FINAL TECHNICAL PROGRAM

MONDAY, JULY 12TH, MORNING

Monday Morning
URSI B Session 1 Coral Room A

NUMERICAL METHODS
Session Chairs: T. Sarkar and. R. J. Adams

8:05 Opening Remarks

8:10 Efficient parasitic extraction for structures with non-uniform surface meshes, V. Jandhyala*, S. Savage, E. Bracken, Z. Cendes, Ansoft Corporation, USA

8:30 Deconvolution of a microwave device response by FDTD and moment expansion methods, G. Marrocco, F. Bardati, University of Roma, Italy

8:50 Simultaneous extrapolation in time-and frequency-domain, T. Sarkar*, Syracuse University, USA

9:10 ALPS: A new fast frequency sweep procedure for microwave devices, D. Sun*, Ansoft Corporation, USA, J. Lee, Worcester Polytechnic Institute, USA, Z. Cendes, Ansoft Corporation, USA

9:30 Efficient computation of field patterns in arbitrary cross-section waveguides, S. Cogollos*, H. Esteban, R. Chismol, V.E. Boria, Universidad Politecnica de Valencia, Spain

9:50 Break

10:10 Efficient finite element simulation of plane wave scattering by parallel gratings, C. Mias*, Nottingham Trent University, UK, R.L Ferrari, Cambridge University, UK

10:30 A compact and efficient non-uniform FDTD Maxwell solver for the analysis of MMICs, scattering and antenna problems in cylindrical co-ordinates, G. Shen, Y. Chen*, Hong Kong Polytechnic University, Hong Kong, R. Mittra, Pennsylvania State University, UK

10:50 Spectral multi-grid for the electric field integral equation, K. Warnick*, W. Chew, E. Michielssen, University of Illinois at Urbana-Champaign, USA

11:10 The use of meshless methods for solving electromagnetic vector scattering problems, S. Buckles, S. Castillo, New Mexico State University, USA

11:30 An efficient finite element algorithm employing wavelet-like basis functions, R. Gordon, W. Hutchcraft, University of Mississippi, USA, J. Lee, Worcester Polytechnic Institute, USA

Morning Morning
AP Session 2 Convention Center Ballroom I

DIELECTRIC AND WIRE ANTENNAS FOR WIRELESS COMMUNICATIONS
Session Chairs: D. Black and J. Huang

8:05 Opening Remarks

8:10 A Light Dual-Band AMPS/GSM Top-Loaded Retractable Antenna, K. Simmons, B. Winter, Centurion International Inc., USA, V. Stoiljkovic, Centurion International Ltd., USA

8:30 A balance-fed loop antenna system for handsets, H. Furuuchi, H. Morishita, H. Ide, Z. Tanaka, The National Defense Academy, Japan, K. Fujimoto, University of Tsukuba, Japan

8:50 Radiation efficiency of small loop antennas for pager, M. Sasaki, Q. Chen, K. Sawaya, Tohoku University, Japan

9:10 Variable radiation pattern of helix antennas, H. Kawakami*, Y. Iitsuka, Y. Ojiro, S. Kogiso, G. Sato, Antenna Giken Company Ltd., Japan

9:30 Adjustable multifilar helical antenna with reduced frequency scanning, C. du Toit, P. Chadwick, R. Butland, Deltec New Zealand Ltd., New Zealand, R. Vaughan, The New Zealand Institute for Industrial Research Ltd., New Zealand

9:50 Break

10:10 Characteristics of half-volume DRAs with different permittivities, O. Lehmus*, J. Ollikainen, P. Vainikainen, Helsinki University of Technology, Finland

10:30 Evaluation for dielectric loaded small dipole antenna using efficiency-bandwidth product, I. Ida*, K. Ito, J. Sato, Chiba University, Japan

10:50 Multi-mode dielectric resonator antenna with controllable radiation pattern, A. Popov*, K. Fujimoto, University of Tsukuba, Japan

11:10 Cross-aperture coupled circularly polarized dielectric resonator antenna, C. Huang*, Yung Ta College of Technology and Commerce, Taiwan, C. Yang, Chinese Airforce Academy Taiwan

11:30 A novel dielectric loaded antenna for wireless applications, C. Cheung, California Institute of Technology, USA, C. Liu, P. Sung, Rockwell International Science Center, USA, D. Rutledge, California Institute of Technology, USA

Morning Morning
AP Session 3 Japanero

SCATTERING FROM NATURAL TARGETS AND MAGNETIZED PLASMA
Session Chairs: A. Nashashibi and R. De Roo

8:05 Opening Remarks

8:10 Observation of MMW backscatter from snow near grazing incidence, R. De Roo, Y. Du*, F. Ulaby, University of Michigan, USA

8:30 Modeling the backscattering response of tree trunks at MMW frequencies, A. El-Rouby*, F. Ulaby, A. Nashashibi, University of Michigan, USA

8:50 Statistics of heterogeneous terrain at 95 GHz near grazing incidence, R. De Roo* , F. Ulaby, A. El-Rouby, A. Nashashibi, University of Michigan, USA

9:10 Angular characteristics of electromagnetic wave multiple scattered in the nonstationary collisional magnetised plasma, V. Gavrilenko, A. Aistov, University of Nizhni Novgorod, Russia, G. Jandieri, Georgian Technical University, Georgia

9:30 Statistical characteristics of multiple scattered electromagnetic waves in layer of magnetized turbulent plasma, G. Jandieri, N. Pirtskhlaishvili, Georgian Technical University, Georgia, V. Gavrilenko, A. Semerikov, University of Nizhni Novgorod, Russia

Monday Morning
AP Session 4 Convention Center Ballroom XI

EM EDUCATION
Session Chairs: C. Furse and J. Shaeffer

8: 05 Opening Remarks

8:10 Hands-on electromagnetics: Microstrip circuit and antenna design laboratories at USU, C. Furse, Utah State University, USA

8:30 Making a world of difference: Recruitment of undergraduate students at USU, C. Furse, Utah State University, USA

8:50 Electromagnetic visualization for antennas and scattering, J. Schaeffer, B. Cooper, Marietta Scientific, Inc., USA

9:10 An integrated online environment for antenna education, S. Fisher, E. Michielssen, University of Illinois at Urbana-Champaign, USA

9:30 Microwave engineering design laboratories: C-band rail SAR and Doppler radar systems, M. Jensen*, D. Arnold, D. Crockett, Brigham Young University, USA

Monday Morning
AP Session 5 Convention Center Ballroom III

BROADBAND AND MULTIFREQUENCY ANTENNAS
Session Chairs: K. Virga and P. Ingerson

8:05 Opening Remarks

8:10 Characterization and design methodology for the dual exponentially tapered slot antenna, M. Greenberg*, K. Virga, University of Arizona, USA

8:30 Novel feeding technique for dielectric resonator antennas, M. Lee, K. Luk, M, Leung, E. Yung, City University of Hong Kong

8:50 An SBH antenna with a pulse type main beam, M. Mahmoud, T Lee, W. Burnside, Ohio State University, USA

9:10 Analysis and design of quasi-optical multipliers using lumped element (LE)-FDTD method, M. Cryan, S. Helbing, F. Alimenti, P. Mezzanotte, L. Roselli, R. Sorrentino, Università di Perugia, Italy

9:30 Investigation of dual frequency crossed dipoles for quasi-optical frequency multipliers using the lumped-element-FDTD-method, S. Helbing, M. Cryan, F. Alimenti, P. Mezzanotte, L. Roselli, R. Sorrentino, Università di Perugia, Italy

9:50 Break

10:10 A dual-band antenna for cellular applications: Influence of plastic embedding, E. Vasilyeva*, A. Taflove, NorthWestern University, USA, U. Navsariwala, T&M Antennas, USA

10:30 A Multi-Band Fixed Cellular Phone Antenna, G. Zhou*, B. Yildirim, MOTOROLA, Inc., USA

10:50 A compact dual-band microstrip antenna for portable GPS / cellular phones, M. Sanad, N. Hassan, AMANT, USA

11:10 Broadband, dual polarised microstrip antennas with improved beam forming and gain capabilities, E. Schwenzfeier, University of Paderborn, Germany

11:30 A dual mode log-periodic cavity-backed slot array, L. Lu, E. Michielssen, P. Mayes, University of Illinois at Urbana-Champaign, USA, P. Ingerson, TRW Antenna Products Center, USA

Monday Morning
AP Session 6 Convention Center Ballroom IV

PHASED ARRAYS
Session Chairs: N. Montgomery and J. Smolko

8:05 Opening Remarks

8:10 Effects of slotine cavity on dual-polarized tapered slot antenna arrays, T. Chio*, D. Schaubert, University of Massachusetts, USA

8:30 A radiating element for an active airborne antenna, E. Arnold, Daimler Chrysler Aerospace, Germany

8:50 Bandwidth enhancement technique for a square waveguide phased array element, D. Purdy*, Lockheed Martin Corporation, USA, W. Stutzman, Virginia Polytechnic Institute and State University, USA, H. Swinford, Naval Air Warfare Center, USA

9:10 Alternating-phase single-layer slotted waveguide arrays at 25GHz band, Y. Kimura*, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

9:30 Model antenna of 76GHz post-wall waveguide fed parallel plate slot arrays, J. Hirokawa*, M. Ando, Tokyo Institute of Technology, Japan

9:50 Break

10:10 Phased array transmit antenna for a satellite, R. Huggins*, P. Heisen, G. Miller, D. McMeen, Boeing Phantom Works, USA, K. Perko, NASA Goddard Space Flight Center, USA

10:30 A circularly polarized waveguide array for LEO satellite communications, K. Chan*, Chan Tech. Inc., Canada, F. Marcoux, M. Forest, L. Martins-Camelo, Spar Aerospace Ltd., Canada

10:50 Development and performance of an L-Band phased array antenna for mobile satellite communications, N. Karmakar, University of Queensland, Australia, M. Bialkowski*, Nanyang Technological University, Singapore

11:10 A dual polarization, active, microstrip antenna for an orbital imaging radar system operating at L-band, K. Kelly, J. Huang, Jet Propulsion Laboratory, USA

Monday Morning
AP Session 7 Coral Room C

Advances in FDTD
Session Chairs: G.S. Smith and R. Pogorzelski

8:05 Opening Remarks

8:10 Relative accuracy of several low-dispersion finite-difference time-domain schemes, K. Shlager*, Lockheed Martin Missiles & Space Company, USA, J. Schneider, Washington State University, USA

8:30 The time domain discrete Green's function as boundary condition for three dimensional waveguide problems, R. Holtzman, R. Kastner*, E. Heyman, Tel-Aviv University, Israel, R. Ziolkowski, University of Arizona, USA

8:50 The design of high-order, leap-frog integrators for Maxwell's equations, J. Young, University of Idaho, USA

9:10 Modeling staircased wires using the FDTD method, T. Montoya*, University of Tennessee, USA, J. Maloney, Georgia Tech Research Institute, USA, G. Smith, Georgia Institute of Technology, USA

9:30 Inhomogeneous waves and faster-than-light propagation in the Yee FDTD grid, J. Schneider, R. Kruhlak, Washington State University, USA

9:50 Break

10:10 Analysis of the FDTD method via the discrete oscillator, J. Schutt-Ainé, University of Illinois at Urbana-Champaign, USA

10:30 A new FDTD algorithm free from the CFL condition restraint for a 2D-TE wave, T. Namiki*, Fujitsu Ltd., Japan, K. Ito, Chiba University, Japan

10:50 A modified 3-D fourth order FDTD algorithm M3d24 for improving phase accuracy with low resolution, H. Abd El-Raouf, E. El-Diwani, Electronics Research Institute, Egypt, A. Ammar, Al-Azhar University, Egypt, F. El-Hefnawi, Electronics Research Institute, Egypt

Monday Morning
AP Session 8 Convention Center Ballroom IX

MICROSTRIP CIRCUITS
Session Chairs: C. Nguyen and C. Butler

8:05 Opening Remarks

8:10 The effects of substrate permittivity and pulse-width on the crosstalk as applied to ultra-high-speed microstrip lines, V. Ungvichian, S. Malisuwan, Florida Atlantic University, USA

8:30 Microstrip spurline band-pass filters, C. Nguyen, Texas A&M University, USA

8:50 Nonlinear effects of HTSC microstrip corner-cut patch filter with and without HTSC feed line, H. Tang, S. Safavi-Naeini, University of Waterloo, Canada, Y. Chow, City University of Hong Kong, Hong Kong

9:10 A wide-band uniplanar mixer, P. Hsu, C. Nguyen*, Texas A&M University, USA, M. Kintis, TRW Electronics Systems & Technology Division, USA

9:30 $180^{o}/\alpha^{o}$ combined phase shifter, K. Nakada*, T. Marumoto, R. Iwata, NEC Corporation, Japan

9:50 Break

10:10 Simplified analysis of a three line microstrip coupler on anisotropic substrate, B. Rawat*, University of Nevada, USA, V. Boiteau, J. Chi, J. Le Bihan, Ecole Nationale d'Ingénieurs de Brest, France

10:30 Analysis of lossy microstrips using two-dimensional equations for planar circuits, A. Tugulea*, I. Ciric, University of Manitoba, Canada

10:50 Full wave analysis of microstrip lines on anisotropic inhomogeneous substrates, K. Radhakrishnan, W. Chew, University of Illinois, USA

11:10 An eigenmode analysis for a MMW antenna comprised of a periodically loaded PEC Cylinder fed by a dielectric rod, F. Villegas*, WaveBand Corp., USA, Y. Rahmat-Samii, University of California, Los Angeles, USA

11:30 Optimum design by waveguide model and mode-matching technique of microstrip line taper shapes for satellite broadcast planar antenna, H. Shirasaki, Tamagawa University, Japan

Monday Morning
AP Session 9 Convention Center Ballroom II

CIRCULARLY POLARIZED MICROSTRIP PATCH ANTENNAS
Session Chairs: S. Safavi-Naeini and N. Alexopoulous

8:05 Opening Remarks

8:10 A wide bandwidth circularly polarized microstrip antenna using a single feed, C. Ravipati*, L. Shafai, University of Manitoba, Canada

8:30 A novel single-feed circular polarized slotted loop antenna, X. Qing*, Y. Chia, Center for Wireless Communications, Singapore

8:50 Array antenna composed of circularly polarized dielectric resonator antennas, M. Haneishi*, B. Wu, Saitama University, Japan

