Cylinder Covered with a Dielectric Layer  
P. Persson\*, Royal Institute Of Technology, R.G. Rojas, Ohio State University
- 9:40 Paraxial Space-Domain Formulation for Surface Fields on Large Dielectric Coated Circular Cylinders  
V.B. Erturk\*, Bilkent University, R.G. Rojas, Ohio State University
- 10:00 Radiation Characteristics of a 2D Periodic Leaky-Wave Antenna Using Metal Patches or Slots  
T. Zhao\*, D.R. Jackson, J.T. Williams, University of Houston, H.Y. Yang, University of Illinois at Chicago
- 10:20 Microstrip Antennas on Multilayer Cylindrical and Quasi-Cylindrical Structures  
M. Thiel\*, A. Dreher, German Aerospace Center (DLR)
- 10:40 A Reduced Surface-Wave Twin Arc-Slot Antenna Element on Electrically Thick Substrates  
M. Qiu\*, G. Eleftheriades, M. Hickey, University of Toronto
- 11:00 Eigensolution Expansion of Dyadic Green's Function for the Analysis of Microstrip Antennas on Cylindrical Sector Multilayer Structures  
M. Thiel\*, A. Dreher, German Aerospace Center (DLR)
- 11:20 Theoretical and Experimental Study of Rectangle Patches Mounted on Multilayer Circular Cylinder  
S. Raffaelli\*, Chalmers University of Technology, Z. Sipus, University of Zagreb, P-S. Kildal, Chalmers University of Technology

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**Wednesday Morning**  
**AP**

**TECC 2**  
**Session 68**

### **Broadband Microstrip Antennas II**

- 8:00 Techniques for Bandwidth Optimization of Probe-Fed Microstrip Antennas on Small, Finite Ground Planes  
D. Chatterjee\*, V. Natarajan, University of Missouri-Columbia at Kansas City, K-F. Lee, University of Mississippi, X. Wang, University of Missouri-Columbia at Kansas City
- 8:20 Wide Band High Gain EMC Patch Active Array Elements with Low Mutual Coupling  
U.K. Revankar\*, Harishchandra, K. Sreenivasulu, K.M. Veerabhadra, Electronics and Radar Development Establishment, India
- 8:40 Enhanced Radiation Performance of Broadband Suspended Plate Antenna  
Z. N. Chen\*, M.Y.W. Chia, National University of Singapore

- 9:00 Wideband Orthogonal Square Monopole Antennas with Semi-Circular Base  
P.V. Anob\*, I.I.T. Bombay, K.P. Ray, SAMEER/I.I.T Campus, G. Kumar, I.I.T. Bombay
- 9:20 Frequency Tuning of Slot-Loaded Rectangular Patch Antenna with Tuning Stubs and Gaps  
J. H. Kim\*, Yonsei University, J. W. Lee, Anyang University, J. G. Yook, H.K. Park, Yonsei University,
- 9:40 A Capacitor-Loaded Broadband Circular Patch Antenna  
M.C. Liang\*, W.C. Lai, Y.M. Yen, Y.L.Kuo, I-Shou University

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**Wednesday Morning**  
**AP**

**TECC 2**  
**Session 69**

**EM Properties of Materials**

- 10:00 Error Estimate for Free-Space Dielectric Measurement Systems  
L.E. Rickard Petersson\*, G.S. Smith, Georgia Institute of Technology
- 10:20 Design of an Absorbing Mounting Plate for a Low Reflection Level  
J.E. Roy\*, Communications Research Centre Canada
- 10:40 Permittivity Measurement Technique for a Dielectric Strip Using a Rectangular Waveguide  
T. Chiu\*, National Central University
- 11:00 Millimeter Wave Transmittance and Diffractive Scattering of Radome Membranes  
M. Afsar\*, I. Tkachov, Tufts University
- 11:20 Effective Constitutive Parameters of a Sparse Medium Containing Randomly Distributed Chiral Spheres  
Y. Nanbu\*, Sasebo National College of Technology, W. Ren, McMaster University, T. Matsuoka, M. Tateiba, Kyushu University
- 11:40 Calculating Radiation Force on Carbon Fiber Gossamer Space Sailcraft  
K. Whites\*, University of Kentucky, T. Knowles, Energy Science Laboratories, Inc.

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**Wednesday Morning**  
**URSI B**

**TECC 3**  
**Session 70**

**Inverse Scattering**

- 8:00 Comparison of Colton-Kirsch Linear Sampling with Linearized Tomographic Inverse Scattering  
M. Brandfass\*, Aero-Sensing Radar Systeme GmbH, K. Warnick, Brigham Young University
- 8:20 Shape Reconstruction of Metallic Objects with Strong Multiple Scattering Using Genetic Algorithm  
Y. Zhou\*, H. Ling, The University of Texas at Austin
- 8:40 Localization and Determination of an Optimal Sphere for 3D Objects  
H. Tortel\*, M. Saillard, Institut Fresnel
- 9:00 3-D Radar Image Formation from Undersampled Aspect Data Using Adaptive Feature Extraction  
J. Li\*, H. Ling, The University of Texas at Austin
- 9:20 Null Spaces for Near Field Imaging  
M. Morgan\*, D. Steenman, Naval Postgraduate School
- 9:40 Reconstruction of 3D Lossy Media by using Microwave Measurements  
Z. Q. Zhang\*, Q. H. Liu, Duke University
- 10:00 Geophysical Analysis of Cross-Borehole Propagation and Reflection Using Triaxial Sources  
C. Pendley\*, C. Furse, A. Tripp, V. Rayala, Utah State University
- 10:20 A Foliage Penetration Imaging Radar System  
C. Beaudoin\*, A. Gatesman, M. Testorf, M. Fiddy, R. Giles, J. Waldman, University of Massachusetts
- 10:40 An Electromagnetic Inversion Algorithm to Detect Neural Activity Using MEG  
F. Borelli\*, O.P. Gandhi, University of Utah, G. D'Inzeo, University of Rome
- 11:00 Microwave Imaging on an Arbitrary Tilted Plane by a Scalar Inverse Scattering  
T. Hasegawa\*, T. Iwasaki, The University of Electro-Communications
- 11:20 FDTD Analysis of Spinal Cord Response to Plane Wave Incidence  
S. Balaguru\*, M. Hashemkhani, B.P. Kumar, California State University-Sacramento, G.R. Branner, University of California, Davis
- 11:40 The Use of Superresolution Methods for Inverse Scattering - Implications for Imaging Strongly Scattering Targets  
M. Testorf, A. Morales-Porras, M. Fiddy, R. McGahan\*, University of Massachusetts-Lowell

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**Wednesday Morning**  
**AP/URSI A**

**TECC 4**  
**Session 71**

## **PCS Antenna Characterization and Measurements**

- 8:00 Measurements and Numerical Evaluation of the Electric Field in the Near-Zone of Radio Base Station Antennas  
F. Davide, G. Paolo, S. Renato\*, V. Roberto, CSELT
- 8:20 3D Antenna Measurement and Electromagnetic Simulation for Advanced Vehicle Antenna Development  
R. Kronberger\*, A. Stephan, M. Dagnius, Fuba Automotive GmbH & Co. KG
- 8:40 On Wheeler's Method for Efficiency Measurement of Small Antennas  
Y. Huang\*, R. Narayanan, University of Nebraska, G. Kadambi, Centurion Wireless Technologies, Inc.
- 9:00 Characterization of Antennas for Mobile and Wireless Terminals by Using Reverberation Chambers: Improved Accuracy by Platform Stirring  
K. Rosengren\*, Intenna Technology, P-S. Kildal, Chalmers University of Technology, C. Carlsson, J. Carlsson, Bluetest AB, Sweden
- 9:20 Effects of Antenna Radiation Pattern on the Performance of the Mobile Handset  
K. Sulonen\*, P. Vainikainen, Helsinki University of Technology
- 9:40 Theoretical Study of Angular Distribution of Plane Waves in a Small Reverberation Chamber for Simulating Multipath Environment and Testing  
K. Rosengren\*, Intenna Technology, P-S. Kildal, Chalmers University of Technology

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**Wednesday Morning**  
**AP**

**TECC 4**  
**Session 72**

## **Polarization Methods for PCS and Wireless**

- 10:00 Two-Branch Space and Polarization Diversity Schemes for Dipoles  
M. Kar, P. Wahid\*, University of Central Florida
- 10:20 A Polarization Diversity Antenna by Printed Dipole and Patch with a Hole  
N. Michishita\*, H. Arai, Yokohama National University
- 10:40 Curl Antennas over Electromagnetic Band-Gap Surface: A Low Profiled Design for CP Applications  
F. Yang\*, Y. Rahmat-Samii, University of California, Los Angeles
- 11:00 Blockage/Shadowing and Polarization Measurements at 2.45 GHz for Interference Evaluation between Bluetooth and IEEE 802.11 WLAN  
A. Kara\*, Atilim University, H. Bertoni, Polytechnic University,
- 11:20 Theory and Experiment of A Circularly Polarized Conical Beam Spherical Slot Array Antenna  
C. Phongcharoenpanich\*, M. Krairiksh, King Mongkut's Institute of Technology J-I. Takada, Tokyo Institute of Technology

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**Wednesday Morning**  
**AP**

**Clarendon**  
**Session 73**

## **Microstrip Antennas with CPW Feeds**

- 8:00 A New Type of Dual Frequency CPW-Coupled Patch Antenna Configurations  
K. Hettak\*, Communications Research Centre, G. Delisle, Laval University, M.G. Stubbs, Communications Research Centre
- 8:20 Wideband U-Slot Microstrip Antenna Using CPW Feed  
J. I. Lee\*, Y. J. Yoon, Yonsei University
- 9:00 Analysis of CPW-Fed Triangle Patch Antennas  
S. M. Deng\*, H. H. Kan, Ta Hwa Institute of Technology
- 9:20 Coplanar Patch Antennas: Principle, Simulation and Experiment  
K. Li\*, C.H. Cheng, T. Matsui, M. Izutsu, Communications Research Laboratory
- 9:40 Wideband Coplanar Waveguide Fed Coplanar Patch Antenna  
K.F. Tong\*, K. Li, T. Matsui, M. Izutsu, Communications Research Laboratory

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**Wednesday Morning**  
**AP**

**Clarendon**  
**Session 74**

## **Circular Polarized Microstrip Antennas**

- 10:00 A Novel Planar Polarizer Feed Network for Dual Circular Polarization  
A. Fathy\*, L. Napoli, E. Denlinger, F. McGinty, D. McGee, G. Ayers, Sarnoff Corporation, C. Rodeffer, Winegard Company
- 10:20 A Multi-Layer Circularly Polarized Microstrip Patch Antenna with Proximity Coupling and Increased Gain  
M. Zawadzki\*, California Institute of Technology/JPL

- 10:40 Stacked Microstrip Antennas for Broadband Circular Polarization  
K.T.V Reddy\*, G. Kumar, I.I.T. Bombay
- 11:00 Compact Circularly Polarized Pentagon-Shaped Microstrip Antenna with Bent Slots  
W-S. Chen\*, H-D. Chen, Cheng Shiu Institute of Technology
- 11:20 Aluminum Planar Antennas Circularly Polarised on Glass Substrate  
M. Bourry\*, M. Drissi, L.C.S.T / I.N.S.A de Rennes