9:10 Small circularly polarized microstrip antennas, W. Chen, ChenG-Shiu Institute of Technology, Taiwan

9:30 Inset-microstripline-fed circularly polarized microstrip antennas, W. Chen, ChenG-Shiu Institute of Technology, Taiwan

9:50 Break

10:10 Single-feed circularly polarized triangular microstrip antennas, J. Lu, National Kaohsiung Institute of Marine Technology, Taiwan

10:30 Array of coupled oscillators generating circular polarization, L. Dussopt, J. Laheurte, Universite de Nice-Sophia Antipolis, France

10:50 A high efficiency L-band microstrip antenna, M. Faiz*, P. Wahid, University of Central Florida, USA

11:10 A dual-polarized microstrip subarray antenna for an inflatable L-band synthetic aperture radar, M. Zawadzki, J. Huang, California Institute of Technology, USA

11:30 Circularly polarized single-fed wide-band microstrip elements and arrays, N. Herscovici, Spike Technologies, USA, Z. Zagreb, Croatia

Monday Morning
AP Session 10 Convention Center Ballroom X

WAVEGUIDE AND TRANSMISSION LINE ANALYSIS
Session Chairs: T. Weller and A. Mortazawi

8:05 Opening Remarks

8:10 Electromagnetic modeling of a waveguide-based strip-to-slot transition module for application to spatial power combining systems, A. Yakovlev*, A. Khalil, C. Hicks, North Carolina State University, USA, M. Steer, University of Leeds, United Kingdom

8:30 Analysis of propagation in corrugated waveguides of arbitrary corrugation profile, S. Amari, R. Vahldieck, Swiss Federal institute of Technology, Switzerland, J. Bornemann, University of Victoria, Canada

8:50 Mode transformation and mode continuation regimes on guided-wave structures, A. Yakovlev, North Carolina State University, USA, G. Hanson, University of Wisconsin-Milwaukee, USA

9:10 A study on reflection coefficient from double layered lossy dielectric by using flanged rectangular waveguide, M. Hirano*, M. Takahashi, M. Abe, Musashi Institute of Technology, Japan

9:30 Generation of the HE_{11} mode in rectangular waveguide using Gaussian techniques, J. Teniente, R. Gonzalo, M. Sorolla, C. del Rio, Universidad Pública de Navarra, Spain

9:50 Break

10:10 Characterization of an optically-controlled double-channel lossy-dielectric waveguide, C. Sobrinho*, Federal University of Parà, Brazil, A. Giarola, State University of Campinas, Brazil

10:30 Three dimension edge FEM analysis of inhomogeneous chiral medium loaded waveguide discontinuity, R. Chen, E. Yung, Z. Xie, Y. Han, City University of Hong Kong, Hong Kong

10:50 Quasi-static analysis of the planar transmission lines with arbitrary electrode thickness, I. Hong*, N. Yoon, H. Park, Yonsei University, Korea

11:10 Modes in metallic waveguides of elliptic sector, T. Do-Nhat, University of Waterloo, Canada, F. Alhargan, King Abdulaziz City for Science and Technology, Saudi Arabia

11:30 Cylindrical and rectilinear microstrip lines with indented grounds, C. Hsu, Da-Yeh University, Taiwan, J. Kiang, National Chung Hsing University, Taiwan

Monday Morning
AP Session 11 Coral Room B

APPLICATIONS OF WAVELETS
Session Chairs: M. Salazar and Z. Baharav

8:05 Opening Remarks

8:10 A comparative study of wavelet matrix transformations for the solution of integral equations, W. Quan*, I. Ciric, University of Manitoba, Canada

8:30 A Gabor frame based method of moments for printed antennas analysis, D. Lugara, C. Letrou, Institut National des Telecommunications, France

8:50 Efficient representation of electromagnetic integral equations using pre-defined wavelet packet basis, H. Deng*, H. Ling, University of Texas at Austin, USA

9:10 Optimal grouping of basis functions, Z. Baharav, Hewlett Packard Laboratories, USA

9:30 Two-dimensional adaptive multiscale moment method for analysis of scattering from a perfectly conducting plate, C. Su, T. Sarkar, Syracuse University, USA

9:50 Wavelet beamspace STAP for uniform linear arrays, I. Jouny, Lafayette College, USA

10:10 Multilevel, multiresolution integral equation analysis of printed antennas, P. Pirinoli, G. Vecchi, M. Serena Garino, L. Matekovits, M. Orefice, Politecnico Torino, Italy

10:30 Efficient waveguide mode computation using wavelet-like basis functions, S. Cogollos*, A. Vidal, H. Esteban, V. Boria, Universidad Politecnica de Valencia, Spain

10:50 On the semi-orthogonal wavelet matrix transformation approach for the solution of integral equations, W. Quan*, I. Ciric, University of Manitoba, Canada

11:10 Wavelet matrix transform approach for the solution of electromagnetic integral equations, N. Guan, K. Yashiro, S. Ohkawa, Chiba University, Japan

11:30 Minimum and maximum time-localized complex-valued wavelets for scattering problems, J. Leou*, National Taiwan University, Taiwan, J. Huang, National Chiao Tung University, Taiwan, S. Jeng, H. Li, National Taiwan University, Taiwan

Monday Morning
JOINT AP/URSI B Session 12 Koi

SCATTERING
Session Chairs: L. Carin and H. Kalhor

8:05 Opening Remarks

8:10 Wedge diffraction as an instance of internal, radiative shielding, J. Grzesik, TRW Electronics Systems Group, USA

8:30 Beam splitting using metallic photonic band-gap materials, G. Poilasne, P. Pouliguen, K. Mahdjoubi, University de Rennes, France, L. Desclos, NEC Corp., Japan, C. Terret, University de Rennes, France

8:50 A uniform asymptotic analysis for the scattered electromagnetic pulse wave on a plane dielectric interface excited by a vector point source, T. Ishihara*, Y. Miyagawa, National Defense Academy, Japan

9:10 EM Scattering from periodic gratings of lossy conductors, H. Kalhor, State University of New York, USA

9:30 Scattering from surfaces with small radii of curvature using the method of ordered multiple interactions, B. Browe*, G. Brown, Virginia Polytechnic Institute and State University, USA

9:50 Break

10:10 Electromagnetic scattering from arbitrary dielectric targets embedded in a layered medium: Detection of buried plastic mines, J.He*, H. Yu, L. Carin, Duke University, USA

10:30 Radiation from a circular loop in the presence of a dielectric sphere and/or a radome, H. Partal*, E. Arvas, J. Mautz, Syracuse University, USA

10:50 Generalized recursive algorithm for the scattering from a spherical inhomogeneity inside a circular dielectric waveguide, T. Kushta*, K. Yasamuto, Kyushu University, Japan

11:10 Antenna gain and scattering measurement using reflective three-antenna method, T. Chu, H. Lu, National Taiwan University of Science and Technology

Monday Morning
AP Session 13 Labrid

PROPAGATION I
Session Chairs: A.G. Pino and S. El-Khamy

8:05 Opening Remarks

8:10 Body-obstructed fading characteristics of an in-ward, 2.45 GHz biomedical telecommand link, W. Scanlon*, G. Crumley, N. Evans, University of Ulster, UK

8:30 Simulations and measurements for indoor wave propagation through periodic structures, C. Yang*, B. Wu, National Taiwan University of Science and Technology, Taiwan

8:50 Measurement and modeling of temporal and spatial indoor multipath characteristics, M. Jensen*, Q. Spencer, A. Swindlehurst, B. Jeffs, Brigham Young University, USA

9:10 UTD-Based propagation model for the path loss characteristics of cellular mobile communications system, A. Kara*, Dumlupinar University, Turkey, E. Yazgan, Hacettepe University, Turkey

9:30 Frequency hopped-chirp modulation (FH-CM) for multi-user signaling in multipath dispersive media, S. El-Khamy, S. Shaaban, E. Thabet, Alexandria University, Egypt

9:50 Break

10:10 Depolarisation due to rain: the XPD - CPA relation, M. van de Kamp, Eindhoven University of Technology, The Netherlands

10:30 Separation of simultaneous rain and ice depolarisation, M. van de Kamp, Eindhoven University of Technology, The Netherlands

10:50 Long distance site-diversity (SD) characteristics by using new measuring system, T. Hatsuda, R. Mitsuhasi, Hokkaido Institute of Technology, Japan, Y. Aoki, Hokkaido University, Japan, H. Echigo, Tohoku Gakuin University, Japan, F. Takahata, Waseda University, Japan, Y. Maekawa, Osaka Elec. Comm. University, Japan, K. Fujisaki, Kyushu University, Japan

11:10 A new method to estimate efficiently the local fading statistics from ray-tracing, R. Torres, S. Loredo*, M. Domingo, L. Valle, University of Cantabria, Spain

11:30 An efficient ray-tracing method for enclosed spaces based on image and BSP algorithm, R. Torres*, L. Valle, M. Domingo, S. Loredo, University of Cantabria, Spain

Monday Morning
JOINT AP/URSI B Session 14 Convention Center Ballroom XII

OPTIMIZATION METHODS IN EM DESIGN
Session Chairs: J. Philo and C. Zuffada

8:05 Opening Remarks

8:10 Optimal design of the generalized three-parameter aperture distribution by the emperor-selective genetic algorithm, Y. Lu, Y. Rahmat-Samii, University of California, Los Angeles, USA

8:30 An accelerated hybrid genetic algorithm for optimization of electromagnetic structures, D. Jones, K. Sabet*, J. Cheng, EMAG Technologies, USA, L. Katehi, K. Sarabandi, University of Michigan, USA, J. Harvey, The Army Research Office, USA

8:50 Toward the synthesis of an artificial magnetic medium, J. Hagen, Universitat Karlsruhe, Germany, P. Werner*, R. Mittra, D. Werner, Pennsylvania State University, USA

9:10 Non-uniform luneburg lens antennas: A design approach based on genetic algorithms, H. Mosallaei, Y. Rahmat-Samii, University of California, Los Angeles, USA

9:30 RCS reduction in planar, cylindrical, and spherical structures by composite coating using genetic algorithms, H. Mosallaei, Y. Rahmat-Samii, University of California, Los Angeles, USA

9:50 Break

10:10 Genetic algorithm optimization of cylindrical reflectors for aperture-coupled patch elements, B. Lindmark, Allgon System AB, Sweden, P. Slattman, Smartwaves International, USA, A. Ahlfeldt, Allgon System AB, Sweden

10:30 Frequency extrapolation and model-based parameterization of antenna-platform radiation from CEM data, T. Su*, Y. Wang, H. Ling, University of Texas at Austin, USA

10:50 RCS interpolation in frequency and angle using adaptive feature extraction, Y. Wang*, H. Ling, University of Texas at Austin, USA

11:10 Determination of surface currents by back propagation of field measurements, P. Harms, J. Maloney, M. Kesler, E. Kuster, S. Blalock, Georgia Tech Research Institute, USA, G. Smith, Georgia Institute of Technology, USA

11:30 Simulated annealing optimization applied to antenna arrays with failed elements, J. Redvik, Ericsson Microwave System AB, Sweden

11:50 Multicriteria optimization of loaded antennas via genetic algorithms, K. Yegin, A. Martin, Clemson University, USA

MONDAY, JULY 12TH, AFTERNOON

Monday Afternoon
URSI B Session 15 Coral Room C

GUIDED WAVES
Session Chairs: A. Elsherbini and A. Yakovlev

1:15 Opening Remarks

1:20 Photonic bandgap structures for minimizing the coupling between microstrip lines, V. Rodriguez-Pereyra, A. Elsherbeni, C. Smith, University of Mississippi, USA

1:40 Analysis and reduction of crosstalk on ribbon cables, A. Elsherbeni, C. Huang, C. Smith, University of Mississippi, USA

2:00 Full-wave analysis of nonplanar lines on layered medium using MPIE and complex images, J. Bernal, F. Medina, R. Boix, University of Seville, Spain

2:20 Spectral domain analysis of thick transmission lines using orthogonal polynomials, A. Mathis, Ansoft Corporation, USA

2:40 Microstrip lines with finite conductivity in a layered medium, C. Lee, National Changhua University of Education, Taiwan, J. Kiang, National Chung-Hsing University, Taiwan, C. Hsu, Da-Yeh University, Taiwan, J. Lin, National Changhua University of Education, Taiwan

3:00 Mode structure and field distribution for guiding radar system based on H-field leaky coaxial cable, N. Blaunstein, Z. Dank, Magal Security Systems, Ltd., Israel, M. Maki, C. Hill, Stellar-Senstar, Inc., Canada

3:20 Leakage properties of open 3D anisotropic waveguides, A. Topa*, C. Paiva, A. Barbosa, Instituto Superior Técnico, Portugal

3:40 Complex characteristics impedance of printed transmission lines under power-leakage conditions: A new theory, N. Das, Polytechnic University, USA

4:00 Investigation of mode interaction on planar dielectric waveguides with loss or gain using complex-plane singularities of the dispersion function, G. Hanson, University of Wisconsin-Milwaukee, USA, Y. Yakovlev, North Carolina State University, USA

4:20 Properties of TE surface waves in absorbing layers, P. Ya Ufimtsev, R. Ling, Northrop Grumman Corp., USA

4:40 Orthogonality and Green's functions for modes in periodic waveguides with asymmetric cells, M. Jiang, T. Tamir*, Polytechnic University, USA

Monday Afternoon
AP Session16 Convention Center Ballroom III

Session Title: DEVELOPMENT AND APPLICATIONS OF FEM
Session Chairs: S. Castillo and O. Ramahi

1:15 Opening Remarks

1:20 On the FEM treatment of wedge singularities in waveguide problems, J. Juntunen*, Helsinki University of Technology, Finland, T. Tsiboukis, Aristotle University of Thessaloniki, Greece

1:40 Edge-based FEM analysis for MoM basis functions in a waveguide cross slot, T. Hirano*, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

2:00 Absorbing boundary conditions for convex object-conformable boundaries, O. Ramahi, Compaq Computer Corp., USA

2:20 Finite element analysis of complex axisymmetric radiating structures, A. Greenwood*, Air Force Research Laboratory, USA, J. Jin, University of Illinois, USA

2:40 A 3-D FEM based segmentation method for the full-wave analysis of passive microwaves circuits, J. Rubio, J. Garcia J. Zapata, Universidad Politécnica de Madrid, Spain