**Wednesday, July 11, 2001 - PM**

**Wednesday Afternoon  
AP**

**Commonwealth  
Session 75**

## **Novel Antennas for Mobile Communications**

- 1:00 An Unequally Spaced Array Antenna for Mobile Base Stations  
Y. Yamada\*, S. Takubo, National Defense Academy, Y. Ebine, NTT Mobile Comm. Network Inc.
- 1:20 Dual Band Antenna Mounted On Chip Case  
G. Ma\*, P. Gardner, P.S. Hall, University of Birmingham
- 1:40 A Folded Loop Antenna System for Handsets  
H. Morishita\*, Y. Kim, National Defense Academy, Y. Koyanagi, Matsushita Communication Industrial Co. Ltd, K. Fujimoto, University of Tsukuba, FAIS
- 2:00 Self-Diplexed Integrated Antenna Transceiver for Wireless Applications  
D-K. Park\*, Korea Maritime University, R. Waterhouse, Royal Melbourne Institute of Technology, Y. Qian, T. Itoh, University of California, Los Angeles
- 2:20 Compact Surface-Wave Assisted Printed Endfire Antenna With Multiple System Compatibility  
K.M.K.H. Leong\*, Y. Qian, T. Itoh, University of California, Los Angeles
- 2:40 GSM Fabric Antenna for Mobile Phones Integrated Within Clothing  
P.J. Massey\*, Philips Research Laboratories
- 3:00 Enhancement of FB Ratio for Cellular Base Station Antenna by Optimizing Reflector Shape  
Y. Rikuta\*, H. Arai, Yokohama National University, Y. Ebine, NTT Mobile Communication Network Inc.
- 3:20 A Bi-Directional Pattern Antenna Using Short-Tapered Slot Antenna  
N. Kuga\*, J. Okayama, Toyko Institute of Polytechnics, H. Arai, Yokohama National University
- 3:40 SDA-A New Family of Small Antennas Used Since Long Time  
O. Edvardsson\*, Allgon Mobile Communications AB
- 4:00 Rigorous Analysis of a Rectangular Dielectric Antenna on a Grounded Substrate  
S.-Y. Ke\*, H.-T. Chen, Chinese Military Academy
- 4:20 Analyses of Voluminous Metallic Antenna Covered with Dielectric Layer  
R. Zaridze\*, G. Bit-Babik, K. Tavzashvili, A. Bijamov, G. Ghvedashvili, Tbilisi State University

**Wednesday Afternoon  
AP**

**Fairfax A  
Session 76**

## **Aperture Coupled Microstrip Antennas**

- 1:00 Linearly and Circularly Polarized Slot Antennas Integrating Solar Cells  
S. Vaccaro\*, J.R. Mosig, Ecole Polytechnique Federale P. de Maagt, ESTEC, European Space Agency
- 1:20 Dual Linearly Polarized Reflect Array Using Aperture Coupled Microstrip Patches  
M. Bialkowski\*, University of Queensland, H. Song, HRL Laboratories
- 2:00 A Novel Concept for Slot Coupled Circularly Polarized Patch Antenna  
M. Fries\*, R. Vahdieck, Swiss Federal Institute of Technology
- 2:20 A Broadband Microstrip Antenna Fed by A Coplanar Waveguide with Dogbone Slot  
A. Suzuki\*, M. Haneishi, Saitama University
- 2:40 Fast Full-Wave Moment Method for the Analysis of Finite Aperture-Coupled Microstrip Patch Arrays  
A. Enneking\*, F. Arndt, University of Bremen
- 3:00 Broadside Parallel-Plate Slot Antenna Without Dielectric  
M. V. Isasa\*, A. Alvarez, Universidad de Vigo, M. Sierra-Castaner, M. Sierra-Perez, Universidad Politecnica de Madrid
- 3:20 Aperture-Coupled Coplanar Patch Antennas  
C.H. Cheng\*, K. Li, K.F. Tong, T. Matsui, Communications Research laboratory
- 3:40 Design of Compact Rectangular Microstrip Antenna with a CPW Feed  
M.-C. Pan\*, Yung-Ta Institute of Technology and Commerce
- 4:00 Stacked Gap-Coupled Multi-Resonator Rectangular Microstrip Antennas  
G. Kumar\*, I.I.T. Bombay, K.P. Ray, SAMEER
- 4:20 Electromagnetic Coupling in Aperture-Coupled and Proximity-Coupled Microstrip Antenna Structures  
L.G. Yoon\*, Kyungpook National University, J.H. Ko, Kumoh National University of Technology, Y. K. Cho, Kyungpook National University

## **Applications of FDTD Modelling**

- 1:00 Analysis of a Corrugated Horn Using the COR-FDTD Method  
C. Johnson\*, Harris Corporation, P. Wahid, University of Central Florida
- 1:20 Analysis of Multilayer Cylindrical Lines Containing Ferrite Media Using the FDTD Technique  
N. Dib\*, Jordan University of Science & Technology
- 1:40 HIRF Penetration into a Fuselage-Like Body: FDTD Predictions vs. Measurements  
C. Birtcher\*, S. Georgakopoulos, C.A. Balanis, Arizona State University
- 2:00 Dispersion Relation and Similarity Transform of Electromagnetic Waveguide  
L. Liou\*, Air Force Research Laboratory-Wright Patterson AFB
- 2:20 Isolating Target Returns Through Foliage  
H.-M. Shieh, P. Duvellem, M. Testorf, M. Fiddy, University of Massachusetts-Lowell, R. McGahan, Air Force Research Laboratory-Hanscom AFB
- 2:40 Elevated-CPW for High-Speed Digital Interconnects  
S.H. Jeong\*, Yonsei University, S-J. Yoon, Agency for Defense Development-Korea, S-G. Lee, Samsung Electronics, Y.J. Kim, Yonsei University
- 3:00 Slot Antenna Consisted of Two Conductive Plates and Thin Wires  
M. Omiya\*, Hokkaido University, T. Hikage, K. Murakami, K. Itoh, Hokkaido University-Grad School of Engineering
- 3:20 Cross-Shaped Dielectric Resonator Antenna Analysis Using the Conformal Finite Difference Time Domain Method  
N. Farahat\*, W. Yu, R. Mittra, The Pennsylvania State University, T. Koleck, CNES Laboratories
- 3:40 FDTD Simulation of the Angular Correlation Function of Objects Buried in Continuous Random Media  
C.D. Moss\*, Massachusetts Institute of Technology, F.L. Texeira, Ohio State University, J.A. Kong, Massachusetts Institute of Technology
- 4:00 Multiresolution Time Domain Modeling for Large Scale Wireless Communication Problems  
C.D. Sarris, University of Michigan, K. Tomko, University of Cincinnati, P. Czarnul, S-H. Hung, R.L. Robertson, D. Chun, E. Davidson, L. Katehi, University of Michigan
- 4:20 FDTD Analysis of Wire Antenna Used for Process Plasma  
H. Sato\*, K. Tamashiro, K. Sawaya, Tohoku University, T. Takagi, M. Ueda, Y. Watabe, ANELVA, Company

## **Fixed-Beam Microstrip Arrays**

- 1:00 A Higher-Order Microstrip Reflectarray at Ka-Band  
K-C. Chen\*, C-K. Tzuang, National Chiao Tung University, J. Huang, Jet Propulsion Laboratory
- 1:20 Planar Dielectric Image Line Antenna Arrays Using Y-Junctions  
H. Tehrani\*, M.-Y. Li, K. Chang, Texas A&M University
- 1:40 Design Method, Analysis and Prototypes of Radial Line Slot Antennas  
M.Sierra Castaner\*, M. Sierra Perez, Univ. Politecnica de Madrid, M. Vera Isasa, Universidad de Vigo, F. Jambrina, Univ. Politecnica de Madrid
- 2:00 A Dual-Frequency Microstrip-Fed Slot Ring Linear Antenna Array  
H. Tehrani\*, K. Chang, Texas A&M University
- 2:20 Proposal of Triangular Dielectric Phase-Shifter and Design Method Considering Loss Minimization for Offset Beam Planar Antenna  
N. Honma\*, T. Maruyama, T. Hori, Nippon Telegraph and Telephone Corporation
- 2:40 Multilayer Feeding of a Microstrip Patch Sub-Array Using Parallel-Plate Dielectric Waveguides (PPDW)  
J. Hug, N. Das\*, Polytechnic University
- 3:00 Design of Low Cost Cavity-Backed Microstrip Patch Arrays  
M. Gonzalez\*, J. Encinar, J. Zapata, Ciudad Universitaria
- 3:20 Performance of a Microstrip Planar Array Antenna At Millimeter Wave Frequencies Using a Series-Parallel Feed Network  
S. Sharma\*, L. Shafai, The University of Manitoba

- 3:40 A New Technique for the Design of Slot-Fed Linear Arrays of Patches  
A. Casula\*, G. Mazzarella, G. Montisci, Universita' di Cagliari
- 4:00 Size Reduced Microstrip Planar Antenna Array for a Compact 3D-Mouse Microwave Holographic System  
H. Elsadek\*, H. Eldeeb, F. De-Flaviis, L. Jofre, University of California-Irvine, E. Abdallah, Electronics Research Institute, E. Hashish, Cairo University
- 4:20 Design of a 38-GHz Printed Yagi Antenna with Multiple Directors  
Y.-C. Lee, S.-J. Chung\*, National Chiao Tung University

**Wednesday Afternoon**  
**AP/URSI B**

**Special Session**

**Fairfax B**  
**Session 79**

**Fractal Antennas**

- 1:00 Fracton Vibration Modes in the Siepinski Microstrip Patch Antenna  
C. Borja, J. Romeu\*, Universitat Politecnica de Catalunya (UPC)
- 1:20 Analysis of a Sierpinkski for Fractal Patch Antenna Using the Concept of Macro Basis Functions  
J. Parron\*, J.M. Rius, J. Romeu, Universitat Politecnica de Catalunya (UPC)
- 1:40 An Efficient Recursive Procedure for Calculating the Driving Point Impedance of Linear and Planar Fractal Arrays  
D. Baldacci\*, D.H. Werner, The Pennsylvania State University
- 2:00 The Electrically Small Limit of Fractal Element Antennas  
R. Hohlfeld\*, Boston University, N. Cohen, Fractal Antenna Systems, Inc.
- 2:20 Genetically Engineered Dual-Band Fractal Antennas  
D.H. Werner\*, P.L. Werner, The Pennsylvania State University, K.H. Church, CMS Technetronics Inc., J.W. Culver, S.D. Eason, Raytheon Systems Company
- 2:40 A Novel Design Approach for Small Dual-Band Sierpinski Gasket Monopole Antennas  
D.H. Werner\*, J. Yeo, The Pennsylvania State University
- 3:00 UHF Fractal Antennas  
S.D. Eason\*, R. Libonati, J.W. Culver, Raytheon Systems Company, D.H. Werner, P.L. Werner, S. Mummaredy, The Pennsylvania State University
- 3:20 Fractal Patch Antennas: Miniaturizing Resonant Patches  
J. Gianvittorio\*, Y. Rahmat-Samii, University of California, Los Angeles
- 3:40 Fractal FSS: Various Self-Similar Geometries Used for Dual-Band and Dual-Polarized FSS  
J. Gianvittorio\*, Y. Rahmat-Samii, University of California, Los Angeles, J. Romeu, Universitat Politecnica de Catalunya (UPC)
- 4:00 Observation of the Localized Modes in the Koch Waveguide  
J. Romeu, A. Aguasca, S. Blanch\*, Universitat Politecnica de Catalunya (UPC)
- 4:20 Resonant Frequency of Hilbert Curve Fractal Antennas  
K.J. Vinoy\*, K.A. Jose, V.K. Varadan, V.V. Varadan, The Pennsylvania State University

**Wednesday Afternoon**  
**AP**

**Special Session**

**Berkeley**  
**Session 80**

**RF MEMS for Antenna Applications**

- 1:00 MEMS-Switched Reconfigurable Antennas  
W. Weedon\*, W. Payne, Applied Radar, Inc., G. Rebeiz, University of Michigan
- 1:20 A Wideband Beam Switching Antenna Using RF MEMS Switches  
J. Schaffner\*, D. Sievenpiper, R. Loo, HRL Laboratories, J. Lee, S. Livingston, Raytheon
- 1:40 MEMS True-Time Delay Circuit for Broadband Antennas  
M. Kim, Korea University, J.B. Hacker, R.E. Mihailovich\*, J.F. DeNatale, Rockwell Science Center
- 2:00 Micromachined Waveguides and Horns for Submillimeter-Wave Components  
T. Crowe\*, University of Virginia
- 2:20 A Hybrid-Statistical Approach for Accurate Characterization of MEMS on Complex Platforms  
T. Ozdemir\*, K.F. Sabet, E. Yasan, M.C. Bega, EMAG Technologies, Inc., J. Ebel, AFRL/SNDD-Wright Patterson AFB, G. Creech, C. Lesniak, AFRL/SNDM-Wright Patterson AFB, L. Katehi, K. Sarabandi, University of Michigan
- 2:40 Low Voltage Tunable Capacitors for RF MEM Filters and Antenna Applications  
K.A. Jose\*, H. Yoon, K.J. Vinoy, P. Sharma, V.K. Varadan, V.V. Varadan, Pennsylvania State University
- 3:00 Reconfigurable Array Antenna Using Microelectromechanical Systems (MEMSS) Actuators  
R. Simons\*, Dynacs Engineering Company, Inc, D. Chun, L. Katehi, University of Michigan,