3:00 Break

3:20 Open-region, electromagnetic finite-element scattering calculations in anisotropic media on parallel computers, G. Hennigan, S. Castillo*, New Mexico State University, USA

3:40 Finite element implementation of Bayliss-Turkel boundary operators in the three-dimensional vector wave equation, O. Ramahi, Compaq Computer Corporation, USA

4:00 Frequency-domain complementary operators for finite elements simulation, O. Ramahi, Compaq Computer Corporation, USA

4:20 Analysis of HF antennas on a helicopter in the presence of a stratified ground, D. Han*, A. Polycarpou, C. Balanis, Arizona State University, USA

4:40 Prediction of radiated perturbations from currents inside slotted screens using a hybrid FEM procedure, L. Nuño*, J. Balbastre, E. de los Reyes, Universidad Politecnica de Valencia, Spain

Monday Afternoon
AP Session 17 Japanero

SCATTERING FROM ROUGH RANDOM SURFACES
Session Chairs: K. Sarabandi and G. Schiavone

1:15 Opening Remarks

1:20 Effective boundary conditions for rough surfaces with a thin cover layer, C. Holloway*, Institute for Telecommunication Sciences, U.S. Department of Commerce, E. Kuester, University of Colorado, USA

1:40 Stationary solutions for the rough surface radar backscatter cross sections based on a two scale full wave approach, E. Bahar, P. Crittenden*, University of Nebraska-Lincoln , USA

2:00 Strategies to apply the Kirchhoff approximation in electromagnetic scattering from Gaussian surfaces: A comparison, G. Franceschetti, Università di Napoli Federico II, Italy, D. Riccio, Università di Cagliari, Italy, M. Migliaccio, Università di Napoli Federico II, Italy

2:20 A Kirchhoff scattering model for fBm surfaces, G. Franceschetti, Università di Napoli Federico II, A. Iodice, Università di Napoli Federico, Italy, M. Migliaccio, Università di Napoli Federico II, Italy, D. Riccio, Università di Cagliari, Italy

2:40 Parallel implementation of the sparse-matrix canonical grid method for two-dimensional lossy dielectric random rough surfaces (3D scattering problems) on a Beowulf System, S. Li, C. Chan*, City University of Hong Kong, Hong Kong, L. Tsang, Q. Li, University of Washington, USA

3:00 Break

3:20 Integral equation formulation for iterative calculation of scattering from lossy rough surfaces, J. West, Oklahoma State University, USA

3:40 Numerical simulation of scattering from rough surfaces using a fast far-field iterative physical optics approach, D. Zahn, K. Sarabandi, University of Michigan, USA

4:00 The steepest descent fast multipole method (SDFMM) for solving combined field integral equation pertinent to rough surface scattering, M. El-Shenawee, V. Jandhyala, E. Michielssen, W. Chew, University of Illinois at Urbana-Champaign, USA

4:20 Running power spectrum of pulsed radiation in an absorptive randomly inhomogeneous media, G. Jandieri, N. Pirtskhalaishvili, V. Jandieri, Georgian Technical University, Georgia

Monday Afternoon
AP KEYNOTE SESSION Session 18 Coral Rooms A,B

NEW DIRECTIONS IN PCS ANTENNA DESIGN
Session Chairs: R. Mittra and M. Ando

1:15 Opening Remarks

1:20 Challenges in PCS antenna design, R. Mittra, S. Dey, Pennsylvania State University, USA

1:40 PCS antenna design: The challenge of miniaturization, O. Staub, J. Zυrcher, A. Skrivervik, J. Mosig, Swiss Federal Institute of Technology, Switzerland

2:00 Antenna research for PCS in Hong Kong, C. Chan*, City University of Hong Kong, Hong Kong, R. Murch, Hong Kong University of Science and Technology, Hong Kong, K. Luk, City University of Hong Kong, Hong Kong

2:20 Omnidirectional antennas for wireless communication, N. Herscovici, E. Dziadek, Spike Technologies, Inc., USA

2:40 Discussion

3:00 Break

3:20 Spiral antenna with frequency-independent coplanar feed for mobile communication systems, E. Gschwendtner*, J. Parlebas, W. Wiesbeck, University of Karlsruhe, Germany

3:40 Dual frequency base station antennas for PDC systems in Japan, Y. Ebine, NTT Mobile Communications Network, Japan

4:00 Base station antennas inside tunnels and subway stations, and outdoor compact base station antennas for PDC systems in Japan, H. Arai, Yokohama National University, Japan

4:20 Advanced base station antennas for personal handy-phone system (PHS) in Japan, T. Hori, Nippon Telegraph and Telephone Corporation, Japan

Monday Afternoon
AP Session 19 Convention Center Ballroom I

FDTD APPLICATIONS I
Session Chairs: C.A. Balanis and D. Sazanov

1:15 Opening Remarks

1:20 Numerical studies of wave propagation through concrete walls using effective material property technique and FDTD method, W. Lan*, H. Chou, H. Chen, Yuan Ze University, Taiwan

1:40 Analysis of coupling between cavity-backed slot antennas: FDTD, FEM and measurements, S. Georgakapoulos*, A. Polycarpou, C. Balanis, C. Birtcher, Arizona State University, USA

2:00 A circular aperture antenna backed by a cavity, H. Nakano, M. Sugama*, K. Nakayama, J. Yamauchi, Hosei University, Japan

2:20 Numerical study of reflection and transmission coefficients for different inhomogeneous walls, G. Stratis*, D. Demetriou, Motorola Inc., USA

2:40 Modeling of periodic structures using the finite difference time domain (FDTD), W. Yu, S. Dey, R. Mittra, Pennsylvania State University, USA

3:00 Break

3:20 Modeling of lightning effects on simple structures and helicopter airframes using FDTD, G. Ballas*, C. Balanis, Arizona State University, USA

3:40 FD-TD Analysis of dielectric rod antennas with an antireflective layer, J. Yamauchi, T. Ando*, H. Nakano, Hosei University, Japan

4:00 FDTD analysis of an inclined microstrip patch antenna considering field singularity at the edges, K. Esselle*, M. Foroughipour, Macquarie University, Australia

4:20 Analysis of patch antenna with short pin by using non-uniform mesh FDTD, H. Jiang*, H. Arai, Yakohama National University, Japan

4:40 FDTD simulations in antenna impedance calculation, V. Voipio*, P. Vainikainen, Helsinki University of Technology, Finland

Monday Afternoon
AP Session 20 Convention Center Ballroom II

FAST METHODS
Session Chairs: W. Chew and J. Volakis

1:15 Opening Remarks

1:20 Fast multipole acceleration using impedance matrix localization, E. Michielssen*, B. Shanker, S. Han, W. Chew, University of Illinois at Urbana-Champaign, USA

1:40 Effects of the fast multipole method (FMM) parameters on radar cross section computations, K. Sertel*, J. Volakis, University of Michigan, USA

2:00 Error analysis for the truncation of multipole expansion of vector Green's functions, J. Song*, University of Illinois at Urbana-Champaign, USA, W. Chew, DEMACO, USA

2:20 An efficient solution of the generalized multipole technique (GMT) for large two-dimension scattering problems, F. Obelleiro*, L. Landesa, J.L. Rodriguez, M.R.Pino, Universidade deVigo, Spain

2:40 Solving large scale electromagnetic problems using a Linux cluster and parallel MLFMA, S. Velamparambil, J. Schutt-Aine, J. Nickel, J. Song, W. Chew, University of Illinois at Urbana-Champaign, USA

3:00 Break

3:20 Multilevel FMA for the discrete dipole approximation, S. Koc*, Middle East Technical University, Turkey, W. Chew, University of Illinois at Urbana-Champaign, USA

3:40 Fast multipole method for targets above or buried in lossy soil, N. Geng*, Insitute fur Hoechstfrequenztechnik und Elecktronik, Germany, L. Carin, Duke University, USA

4:00 A portable parallel multilevel fast multipole solver for scattering from perfectly conducting bodies, S. Velamparambil*, J. Song, W. Chew, University of Illinois at Urbana-Champaign, USA

4:20 Iterative network models to predict the performance of Sierpinski fractal antennas and networks, C. Borja, C. Puenter, Universitat Politecnica de Catalunya, Spain

4:40 Efficient solution of 3-D vector electromagnetic scattering by FMM with partly approximate iteration, H. Jun, N. Zaiping, University of Electronic Science and Technology of China, China

Monday Afternoon
AP Session 21 Convention Center Ballroom X

MICROSTRIP FEEDING TECHNIQUES
Session Chairs: K. Trott and J. Herd

1:15 Opening Remarks

1:20 Compact, integrated, coplanar phase shifter/antenna array, A. Brown*, University of Michigan, USA, L. Kempel, Michigan State University, USA, K. Trott, Mission Research Corporation, USA, H. How, Electromagnetic Associates, USA, J. Volakis, University of Michigan, USA

1:40 Finite-element investigation of scan performance characteristics of probe-fed phased arrays on magnetized ferrite substrates, A. Polycarpou*, C. Balanis, Arizona State University, USA

2:00 A miniature 2-layer patch antenna, R. Chair, K. Luk, City University of Hong Kong, China, K. Lee, University of Missouri-Columbia, USA

2:20 Finite element modelling of an optical antenna using piezoelectric polymer coated D-fibre, A. Bhatti*, Manchester metropolitan University, UK, H. Al-Raweshidy, University of Kent, UK, G.Murtaza, Manchester Metropolitan University, UK

2:40 A novel planar omnidirectional antenna, M. Fan, X. Zhang, Tsinghua University, China

Monday Afternoon
AP Session 22 Nomeus

SATELLITE COMMUNICATION ANTENNAS
Session Chairs: T.S. Bird and P. Ramanujam

1:15 Opening Remarks

1:20 A milstar low profile antenna, Y. Chang, M. Sarcione, F. Beltran, Raytheon Systems Company, USA

1:40 SOPERA: A new antenna concept for low earth orbit satellites, J. Fernandez del Rio*, A. Nubla, l. Bustamante, RYMSA, Spain, K. van't Klooster, ESA, Holland

2:00 A C/X/Ku-band dual polarized Cassegrain antenna system, M. Beadle*, R. Chugh, D. Geen, S. Patel, R. Schwerdtfeger, S. Casey, Vertex Communications Corporation, USA

2:20 A dual-band low PIM feed system for Cassegrain applications, M. Beadle*, S. Casey, R. Schwedtfeger, Vertex Communications Corporation, USA

2:40 A tri-band reflector antenna with dual band TE_{21} mode tracking, S. Patel*, R. Schwendtfeger, R. Chugh, J. Webb,Vertex Communications Corporation, USA

3:00 Break

3:20 An ultra-wideband nested coaxial waveguide feed for reflector antenna application, S. Johns*, The Aerospace Corporation, USA, A.Prata, Jr., University of Southern California, USA

3:40 Simple Ka-band earth coverage antennas for LEO satellites, S. Hay, D. Bateman, T. Bird*, F. Cooray, CSIRO Telecomm and Industrial Physics, Australia

4:00 Compact low-sidelobe corrugated horn for global-earth coverage, C. Granet, T. Bird*, G. James, CSIRO Telecomm and Industrial Physics, Australia

4:20 Design of Q-band beam-waveguide system for the satellite communication earth antenna, T. Son*, Soonchunhyang University, Korea, D. Lee, Central Lab. of High gain Antenna, Korea, P. Uslenghi, University of Illinois at Chicago, USA

Monday Afternoon
AP SPECIAL SESSION Session 23 Convention Center Ballroom XI

STATUS AND FUTURE OF FRESNEL ZONE PLATE ANTENNAS
Session Chairs: J. Wiltse and H.D. Hristov

1:15 Opening Remarks

1:20 History and evolution of Fresnel zone plate antennas for microwaves and millimeter waves, J. Wiltse, Georgia Tech Research Institute, USA

1:40 Some developments in Fresnel zone plate lens antennas, M. Herben, Eindhoven University of Technology, The Netherlands, H. Hristov*, Technical University of Varna, Bulgaria

2:00 Metallic zone plates for the sectoral horns, D. Black, C. Nguyen, Electromagnetic Sciences, Inc., USA

2:20 Review on the layered Fresnel zone plate lens antenna, W. Zhang*, G. Jiang, Southeast University, China

2:40 Computer aided design of holographic antennas, D. Sazonov, Moscow Power Engineering Institute, Russia

3:00 Break

3:20 A design method of offset Fresnel zone plate reflector as receiving antenna, T. Onedera, T. Hoashi, Kumamoto Institute of Technology, Japan

3:40 Theoretical and experimental investigations on focusing properties of the Fresnel zone lens and plate, J. Yamauchi, H. Nakano, Hosei University, Japan

4:00 Variety of cylindrical Fresnel zone plate antennas, H. Hristov, Technical University of Varna, Bulgaria

4:20 New class microwave antennas, based on the elements of the diffraction quasioptics: Advantages and applications, I. Minin, O. Minin, Institute of Applied Physics Problems, Russia

Monday Afternoon
AP Session 24 Convention Center Ballroom IV

APPLICATION OF EM THEORY
Session Chairs: H. Ling and D. Novotny

1:15 Opening Remarks

1:20 Analysis and design of magnet and antenna for NMR well-logging tool, J. Goswami*, B. Luong, A. Sezginer, R. Oldigs, Schlumberger Oilfield Services, USA

1:40 Representation of absolute electric fieldstrength by superposition of radiated and guided waves, J. Werner, A. Enders, Technical University Braunschweig, Germany

2:00 On the accuracy of the transmission line theory for the insulated linear antenna, T. Hertel*, G. Smith, Georgia Institute of Technology, USA

2:20 The co-conical field generation system - A 40 GHz antenna calibration cell, D. Novotny, A. Ondrejka, R. Johnk, National Institute of Standards and Technology, USA

2:40 Efficient electromagnetic modeling of microstrip structures in multilayer media, F. Ling*, D. Jiao, J. Jin, University of Illinois at Urbana-Champaign, USA

3:00 Modeling surface currents on electrically large impedance cylinders - 2D, TM case, M. Casciato*, K. Sarabandi, University of Michigan, USA

3:20 Beamspace STAP for circular arrays, I. Jouny, Lafayette College, USA

3:40 A new approach to decompose MoM matrix to sparse matrices by using the concept of MEI method, Y. Liu*, K. Lan, K. Mei, Y. Song, W. Zhao, City University of Hong Kong, Hong Kong