3:20	TBD C. Keast*
3:40	TBD M. Zaghloul*
4:00	Development of very Low Loss 2-Bit and 4-Bit Monolithic X-Band MEMS Phase Shifters Tan*, Rabiez, University of Michigan, J.B. Hacker, R.E. Mahailovich, J.F. DeNatale, Rockwell Science Center, N. Karabudak, W. Taft, T. Karras, Lockheed Martin Space Systems, W. Kornrumpf, GE Corporate R&D

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**Wednesday Afternoon**  
**AP**

**Beacon A**  
**Session 81**

### Antenna Arrays

1:00	Bi-Mode Time-Space Multiplexing Antenna Array for Multi-Targets Detection in Automotive Application L. Yang*, F. Zhenghe, Tsinghua University
1:20	Thinned Aperiodic Linear Phased Array Optimization for Reduced Grating Lobes During Scanning with Input Impedance Bounds M. Bray*, D.H. Werner, The Pennsylvania State University, D. Boeringer, D.W. Machuga, Northrop Grumman Corporation
1:40	Phase Conjugation Array Using Subharmonically Injection Locked Self-Oscillating Mixers S.-C. Yen*, T.H. Chu, National Taiwan University
2:00	Space Based Lens Vs Corporate Antenna Distortion Comparison D. Davis*, J. Moellers, Northrop Grumman Corporation
2:20	Resonant Frequency of Dipole Antennas with Crank Sections in Dual-Band Arrays K. Nishizawa*, H. Okegawa, H. Ohmine, Mitsubishi Electric Corporation
2:40	Coaxial Cylinder Antenna Composed with Square Bracket Shaped Slots K. Igusa*, T. Ohiro, ATR Adaptive Communications Research, M. Tanaka, Kashima Space Research Center CRL
3:00	Compact Antenna Arrays for MIMO Applications M. Stoytchev*, H. Safar, Agere Systems, A. Moustakas, S. Simon, Bell Laboratories
3:40	Large-Area And Uniform Plasma Production by Rotating Mode Radial Line Slot Antennas with Densely Arrayed Slots T. Yamamoto*, M. Ono, M. Takahashi, Yamagata University, M. Ando, Tokyo Institute of Technology, N. Goto, Takushoku University, Y. Yasaka, Kyoto University, N. Ishii, Tokyo Electron Ltd.
4:00	Array Pattern Synthesis with Null Field Constraints in the Near-Field Region O.M. Bucci, University of Naples, F. D'Agostino*, C. Gennarelli, C. Riccio, University of Salerno, C. Svarese, Instituto Universitario Navale
4:20	On a Method of Formation of Surface Wave Structures Using for Strip Antennas P. Anh*, Hanoi National University. T.M. Tuan, Vietman Telecom International
4:40	Spiral Microstrip Patch Element for Reflectarrays S. Datthanasombat*, A. Prata, University of Southern California, P. Brown, O. Quintero, S. Spitz, E. Rodriguez, Jet Propulsion Laboratory

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**Wednesday Afternoon**  
**URSI H**

**Beacon B**  
**Session 82**

### New Results in Space Based Sounding

1:00	New Tools for Analysis of Space-Borne Sounding Data I. Galkin*, G. Khmyrov, A. Kozlov, B. Reinisch, X. Huang, G. Sales, University of Massachusetts-Lowell
1:20	Radio Sounding of the Plasmapause M. Salvati*, D. Carpenter, U. Inan, T. Bell, Stanford University, B. Reinisch, University of Massachusetts-Lowell
1:40	Observations of Ducts in the Plasmasphere by RPI G. Sales*, X. Huang, B. Reinisch, P. Song, University of Massachusetts-Lowell, D. Carpenter, Stanford University, S. Fung, R. Benson, J. Green, NASA Goddard Space Flight Center
2:00	Electron Density Distributions Along Magnetic Field Lines in the Magnetosphere Deduced from RPI Plasmagrams X. Huang*, B. Reinisch, P. Song, University of Massachusetts-Lowell, R. Benson, J. Green, S. Fung, NASA Goddard Space Flight Center, D. Carpenter, Stanford University
2:20	Ionospheric Occultation Measurement with Single Frequency GPS Onboard Receiver J-S. Guo*, S-P Shang, M-L. Zhang, H. Zheng, X-G. Luo, J. Shi, Q-Y. Zhang, Chinese Academy of Sciences

## **Waves in the Ionosphere: Simulation and Modeling Techniques**

- 2:40 Plasma Simulations and Analysis of Meteor Trails  
L.P. Dyrud\*, M.M. Oppenheim, A.F. vom Endt, Boston University
- 3:00 Dynamic Processes of Ionospheric-Magnetosphere Coupling: A Three Fluid Treatment  
P. Song\*, B. Reinisch, University of Massachusetts-Lowell
- 3:20 Direct Measurements of the Ionospheric Current  
A. Reinisch\*, P. Song, V. Paznukhov, University of Massachusetts-Lowell

## **Rough Surface Scattering II**

- 1:00 On the Average Properties of Doppler Spectra at Moderate to Grazing Incidence Angles  
B. Gotwols\*, M. Keller, R. Chapman, Johns Hopkins University
- 1:20 Sea Spikes and Doppler Spectra at Moderate to Grazing Incidence Angles  
M. Keller\*, B. Gotwols, R. Chapman, Johns Hopkins University
- 1:40 Modeling of Multipath Scattering from Breaking Water Waves with Rough Faces  
Z. Zhao\*, J. West, Oklahoma State University
- 2:00 Polarization Ratios Anomalies of 3D Rough Surface Scattering as Second Order Effects  
A. Sei\*, M. Caponi, TRW, O. Bruno, California Institute of Technology
- 2:20 An Analytical Two-Scale Model for the Microwave Emissivity of the Ocean Surface  
D. Lyzenga\*, University of Michigan, J. Vesey, University of California at Santa Cruz, N-Y. Wang, University of Michigan
- 2:40 FDFD Modeling of Plane Wave Interactions with Buried Objects Under Rough Surfaces  
C. Rappaport, A. Morgenthaler, Northeastern University, M. Kilmel, Tufts University
- 3:00 EM Scattering from a 3D Target on a Rough Sea Surface Using Forward-Backward IPO  
R. Burkholder\*, Ohio State University
- 3:20 Electromagnetic Wave Scattering from Two Nearby Objects Buried Under Random Rough Surface Using the SDFMM: Subsurface Sensing Applications  
M. El-Shenawee\*, University of Arkansas at Fayetteville, C. Rappaport, Northeastern University
- 3:40 Numerical Computation of Scattering From a Penetrable Target Above a Slightly Rough Surface  
J. Johnson\*, Ohio State University
- 4:00 Dual Frequency Microwave-Enhanced Infrared Thermography  
S. Shi\*, G. Sauermann, C. Rappaport, C. DiMarzio, Northeastern University
- 4:20 High-Order High-Frequency Solvers for Rough Surface Scattering Problems  
O. Bruno, California Institute Of Technology

## **Remote Sensing**

- 1:00 A Numerical Study on the SVD-Based Retrieval of Radiometric Data  
M. Sunda\*, G. Mazzarella, M. Migliaccio, , Universita di Cagliari
- 1:20 Environmental Influence on Microwave Radiometry for Buried Object Detection  
D. Wiggins\*, B. Ungan, J. Johnson, The Ohio State University
- 1:40 Modelling of Ultrawideband Echoes from Rough Dielectric Surfaces by Calculating Physical Optics Currents  
Y. Lostanlen\*, B. Uguen, G. Chassay, LCST/FRE CNRS - URER
- 2:00 Simulation of Wave Scattering from Rough Surfaces Using Single Integral Equation and Multilevel Sparse-Matrix Canonical-Grid Method  
M. Xia\*, Chinese Academy of Sciences, C. Chan, S.Q. Li, B. Zhang, City University of Hong Kong, L. Tsang, University of Washington

- 2:20 Time-Domain Two-Dimensional Scattering by Moderately Rough dielectric Interfaces via Narrow-Waisted Gaussian Beams  
V. Galdi\*, L. Felsen, D. Castanon, Boston University
- 2:40 Resonances of Coupled Objects Buried in a Dielectric Half-Space  
M Afsar\*, Y. Wang, Tufts University
- 3:00 Mine Detection Under Rough Ground Surfaces Using 2-D FDTD Modeling and Hypothesis Testing  
H. Zhan\*, C. Rappaport, M. El-Shenawee, E. Miler, Northeastern University
- 3:20 Simulation of TRT-Configured Ground-Penetrating Radars Over Heterogeneous Grounds  
U. Oguz\*, L. Gurel, Bilkent University
- 3:40 On The Frequency-Band Selection for Ground-Penetrating Radars Operating over Lossy and Heterogeneous Grounds  
U. Oguz\*, L. Gurel, Bilkent University
- 4:00 Millimeter-Wave Radar Detection of Partially Obscured Targets  
A. Nashashibi\*, F.T. Ulaby, University of Michigan
- 4:20 A Simplified Scanning Scheme for Millimeter-Wave Active Phased Arrays  
A. Abbaspour-Tamijani\*, K. Sarabandi, University of Michigan

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**Wednesday Afternoon**  
**AP**

**TECC 3**  
**Session 86**

### **Fast Multipole Methods**

- 1:00 Multilevel Fast Multipole Algorithm for Electromagnetic Scattering from Conducting Objects with Material Coating  
C.C. Lu\*, University of Kentucky
- 1:20 A Study of the Error Controllability of MLFMA  
S. Ohnuki\*, W. C. Chew, University of Illinois at Urbana-Champaign
- 1:40 The Application of the Generalized Conjugate Residual Algorithm to Accelerate the Fast Multipole Method  
N. Yuan\*, T.S. Yeo, L. Li, X. Nie, National University of Singapore
- 2:00 Fast Multipole Method and Microlocal Discretization for the 3-D Helmholtz Equation  
E. Darrigrand\*, Universite Bordeaux
- 2:20 Multilevel Fast Multipole Method Solution of Volume Integral Equations Using Parametric Geometry Modeling  
K. Sertel\*, J. Volakis, University of Michigan
- 2:40 Fast and Accurate Solution of 3-D Vector Electromagnetic Scattering by FMM with Curvilinear Triangular Patch  
J. Hu\*, Z. Nie, X. Gong, University of Electronic Science & Technology of China

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**Wednesday Afternoon**  
**URSI B**

**TECC 3**  
**Session 87**

### **Multigrid and Fast Multipole Applications**

- 3:00 Multigrid Analysis of Scattering by Large Planar Structures  
O. Livne\*, A. Brandt, Weizmann Institute of Science, A. Boag, Tel Aviv University,
- 3:20 Parallel Implementation of the MLFMA for Dielectric Targets  
J. Pormann\*, J. Board, J. He, E. Jones, L. Carin, Duke University
- 3:40 High Frequency Asymptotic Representation of the Fast Multipole Method Translation Operator  
K. Warnick\*, Brigham Young University W. C. Chew, University of Illinois at Urbana-Champaign
- 4:00 Comparison of Interpolation Methods in the Multilevel Fast Multipole Algorithm  
N. Ozdemir\*, Ohio State University, K. Sencer, Middle East Technical University
- 4:20 MLFMA Analysis of Multiple Conducting and Dielectric Targets in the Presence of a Half Space  
J. He\*, L. Carin, Duke University
- 4:40 MLFMA Analysis of Wideband Scattering from Single and Multiple Trees  
J. He\*, L. Carin, Duke University

## **Phased Array Analysis and Design**

- 1:00 High-Frequency Green's Function for a Rectangular Array of Dipoles with Weakly Varying Tapered Excitation  
F. Mariottini\*, F. Capolino, S. Maci, University of Siena, L. Felsen, Boston University
- 1:20 Synthesis of Electronically Steerable Antenna Arrays with Elements on Concentric Rings with Reduced Sidelobes  
G. Holtrup\*, A. Marguinaud, Satellite Terminal Access, J. Citerne, INSA/URER Rennes
- 1:40 Mutual Coupling Compensation Accuracy  
M. Leifer\*, Ericsson Wireless Communications
- 2:00 Azimuth Scanning, Ka-Band Phased Array Antenna  
S. Chen\*, C. du Toit, K. Hersey, D. Pao, V. Karasack, J. Patel, M. Ramesh, C. Sui, E. Ekelman, Paratek Microwave, Inc.
- 2:20 Improvement of Gain of the Phased Array Antenna by the Parasitic Elements  
K. Takuya, K. Yoshihiki\*, Shizuoka University
- 2:40 CAD of Multilayer Conformal Cylindrical Arrays  
G. Gerini\*, TNO-Physics and Electronics Laboratory, L. Zappelli, University of Ancona,
- 3:00 A 1-D Circularly-Polarised Array Designed with Dual-Flared Microstrip Slot Antenna Element  
K.Y. Liew\*, T-H. Chio, DSO National Laboratories-Singapore
- 3:20 Numerical Analysis of Broadband Phased Array Using Log-Periodic Dipole Elements  
D. Kim\*, Q. Chen, K. Sawaya, Tohoku University
- 3:40 A Design Method for Array Antennas Taking into Account of Mutual Coupling Between Elements  
K. Sakaguchi\*, N. Hasebe, Nihon University
- 4:00 A Design Method of Array Antennas Taking into Account of Mutual Coupling Between Elements  
K. Nagasawa\*, N. Hasebe, Nihon University
- 4:20 Inductive Magnetic Currents and Radiation Characteristics of Planer and Linear Arrays: Analysis of Resembling Behaviours  
J-Y. Li\*, L-W. Li, B-L. Ooi, P-S. Kooi, M-S. Leong, The National University of Singapore

## **Novel Time-Domain Methods & Related Issues**

- 1:00 An Application of the T-Matrix Method to Time-Domain Scattering  
S.S. Koc\*, O. Aydin Civi, O.M. Buyukdura, Middle East Technical University
- 1:20 Multidomain Pseudospectral Time-Domain Method for 2.5-D Problems  
G. Zhao, Q.H. Liu, Duke University
- 1:40 Some Preliminary Observations from a Simple Time-Domain Magnetic Field Integral Equation Implementation  
R. Burkholder\*, J.F. Lee, P. Pathak, Ohio State University
- 2:00 D.O.R.T. Method as Applied to Wide-Band Signals for Detection of Buried Objects  
G. Micolau\*, M. Saillard, Institut Fresnel, P. Borderies, ONERA
- 2:20 An FFT-Accelerated MOT Scheme for the Analysis of Scattering in Lossy Media  
A. Yilmaz\*, J.M Jin, E. Michielssen, University of Illinois at Urbana-Champaign
- 2:40 Fast Plane Wave Time Domain Algorithms for Quasi-Planar Structures  
E. Michielssen\*, University of Illinois at Urbana-Champaign, A. Boag, Tel Aviv University, B. Shanker, Iowa State University M. Lu, University of Illinois at Urbana-Champaign

## **Distributed & Filter Structures**

- 3:00 Microstrip Excited Double Slot Antennas as Elements for 2.5 THz Imaging Array Camera: Equivalent  
A. Neto\*, P. Siegel, California Institute of Technology/JPL

- 3:20 A Ka-Band Planar Type Dielectric Resonator Filter With Balanced Outputs  
C. Yuan\*, Z. Chen, Dalhousie University
- 3:40 Distributed-Source-Excitation of Coplanar Waveguides: An Antenna Loaded Traveling-Wave Photomixer  
D. Pasqualini\*, University of Siena, A. Neto, R. Wyss, California Institute of Technology/JPL
- 4:00 Low-Loss and Wide-Band NRD Guide Band-Pass Filter with Ceramic Resonators at 60GHz  
F. Kuroki\*, S. Shinke, Kure National College of Technology, T. Yoneyama, Tohoku Institute of Technology
- 4:20 A Compact Design of Photonic Bandgap Structure for Microstrip Lines  
S.F. Yeh, C.L. Tai, H.H. Chen\*, , Huafan University
- 4:40 Parametric Analysis of Electrode Geometry for LiNbO<sub>3</sub> Electro-Optic Modulators  
P. Savi\*, Politecnico di Torino, I.L. Gheorma, Columbia University

**Thursday, July 12, 2001 - AM**

**Thursday Morning  
AP**

**Commonwealth  
Session 91**

### **Adaptive Arrays in Communications**

- 8:00 A Study of Transfer Function Estimation Error and A Practical Multi-Beam Antenna System with Pre-Coding Interference Cancellation  
K. Tsunekawa\*, NTT DoCoMo Inc.
- 8:20 Optimum Element Arrangement of Adaptive Arrays for SDMA Considering Angular Spread and Doppler Effect  
K. Cho\*, Y. Takatori, K. Nishimori, T. Hori, Nippon Telegraph and Telephone Corp.
- 8:40 A Novel Multitarget Adaptive Array Algorithm for Wireless CDMA Systems  
A. R. de Matos\*, L.M. de Mendonca, A.G. D'Assuncao, Universidade Federal do Rio Grande do Norte
- 9:00 Single-Port Electronically Steerable Passive Array Radiator Antenna Based Space-Time Adaptive Filtering  
K. Yang\*, T. Ohiro, ATR Adaptive Communications Research
- 9:20 Improvement of Elevation Directivity for ESPAR Antennas with Finite Ground Plane  
Y. Ojiro\*, H. Kawakami, Antenna Giken Co., Ltd., K. Gyoda, T. Ohira, ATR Adaptive Communications Research Laboratories
- 9:40 Smart Antenna System for Wideband CDMA Signals  
M. Hefnawi\*, Royal Military College of Canada, G. Delisle, Laval University
- 10:00 Smart Antennas for Wireless Communications  
S. Bellofiore\*, J. Foutz, C.A. Balanis, A. Spanias, Arizona State University
- 10:20 Computational Complexity Reduced MMSE Adaptive Array Antenna with Space-Temporal Joint Equalization  
Y. Ichikawa\*, K. Tomitsuka, S. Obote, K. Kagoshima, Ibaraki University
- 10:40 Minimization of a Rectangular Patch using Genetic Algorithms  
N. Herscovici\*, Spike Broadband Systems, M. Osorio, University of Valencia, C. Peixeiro, Technical University of Lisbon
- 11:00 Mutual Coupling Analyses for Small GPS Adaptive Arrays  
E. C. Ngai\*, D.J. Blejer, MIT Lincoln Laboratory
- 11:20 Analysis of an Adaptive Planar Yagi Array for WLAN Applications  
M.A. Ali\*, P. Wahid, University of Central Florida

**Thursday Morning  
AP/URSI**

**Special Session**

**Beacon D  
Session 92**

### **History of Phased Array Development and Applications in the New Millennium**

- 8:00 Some Historical Phased Array Antennas  
H. Schrank\*, Consultant
- 8:20 To Be Determined  
R.C. Hansen, Consultant
- 8:40 Radar History  
A.A. Kostenko\*, The A. Usikov Institute of Radio-Physics
- 9:00 The Development of Smart Antennas  
R. Haupt\*, Utah State University
- 9:20 Multi-Function Interleaved Phased Arrays  
L. Poles\*, J. Turtle, E. Martin, R. Wang, Air Force Research Laboratory-Hanscom AFB
- 9:40 Sketching the Evolution of Array Antenna Pattern Synthesis  
H. Steyskal\*, Air Force Research Laboratory-Hanscom AFB, L. Josefsson, Ericsson Microwave Systems AB
- 10:00 Phased Arrays for New Millenium  
E. Brookner

**Thursday Morning  
URSI B**

**Gardner  
Session 93**

### **Efficient and Higher Order Methods**

- 8:00 A Multilevel Direct Solver for the Method of Moments  
D. Gope, V. Jandhyala\*, University of Washington
- 8:20 New Boundary Integral Equations for Computer-Aided Design of 3-Dimensional Optical Waveguide  
M. Tanaka\*, K. Tanaka, Gifu University
- 8:40 Combined-Source Formulations for Electromagnetic Scattering from Convex Geometries  
R. Adams\*, Virginia Tech
- 9:00 Iterative Preconditioned Solvers In Electromagnetic Computations  
V. Cable\*, California Institute of Technology/JPL
- 9:20 Experimental Results for Implementing a Combination of AP and RWG Basis Functions Using MoM to Solve the EFIE  
J. Gulick\*, Michigan State University, M. Kowalski, University of Illinois, L. Kempel, Michigan State University, J. Jin, University of Illinois
- 9:40 Higher Order Loop-Star Basis Functions for Method of Moment Computations  
J.F. Lee\*, R.J. Burkholder, P.H. Pathak, R. Lee, The Ohio State University
- 10:00 A Grid-Robust, Higher-Order Multilevel Fast Multipole Algorithm for 3-D Electromagnetic Scattering Analysis  
K.C. Donepudi\*, J.M. Jin, W.C. Chew, University of Illinois
- 10:20 Full-Wave Time-Domain Analysis of Conducting Surface Including the Singular Edge Behavior  
Y. Yu\*, University of Illinois at Urbana-Champaign, D.S. Weile, University of Delaware, M. Lu, E. Michielssen, University of Illinois at Urbana-Champaign
- 10:40 Topics in 3D Higher Order Modeling in the BEM/FEM Hybrid Formulation  
P. Fink\*, NASA-JSC, D.R. Wilton, University of Houston, N. Champagne, R. Sharpe, D. White, LLNL
- 11:00 Accurate Large-Scale CEM Modeling Using Hybrid FEM/MOM Technique  
S.S. Navale, Y.C. Ma., M. Sancer, Northrop Grumman Corporation, K.C. Hill\*, Air Force Research Laboratory-Wright Patterson AFB
- 11:20 Dissimilar Mesh Formulation for the Finite Element-Boundary Integral Method  
J. Meese\*, L. Kempel, Michigan State University

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Thursday Morning  
AP

Hampton  
Session 94

## Dual Band Microstrip Antennas

- 8:00 A Quarter-Wave U-Shaped Patch Antenna with Two Unequal Arms for Wideband and Dual-Frequency Operation  
Y-X. Guo\*, K-M. Luk, City University of Hong Kong, K-F. Lee, University of Mississippi, R. Chair, City University of Hong Kong
- 8:20 Experiences on Multiband Fractal Antennas  
J. Sanchez, L. de Haro\*, Ciudad Universitaria
- 8:40 New Developments of the Wire-Patch Antenna for Ceramic Technology and Multifunction Applications  
F. Pasquet\*, CREAPE Ingenierie, B. Jecko, CREATE-IRCOM
- 9:00 A High-Performance Dual Frequency Microstrip Antenna for Global Positioning System  
L. Boccia\*, G. Amendola, G. Di Massa, Universita della Calabria
- 9:20 Dual Band Dual Polarisation Slotted Microstrip Patch Antenna Element  
T. Condello, University of Pisa, C. Peixeiro\*, Technical University of Lisbon
- 9:40 Single-Feed Dual-Frequency Rectangular Microstrip Antenna with a Pair of n-Shaped Slots  
Y-F. Lin\*, H-M. Chen, C-C. Kuo, K-C. Huang, National Kaohsiung University of Applied Sciences
- 10:00 A Novel Dual-Polarized, Wide-Band Microstrip Patch Antenna With Aperture Coupling  
S.C. Gao\*, L. W. Li, M.S. Leong, T. S. Yeo, The National University of Singapore
- 10:20 Experimental Study of Broadband Dual-Frequency Circular Patch Antennas  
J.H. Lu\*, National Kaohsiung Institute of Marine Technology
- 10:40 A Dual-Frequency Small Microstrip Antenna  
S.C. Gao\*, L.W. Li, T.S. Yeo, M.S. Leong, The National University of Singapore
- 11:00 Square Microstrip Slot Antenna with Chip Capacitor Loading for Dual Frequency Operation  
G.S. Binoy\*, C.K. Anandan, P. Mohanan, K. Vadudevan, Cochin University of Science & Technology
- 11:20 Design of Dual-Band L-Probe Patch Antenna for Mobile Communications  
Y.H. Shum\*, K.M. Luk, City University of Hong Kong