4:00 A new time domain analysis of vertical dipole in the vicinity of a planar dielectric interface, G. Rafi, R. Moini, Amirkabir University of Technology, Iran, R. Faraji-Dana, University of Tehran, Iran

4:20 Parameters of microstrip patch antenna under the consideration using the piece-wise basis functions, M. Davidovich, Saratov State Technical University, Russia

4:40 A resonant type leaky wave antenna using an image NRD guide, M. Yamamoto, Japan

Monday Afternoon

JOINT URSI B & F Session 25 Koi

PROPAGATION THROUGH RAIN
Session Chairs: L. Ariet and Q. Liu

1:15 Opening Remarks

1:20 A wet antenna model for correcting Ka band propagation measurements, R. Acosta, NASA Lewis Research Center, USA

1:40 A comparison of methods for minimizing or compensating for rain fade at Ka band, C. Cox*, R. Acosta, NASA Lewis Research Center, USA

2:00 Narrow angle diversity research using ACTS Ka-band signal with two USAT ground stations, C. Emrich*, R. Acosta, NASA Lewis Research Center, USA

2:20 Fade slope analysis using the seven-site ACTS propagation data at 20 and 27 GHz, C. Grinder, Stanford Telecom, USA

2:40 Propagation models comparison with measurements taken in a tropical rain zone using the ACTS system, S. Johnson*, R. Acosta, NASA Lewis Research Center, USA

3:00 Break

3:20 Dynamics of rainfall in Brazil, E. Couto de Miranda, L. da Silva Mello, M. Pontes, Pontifical Catholic University of Rio de Janeiro, Brazil

3:40 Frequency scaling of rain attenuation for terrestrial microwave links in Malaysia, M. Islam, J. Chebil, T. Rahman, University of Technology Malaysia, Malaysia

4:00 Modeling multiple-frequency microwave scattering from hydrometeors using the finite-difference time-domain method, F. Hastings, Stanford Telecom, USA

Monday Afternoon
URSI K Session 26 Labrid

ELECTROMAGNETICS IN BIOLOGY AND MEDICINE
Session Chairs: E.J. Rothwell and Jian-Ming Jin

1:15 Opening Remarks

1:20 An implantable antenna for communication with implantable medical devices, C. Furse, H. Lai, C. Estes, A. Mahadik, A. Duncan, Utah State University, USA

1:40 Characterization and optimization of experimental E-field probes with FDTD, A. Christ, K. Pokovic, T. Schmid, N. Kuster, Swiss Federal Institute of Technology (ETH), Switzerland

2:00 An image reconstruction algorithm for ultrawideband microwave radar technology applied to breast cancer detection, S. Hagness*, University of Wisconsin, USA, M. Popovic, A. Taflov, Northwestern University, USA, J. Bridges, Interstitial, Inc., USA

2:20 Assessment of an ultrawideband microwave radar technology for early detection of cancer in radiographically dense breast tissue, S. Hagness*, University of Wisconsin-Madison, USA, J. Bridges, Interstitial, Inc., USA

2:40 A numerical study of control algorithms for MR-monitored microwave hyperthermia systems, M. Kowalski, J. Jin, University of Illinois, USA

3:00 Break

3:20 A numerical study of the signal-to-noise ratio of magnetic resonance surface coils, M. Kowalski, J. Chen, J. Jin, University of Illinois, USA

3:40 In vitro effects of 60 Hz magnetic fields on cell differentiation and proliferation, E. Rothwell*, K.Chen, J. Suk, C. Chang, J. Trosko, G. Chen, B. Upham, W. Sun, Michigan State University, USA

4:00 Reduction of hazards of magnetic fields of power lines, H. Kalhor, R. Kalhor, State University of New York, USA

4:20 Research of non-heating millimeter waves for increasing of effectiveness generically valuable breeds of animal, V. Murav'ev, A. Tamelo, U. Byahun, Belarusian State University of Informatics and Radioelectronics, Republic of Belarus, N.H. Fedosova, Belarusian Agricultural Academy, Republic of Belarus

Monday Afternoon
URSI A Session 27 Palani Sailfish

NEAR FIELD ANTENNA MEASUREMENTS
Session Chairs: L. Kempel and T.D. Tsiboukis

1:15 Opening Remarks

1:20 On the antenna phase center for spherical near-field measurement, G. Cheng, S. Huynh, S. Acharya, M. Sanchez, ANTCOM CORPORATION

1:40 Near field to far field transformation from equivalent source reconstruction: planar acquisition, F. Las-Heras, Universidad Politecnica de Madrid

2:00 Near field to far field transformation using reconstruction of equivalent sources: spherical acquisition, F. Las-Heras, Universidad Politecnica de Madrid

2:20 Numerical reconstruction routines for fields with linear or elliptical polarization, N. Chevannes, K. Pokovic, N. Kuster, T. Schmid, J. Froehlich, Swiss Federal Institute of Technology

2:40 Near-Zone Gain of 500 MHz to 2.6 GHz Rectangular Standard Pyramidal Horns, M. Kanada, S. Kawalko, National Institute of Standards and Technology

Monday Afternoon
AP Session 28 Convention Center Ballroom IX

MICROSTRIP ANTENNA ANALYSIS
Session Chairs: J. Mooney and I. Jouny

1:15 Opening Remarks

1:20 Moment method based analysis of dielectric-resonator antennas, Z. Liu, W. Chew, E. Michelssen, University of Illinois at Urbana-Champaign, USA

1:40 An annular-ring reduced surface wave microstrip antenna, A. Mehrotra, D. Jackson, J. Williams, S. Long, University of Houston, USA

2:00 Mutual coupling between shorted annular ring reduced surface wave antennas, M. Khayat*, J. Williams, D. Jackson, S. Long, University of Houston, USA

2:20 A new method to compute the fundamental mode resonant frequencies of microstrip annular rings, G. Panariello, F. Schettino, L. Verolino, Universita diNapoli Federico II, Italy

2:40 Full-wave spectral cavity mode analysis of line-fed annular patch antennas, P. Pirinoli, M. Garino, G. Vecchi, M. Orefice, Politecnico di Torino, Italy

3:00 Patch antennas constructed from meshes, G. Clasen, R. Langley, University of Kent, UK

TUESDAY, JULY 13TH, MORNING

Tuesday Morning
URSI B Session 29 Convention Center Ballroom I

FREQUENCY DOMAIN METHODS
Session Chairs: R. Lee and A. Greenwood

8:05 Opening Remarks

8:10 A field picture of wave propagation in inhomogeneous dielectric lenses, A. Greenwood, J. Jin, Air Force Research Laboratory/DEPE, USA

8:30 TV FEM Analysis of infinite and finite periodic structures for radiation and scattering, R. Lee, Y. Zhu, Ohio State University, USA

8:50 Domain decomposition method for the 3D wave equation, B. Stupfel, M. Mongot, CEA/CESTA

9:10 Discrete mode matching for the analysis of multilayer planar antennas, A. Dreher, A. Ioffe, German Aerospace Center (DLR), Germany

9:30 Analysis of microstrip line on ferrite substrate using the method of lines, I. Barseem, E. Abdallah, E. Hashish, M. El-Said, H. Taher, Electronics Research Institute, Egypt

Tuesday Morning
JOINT AP/URSI B Session 30 Convention Center Ballroom I

TRANSIENTS
Session Chairs: L. Riggs and J. Mooney

10:05 Opening Remarks

10:10 Time-domain imaging of conducting objects within enclosures, M. Schacht, E. Rothwell*, C. Coleman, J. Gulick, Michigan State University, USA

10:30 Performance analysis of an automated E-pulse scheme in white gaussian noise, J. Mooney*, L. Riggs, Auburn University, USA, Z. Ding, University of Iowa, USA

10:50 The half-wave resistively loaded orthogonal dipoles excited by ultra-wideband signals, A. Choudhury, Howard University, USA

11:10 Characteristic frequency and its application in UWB/SP radiation, W. Gang*, W. WenBing, Xi'an Jiaotong University, China

11:30 Time-domain techniques for reconstructing layered media from one-sided scattering, J. Frolik, Tennessee Technological University, USA

Tuesday Morning
AP Session 31 Convention Center Ballroom III

METHOD OF MOMENTS
Session Chairs: V. Hibner and Le-Wei

8:05 Opening Remarks

8:10 Asymptotic boundary conditions for strip-loaded surfaces of cylindrical structures with arbitrarily shaped cross-section, A. Kishk, P. Kidal*, University of Mississippi, USA

8:30 Coupling to a probe in a metal can by an electric dipole, C. Ozzaim*, C. Butler, Clemson University, USA

8:50 Efficient and accurate inclusion of radomes into antenna analysis, B. Kolundzija, M. Tasic, University of Belgrade, Yugoslavia, T. Sarkar, , Syracuse University, USA

9:10 A 3D discrete analysis of cylindrical radomes using dyadic Green's functions, L. Li, M. Leong, National University of Singapore, Singapore, S. Lee, Y. Gan, DSO National Laboratories, Singapore

9:30 Moment method analysis of parallel plate slot antennas, M. Castaner*, Polytechnic University of Madrid, Spain, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan

9:50 Break

10:10 Electromagnetic analysis of an antenna buried in a composite environment, J. Pasvolsky, E. Heyman, R. Kastner*, A. Boag, Tel Aviv University, Israel

10:30 A moment method analysis of an aperture coupled rectangular dielectric resonator antenna, D. Yau*, N. Shuley, University of Queensland, Australia

10:50 Analysis of radiation from two separate axisymmetric horns using the method of moments, F. Cooray*, T. Bird, CSIRO Telecomm and Industrial Physics, Australia

11:10 A comparison of solution accuracy resulting from factoring and inverting ill-conditioned matrices, E. Miller, Sante Fe, USA

11:30 The method of auxiliary sources in solving cylindrical shaped conformal antennas, P. Shubitidze, R. Zaridze*, Tbilisi State University, Georgia, D. Economou, D. Kaklamani, N. Uzunoglu, National Technical University of Athens, Greece

Tuesday Morning
URSI SPECIAL SESSION Session 32 Convention Center Ballroom II

APPLIED MATHEMATICS IN ELECTROMAGNETICS - I
A MEMORIAL SESSION HONORING PROFESSOR RALPH E. KLEINMAN
Session Chairs: C. Butler and D. Dudley

8:05 Opening Remarks – C. Butler, Clemson University, USA

8:10 Inductance of a shielded loop-A Rayleigh series analysis, C. Butler, Clemson University, USA

8:30 Inverting real data: The Ipswich experience, R. McGahan, Hanscom AFB, USA

8:50 Evanescent wave tracking and complex rays: A nostalgic retrospective, L. Felsen, Boston University, USA

9:10 Interaction of a traveling wave current with an orthogonal conducting wire, M. Sheikh, D. Dudley*, University of Arizona, USA

9:30 Complete families in inverse electromagnetics, G. Crosta, University of Massachusetts, USA

9:50 Break

10:10 Linear and nonlinear scalar inverse scattering: Comparison of algorithms, K. Langenberg, University of Kassel, Germany

10:30 Hybrid scattering by large objects with cavities using a free-space Green's function: The case of a dyadic impedance boundary condition, J. Asvestas, Naval Air Warfare Center, USA

10:50 Boundary integral equations methods in 3D electromagnetic scattering, G. Hsiao, D. Wang, University of Delaware, USA

11:10 Accuracy of the method of moments for the cylinder, K. Warnick*, W. Chew, University of Illinois at Urbana-Champaign, USA

Tuesday Morning
URSI B Session 33 Convention Center Ballroom IX

HIGH-FREQUENCY TECHNIQUES
Session Chairs: S. Maci and O. Breinbjerg

8:05 Opening Remarks

8:10 High frequency representation for the $T(FW)^2$ analysis of large arrays, S. Maci, A. Cucini, A. Neto, M. Albani, University of Siena, Italy

8:30 A DFT based UTD ray analysis of the EM radiation from electrically large antenna arrays with tapered distributions, P. Nepa, University of Pisa, Italy, P. Pathak, Ohio State University, USA, Ö. Civi, Middle Eastern Technical University, Turkey, H. Chou, Yuan-Ze University, Taiwan

8:50 Fast analysis of electrically large shaped general reflector antennas using a Gaussian beam technique, H. Chou, Yuan-Ze University, Taiwan, P. Pathak*, Ohio State University, USA

9:10 Point-source excited boundary-layer fields near a convex doubly curved impedance surface, P. Hussar*, E. Smith-Rowland, IIT Research Institute, USA

9:30 Slope diffraction in the geometrical and physical theories of diffraction, O. Breinbjerg*, E. Jorgensen, Technical University of Denmark, Denmark

9:50 Break

10:10 EM scattering by an anisotropic impedance half plane with a perfectly conducting face illuminated at oblique incidence, G. Manara*, P. Nepa, University of Pisa, Italy, G. Pelosi, University of Florence, Italy

10:30 Analysis of the scattering form a plane angular sector by a hybrid PTD-MoM Technique, G. Toso*, University of Florence, Italy, P. Ya Ufimtsev, Northrop Grumman Corp., USA, A. Vallecchi, G. Pelosi, University of Florence, Italy

10:50 Physical optics analysis based on field equivalence principle, S. Cui*, K. Sakina, K. Hara, M. Ando, Tokyo Institute of Technology, Japan

11:10 Development of a new indoor propagation model for wireless communications, Z. Yun, M. Iskander*, University of Utah, USA

11:30 Multiple scattering by impedance polygonal cylinders of arbitrary shape, D. Erricolo*, P. Uslenghi, University of Illinois at Chicago, USA

Tuesday Morning
AP NSF SPONSORED KEYNOTE SESSION Session 34 Coral Rooms A, B

WIRELESS TECHNOLOGIES AND INFORMATION NETWORKS
Session Chair: M. F. Iskander

8:05 Opening Remarks

8:10 Linking the layers in wireless networking, A. Ephremides, University of Maryland, USA

8:30 A DoD perspective on wireless communications, R. Trew, US Department of Defense, USA

8:50 Active integrated antennas for new RF front end architecture, B. Deal, Y. Qian, T. Itoh, University of California, Los Angeles, USA

9:10 Integrating antennas into higher layers in mobile, wireless communications systems, J. Freebersyser, Office of Naval Research, USA