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Thursday Morning  
AP

Fairfax B  
Session 95

## **Wideband and Spiral Antennas**

- 8:00 The Diamond Dipole: A Gaussian Impulse Antenna  
H.G. Schantz\*, L. Fullerton, Time Domain Corporation
- 8:20 The COTAB UWB Magnetic Slot Antenna  
H.G. Schantz\*, M. Barnes, Time Domain Corporation
- 8:40 A Miniature Broadband Antenna for Portable Communications Terminals  
B. Cetiner\*, L. Jofre, F. de Flavis, N. Alexopoulos, G.P. Li, University of California, Irvine
- 9:00 Increasing the Bandwidth of a Two-Strip Meander-Line Antenna Mounted on a Conducting Box  
K. Noguchi\*, Kanazawa Institute Of Technology, N. Yasui, Mitsubishi Electric Corporation, M. Mizusawa, Kanazawa Institute of Technology
- 9:20 Multiple Linear Antenna Patterns with Single Prefixed Amplitude Distributions  
A. Trastoy\* F. Ares, M. Durr, E. Moreno, Universidade de Santiago de Compostela
- 9:40 Design and Demonstration of a Novel Conformal Slot Spiral Antenna for VHF to L-Band Operation  
D.S. Filipovic\*, J. Volakis, The University of Michigan
- 10:00 A New Wideband Cavity-Backed Spiral Antenna  
M. Afsar\*, Y. Wang, H. Ding, Tufts University
- 10:20 A Two-Wire Spiral Antenna with Unbalanced Feed  
K. Hirose, M. Miyamoto\*, Tokyo Denki University, H. Nakano, Hosei University
- 10:40 The Effects of an Upper Dielectric Layer on the Radiation Characteristics of a Spiral Antenna  
H. Nakano\*, Y. Okabe, Hs. Mimaki, J. Yamauchi, Hosei University

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**Thursday Morning**  
**AP**

**Fairfax B**  
**Session 96**

## **FDTD Theory II**

- 8:00 Development of an Integrated Multi-Grid 3D FDTD and Finite-Difference Heat Transfer Code to Simulate Microwave Drying in Multimode Cavities  
V. Pathak, Z. Yun, M. Iskander\*, University of Utah
- 8:20 Wave Source Conditions for the Unconditionally Stable ADI-FDTD Method  
T.W. Lee\*, S. Hagness, University of Wisconsin-Madison
- 8:40 A Novel Perfectly Matched Layer Method for an Unconditionally Stable ADI-FDTD Method  
A. Zhu,\* S. Gedney, G. Liu, University of Kentucky, J. A. Roden, IBM Corporation
- 9:00 Application of Signal-Processing Techniques to Reduce the Errors Related to the FDTD Excitations  
L. Gurel, U. Oguz\*, Bilkent University
- 9:20 Analysis of Lossy Systems via 2D-FDTD and ESPRIT  
F. Liu\*, J.E. Schutt-Aine, University of Illinois, J. Chen, Motorola,
- 9:40 Coarseness Error in FDTD Thin-Wire Models  
R. Makinen\*, Tampere University of Technology, J. Juntunen, Helsinki University of Technology, M. Kivikoski, Tampere University of Technology

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**Thursday Morning**  
**AP**

**Berkeley**  
**Session 97**

## **Time Domain Theory I**

- 10:00 Time-Domain Analysis in Non-Harmonious Net of an Antenna With Two Parallel Elements Using Potential Function's Approximation  
L. Ololoska-Gagoska\*, L. Janev, University "Sts. Kiril and Metodij"
- 10:20 Electric Field Distributions Inside A Parallel Plate NEMP Simulator by Time-Domain Moment Method  
H.Y. Chen\*, B.H. Chang, Yuan Ze University
- 10:40 Novel Approach to Construct Temporal Bases Functions for Time-Domain Integral Equation Method  
J.L. Hu\*, C. Chan, City University of Hong Kong
- 11:00 A New Fast Time Domain Integral Equation Solution Algorithm  
E. Bleszynski\*, M. Bleszynski, T. Jaroszewicz, Monopole Research
- 11:20 Staircase Approximation for Transients of Multisection Dispersive Transmission Lines with Nonlinear Loads  
I.T. Chiang\*, S. K. Jeng, National Taiwan University
- 11:40 Solution of Electromagnetic Transients by Wavelet Expansion in the Time Domain

**Thursday Morning  
AP**

**Exeter  
Session 98**

**Antenna Theory**

- 8:00 Cavity Backed Antennas with Multilayer Superstrates  
M. Vouvakis\*, C. Polycarpou, C.A. Balanis, Arizona State University
- 8:20 Analysis of Ferrite-Loaded Cavity-Backed Antennas Including Nonlinear and Nonuniform Magnetization Effects  
M. Vouvakis\*, C. Polycarpou, C.A. Balanis, Arizona State University
- 8:40 An Improved Low-Profile Cavity-Backed Slot Antenna Loaded with 2D UC-PBG Reflector  
J.Y. Park\*, C.C. Chang, Y. Qian, T. Itoh, University of California, Los Angeles
- 9:00 A Novel Low Profile Slot-Multi-Layer Patch Antenna  
M. Fan\*, X. Zhang, Z. Feng, Tsinghua University
- 9:20 Excitation of CP Aperture-Coupled Dielectric Resonator Antenna with a Parasitic Patch  
H.K. Ng\*, K.W. Leung, City University of Hong Kong
- 9:40 On the Conditions for the Approximate Formulas for the Problem of a Boundary-Penetrating Antenna  
Y. Long\*, Zhongshan University, E. Yung, City University of Hong Kong
- 10:00 Analysis of Antennas and Nearby Conducting Bodies with the Source Reconstruction Method  
F. Las-Heras\*, Ciudad Universitaria, T. Sarkar, Syracuse University
- 10:20 Balancing Magnetic and Electric Responses of Vector-Sensing Antenna  
Y. Huang\*, G. Friedman, A. Nehorai, , University of Illinois at Chicago
- 10:40 A 60 GHz Conical Horn Antenna with Polarizer Fed by Quasi-Yagi Antenna  
T. Itoh, M. Sironen, Y. Qian, University of California, Los Angeles
- 11:00 Folded Loop C.P. Antenna  
R.L. Li, V.F. Fusco\*, Queens University Belfast
- 11:20 Beam-Space Circular Smart Antenna Fed by Hybrid Circuits  
I. Chiba\*, K. Kihira, R. Yonezawa, T. Numazaki, Mitsubishi Electric Corporation

**Thursday Morning  
URSI B**

**Beacon B  
Session 99**

**Guiding Structures and Circuits II**

- 8:00 Synthesis and Performance of Irregular Field Transformation Elements  
K. Webb\*, M-C. Yang, J-H. Li, Purdue University
- 8:20 Full-Vectorial Finite Element Modal Analysis of Dielectric Waveguides Considering Corner Field Singularities  
D.U. Li, H. Chang\*, National Taiwan University
- 8:40 Robust Complex Images Analysis of Multislot Transmission Lines  
J. Bernal\*, F. Medina, R. Boix, Universidad de Sevilla
- 9:00 Practical Characteristic Analysis of a Parallel-Plate EMP Simulator via the Interpretation of UTD Field Decompositions  
H.T. Chou\*, Yuan Ze University, J.J. Ju, Chung-Shan Institute of Science and Technology, H.Y. Chen, Yuan Ze University
- 9:20 Application of Chalcogenide-Based Materials For Use in Programmable Circuitry for a Microstrip Antenna  
D. Vreeland\*, C.G. Christodoulou, University of New Mexico, J.C. Lyke, Air Force Research Laboratory/VSSE

**Thursday Morning  
AP**

**Beacon B  
Session 100**

**Numerical Analysis for Antenna Design**

- 10:00 Full Wave Analysis and Experimental Verification of a Broadband Ridged Horn Antenna System with Parabolic Reflector  
C. Bruns\*, P. Leuchtmann, R. Vahldieck, Swiss Federal Institute of Technology
- 10:20 Numerical Modeling and Experimental Study of a Novel Leaky Wave Antenna  
E. Semouchkina\*, W. Cao\*, R. Mittra, The Pennsylvania State University, G. Semouchkina, , N. Polenko, I. Ivanchenko, Institute of Radiophysics & Electronics

- 10:40 Ultra-Wideband Antenna Design Using the Green's Function Method (GFM) ABC with Genetic Algorithm  
R. Holtzman, R. Kastner\*, E. Heyman, Tel-Aviv University, R.W. Ziolkowski, University of Arizona
- 11:00 A Combined FDTD-GAM Method for the Modeling of Rectangular Corrugated Horn Fed by Wide-Band Sources  
G. Marrocco\*, D.I.S.P. Universita di Roma, A. Freni, L. Salghetti, University of Florence, S. Maci, University of Siena
- 11:20 Broadband Nearfield Beamforming Using a Simple Recursive Algorithm  
Q. Zeng\*, D. O'Shaughnessy, University of Quebec
- 11:40 Developing a Broadband Circuit Model for the Cutler VLF Antenna  
T. Simpson\*, University of South Carolina, M. Roberts, E. Berg, Veridian Systems

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**Thursday Morning**  
**AP**

**Beacon C**  
**Session 101**

## Radar Imaging & Inverse Scattering

- 8:00 Linearized Multi-Frequency Inversion of Ground Penetrating Radar Data  
N. Budko\*, P. van den Berg, Delft University of Technology
- 8:20 Detection and Imaging of Buried Homogeneous Dielectric Objects  
O.M. Bucci, L. Crocco\*, T. Isernia, Universita di Napoli "Federico II"
- 8:40 Ground Penetrating Radar Imaging of Buried Metallic Objects  
B. Polat, P. Meincke\*, Technical University of Denmark
- 8:40 Investigation of Direct and Inverse Scattering Problems for Inhomogeneous Medium  
V. Turchin\*, Institute of Applied Physics Russian Academy of Science, S. Skulkin, H. Sahli, Vrije Universiteit Brussel
- 9:00 Imaging Performance Analysis of a FOPEN UWB Random Noise Radar  
X. Xu\*, R. Narayanan, University of Nebraska
- 9:20 Radar Images of Vehicles Based on SAR/ISAR Processing  
R. Giret\*, S. Meric, G. Chassay, LCST/URER,INSA Rennes
- 9:40 Comparison of Monostatic and Bistatic Radar Images  
J. Johnson\*, I. Gupta, R. Burkholder, The Ohio State University
- 10:00 Time-Domain Imaging of Radar Targets Using High Frequency Approximation Methods  
Y Dai\*, Ford Motor Company, E.J. Rothwell, K.M. Chen, D.P. Nyquist, Michigan State University, T. Talty, Ford Motor Company
- 10:20 MMW-Radar Powerline Detection Simulator  
L. Pierce, Sarabandi, The University of Michigan
- 10:40 Artificial Neural Network Based Buried Land Mine Imaging  
K. Struckman\* BAE Systems

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**Thursday Morning**  
**AP**

**Beacon E**  
**Session 102**

## Hybrid Methods

- 8:00 An Integrated Finite Element-Mode Matching-Plane Wave Expansion Code for Horn Antenna Analysis  
L. Conti, e. Martini, R. Nesti, G. Pelosi, S. Selleri\*, University of Florence
- 8:20 A Hybrid FDTD-MoM Procedure for the Modeling of Electromagnetic Radiation from Cavity-Backed Apertures  
G. Marrocco\*, S. Fari, F. Bardati, D.I.S.P. Universita di Roma
- 8:40 A Hybrid MoM Formulation for Scattering From Dielectrically Covered Arrays of Cylindrical Cavities in a Ground Plane  
F.J. Villegas\*, Y. Rahmat-Samii, University of California, Los Angeles, D.R. Jackson, University of Houston
- 9:00 Electromagnetic Coupling to Thin-Wire Structures in Complex Cavities  
B. Lail\*, S. Castillo, New Mexico State University
- 9:20 A Hybrid Discrete Fourier Transform-Moment Method for the Fast Analysis of Large Rectangular Phased Arrays  
H.T. Chou\*, H.K. Ho, Yuan Ze University, P.H. Pathak, Ohio State University, P. Nepa, University of Pisa, O.A. Civi, Middle East Technical University
- 9:40 Coupling of Finite Integration Technique and Ray Tracing  
A. Skarlatos\*, R. Schuhmann, T. Weiland, Darmstadt University of Technology
- 10:00 A Novel, Highly Effective Preconditioner for Solving the Finite Element-Boundary Integral Matrix Equation of 3-D Scattering  
J. Liu\*, J. Jin, University of Illinois at Urbana-Champaign

- 10:20 Efficient Hybrid Finite Elements - Modal Expansion Method for Microstrip-Waveguide Transitions Analysis  
E. Limiti, Universita di Roma, E. Martini, G. Pelosi, M. Pierozzi, S. Selleri\*, University of Florence,
- 10:40 A Novel Hybridization of Higher Order Finite Element and Boundary Integral Methods for Electromagnetic Scattering and Radiation Problems  
J. Liu\*, J.M. Jin, University of Illinois at Urbana-Champaign
- 11:00 A Fast Higher-Order Time-Domain Finite Element-Boundary Integral Method for 3-D Electromagnetic Scattering Analysis  
D. Jiao\*, A.A. Ergin, University of Illinois at Urbana-Champaign, B. Shanker, Iowa State University, E. Michielssen, J.M. Jin, University of Illinois at Urbana-Champaign

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**Thursday Morning**  
**URSI F**

**Beacon F**  
**Session 103**

### **Propagation Modeling**

- 8:00 A 3D Parabolic Equation Method for Imperfectly Reflecting Vertical Obstacles on Flat Ground  
R. Janaswamy\*, Naval Postgraduate School
- 8:20 Microwave Propagation Over Sea Surfaces at Low Grazing Levels  
R.M. Jha\*, R. Janaswamy, Naval Postgraduate School
- 8:40 Parabolic Equation Modeling of 3-D Tropospheric Electromagnetic Wave Propagation  
R. Awadallah\*, J. Kuttler, The Johns Hopkins University
- 9:00 An Accelerated Boundary Integral Equation Propagation Scheme  
M. Lamar\*, R. Awadallah, J. Kuttler, The Johns Hopkins University
- 9:20 Comparisons Between Various Propagation Models and Softwares - Application to Detection Systems  
J. Claverie\*, M. Le Palud, G. Le Poulard, Ecoles Militaires de Coetquidan
- 9:40 Extremely Low Frequency (ELF) Mixed-Path Propagation Model  
E. Wolkoff\*, Science Applications International Corp, J. Casey, Naval Undersea Warfare Center

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**Thursday Morning**  
**AP**

**Beacon F**  
**Session 104**

### **Scattering: Complex Media and Materials**

- 10:00 Phase Switched Radar Absorbers  
A. Tennant\*, B. Chambers, University of Sheffield
- 10:20 Investigation on the Potential Application of Conductor-Grounded Lossy Dielectric Periodic Structures as the Cover of Stealth  
Y. Li\*, X. Shanjia, University of Science and Technology of China
- 10:40 Electromagnetic Scattering from a Dielectric Cylinder Beneath a Slightly Rough Surface  
D. Lawrence\*, K. Sarabandi, University of Michigan
- 11:00 Monte Carlo Study and Statistical Description of the Radar Scattering from 2D Ships on Rough Sea Surfaces  
M.R. Pino\*, Univeridade de Vigo, R. Burkholder, The Ohio State University, J.L. Rodriguez, F. Obelleiro, Univeridade de Vigo
- 11:20 High-order Method of Moment Solution for Penetrable Scatterers  
Gang Liu\*, S. Gedney, University of Kentucky
- 11:40 Enhancement of Radar Cross-Section of Partially Convex Targets in Continuous Random Media for Circularly Polarized Wave Incidence  
H. El Oda\*, M. Tateiba, Kyushu University

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**Thursday Morning**  
**AP**

**Beacon G**  
**Session 105**

### **Frequency Selective Surfaces**

- 8:00 Bandwidth Enhancement of Multiband Antennas Using Frequency Selective Surfaces for Ground Planes  
J. Yeo, R. Mittra\*, The Pennsylvania State University
- 8:20 Analysis of a Frequency Selective Surface (FSS) Radome Located in Closed Proximity of a Phased Array Antenna  
R. Mittra\*, D. Lee, Pennsylvania State University
- 8:40 Efficient Green's Function Formulation for Analysis of Frequency Selective Surfaces in Stratified Media

P. Simon\*, Space Systems/Loral

- 9:00 Composite Materials with Negative Permittivity and Permeability Properties: Concept, Analysis, and Characterization  
H. Mosallaei\*, Y. Rahmat-Samii, University of California, Los Angeles
- 9:20 Scattering Parameters of a Frequency Selective Surface Between Anisotropic Dielectric Layers for Incident Co-Polarized Plane Waves  
A. Campos\*, Universidade Federal da Paraiba, A. D'Assuncao, Universidade Federal do Rio Grande do Norte
- 9:40 A Hybrid MoM/UAPO Approach for the Analysis of Truncated Penetrable Periodic Structures  
C. Pochini, G. Pelosi, University of Florence, G. Toso\*, A. Roederer, European Space Agency, ESA ESTEC
- 10:00 Efficient Analysis of FSSs with Arbitrarily Shaped Patches by the MoM/BI-RME Method  
M. Bozzi\*, L. Perregini, University of Pavia
- 10:20 Deep Space Antenna for Rosetta Mission: Design of the S/X Band Dichroic Mirror and Analysis of the Beam Waveguide  
P Besso\*, CSELT, M. Bozzi, University of Pavia, R. Madde, European Space Agency, L. Perregini, University of Pavia, L. Srioli, University of Florence, S. Salvatori, European Space Agency
- 10:40 Scattering Analysis of Strip Gratings with Layered Periodical Substrate for TE Case  
C.H. Lee\*, National Changhua University of Education, C-I G. Hsu, Da-Yeh University, J-F. Kiang, National Taiwan University, C-C. Lee, National Changhua University of Education
- 11:00 Frequency-Selective Properties of the Slab with Multiscale Inhomogeneities  
L.V. Vavril\*, Research Institute Molniya, A.E. Serebryannikov, Institute of Radio Astronomy/NASU, S. Yu. Puzirkov, Kharkov State University,
- 11:20 Frequency-Selective Surfaces with Dumbbell Shaped Elements  
V.N Apletalin, Yu. N. Kazantsev\*, V.S. Solosin, Institute of Radio Engineering & Electronics of Russian Academy of Sciences

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**Thursday Morning**  
**AP**

**Special Session**

**Clarendon**  
**Session 106**

**Measurements I**

- 8:00 Comparative Measurements of Precision Radar Cross Section (RCS) Calibration Targets  
B. Kent\*, Air Force Research Laboratory-Wright Patterson Air Force Base
- 8:20 Progress in Phaseless Near-Field Antenna Measurement Research at the University of California, Los Angeles  
R. Yaccarino, Y. Rahmat-Samii\*, University of California, Los Angeles
- 8:40 Current State-of-the-Art in Near Field Antenna Measurements  
A. Newell\*, Newell Near-Field Consultants
- 9:00 Stray Signal Source Location in Antenna/RCS Ranges  
I. Gupta\*, The Ohio State University
- 9:20 Electromagnetic Measurement System Requirements  
W.D. Burnside\*, T-H Lee, The Ohio State University
- 9:40 Design of the GE Aircraft Engine Compact Range Facility  
R. Silz\*, GE Aircraft Engines
- 10:00 A Brief History of the Compact Range and the Near-Field Range  
E. Gillespie\*, California State University, Northridge
- 10:20 Microwave Holography for Antenna and Radome Diagnostics  
E. Joy\*, Georgia Institute of Technology, M. Guler, EMS Technologies
- 10:40 To Be Determined  
D. Hess

**Thursday, July 12, 2001 PM**

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**Thursday Afternoon  
AP**

**Commonwealth  
Session 107**

### **Patch Antennas for Communications**

- 1:00 Design of an Efficient Miniaturized UHF Planar Antenna  
K. Saraband\*, R. Azadegan, The University of Michigan
- 1:20 Reduced Size Single and Dual Band Linear Polarized Microstrip Antennas for Mobile Communications  
R. Ramirez\*, H. Elsadek, L. Jofre, F. De Flaviis, University of California, Irvine
- 1:40 Compact Multi-Band Planar Antenna for Mobile Wireless Terminals  
Z. Turski\*, A.E. Fathy, D. McGee, G. Ayers, S. Kanamaluru, Sarnoff Corporation
- 2:00 A -45 Degree/+45 Degree Dual Polarized Microstrip Antenna for Wireless Communication  
X. Yao, W. Hong\*, Southeast University
- 2:20 A Double Folded, Capacitive-Fed, Cavity-Backed Microstrip Antenna  
B.L. Ooi\*, Q. Shen, M.S. Leong, National University of Singapore
- 2:40 A Novel Small Size and High Gain Antenna for 2.45 GHz Band Application  
J-P. Lee\*, S-O. Park, K-Y. Park, Information and Communications University, S.K. Lee, ShinA Info & Telecomm. Co., Ltd., J-K. Oh, Ace Technology
- 3:00 Experimental Investigation of Microstrip Antenna Behavior Beside Lossy Dielectric Materials  
K.H. Pan\*, University of Illinois at Urbana-Champaign, T. Moore, Amphenol T&M Antennas, J. Bernhard, University of Illinois at Urbana-Champaign
- 3:20 A Novel F-Probe Fed Broadband Patch Antenna  
B.L. Ooi\*, C.L. Lee, P.S. Kooi, S.T. Chew, National University of Singapore
- 3:40 A Novel Stacked E-Shaped Patch Antenna  
B.L. Ooi\*, Q. Shen, The National University of Singapore
- 4:00 A Novel Equivalent Circuit for E-Shaped Slot Patch Antenna  
B.L. Ooi\*, M.S. Leong, Q. Shen, The National University of Singapore
- 4:20 Miniaturized UHF Microstrip Antenna for a Mars Mission  
J.Huang\*, California Institute of Technology/JPL

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**Thursday Afternoon  
AP/URSI B**

**Beacon D  
Session 108**

### **Complex Media**

- 1:00 Negative Permittivity and Permeability Meta-Materials and Their Applications  
R. Ziolkowski\*, The University of Arizona
- 1:20 A Combined Numerical and Analytic Approach for Generalized Models of Complex Bi-Anisotropic Meta-Materials  
V. Jandhyala\*, A. Ishimaru, S-W Lee, Y. Kuga, University of Washington
- 1:40 High Permittivity Dielectric Composite Materials  
S-W Lee\*, Y. Kuga, University of Washington, E. Savrun, Sienna Technology
- 2:00 Computation of Static Effective Permittivity for 2-D Anisotropic Composite Materials  
F. Wu\*, K. Whites, University of Kentucky
- 2:20 Semi-leaky Waves in Dielectric Pseudochiral Slabs  
A. Topa\*, C. Paiva, A. Barbosa, DEEC-IT - Technical University of Lisbon
- 2:40 Dipole Radiation Near a Wire-Medium Sheet Above a Ground Plane  
N. Engheta\*, University of Pennsylvania
- 3:00 Active High Impedance Ground Planes  
G. Poilasne\*, L. Desclos, Photonic RF Corp.
- 3:20 The Method of Auxiliary Sources (MAS) and Some EM Properties of Complex Material Objects  
R. Zaridze\*, F. Bogdanov, d. Karkashadze, K. Tavzarashvili, A. Bijamov, Tbilisi State University
- 3:40 Lattices of Cubes as Phenomenological Maxwell/Maxwell Garnett Materials Containing Large Particle Interaction  
K. Whites\*, F. Wu, University of Kentucky

- 4:00 Optimized Electromagnetic Inverse Scattering Theory for the Reconstruction of Electron Density Profiles  
A.K. Jordan\*, Naval Research Laboratory, Y. Zhang, Massachusetts Institute of Technology