9:30 Microwave & analog front end technology (MAFET): The saga continues, E. Martinez, DARPA, USA

9:50 Break

10:10 Antenna designs and propagation models for the next generation wireless technology, M. Iskander, Z. Yun, Z. Zhang, University of Utah, USA

10:30 Satellite RF front end on a chip: The use of Si micromachining for the development of miniaturized communication systems, L. Katehi, University of Michigan, USA, M. Herman, E. Kolawa, Jet Propulsion Lab, USA

10:50 Electromagnetics research for military wireless applications, J. Harvey, Army Research Office, USA

11:10 Discussion

Tuesday Morning
URSI B Session 35 **Convention Center Ballroom X**

TIME DOMAIN METHODS IN ELECTROMAGNETICS - I
Session Chairs: S.M. Rao and J. Gomez-Tagle

8:05 Opening Remarks

8:10 Quasi-static finite difference time domain method for low-frequency induction from line sources, M. Potter, M. Okoniewski*, M. Stuchly, University of Victoria, Canada

8:30 Modal extraction for a slot in an NRD ground plane using the transmission line matrix method, B. Ghosh*, University of Manitoba, Canada, N. Simons, Communications Research Centre, Canada,

L. Shafai, University of Manitoba, Canada, A. Ittipiboon, A. Petosa, Communications Research Centre, Canada

8:50 Calculation of multiple-frequency forward scattering amplitudes for ellipsoidal scatterers using the finite-difference time-domain method, F. Hastings, Stanford Telecom, USA

9:10 Time-domain simulation of circularly polarized phased array microstrip antennas, J. Gomez-Tagle*, University of Central Florida, USA, C. Christodoulou, University of New Mexico, USA, P. Wahid, University of Central Florida, USA

9:30 On the use of wavelet-like basis functions in a finite element time domain algorithm, W. Hutchcraft, University of Mississippi, USA, R. Gordon, J. Lee, Worcester Polytechnic Institute, USA

9:50 Correction of numerical phase speed errors in graded FDTD meshes, A. Christ and N. Kuster, Swiss Federal Institute of Technology, Switzerland

10:10 Massively parallel implementations of time-domain electromagnetic solvers on teraflop platforms: Descriptions, problems and results, J. Kotulski*, C. Turner, D. Riley, M. Pasik, D. Seidel, S. Plimpton, Sandia National Laboratory, USA

10:30 Pseudospectral time-domain method with a nonuniform fast Fourier transform algorithm, Q. Liu, New Mexico State University, USA

10:50 Implicit solution of time domain integral equation - application to conducting/dielectric composite bodies, S. Rao*, Auburn University, USA, T. Sarkar, Syracuse University, USA

11:10 A new formalism for time dependent wave scattering from a bounded obstacle, F. Zirilli, University di Roma La Sapienza, Italy

11:30 Shielding effectiveness measurements and calculations including theoretical and FDTD analysis for cavities with apertures, B. Turetken, UEKAE, Turkey, F. Akleman, ITU, Turkey

Tuesday Morning
AP Session 36 Convention Center Ballroom XI

ANTENNAS ON NON-PLANAR SURFACES
Session Chairs: H. Nakano and P. Persson

8:05 Opening Remarks

8:10 Conformal aperture coupled microstrip phased array on a cylindrical surface, D. Löffler*, W. Wiesbeck, University of Karlsruhe, Germany, B. Johannisson, Ericsson Microwave Systems, Sweden

8:30 FDTD analysis of mutual coupling between microstrip patch antennas on curved surfaces, J. Byun*, Southern Illinois University at Carbondale, USA, B. Lee, Kwangwoon University, Korea, F. Harackiewicz, Southern Illinois University at Carbondale, USA

8:50 Calculating the mutual coupling between apertures on convex cylinders using a hybrid UTD-MoM method, P. Persson*, L. Josefsson, Royal Institute of Technology, Sweden

9:10 A conformal spiral array antenna radiating an omnidirectional circularly-polarized wave, K. Nakayama*, T. Kawano, H. NakaNo, Hosei University, Japan

9:30 Radiation properties of two cylindrical conformal arrays isolated by a space filter, V. Okhmatovsky*, Moscow Power Engineering Institute, Russia, K. Nikita, N. Uzunoglu, National Technical University of Athens, Greece

Tuesday Morning
URSI A Session 37 Japanero

SHIELDING, ABSORBERS, TRANSIENT PROBING OF MEDIA
Session Chairs: D. Nyquist and C. Rowell

8:05 Opening Remarks

8:10 Simplified modeling of bi-periodic pyramidal dielectric absorber structures, S. Krupa, R. Marhefka, Ohio State University, USA

8:30 Electromagnetic shielding effectiveness of fuselage of commercial aircraft, M. Deshpande, VIGYAN Inc., USA, F. Beck, C. Cockrell, NASA Langley Research Center, USA

8:50 A comparison of time and frequency-domain measurements in the electromagnetic characterization of materials using a stripline field applicator, F. Kienle, M. Harvilla*, D. Nyquist, D. Infante, Michigan State University, USA

9:10 Effects of aspect angle, polarization and pulse width on the transient interrogation of layered media, M. Harvilla, E. Rothwell*, D. Nyquist, K. Chen, Michigan State University, USA, L. Frasch, Boeing ISDS, USA

9:30 Evaluation of SAR-reduction products, C. Rowell, Integra Antennas, Hong Kong

Tuesday Morning
AP Session 38 Convention Center Ballroom XII

MICROSTRIP/PRINTED WIDEBAND ANTENNAS
Session Chairs: M. Zheng and P.S. Hall

8:05 Opening Remarks

8:10 A new broad-band, dual-frequency coplanar waveguide fed slot-antenna, A. Omar, United Arab Emirates University, UAE, Y. Antar, Royal Military College, Canada

8:30 Triple-band planar inverted F. antenna, P. Song, P. Hall*, H. Ghafouri-Shiraz, University of Birmingham, UK, D. Wake, BT Laboratories, UK

8:50 Multi-band antennas, E. Lee, P.S. Hall*, P. Gardner, University of Birmingham, UK, D. Kitchener, Advance Technology Centre, UK

9:10 Low cost broadband microstrip antenna for satellite-TV reception, L. Bekraoui, University of Paderborn, Germany

9:30 A multi-frequency microstrip-fed shorted square ring slot line antenna, H. Tehrani*, T. Yun, K. Chang, Texas A&M University, USA

9:50 Break

10:10 A uniplanar Quasi-Yagi antenna with wide bandwidth and low mutual coupling characteristics, Y. Qian*, W. Deal, N. Kaneda, To. Itoh, University of California, Los Angeles, USA

10:30 Design of large broadband patch arrays, K. Ghorbani*, R. Waterhouse, RMIT University, Australia

10:50 Broad band patch antennas using a wedge-shaped air dielectric substrate, Y. Jo, Florida Institute of Technology, USA

11:10 Designs of broadband microstrip antennas with embedded slots, J. Sze*, K. Wong, National Sun Yat-Sen University, Taiwan

11:30 A T-strip loaded rectangular microstrip patch antenna for dual-frequency operation, S. Deng, Computer and Communication Research Insitute, Taiwan

11:50 A procedure to design wide-band electromagnetically coupled stacked microstrip antennas based on a simple network model, J. Anguera, C. Puente, C. Borja, University Polithecnic of Catalunya, Spain

Tuesday Morning
AP Session 39 Nomeus

WAVEGUIDE DEVICES AND ANALYSIS
Session Chairs: J. Mosig and R. Narayanan

8:05 Opening Remarks

8:10 A combined mode-matching and coupled-integral-equations technique for the design of narrow-band H-plane waveguide diplexers, J. Bornemann*, S. Amari, University of Victoria, Canada, R. Vahldieck, Federal Institute of Technology, Zurich, Switzerland

8:30 A low loss, dual polarized switch for polarization state selection, R. Dybdal, The Aerospace Corporation, USA

8:50 An inhomogeneous waveguide transformer with hard walls for the excitation of quasi-optical amplifiers, M. Ozkar*, A. Mortazawi, North Carolina State University, USA

9:10 Dual-band compact square waveguide corrugated polarizer, J. Rebollar, Universidad Politecnica de Madrid, Spain, J. de Frutos, Instituto Nacional de Técnica Aerospacial, INTA, Spain

9:30 A new hybrid mode-matching method for the analysis of inductive obstacles and discontinuities, H. Esteban*, S. Cogollos, A. Vidal, M. Ferrando, Universidad Politècnica de València, Spain

9:50 Break

10:10 Spherical-multipole analysis of the field within a canonical GTEM-cell, J. Hannemann*, L. Klinkenbusch, University of Kiel, Germany

10:30 Interconnect and packaging electrical circuits network, R. N'Gongo*, H. Aubert, H. Baudrand, J. Laleurie, G. Martins, France

10:50 Application of the conjugate gradient algorithm to a self-matching network for industrial microwave heating antennas, J. Mallorqui*, A. Aguasca, A. Cardama, R. Pagès, J. Haro, Universitat Politècnica de Catalunya, Spain

11:10 Improvements of the radiation performance in leaky-wave antennas with gyrotropic media, P. Baccarelli, C. Di Nallo, F. Frezza, A. Galli, P. Lampariello, University of Rome, Italy

11:30 Near field distributions in radial line slot antennas for surface wave coupled plasma generation, T. Yamamoto*, M. Ono, Yamagata University, Japan, M. Ando, Tokyo Institute of Technology, Japan, N. Goto, Takushoku University, Japan, N. Ishii, Tokyo Electron Ltd., Japan

Tuesday Morning
JOINT AP/URSI B, F & K Session 40 Margate

BIOMEDICAL APPLICATIONS AND EFFECTS
Session Chairs: O. Gandhi and J. Wojcik

8:05 Opening Remarks

8:10 Numerical analysis of thin coaxial antennas for microwave coagulation therapy, K. Saito*, Y. Hayashi, H. Yoshimura, K. Ito, Chiba University, Japan

8:30 Reduction of the model noise in non-linear reconstruction via an efficient calculation of the incident field: Application to a 434 MHz scanner, J. –M.Geffrin*, CNRS, France, J. Mallorqui, Universitat Politècnica de Catalunya, Spain, N. Joachimowicz, CNRS, France, R. Redonodo, University Politècnica de Catalunya, Spain

8:50 Selective targeting: Developing space time array to increase the peak power delivered to a localized region in space, R. Hackett, C. Taylor, Air Force Research Laboratories, USA, D. McLemore, ITT Systems, USA, H. Dogliani, Los Alamos National Laboratory, USA, W. Walton, III, Air Force Research Laboratories, USA, A. Leyendecker, University of Maryland, USA

9:10 Systematic design of antennas for cylindrical 3D phased array hyperthermia applicator, W. Wlodarezyk*, J. Nadobny, P. Wust, G. Mönich, P. Deuflhard, R. Felix, Germany

9:30 Accurate measurement of permittivity of brain simulating liquids, A. Toropainen*, P. Vainikainen, Helsinki University of Technology, Finland, A. Drossos, P. Sinisalo, Nokia Research Center, Finland

9:50 Break

10:10 Polarization and human body effects on the mircowave absorption in a human head exposed to radiation from hand-held devices, R. Quintero-Illera, M. Iskander*, Z. Yun, University of Utah, USA

10:30 Scattering from biological tissue using the SCN TLM, I. El-Babli, A. Sebak, University of Manitoba, Canada, N. Simons, Communications Research Centre, Canada

10:50 Advancement of methodology for RF dosimetry, J. Wojcik*, Spectrum Sciences Institute, Canada, G. Cardinal, APREL Laboratories, Canada

11:10 Visualization of induced currents and SAR in human's head in cellular telecommunications, M. Kacarska*, L. Ololoska-Gagoska, S. Loskovska, L. Grcev, Macedonia

11:30 Numerical computation on radiation characteristics of square loop antennas at the wrist position of a human body in personal wireless communications, Y. Wei, National Cheng Kung University

Tuesday Morning
JOINT AP/ URSI F&A Session 41 Koi

PROPAGATION OVER AND THROUGH MEDIA
Session Chairs: D. Dion and J. Gozani

8:05 Opening Remarks

8:10 Evaluation of diffracted fields for perfectly conducting cylinders from approximate surface currents, M. Casciato*, K. Sarabandi, University of Michigan, USA

8:30 Influence of the local ground topography on the propagation of low frequency electromagnetic waves, P. Degauque, O. Benlamlih, J. Baudet, University of Lille, France

8:50 Considerations of propagation and equipment for reforming MF and HF radiotelegram systems, T. Kobayashi, YRP Mobile Telecommunications Key Tech Labs, Japan

9:10 On the accuracy of bulk methods for predicting path-loss in the marine surface layer, D. Dion*, CRDV/DREV, Canada, L. Gardenal, Informission Group Inc., Canada

9:30 The use of bulk method to predict RF and EO propagation within the marine atmospheric surface layer: An overview, J. Claverie, Ecoles de Coëtquidan, France

9:50 Break

10:10 Propagation measurements over the sea in 900 MHz band, V. Rodrigo*, L. Rubio, L. Juan-Llácer, N. Cardona, M. Ferrando, Universidad Politécnica de Valencia, Spain

10:30 The scintillation of laser propagating through the intermittent stratosphere, J. Gozani, University of Colorado at Boulder, USA

10:50 Does the coherence improve for wave propagation through intermittent media?, J. Gozani, University of Colorado at Boulder, USA

11:10 Modulated chaotic wave propagation and recovery synchronization, T. Wu*, D. Jaggard, University of Pennsylvania, USA

11:30 Improved smokescreen for MM wave and IR, C. ZhiPing*, Z. Qi, X. Shan-Jia, University of Science & Technology of China, China

Tuesday Morning
JOINT AP/URSI B Session 42 Palani Sailfish

ARRAY OPTIMIZATION AND SYSTHESIS
Session Chairs: S. Vergenz and R. Fante

8:05 Opening Remarks

8:10 Genetic algorithms with diploid chromosomes and dominance for the adaptive repair of arrays with failed elements, D. Weile*, E. Michielssen, University of Illinois at Urbana-Champaign, USA

8:30 Genetic algorithms for the multi-objective design of switched beam linear arrays, J. Johnson, University of Nevada, USA, Y. Rahmat-Samii, University of California, Los Angeles, USA