**Thursday Afternoon**  
**AP**

**Gardner**  
**Session 109**

## Time Domain Theory II

- 1:00 Transformed-Space Non-Uniform Pseudo-Spectral Time Domain (NU-PSTD) Algorithm without the Use of the Non-Uniform FFT  
W. K. Leung\*, Hong Kong Polytechnic University, Y. Chen, University of South Carolina, R. Mittra, The Pennsylvania State University,
- 1:20 Analytic Time-Domain Performance Analysis of Absorbing Boundary Conditions and Perfectly Matched Layers  
A. de Hoop, P. van den Berg, R. Remis\*, Delft University of Technology
- 1:40 A General Approach for the Stability Analysis of Time-Domain Finite Element Method  
D. Jiao\*, J.M. Jin, University of Illinois at Urbana-Champaign
- 2:00 A Hierarchical FFT Algorithm (HIL-FFT) for Accelerating Marching-on-in-Time Methods  
A. Yilmaz\*, University of Illinois at Urbana-Champaign, D. Weile, University of Delaware, J-M. Jin, E. Michielssen, University of Illinois at Urbana-Champaign
- 2:20 Modification of the Maxwell's Equations for the Electromagnetic Analysis in the Time Domain Mode  
C. Klimov, Moscow State Institute of Electronics and Mathematics, B. Sestroretsky\*, Lavochnik Association
- 2:40 An Accurate Scheme for the Numerical Solution of the Time Domain Electric Field Integral Equation  
D. Weile\*, University of Delaware, B. Shanker, Iowa State University, E. Michielssen, University of Illinois at Urbana-Champaign
- 3:00 MRTD Application for Scattering Analysis  
Q. Cao\*, P.K.A. Wai, The Hong Kong Polytechnic University, Y. Chen, University of South Carolina
- 3:20 Suppression of EM Coupling Spikes By Line-Shaping in High-Speed Coupled Lines  
E.J. Park\*, Kumoh National University of Technology
- 3:40 Transient Analysis of Air Layer in a Dielectric Medium Using Wavelet-Based Implicit TDIE Formulation  
Y. Shifman\*, Y. Leviatan, Technion - Israel Institute of Technology
- 4:00 Fast Integral Equation Based Analysis of Transient Electromagnetic Scattering from Three-Dimensional Inhomogeneous Lossy Dielectric Objects  
B. Shanker\*, Iowa State University, K. Aygun, N. Gres, E. Michielssen, University of Illinois at Urbana-Champaign
- 4:20 Iterative Spectrum Analysis for Pre-Cleaning of Narrow-Band Interference from Radar Data  
K. Bibl\*, G. Cheney, University of Massachusetts-Lowell

**Thursday Afternoon**  
**AP**

**Special Session**

**Hampton**  
**Session 110**

## Helical and Slotted Antennas for Wireless Communications

- 1:00 A Quad-Band Stubby Antenna for Portable Wireless Devices  
E. Borisov\*, T. Moore, Amphenol T&M Antennas
- 1:20 Central-Fed Hemispherical Helical Antenna  
K.Y. Chan\*, H. T. Hui, E.K.N. Yung, City University of Hong Kong
- 1:40 A Helical Antenna with a Self-Complementary Shape  
N. Takemura\*, M. Ohtsuka, I. Chiba, S. Urasaki, Mitsubishi Electric Corporation
- 2:00 Recent Advances in Handset Antennas for Satellite Communication  
O. Edvardsson\*, Allgon Mobile Communications AB
- 2:20 Characteristics of a Helical Array Antenna Radiating Circularly Polarized Conical Beam  
C. Phongcharoenpanich\*, King Mongkut's Institute of Technology-Ladkrabang, T. Lertwiriyaprapa, King Mongkut's Institute of Technology-North Bangkok, S. Lamultree, P. Wounchoum, S. Kosulvit, M. Krairiksh, King Mongkut's Institute of Technology-Ladkrabang
- 2:40 Conducting Ring Loaded Annular Slot Array Antennas  
S. Noghanian\*, L. Shafai, The University of Manitoba
- 3:00 Design of Miniaturized Slot Antennas  
R. Azadegan\*, K. Sarabandi, University of Michigan
- 3:20 "Folded" Quadrifilar Helix Antenna  
A. Petros, XM Satellite Radio, Inc., . Licul\*, Virginia Polytechnic Institute and State University
- 3:40 Radiation from Slots on the Leaky Coaxial Cables  
J. Wang\*, S. S. Jian, Northern Jiaotong University

- 4:00 Characteristics of Handheld Terminal a Modified Folded Dipole Antenna for Mobile Communication  
H. Kawakami\*, Y. Ojiro, S. Koshikawa, S. Kogiso, G. Sato, Antenna Giken Co., Ltd

**Thursday Afternoon**  
**AP**

**Special Session**

**Fairfax B**  
**Session 111**

## **Electromagnetic Measurements and Associated Processing Techniques II**

- 1:00 Full Scale Aircraft Antenna Measurements at the Air Force Research Laboratory, Newport Measurement Facility  
J. DeRosa\*, Air Force Research Laboratory-Rome Research Site
- 1:20 To Be Determined  
E. Walton\*, Ohio State ElectroScience Lab
- 1:40 Design and Evaluation of a Self-Referencing UHF Ultrawideband Channel Sounder  
S. Yano\*, Time Domain Corp., S. Ellingson, The Ohio State University,
- 2:00 Measurement System for the Green Bank Telescope  
D. Parker, S. Srikanth\*, National Radio Astronomy Observatory
- 2:20 Advances in Time Domain Antenna Measurements  
J. Marti-Canales\*, European Space Research and Technology Centre, L.P. Lighthart, Technical University of Delft
- 2:40 Passive Microwave Imaging from Spacecraft  
C. Swift\*, University of Massachusetts at Amherst
- 3:00 Fully-Polarimetric Ground Penetrating Radar Application  
C.C. Chen\*, The Ohio State University
- 3:20 An Overview of Advanced Processing Techniques for RCS Measurements  
I. LaHaie\*, Veridian Systems Division
- 3:40 Dynamic In-Flight Antenna Pattern Measurement Techniques  
R. Hartenstien\*, NAWCAD-Naval Air Warfare Center Aircraft Division
- 4:00 System Measurement of Antennas  
R.B. Dybdal\*, The Aerospace Corporation
- 4:20 Antenna PIM Measurements and Associated Test Facilities  
Y. Patenaude\*, J. Dallaire, F. Menard, S. Richard, EMS Technologies Canada

**Thursday Afternoon**  
**AP**

**Berkeley**  
**Session 112**

## **Numerical Methods**

- 1:00 Simulation of 3D EM Fields by a Weak-Form Biconjugate Gradient FFT Method  
Z. Q. Zhang\*, Q.H. Liu, Duke University
- 1:20 Fast Algorithm for Matrix-Vector Multiply of Asymmetric Multilevel Block-Toeplitz Matrices  
B.E. Barrowes\*, Massachusetts Institute of Technology, F.L. Teixeira, The Ohio State University, J.A. Kong, Massachusetts Institute of Technology
- 1:40 Electromagnetics Optimization Using an Evolutionary Algorithm with a Mixed-Parameter Self-Adaptive Mutation Operator  
A. Hoorfar\*, S. Nelaturi, J. Zhu, Villanova University
- 2:00 A Sparse Data Fast Fourier Transform (SDFFT) - Algorithm and Implementation  
A. Aydiner\*, W.C. Chew, J. Song, University of Illinois at Urbana-Champaign
- 2:20 Application of Domain Decomposition and Finite Element Method to Electromagnetic Compatible Analysis  
Z. Qian\*, PLA University of Science and Technology L. Yin, Ultima Interconnect Technology Inc., W. Hong, Southeast University,
- 2:40 Higham-Cheng Algorithm for Solving the Generalized Eigenproblem Applied to the Computation of the Characteristic Modes  
G. Angiulli\*, Universita di Reggio Calabria, G. Amendola, G. Di Massa, Universita della Calabria,
- 3:00 Application of Intervallic Wavelets to the Problem of EM Scattering on Multiple Bodies  
G. Pan\*, M. Toupikov, Arizona State University, B. Gilbert, Mayo Foundation,
- 3:20 Computation of 2.5-Dimensional Static Fields in Uniaxial Anisotropic Media  
R. Remis\*, P. van den Berg, A. de Hoop, Delft University of Technology
- 3:40 An Improved Method for the Mesh Termination in the Finite-Difference Solution of Scattering Problems  
Z. Lou, Y. S. Xu\*, D. Fan, University of Science and Technology of China

- 4:00 Spectral Domain Analysis of 2-D Cylindrical Transmission Lines Composed of Iso/Anisotropic Substrates  
A. Omar\*, Hashemite University
- 4:20 Parallel Implementation of the Finite Difference Time Domain Method Using the ZPL Language  
A. Semichaevsky\*, D. Rey, J. Stubblefield, C. Chan-Aldebol, M. Testorf, J. Canning, M. Fiddy, University of Massachusetts-Lowell

Thursday Afternoon  
URSI F

Exeter  
Session 113

## Calibration and Remote Sensing of the Atmosphere and Objects

- 1:00 Numerical Simulations of Effects of Ionospheric Irregularities on SAR Imaging  
J. Liu\*, Y. Kuga, A. Ishimaru, University of Washington, Xi. Pi, T. Freeman, Jet Propulsion Laboratory
- 1:20 Diagnostics of Subauroral Ionosphere with HF Radar  
D.V. Blagoveshchensky\*, S.V. Nozdrachev, University of Aerospace Instrumentation
- 1:40 Retrieval of Water Vapor Profiles Using the 54-, 118-, and 183-GHz Bands  
J. Hancock, W. Blackwell, R. Leslie, P. Rosenkranz, D. Staelin, Massachusetts Institute of Technology, J. Wang, NASA/Goddard Space Flight Center
- 2:00 Island Wake Impact on Evaporation Duct Height and Sea Clutter in the Lee of Kauai  
S. Burk\*, Naval Research Laboratory, L.J. Wagner, Space and Naval Warfare Systems Center, T. Haack, Naval Research Laboratory, L.T. Rogers, Space and Naval Warfare Systems Center, P. Whittman, Fleet Numerical Meteorology and Oceanography Center
- 2:20 Temperature Profile Retrievals with an Airborne Passive Microwave Radiometer NAST-M  
R. Leslie\*, W. Blackwell, J. Barrett, P. Rosenkranz, Massachusetts Institute of Technology
- 2:40 Precipitation Signatures Observed Near 54 and 118 GHz  
F. Chen\*, J. Barrett, W. Blackwell, R. Leslie, P. Rosenkranz, D. Staelin, Massachusetts Institute of Technology
- 3:00 Millimeter Cloud Radar System Upgrades and Calibration During the ARM Cloud IOP 2000/ARESE II Experiment  
L. Li\*, S. Sekelsky, M. Bergada, University of Massachusetts-Amherst
- 3:20 Corrosion Detection and Thickness Evaluation Using Microwave Nondestructive Testing Techniques  
W. Saleh\*, N. Qaddoumi, American University of Sharjah

Thursday Afternoon  
URSI B

Beacon B  
Session 114

## Frequency and Polarization Diversity

- 1:00 The Effect of Slot Contour on the Polarization Characteristics of A Single Feed Dual Band PIFA  
G. Kadambi\*, K. Simmons, S. Yarasi, J. Sullivan, T. Hebron, Centurion Wireless Technologies
- 1:20 Comparison of Helmet and Vest Mounting Configurations for Switched Diversity Antennas  
H. Foltz\*, S. Silva, S. Ledezma, E. Guzman, E. Hobbs, M. Garces, J. de D. Ramirez, G. Arellano, G. Montiel, University of Texas-Pan American, J. McLean, EMC Automation, Inc.
- 1:40 Multi-Frequency Printed Dipole with Built-In Filter  
R.B. Hermida\*, Santander University, L. Desclose, Y. Mahe, S. Toutain, Ecole polytechnique universite de Nantes
- 2:00 Diversity PIFAs With Common and Compact Ground Plane  
G. Kadambi\*, K. Simmons, T. Hebron, S. Yarasi, J. Sullivan, Centurion Wireless Technologies, Inc.
- 2:20 Multi-band, Multi-Mode Antenna Using Meanderline Structures  
F. Caimi\*, J. Kralovec, SkyCross, Inc.
- 2:40 The Application of Numerical Optimisation to the Design of Meanderline Polarisers  
D. McNamara\*, University of Ottawa
- 3:00 Size Reduction of Circularly-Polarized Microstrip Antennas  
J. Powell\*, R. Jedlicka, B. Blevins, New Mexico State University
- 3:20 A Comparative Analysis of Different Microstrip Antenna Structures Designed to Function as Single Frequency Technology  
S. Khan\*, Kansas State University
- 3:40 Discretized-Phase-Space Slant-Stack Transform for Time-Dependent Radiation from Aperture Sources  
A. Shlivinski\*, E. Heyman, A. Boag, Tel Aviv University, A. Fluerasu, C. Letrou, I.N.T.
- 4:00 Dual Frequency Circular Polarization Printed Antennas  
L. Desclos\*, Y. Mahe, G. Poilasne, S. Toutain, Ecole polytechnique de Nantes
- 4:20 Dual-Polarized Operations of A Compact Microstrip Antenna  
J.S. Row\*, W.S. Chen, Chien Kuo Institute of Technology, S.H. Yeh, National Sun Yat-Sen University,

## **Genetic Algorithms**

- 1:00 Novel Dual Frequency Antenna with Same Beam Width Generated by GA-ICT Using Improved Objective Function  
T. Maruyama\*, T. Hori, Nippon Telegraph and Telephone Corporation
- 1:20 Design of Broadband Radar Absorbers with Genetic Algorithm  
A. Bajwa\*, T. Williams, M. Stuchly, University of Victoria
- 1:40 Genetic Algorithm Optimization and Realization of Broadband Loaded Wire Monopoles  
S. Rogers\*, e-tenna Corporation, C. Butler, A. Martin, Clemson University
- 2:00 Evolutionary Programming with Niching Technique for Efficient Model Parameter Extraction  
N. Damavandi\*, S. Safavi-Naeini, University of Waterloo
- 2:20 Synthesis of Phased Array Amplitude Weights for Stationary Sidelobe Envelopes Using Genetic Algorithms  
D. Boeringer\*, D. Machuga, Northrop Grumman Corporation, D.H. Werner, The Pennsylvania State University
- 2:40 A Genetic Algorithm Approach for FSS Filter Design  
Y. Yuan\*, C.H. Chan, K.F. Man, City University of Hong Kong, R. Mittra, The Pennsylvania State University
- 3:00 Application of Micro-Genetic Algorithm (MGA) to the Synthesis of Broadband Microwave Absorbers Comprising Multiple Frequency Selective Surfaces  
S. Chakravarty, R. Mittra\*, The Pennsylvania State University, N. Williams, W.L. Gore & Associates
- 3:20 Automated Dual Band Patch Antenna Design by a Genetic Algorithm Based Numerical Code  
F. Castellana, F. Bilotti\*, L. Vegni, University of Roma Tre
- 3:40 Design of a PIFA Antenna Using FDTD and Genetic Algorithms  
P. Pinho\*, J.F. Rocha Pereira, Universidade de Aveiro
- 4:00 Antenna Input Impedance Determination via Genetic Algorithm  
S. Selleri\*, University of Florence
- 4:20 Design of Corrugated Absorbers for Oblique Incidence Using Genetic Algorithm  
H. Choo\*, H. Ling, University of Texas at Austin, C.S. Liang, Lockheed Martin Tactical Aeronautics Company

## **RCS Calculations**

- 1:00 RCS Calculation for Large Inhomogeneous Penetrable Objects Using a Spectral Integral Equation Solver  
Q.H. Liu\*, Z.Q. Zhang, Duke University
- 1:20 Radar Cross Section of a Rectangular Cavity in a Finite Cylinder  
R. Paknys\*, Concordia University, S. Kashyap, A. Louie, Defence Research Establishment Ottawa
- 1:40 A New Technique for Scattering by the Electrical Large Body with an Open Cavity - Generalized CFIE  
W.H. Gang\*, N.Z. Ping, W. Jun, University of Electronic Science and Technology of China
- 2:00 A Hybrid SBR/FE-BI Technique for Computing the RCS of Electrically Large Objects with Deep Cavities  
P. Baldensperger\*, J. Liu, J-M. Jin, University of Illinois at Urbana-Champaign
- 2:20 Dielectric Radome Analysis Using Multilevel Fast Multiple Algorithm  
C.C. Lu\*, University of Kentucky
- 2:40 Analytic Scattering Model for Indoor Propagation  
R. Musselman\*, US Air Force Academy
- 3:00 The Characteristics of Scattering from Finite Arrays of Non-Uniform Cylindrical Cavities in a Ground Plane  
F.J. Villegas\*, Y. Rahmat-Samii, University of California, D.R. Jackson, University of Houston
- 3:20 Electromagnetic Wave Scattering by Two Rectangular Troughs on a Ground Plane - H Polarization Case -  
R. Sato\*, Niigata University, H. Shirai, Chuo University
- 3:40 The Method of Auxiliary Sources in Scattering and Diffraction Problems  
R. Zaridze\*, G. Bit-Babick, K. Tavzarashvili, b. Bijamov, D. Kakulia, G. Ghvedashvili, Tbilisi State University
- 4:00 Characterisation of the RF Channel Between the ATV-ISS Composite and TDRSS: Modelling and Modelling Needs  
G. Toso\*, M. Sabbadini, G. Crone, European Space Agency, ESA ESTEC

- 4:20 Method of Moments Solution for Wires Attached to Perfect Electric Conducting Surfaces Using Floating Attachment Modes  
J.M. Taboada\*, J.L. Rodriguez, F. Obelleiro, M.R. Pino Universidade de Vigo

Thursday Afternoon  
AP

Beacon F  
Session 117

## Active Microstrip Phased Arrays

- 1:00 Electronically De-Spun Phased Array Antenna for Spinning Spacecraft  
H. Underwood\*, Messiah College
- 1:20 Theory of an Active Transmit/Reflect Array of Patch Antennas Operating as a Spatial Power Combiner  
M. Bialkowski\*, H. Song, University of Queensland, K-M. Luk, C.H. Chan, City University of Hong Kong
- 1:40 Spatial Power Combiner Using an Active Reflectarray of Dual-Feed Aperture Coupled Microstrip Patch Antennas  
H. Son\*g, M. Bialkowski, University of Queensland
- 2:00 A Novel Proximity-Coupled Patch Antenna for Active Circuit Integration  
S. Vajha\*, TLC Precision Wafer Technology, Inc, P. Shastry, Bradley University
- 2:20 A Simple Circularly Polarized Beam-Switching Patch Array Antenna for Satellite Communication  
D. Delaune\*, K. Ito, I. Ida, H. Yoshimura, Chiba University
- 2:40 Electronically Switchable Beam Patterns Using Leaky-Wave Antenna  
C.J. Wang\*, Southern Taiwan University of Technology, C. Jou, I-Y. Chen, National Chiao-Tung University
- 3:00 A Modified Butler Matrix for Tapered Excitation of Scanned Arrays  
A. Fragola, M. Orefice\*, M. Pirola, Politecnico di Torino
- 3:20 Steerable Reactively Loaded Microstrip Loop Antenna  
R.L. Li, V.F. Fusco\*, Queen's University Belfast
- 3:40 Microstrip Phased Array Development Using Microwave Antenna CAD Tools  
N. Karmakar\*, Nanyang Technological University, M. Bialkowski, University of Queensland, S. Padhi, Nanyang Technological University
- 4:00 Printed Dipole Radiating Elements for Broadband and Wide Scan Angle Active Phased Array  
U.K. Revankar\*, Harishchandra, Electronics and Radar Development Establishment, India

Thursday Afternoon  
URSI K

Beacon G  
Session 118

## Biology and Medicine

- 1:00 3-D Microwave Imaging for Biomedical Applications: Numerical Simulations  
Qi-H. Liu\*, Z.Q. Zhang, Duke University
- 1:20 Efficient Hybrid Integral Equation and Finite Difference Method for Low-Frequency Electric Induction in Humans  
T.W. Dawson\*, University of Victoria, S. Velamparambil, University of Illinois
- 1:40 Comparison of Experimental and Numerical Methods for SAR Assessment in Human Head Phantoms  
A. Christ\*, K. Pokovic, H. Gerber, N. Chavannes, N. Kuster, Swiss Federal Institute of Technology
- 2:00 Fields in Adult and Child bodies from 60 Hz Electric Fields and Contact Currents  
M. Stuchly\*, T.W. Dawson, K. Caputa, A. Hirata, University of Victoria
- 2:20 Phased-Array Radar for Breast Cancer Detection  
O. Ramahi\*, R. Thakker, University of Maryland, M. El-Shenawee, University of Arkansas, S. Trabelsi, Richard B. Russell Agricultural Research Center
- 2:40 Microwave Breast Cancer Detection Using Ultrawideband Space-Time Focusing Techniques  
X. Li\*, E.J. Bond, D. Hagl, B. Van Veen, S. Hagness, J.H. Booske, University of Wisconsin

Thursday Afternoon  
AP

Special Session

Beacon G  
Session 119

## Wavelets

- 3:00 Multilayer Package Modeling Using the Multi-Resolution Time Domain Technique  
N. Bushyager\*, A. Obatoyinbo, M. Tentzeris, Georgia Institute of Technology
- 3:20 On Daubechies Wavelet Based Time Domain Scheme  
Y. Tretiakov\*, G. Pan, Arizona State University

- 3:40 A Wavelet Packet Basis Optimization Approach to Radar Waveform Design  
R. Bonneau\*, Air Force Research Laboratory
- 4:00 Using Correlation in Wavelet Transform Coefficients  
Z. Baharav\*, Agilent Technologies Labs.
- 4:20 Evaluation of MoM Reaction Integrals for Multiresolution Basis Functions  
F. Vipiana\*, G. Vecchi, P. Pirinoli, Politecnico di Torino
- 5:00 Solution of EM Transients by Wavelet Expansion in the Time Domain  
Barmarda\* Universita di Pisa, N. Ida, The University of Akron, M. Raugi, Universita di Pisa

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**Thursday Afternoon**  
**AP**

**Clarendon**  
**Session 120**

### **Analysis Methods for Layered Media**

- 1:00 Implementation of Formulations for Dielectric Material and Perfect Conductors in G2DMULT  
J. Yang\*, P. S. Kildal, Chalmers, University of Technology
- 1:20 Efficient Use of Closed Form Green's Functions for the Electromagnetic Scattering by 3D Buried Objects  
P. Yla-Oijala\*, M. Taskinen, University of Helsinki
- 1:40 A Simulated Image Model for Buried Electrodes in Multilayered Media  
R.M. Shubair\*, Etisalat College of Engineering
- 2:00 Multi-Domain Pseudospectral Time-Domain Method for Lossy Media  
G.X. Fan\*, Q.H.Liu, Duke University, J.S. Hesthaven, Brown University
- 2:20 On the Accuracy of the Complex Image Method  
M. Hellen\*, I.J. Craddock, University of Bristol
- 2:40 A Fast Analysis Method Based on Exponential Expansion of Green's Functions for Large Multilayer Structures  
M. Ayatollahi\*, S. Safavi-Naeini, University of Waterloo
- 3:00 A Boundary Integral Method for A Mutli-Layered Problem  
F. Seydou\*, T. Seppanen, University of Oulu
- 3:20 Adaptive Integral Method Applied to Multilayer Penetrable Scatterers with Junctions  
M. Carr\*, E. Topsakal, J. Volakis, University of Michigan, D.C. Ross, Sikorsky Aircraft Corporation
- 3:40 A Robust Generalized DCIM Technique with Pole Extraction  
S.A.Teo\*, M.S. Leong, S.T. Chew, B.L. Ooi, The National University of Singapore
- 4:00 Fast Computation of Multi-Layered Green's Function  
D. Lee\*, S. Safavi-Naeini, Motorola, Inc./University of Waterloo