8:50 Phased array pattern synthesis and optimization in the presence of strongly scattering domain inhomogenetics, Y. Botros, E. Ebbini, J. Volakis, University of Michigan, USA

9:10 Reduction of excitation dynamics in pattern synthesis for circular arrays, R. Vescovo, Università di Trieste, Italy

9:30 Characterization of antenna array phase center for interferometric applications, B. Houshmand, Jet Propulsion Laboratories, USA

9:50 Break

10:10 Application of some optimization techniques to adaptive, conformal array antennas for mobile communication systems, D. Chatterjee, S. Chakrabarti*, K. Shanmugan, G. Prescott, University of Kansas, USA

10:30 Effect of element mutual coupling on the performance of adaptive arrays, H. Tan, R. Janaswamy, Naval Postgraduate School, USA

10:50 Adaptive anti-jam protection for a GPS receive array, R. Fante*, J. Vaccaro, The MITRE Corporation, USA

11:10 Synthesis of adaptive sum and difference patterns to maintain monopulse slope, R. Fante, The MITRE Corporation, USA

11:30 Optimization of patch antennas on ferrite substrate using the finite element methods, Z. Li, J. Volakis, P. Papalambros, University of Michigan

11:50 Language based genetic antenna design, E. Jones, W. Joines, Duke University, USA

Tuesday Morning
AP Session 43 Coral Room C

ANTENNA CALIBRATION
Session Chairs: P. Halsema and E. Ekelman

8:05 Opening Remarks

8:10 Normalization of NEXRAD antenna gain for overlapping radars, S. Boustany, W. Jones, T. Kasparis, University of Central Florida, USA

8:30 On-orbit calibration of the seawinds scatterometer antennas, J. Zec, W. Jones, University of Central Florida, USA

8:50 A fast and accurate scheme for calibration of active phased-array antennas, G. Hampson, A. Smolders, Netherlands Foundation for Research in Astronomy, The Netherlands

9:10 Generalized coincident arrays for the direct measurement of the principal solution in radio astronomy, R. MacPhie, University of Waterloo, Canada

9:30 Radio star flux density expressions for accurate antenna gain measurements, E. Ekelman, COMSAT Laboratories, USA

Tuesday Morning
URSI A Session 44 Coral Room C

PCB EMI: MICROSTRIP LINES AND COUPLERS
Session Chairs: B. Beker and G. Chiu

10:05 Opening Remarks

10:10 Theoretical aspects of formulating asymmetric multi-conductor microstrip line problems in shielded structures with anisotropic substrates, B. Beker, University of South Carolina, USA

10:30 Optimizing directivity of a phase velocity compensation “wiggly” coupler, C. Lumbreras, D. Worasawate*, D. Huang, Syracuse, USA

10:50 Network analysis and design of a slot-coupled microstrip directional coupler, J. Kim, LG Precision Co., Korea, S. Oh, W. Park, Pohang University of Science and Technology, Korea

11:10 Study of the moat effect on split ground planes, G. Chiu, Industry Technology Research Institute, Taiwan

11:30 Decoupling capacitance effect both on the signal integrity and EMI for high-speed PCB circuits, S. Chao, Central Research Institute, Taiwan, T. Wu*, National Sun Yat-Sen University, Taiwan

TUESDAY JULY 13TH, AFTERNOON

Tuesday Afternoon
URSI B Session 45 Japanero

REMOTE SENSING
Session Chairs: G. Brown and A. Nashashibi

1:15 Opening Remarks

1:20 TE/TM simulation of interferometric measurements, B. Houshmand, Jet Propulsion Laboratories, USA

1:40 MMW measurements of the extinction and volume backscattering coefficients of trees, P. Frantzis*, F. Ulaby, A. Nashashibi, University of Michigan, USA

2:00 MMW polarimetric observations of surfaces and short vegetation at near-grazing incidence, A. Nashashibi*, P. Frantzis, F. Ulaby, University of Michigan, USA

2:20 The modulation of the brightness temperature by ocean surface waves, D. Kasilingam, University of Massachusetts, Dartmouth, USA

2:40 IFSAR simulation using the shooting and bouncing ray technique, R. Bhalla*, H. Ling, University of Texas at Austin, USA, B. Houshmand, Jet Propulsion Laboratory, USA

Tuesday Afternoon
URSI B Session 46 Koi

RANDOM SURFACES
Session Chairs: A. Ishimaru and J. Johnson

1:15 Opening Remarks

1:20 A novel spectral acceleration algorithm for the computation of scattering from two-dimensional rough surfaces with the forward-backward method, D. Torrungrueng*, Ohio State University, USA, H. Chou, Yuan Ze University, Taiwan, J. Johnson, Ohio State University, USA

1:40 Further results in diffraction by a randomly rough knife edge, B. Davis*, G. Brown, Virginia Polytechnic Institute and State University, USA

2:00 Scattering by a planar metal surface with randomized rectangular grooves, M. Morgan*, Naval Postgraduate School, USA, F. Schwering, NJ, USA

2:20 Third order small perturbation method for dielectric rough surfaces, J. Johnson, Ohio State University, USA

2:40 Localized and enhanced electromagnetic fields in the random waveguide, K. Tanaka, M. Tanaka, Gifu University, Japan

Tuesday Afternoon
AP Session 47 Convention Center Ballroom I

FDTD APPLICATIONS II
Session Chairs: L. Shafai and F. Basteiro

1:15 Opening Remarks

1:20 Extension and validation of the equivalent sources helical antenna modeling with the FDTD code, G. Lazzi, Q. Yu, O. Gandhi, University of Utah, USA

1:40 Full-wave analysis of HF antennas on helicopters using the FDTD, FEM and NEC, S. Georgakapoulos*, A. Polycarpou, C. Balanis, Arizona State University, USA

2:00 Modelling complex structures by combining the FE, FDTD, and BIE techniques, H. Rogier*, D. De Zutter, F. Olyslager, University of Gent, Gent

2:20 Study of micromachined microstrip lines using FDTD, Y. Lu*, L. Shafai, University of Manitoba, Canada

2:40 Modeling wave propagation in diagonal microstrip lines using enhanced FDTD equations, M. Foroughipour, K. Esselle*, Macquarie University, Australia

3:00 Break

3:20 Full wave analysis of transmission lines via 2D-FDTD and signal-processing techniques, F. Liu*, J. Schutt-Ainé, University of Illinois at Urbana-Champagne, USA, J. Chen, Motorola, Inc., USA

3:40 Efficient FDTD S-Parameter calculation of microwave structures with TEM ports, S. Van den Berghe*, F. Olyslager, D. De Zutter, University of Gent, Belgium

4:00 Three dimensional optical fiber simulation, D. Sullivan*, J. Liu, University of Idaho, USA, M. Kuzyk, Washington State University, USA

4:20 FDTD modeling of ceramic multi-layer capacitors using lumped equivalent models, T. Weller, University of South Florida, USA, N. Dib, Jordan University of Science and Technology, Jordan, B. Lakshminarayanan, University of South Florida, USA

4:40 Design of coplanar integrated sub MMW receivers by using FDTD lumped element method, J. Vazquez, C. Parini, University of London, London, P. de Maagt, ESA/ESTEC, The Netherlands, P. Clarricoats*, University of London, London

Tuesday Afternoon

URSI SPECIAL SESSION Session 48 Convention Center Ballroom II

APPLIED MATHEMATICS IN ELECTROMAGNETICS - II
A MEMORIAL SESSION HONORING PROFESSOR RALPH E. KLEINMAN
Session Chairs: T. Angell and D. Dudley

1:15 Opening Remarks – T. Angell, University of Delaware, USA

1:20 On a null-placement problem in the mathematical theory of optimal antennas, T. Angell, University of Delaware, USA, A. Kirsch, University of Karlsruhe, Germany

1:40 A preconditioning procedure for the EFIE, R. Adams*, G. Brown, Virginia Polytechnic Institute and State University, USA

2:00 Aspects of analytic methods to determine the current distribution of a circular loop antenna, E. Lepelaars, TNO Physics and Electronics Laboratory, The Netherlands

2:20 Review of low-frequency scattering from two-dimensional perfect conductors, A. Yaghjian, Hanscom AFB, USA

2:40 Exact electromagnetic penetration through a gap in a corner, P. Uslenghi, University of Illinois at Chicago, USA

3:00 Break

3:20 Inverse scattering and specialized modified gradient methods, B. Duchene*, D. Lesselier, Signals and Systems Laboratory, France

3:40 Basis properties of traces and normal derivatives of classical spherical-wave functions, A. Dallas, University of Delaware, USA

4:00 Simultaneous inversion of contrast sources and contrast, P. van den Berg, Delft University of Technology, The Netherlands

4:20 Closing Remarks – D. Dudley, University of Arizona, USA

Tuesday Afternoon
AP SPECIAL SESSION Session 49 Convention Center Ballroom XII

WIRELESS ANTENNA SYSTEMS AND APPLICATIONS
Session Chairs: S. Ellingson and W.D. Burnside

1:15 Opening Remarks

1;20 Applications of smart antennas in cellular networks, M. Feuerstein, Metawave Communications, USA.

1:40 Low-cost adaptive arrays for analysis of wireless systems, S. Ellingson, H. Kim, K. Ayotte, Ohio State University, USA

2:00 Low complexity space-frequency rake receivers for WCDMA, C. Brunner, M. Haardt*, Siemens, Germany, J. Nossek, Munich University of Technology, Germany

2:20 GSM/TDMA adaptive antenna field-trial results, S. Anderson B. Hagerman, Ericsson Radio Systems, Sweden

Tuesday Afternoon
JOINT AP/URSI A Session 50 Convention Center Ballroom XII

ANTENNA HUMAN INTERACTIONS
Session Chairs: K. Ogawa and N. Dib

3:15 Opening Remarks

3:20 Effects of the human head on the radiation pattern performance of the quadrifilar helix antenna, A. Agius, S. Leach, P. Suvannapattana, S. Saunders*, University of Surrey, UK

3:40 Measurement of radiation efficiency of antennas in the vicinity of human head model proposed by COST 244, Q. Chen*, H. Yoshioka, K. Igari, K. Sawaya, Tohoku University, Japan

4:00 An analysis of the performance of a handset diversity antenna influenced by head, hand and shoulder effects at 900 MHz, K. Ogawa, T. Matsuyoshi, K. Monma, Matsushita Electric Industrial Co., Ltd., Japan

4:20 Human body effects on radiation characteristics of superquadric loop antennas with different squareness in personal wireless communications, W. Chen, H. Chuang, National Cheng Kung University, China

Tuesday Afternoon
AP Session 51 Convention Ballroom X

REFLECTOR ANTENNA ANALYSIS
Session Chairs: Y. Patenaude and J. Kralovec

1:15 Opening Remarks

1:20 An analysis of a dual gridded reflector antenna, H. Luh*, R. Hsu, B. Lee, Space Systems/Loral, USA

1:40 A confocal reflector system, H. Luh, Space Systems/Loral, USA

2:00 Shaped reflector and multi-feed paraboloid-A comparison, R. Ramanujam, P. Law, Hughes Space and Communications Company, USA

2:20 A design procedure for classical offset dragonian antennas with circular apertures, S. Chang*, A Prata Jr., University of Southern California, USA

2:40 EIRP and power efficiency of reconfigurable active transmit antennas, U. Kraft, Daimler Chrysler Aerospace/Dornier Satellite Systems, Germany

3:00 Break

3:20 Design of cylindrical reflector antennas with caustic-located array feeding, S. El-Khamy, Y. Elkamchouchi, Alexandria University, Egypt

3:40 Design of a focal plane dielectric rod array for feeding a multiple beams reflector antenna, A. Moumen*, L. Ligthart, Delft University of Technology, The Netherlands

4:00 A reflector antenna with high gain and wide angle beam steering capabilities, R. Capone, Alenia Aerospazio-Divisione Spazio, Italy

4:20 Development of eight meters inverse cosecant square reflector antenna, D. Chang, Da Yeh University, Taiwan, Y. Cheng, Chung Shan Institute of Science and Technology, Taiwan

4:40 Design of two-layer printed reflect arrays for bandwidth enhancement, J. Encinar, Universidad Politecnica de Madrid, Madrid

Tuesday Afternoon
AP Session 52 Convention Center Ballroom III

NUMERICAL METHODS: FAST TECHNIQUES
Session Chairs: R. Nevels and C. J. Reddy

1:15 Opening Remarks

1:20 An efficient high frequency boundary integral equation, D. Levadoux, B. Michielssen*, ONERA, France

1:40 Fast computation of scattering from (Near-) resonant structures, L. Gürel*, A. Yilmaz, Bilkent University, Turkey, W. Chew, University of Illinois at Urbana-Champaign, USA

2:00 Electromagnetic parallel processing using the personal computers of a local area network, K. Brown*, Raytheon Systems Company, USA, A. Prata Jr., University of Southern California, Los Angeles, USA

2:20 Fast steepest descent path algorithm for electromagnetic scattering problems in layered medium, B. Hu*, W. Chew, University of Illinois at Urbana-Champaign, USA

2:40 Error control in the reduced expansion and field testing (REFT) method for MoM matrix thinning, E. Gershon, R. Kastner*, B. Steineberg, Tel Aviv University, Israel

3:00 Break

3:20 The general NMM solution for 2-D EMF problems with arbitrary excitations under general coordinates, P. Jin, N. Zaiping, University of Electronics Science and Technology of China, China

3:40 3-D numerical mode-matching (NMM) method for inhomogeneous media, S. Blanchard, G. Fan, Q. Liu, New Mexico State University, USA

4:00 Analysis of reflection from multilayer cylinder by using a black hole approach, Z. Sipus*, University of Zagreb, Croatia, P. Kildal, Chalmers University of Technology, Sweden

4:20 Efficient MoM analysis of polarization selective surfaces using Trefoil knot arrays, J. Hagen, R. Mittra, D. Werner*, Pennsylvania State University, USA

4:40 Fast spectral domain algorithm for hybrid finite element/boundary integral modeling of infinite periodic arrays, T. Eibert, J. Volakis, University of Michigan, USA

Tuesday Afternoon
URSI B Session 53 Coral Room A

MICROSTRIP ANTENNAS AND CIRCUITS
Session Chairs: S. Long and C. Lee

1:15 Opening Remarks

1:20 Small microstrip antenna at low frequencies, C. Lee*, Southern Methodist University, USA, V. Nalbandian, U.S. Army CECOM, USA

1:40 Single layer wide bandwidth microstrip antenna, G. Kadambi*, T. Masek, J. Sullivan, M. Rohde, Centurion International, Inc., USA

2:00 The measured input impedance of an inset microstrip line fed patch antenna, L. Basilio, M. Khayat, J. Williams, S. Long*, University of Houston, USA

2:20 Proximity-coupled dual polarized patch antenna, A. Zaman*, R. Simons, R. Lee, NASA Lewis Research Center, USA

2:40 Extension of numerical “bandwidth” of the spectral domain full-wave techniques for open microstrip discontinuities, R. Anderson*, B. Beker, University of South Carolina, USA

3:00 Break

3:20 Analysis of cylindrical antennas using generalized transmission-line model theory, K. Wong, National Sun Yat-Sen University, Taiwan

Tuesday Afternoon
JOINT URSI B & A Session 54 Convention Center Ballroom XI

REFLECTOR ANTENNAS
Session Chairs: P. Kildal and W. Imbriale

1:15 Opening Remarks

1:20 Application of the large adaptive reflector (LAR) for deep-space communications, P. Mousavi*, L. Shafai, University of Manitoba, Canada, P. Dewdney, B. Veidt, NRC Penticton, Canada

1:40 A study of a deformable flat plate for compensating reflector distortions, S. Rengarajan*, California State University, USA, W. Imbriale, NASA/Jet Propulsion Laboratory, USA

2:00 Integral equation analysis of reflector antennas with high feed to subreflector interaction, T. Durham, G. Gothard, J. Kralovec, Harris Corp., USA

2:20 Return loss matching with Gaussian vertex plate improves far-out sidelobes in prime-focus reflector antennas, J. Yang, P. Kildal, Chalmers Universityof Technology, Sweden

2:40 A compact ultra wideband antenna for ground penetrating radar, D. Evans, S. Cloude, Applied Electromagnetics, UK, G. Gooding-Williams, G. Crisp, DERA Malvern, UK

3:00 Break

3:40 Experimental study of different feeder units of a Cassegrainian system from 15 GHz to 100 GHz, C. Das Gupta, Indian Institute of Technology Kanpur, India

Tuesday Afternoon
AP Session 55 Coral Room B

PRINTED ANTENNA ELEMENTS
Session Chairs: M. Acree and V. Nalbandian

1:15 Opening Remarks

1:20 An aperture-coupled small microstrip antenna with enhanced bandwidth, I. Park*, B. Cho, Ajou University, Korea, R. Mittra, Pennsylvania State University, USA

1:40 Wideband L-strip fed microstrip antenna, C. Mak, K. Luk, City University of Hong Kong, China, K. Lee, University of Missouri-Columbia, USA

2:00 A wideband CPW-fed microstrip antenna at millimeter-wave frequencies, T. Ellis, J. Raskin, G. Rebeiz, L. Katehi, University of Michigan, USA

2:20 Bandwidth enhancement of microstrip antenna with leaky-wave excitation, V. Nalbandian*, U.S. Army, USA, C. Lee, Southern Methodist University, USA

2:40 Simple broadband dual-polarized aperture-coupled microstrip antenna, S. Hienonen*, A. Lehto, A. Räisänen, Helsinki University of Technology, Finland

3:00 Break

3:20 Archimedean spiral-mode microstrip antenna with improved axial ratio, M. Acree*, Lockheed Martin Skunkworks, USA, A. Prata, Jr., University of Southern California, USA

3:40 Tapered leaky-wave ultra wide-band microstrip antenna, V. Nalbandian*, U.S. Army, USA, C. Lee, Southern Methodist University, USA

4:00 A broadband microstrip antenna for SAR applications, G. Amendola, S. Costanzo, V. Martire, G. Di Massa*, Università della Calabria, Italy

4:20 A novel sleeve monopole with broad bandwidth, Z. Chen*, K. Hirasawa, University of Tsukuba, Japan, K. Wu, Ecole Polytechnique de Montreal, Canada

4:40 Novel designs of broadband equilateral-triangular microstrip antennas, H. Chen*, Nan-Tai Institute of Technology, China, S. Fang, National Sun Yat-Sen University, Taiwan

Tuesday Afternoon
AP Session 56 Margate

ELECTROMAGNETIC THEORY I
Session Chairs: A. Safai-Jazi and K. Michalski

1:15 Opening Remarks

1:20 A topological viewpoint on consistency aspects of electromagnetic theory on a lattice, F. Teixeira*, W. Chew, University of Illinois at Urbana-Champaign, USA

1:40 Aperture Theory and the Equivalence Theorem, A. Booysen, Grintek Avitronics, RSA

2:00 Reciprocity in perfectly matched absorbers, M. Kuzuoglu*, Middle East Technical University, Turkey, R. Mittra, Pennsylvania State University, USA

2:20 3-D spectral domain Green's function for arbitrarily multilayered dielectric structure, K. Li, Communications Research Laboratory, Japan

2:40 Symmetry synthesis of the multiport scattering matrix as a first step in the design of electromagnetic devices and components with bianisotropic media, V. Dmitriev, J. Costa, University Federal of Para, Brazil

3:00 Break

3:20 Electromagnetic radiation of antennas in the presence of an arbitrarily shaped dielectric object: Green dyadics and their applications, Y. Huang, L. Li, M. Leong, National University of Singapore, Singapore

3:40 Closed form expression for mutual partial inductance between two skewed linear current segments, S. Ray, A. Gogoi*, IIT Guwahati, India, R. Mallik, IIT Delhi, India

4:00 Analysis of leaky characteristics for NRD guide with arbitrary profile of cross-section, X. Zeng, S. Xu*, University of Science & Technology of China, China, T.Yoneyama, Tohoku University, Japan, K. Luk, City University of Hong Kong, China, K. Wu, Polytechnique Montreal, Canada

4:20 Extensions of the single integral equation method, E. Marx, National Institute of Standards and Technology

4:40 Domain decomposition method: A direct solution of Maxwell equations, L. Yin, W. Hong, Southeast University, China

Tuesday Afternoon
AP STUDENT PAPER CONTEST Session 57 Convention Center Ballroom IX

STUDENT PAPER CONTEST
Session Chair: M. Thursby

1:15 Opening Remarks

1:20 Higher-order impedance boundary conditions for complex layered planar coatings, V. Galdi, University of Salerno, Italy

1:40 Polarimetric backscatter characterization of road surface faults at millimeter-wave frequencies, K. Sarabandi, E. Li, University of Michigan, USA

2:00 Cylindrical 3D PML-PLRD-FDTD schemes for frequency-dispersive and inhomogeneous media, F. Teixeira, W. Chew, University of Illinois at Urbana-Champaign, USA

2:20 The sleeve-cage monopole and sleeve helix for wideband operation, S. Rogers, C. Butler, Clemson University, USA

2:40 Rigorous analysis of practical reflector antennas, K. Brown, A. Prata, Jr., University of Southern California, USA

3:00 Break

3:20 A new FDTD formulation with reduced dispersion for the simulation of wave propagation through inhomogeneous media, E. Forgy, W. Chew, University of Illinois at Urbana-Champaign, USA

3:40 Electromagnetic energy around Hertzian dipoles, H. Schantz, Ohio State University, USA

4:00 FDTD modelling of magnetised ferrites using Z transforms, T. Hruskovec, Z. Chen, Dal Tech Dalhousie University, Canada

4:20 Antenna beam forming using active metallic photonic band-gap materials, G. Poilasne, P. Pouliguen, K. Mahdjoubi, L. Desclos, C. Terret, University de Rennes I, France

4:40 A simple theoretical model for polarization diversity reception in wireless mobile environments, E. Shin, S. Safavi-Naeini, University of Waterloo, Canada

Tuesday Afternoon
AP Session 58 Convention Center Ballroom IV

TIME DOMAIN METHODS IN ELECTROMAGNETICS II

Session Chairs: E. Michielsson and F. Capolino

1:15 Opening Remark

1:20 A diagonal translation operator for the fast evaluation of two-dimensional transient wave fields, M. Lu*, J. Wang, A. Ergin, E. Michielssen, University of Illinois at Urbana-Champaign, USA

1:40 The multilevel plane wave time domain algorithm for the fast analysis of transient scattering phenomena, B. Shanker*, A. Ergin, E. Michielssen, University of Illinois at Urbana-Champaign, USA

2:00 Complex natural resonance extracted from radar signatures measured in time domain with UWB laboratory system, J. Kergall, P. Pouliguen*, M. Legoff, Y. Chevalier, CELAR, France

2:20 Time domain Green's function for a phased semi-infinite periodic line array of dipoles, F. Capolino, Universita di Siena, Italy, L. Felsen, Boston University, USA

2:40 Acceleration of two-dimensional time domain integral equation solvers using a Hilbert transform, J. Wang, M. Lu, E. Michielssen, University of Illinois at Urbana-Champaign, USA

3:00 Break

3:20 A 2.5-D PSTD algorithm in cylindrical coordinates, H. Jiang*, Q. Liu, New Mexico State University, USA

3:40 Time-domain modelling of propagation in nonlinear dielectrics using TLM, J. Paul*, C. Christopoulos, D. Thomas, University of Nottingham, United Kingdom

4:00 A fast time domain integral equation technique for analysing EMC/EMI problems, K. Aygün*, B. Shanker, A. Ergin, E. Michielssen, University of Illinois at Urbana-Champaign, USA

4:20 PML and PSTD algorithm for arbitrary lossy bianisotropic media, Q. Liu, New Mexico State University, USA

4:40 A conjugate gradient FFT method for transient scattering by dielectric cylinders, R. Bloemenkamp*, TNO Physics and Electronics Laboratory, The Netherlands, P. van den Berg, Delft University of Technology, The Netherlands

Tuesday Afternoon
AP Session 59 Nomeus

PROPAGATION II
Session Chair: Q. Liu and K. Kagoshima

1:15 Opening Remarks

1:20 Paper withdrawn

1:40 A fast algorithm based on MEI and FMM for field prediction in urban mobile communications, X. Yin, X. Zai, W. Hong, X. Zhu, Southeast University, China

2:00 Chaotic wave scattering and synchronization, T. Wu*, D. Jaggard, University of Pennsylvania, USA

2:20 PML-FDTD methods for elastic waves in cylindrical and spherical coordinates, Q. Liu, New Mexico State University, USA

2:40 Inhomogeneous cylindrical waves: An approach to complex beams, M. González Morales, E. Gago-Ribas, Universidad de Valladolid, Spain

Tuesday Afternoon
AP Session 60 Labrid

ROUGH SURFACE SCATTERING AND RCS MEASUREMENTS
Session Chairs: R.J. Burkholder and J. Parks

1:15 Opening Remarks

1:20 Propagation of electromagnetic waves near the surface of a half-space dielectric with rough interface, T. Chiu, K. Sarabandi*, University of Michigan, USA

1:40 The generalized forward-backward method for analyzing the scattering from targets on ocean-like rough surfaces, M. Pino*, L. Landesa, J. Rodriguez, F. Obelleiro, Telecomunicacion Universidade de Vigo, Spain, R. Burkholder, Ohio State University, USA

2:00 Fast generalized forward-backward method by using a spectral acceleration, M. Pino, R. Burkholder, Ohio State University, USA, F. Obelleiro, University de Vigo, Spain

2:20 Scattering from dielectric bodies, J. Parks*, P. Collins, Wright Patterson AFB, USA

2:40 Wideband radar echoes from cylindrical rods, P. Wei, A. Reed, E. Knott*, Boeing Information, Defense & Space Systems, USA

Tuesday Afternoon
AP Session 61 Coral Room C

ADAPTIVE AND SIGNAL PROCESSING ARRAYS
Session Chairs: A. Zaghloul and T. Hori

1:15 Opening Remarks

1:20 Optimum amplitude and phase control for an adaptive linear array using a genetic algorithm, Y. Chung*, R. Haupt, University of Nevada, USA

1:40 A remote calibration for DBF array antennas by using synchronous orthogonal codes, M. Oodo*, R. Miura, Yokosuka Radio Communication Research Center, Japan

2:00 Development and evaluation test of DBF equipment for transmitting, Y. Kuwahara, H. Kakinuma, S. Ogawa, NEC Corporation, Japan

2:20 An adaptive array for high speed wireless local loops steered by local signal phase shifters, S. Obayashi*, H. Shoki, O. Shibata, H. Kasami, S. Otaka, H. Tsurumi, Y. Suzuki, Toshiba Corporation, Japan

2:40 Mathematical model of generalized radiation patterns of point-to-point and point to multipoint fixed service antennas for use in statistical interference assessment, R. Najafabadi, Z. Nami, High Technology Resources Inc., Georgia, USA, A. Shujace, Clark Atlanta University, USA, K. Boto, J. West, C. Harris, B. Mitchel, WorldSpace, USA.

3:00 A new calibration method of adaptive array for TDD systems, K. Nishimori, K. Cho, Y. Takalori, T. Hori, Nippon Telegraph and Telephone Corporation, Japan

3:20 Performance estimation of space-time adaptive processing via subband processing in mobile communications, K. Yang, ATR Adaptive Communications Research Laboratory, Japan, Y. Zhang, Villanova University, USA, Y. Mizuguchi, ATR Adaptive Communications Research Laboratory, Japan

3:40 Computer simulated and analytical results of MSE in adaptive integrated reduced-complexity receiver for multipath DS/CDMA systems, V.D. Pham, University of New South Wales, Australia, R.B. Vu, City University of Hong Kong, Hong Kong

4:00 On the performance of the VESPA algorithm for blind beamforming and signal detection of multi-source multipath signals, S. El-Khamy, M. Aboul-El-Soud, W. Kassem, Alexandria University, Egypt

4:20 Application of conjugate gradient algorithm to adaptive beamforming, T. Jun*, P. Yingning, W. Xiqin, Tsinghua University, China

4:40 Improved wavelet-based beamformers with dynamic subband selection, Y. Wang*, W. Fang, J. Chen, National Taiwan University of Science and Technology, China

Tuesday Afternoon
AP Session 62 Palani Sailfish

PROPAGATION MODELS AND MEASUREMENTS
Session Chairs: R. Janaswamy and S. Marcus

1:15 Opening Remarks

1:20 Parabolic equation-based propagation fields near surface irregularities including backscatter, S. Marcus, RAFAEL, Israel

1:40 Measurement of transmission coefficients of radiowaves through building materials in the 5.8 GHz frequency band, I. Cuinas, M. Sanchez, Universidad de Vigo, Spain

2:00 Causality and restrictions on the initial-boundary conditions for signal propagation in attenuating medium, W. Gang, W. WenBing, Institute of Microwave Engineering, China

2:20 Effects of canopy-air interference roughness on HF-VHF propagation in forest, K. Sarabandi, I. Koh, University of Michigan, USA

2:40 Multi state markov model for satellite propagation channels, H. Lin, C. Yang, National Taipei University of Technology, Taiwan

3:00 Break

3:20 An efficient technique for modeling wideband propagation in an urban parallel street microcellular environment, H. El-Sallabi, W. Zhang, P. Vainkainen, Helsinki University of Technology, Finland

3:40 Channel simulation on LEO satellites, J. Kiang, National Chung-Hsing University, Taiwan, Y. Chen, National Tsing-Hua University , Taiwan, L. Shi, National Chung-Hsing University, Taiwan

4:00 An inexpensive distance measuring system for location of robotic vehicles, N. Kamdar, C. Furse, Utah State University, USA

4:20 Reflections and transmission properties of reinforced concrete walls, R. Dlake, C. Holloway, P. McKenna, Institute for Telecommunication Sciences, USA

4:40 Downlink propagation measurements in the GSM 900 and 1800 MHz Bands, M. Ahlberg, B. Lindmark, J. Simons, C. Beckman, Allgon System AB, Sweden

WEDNESDAY, JULY 14TH, MORNING

Wednesday Morning
URSI B Session 63 Convention Center Ballroom II

ANTENNA ARRAYS
Session Chairs: A. Zaman and H. Arai

8:05 Opening Remarks

8:10 Implementation of the foursquare antenna in broadband arrays, C. Buxton*, W. Stutzman, J. Nealy, Virginia Polytechnic Institute and State University, USA

8:30 Compact double frequency printed arrays for multi-mode communication applications, L. Desclos, M. Madihian, C&C Media Laboratories, Japan

8:50 Design of an ultra-wide band MMW array fed by a suspended microstrip line (SML) network, L. Shen, McMaster University, Canada, C. Wu, LAE Corp., Canada, G. Deng, McMaster University, Canada, J. Litva, LAE Corp., Canada

9:10 Reactively loaded antenna arrays, A. Borgioli*, A. Nagra, R. York, University of California, Santa Barbara, USA

9:30 Design of linearly polarized parallel plate slot antennas, J. Garcia-Hidalgo*, M. Catañer, M. Pérez, Polytechnic University of Madrid, Spain, M. Isasa, University of Vigo, Spain

9:50 Break

10:10 A ridge-guide travelling wave slot antenna design methodology using FEM and generalized S-parameters, E. Lucas*, D. Sall, T. Fontana, Northrop Grumman Corporation, USA

10:30 A computer based approach to the design of a slot array antenna, E. Arnold, M. Boeck*, G. Grupp, W. Haselwander, P. Ruetzel, A. Schlaud, Daimler Chrysler Aerospace, Germany

10:50 A simple double-slot radiator for E-plane beam control, M. Tsai, B. Rulf, Lucent Technologies, USA

11:10 Low-cost semi-cylindrical airborne phased array for radar applications using circular-polarization for rain-clutter suppression, G. Thompson, J. Tillery*, J. Wang, Wang Electro-Opto Corporation, USA

11:30 Phased arrays for ground based satellite payload and control applications, B. Tomasic* Air Force Research Laboratory, USA, S. Liu, The Aerospace Corporation, USA

Wednesday Morning
AP KEYNOTE SESSION Session 64 Coral Rooms A,B

EMERGING LARGE ANTENNAS FOR THE NEW MILLENNIUM
Session Chairs: Y. Rahmat-Samii and Y. Patenaude

8:05 Opening Remarks

8:10 Large deployable antennas – Concepts and realization, T. Takano, Institute of Space and Astronautical Science, Japan

8:30 The astromesh deployable reflector, M. Thomson, TRW Astro Aerospace, USA

8:50 The 13 m aperture space antenna reflectors for Engineering Test Satellite VIII, A. Meguro, A. Tsujihata, N. Hamamoto, National Space Development Agency (NASDA), Japan

9:10 Arise: A challenging 25-m space antenna design, Y. Rahmat-Samii, R. Hoferer, University of California, Los Angeles, USA

9:30 On inflatable antenna state of the art precision, A. Palisoc, C. Cassapakis, L'Garde, Inc., USA

9:50 Break

10:10 Design concepts for the Radarsat-2 SAR antenna, J. Uher, J. Mennitto, D. McLaren, EMS Technologies Canada, Canada

10:30 ESA's ground breaking synthetic aperture radar: The ENVISAT-1 ASAR active antenna, R. Torres, C. Buck, J. Guijarro, J. Suchail, ESA-ESTEC, The Netherlands

10:50 Large 2-D thinned array for the microwave imaging radiometer with synthetic aperture (MIRAS), J. Anders de Matey, H. Palacios, J. Vassal'lo, J. Marti-Canales, M. Martin-Neira, CASA, Spain, INTA, Spain, ESA-ESTEC, The Netherlands

11:10 Design features of the large millimeter telescope (LMT), J. Baars, H.Karcher, University of Massachusetts, USA and INAOE, Mexico, MAN Technologie, Germany.

11;30 An overview of the Green Bank telescope, S. Srikanth, R. Norrod, L. King, D. Parker, NRAO, USA

Wednesday Morning
JOINT AP/ URSI A, B Session 65 Convention Center Ballroom III

WIDE BANDWIDTH ANTENNAS
Session Chairs: W. Wiesbeck and J. Tillery

8:05 Opening Remarks

8:10 Low-power low-profile multifunction helmet-mounted smart array antenna, J. Tillery*, G. Thompson, J. Wang, Wang Electro-Opto Corporation, USA

8:30 Planar trapezoidal and pentagonal monopoles with impedance bandwidths in excess of 10:1, J. Evans*, M. Ammann, Dublin Institute of Technology, Ireland

8:50 Broadband robust, low-profile monopole incorporating top loading, dielectric loading, and a distributed capacitive feed mechanism, J. McLean*, H. Foltz, G. Crook, University of Texas, USA

9:10 Self-similar surface current distribution on fractal sierpinski antenna verified with infra-red thermograms, M. Navarro, J. González, C. Puente, Universitat Politècnica de Catalunya, Spain, J. Romeu, Universidad de Zaragoza, Spain, A. Aguasca, Universitat Politècnica de Catalunya, Spain

9:30 Characteristics of digital terrestrial broadcasting antennas, Y. Ojiro*, Y. Iitsuka, S. Kogiso, H. Kawakami, G. Sato, Antenna Giken Co., Ltd., Japan, S. Sumihiro, Shibaura Institute of Technology, Japan

9:50 Break

10:10 Design of a TEM waveguide for ultra-wideband applications, H. Pao, A. Poggio, Lawrence Livermore National Laboratory, USA

10:30 A multi-branch monopole antenna for dual band cellular applications, D. Liu, IBM, USA

10:50 A compact, ultra-wide-band antenna for ground penetrating radar, D. Evans, S. Cloude, Applied Electromagnetics, UK, G. Gooding-Williams, G. Crisp, DERA Malvern, UK

11:10 Integrated dipole antennas on silicon substrates for intra-chip communication, K. Kim, Kenneth Ko, University of Florida, USA

Wednesday Morning
AP Session 66 Convention Center Ballroom IV

DIRECTION FINDING AND INTERFERENCE CANCELLATION FOR MOBILE COMMUNICATIONS
Session Chairs: R.Q. Lee and V. Karasack

8:05 Opening Remarks

8:10 Adaptive arrays for wideband interference suppression in wireless communications, M. Hefnawi, University of Moncton, Canada, G. Delisle, Laval University, Canada

8:30 Experimental validation of a neural network direction finder, A. El-Zooghby, University of Central Florida, USA, H. Southall, ARINC Incorporated, USA, C. Christodoulou, University of New Mexico, USA

8:50 Synthesis of shaped-beam pattern for mobile antenna, J. Hu, C. Chan, City University of Hong Kong, Hong Kong, S. Lin, Northwestern Polytechnical University, China

9:10 Performance improvement of estimation direction-of-arrival via array geometry arrangement, C. Hui, W. Yongliang, W. Shanhu, Wuhan Radar Academy, China

9:30 3D super resolution algorithm for analysis of multi-path propagation structure, Y. Kuwahara, Y. Susukida, NEC Corporation, Japan

9:50 Break

10:10 Minimization of mutual coupling effects in eigenstructure algorithms based on modal analysis, R. Martin
Cuerdo, D. Segovia-Vargas, M. Sierra-Pérez, Universidad Carlos III de Madrid, Spain

10:30 Interference cancellation system for electromagnetically dense platforms, K. Venskauskas*, E. Venskauskas, Central Marine Research & Design Institute, Russia, G. Rumianstsev, State Maritime Academy, Russia

10:50 A method of adaptive antenna array design for coherent signal and inteferences, L. Marchuk, E. Venskauskas, A. Saveliev, K. Venskauskas,Central Marine Research & Design Institute, Russia, L. Titarenko, Kharkov Technical University, Ukraine

11:10 Design of smart antenna for reducing co-channel interference in cellular mobile communications, A. Saleeb, Aitahady University, Libya

Wednesday Morning
URSI F Session 67 Japanero

PROPAGATION IN URBAN SCENARIOS
Session Chairs: W. Vogel and A. Moustakas

8:05 Opening Remarks

8:10 Prediction of propagation characteristics in urban environments with various distributions of building rows, N. Blaunstein, Ben-Gurion University of the Negev, Israel

8:30 A recursive beam-splitting algorithm for forward ray tracing, M. Sabbadini, Esa Estec, The Netherlands, E. Di Giampaolo, F. Bardati, DISP, University of Roma "Tor Vergata", Italy

8:50 A combined path loss model for small cell propagation prediction in cities, S. Naruniranat, Y. Huang, D. Parsons, University of Liverpool, UK

9:10 Measurements on waves penetrating through trees, H. Li, Y. Lin, H. Lin, T. Liu, National Taiwan University, Taiwan

9:30 Radio wave propagation at 10 GHz in tunnels, M. Lienard, S. Betrencourt, P. Degauque, University of Lille, France

9:50 Break

10:10 Interference effects on capacity of wireless propagation in a multipath environment, A. Moustakas*, H. Baranger, L. Balents, S. Simon, Lucent Technologies, USA

10:30 Envelope correlation, power imbalance, and diversity gain of spatial, polarization, and pattern diversity for hand-held radios in multipath channels, C. Dietrich*, K. Dietze, K. Takamizawa, W. Stutzman, Virginia Polytechnic Institute and State University, USA

10:50 Azimuth and elevation power angular profile computed from satellite mobile measurements, L. de Haro, S.S.R., Spain, L. Braten, Telenor R&D, Norway, M. Sanchez, Universidade de Vigo, Spain

11:10 Joint spatial and temporal characteristics of the indoor wireless channel at 2.4 GHz, B. Hunter, J. Wallace*, M. Jensen, Brigham Young University, USA

11:30 Level-crossing rate and average duration of fades in Nakagami-Hoyt fading channel, N. Youssef, Ecole Sup. des Communications de Tunis, Tunisia

Wednesday Morning
URSI B Session 68 Convention Center Ballroom XII

EFFICIENT METHODS FOR MATRIX GENERATION OR SOLUTION
Session Chairs: F. Canning and V. Cable

8:05 Opening Remarks

8:10 The CG-NUFFT method for inhomogeneous media, X. Xu*, Q. Liu, New Mexico State University, USA

8:30 The nonuniform fast Hankel transform and its applications for integral equations, Q. Liu, Z. Zhang*, New Mexico State University, USA

8:50 The projection iterative method (PIM) solution to MOM equations with matrices sparsified by a novel method, Q. Ye*, L. Shafai, University of Manitoba, Canada

9:10 Comparison of iterative solutions of impedance matrices generated by discrete wavelet transformations, R. Miller*, R. Nevels, Texas A&M University, USA

9:30 An in-depth look at fast multipole with & without Galerkin, V. Cable, Lockheed Martin Skunk Works, USA

9:50 Break

10:10 Fast multipole modeling of wideband scattering from large trihedral fiducial targets situated above a lossy half space, N. Geng, Universitaet Karlsruhe, Germany, A. Sullivan, L. Carin, Duke University, USA

10:30 Rapid full-wave simulation of electromagnetic systems using model order reduction and unstructured finite differences, L. Zhao*, ANSYS Inc., USA, A. Cangellaris, University of Illinois at Urbana-Champaign, USA

10:50 Basis-pursuits matrix compression for moment method scattering analyses, A. Barnes, L. Carin, Duke University, USA

11:10 A combined everything integral equation, F. Canning, Rockwell Corporation, USA

11:30 An efficient BiCG multiple right hand sides algorithm for IE based electromagnetic analysis, B. Shanker*, F. Ng, E. Michielssen, J. Song, W. Chew, University of Illinois at Urbana-Champaign, USA

11:50 A forward-backward iterative physical optics algorithm for cavity scattering problems, R. Burkholder, Ohio State University, USA

Wednesday Morning
AP SPECIAL SESSION Session 69 Nomeus

SPECIAL SESSION HONORING DONALD G. DUDLEY
Session Chairs: W. A. Johnson and R. Lee

8:05 Opening Remarks

8:10 Linear inverse problems in wave motion: Non-self-adjoint integral equations of the first kind, T. Habashy, Schlumberger-Doll Research, USA, D. Dudley, University of Arizona, USA, E. Wolf, University of Rochester, USA

8:30 Complexity issues in inverse scattering problems, W. Chew, University of Illinois at Urbana-Champaign, USA

8:50 A parametric approach to radar processing of reentry vehicle signatures, J. Candy, University of California, USA

9:10 Identification versus imaging, K. Langenberg, University of Kassel, Germany

9:30 Pulsed power fusion, J. Qintenz*, D. Seidel, Sandia National Laboratories, USA

9:50 Break

10:10 Transient plane wave scattering from objects near lossy ground with FDTD, R. Lee, Ohio State University, USA, S. Dvorak, University of Arizona, USA, A. Cangellaris, University of Illinois at Urbana-Champaign, USA

10:30 Reduction of the excitation of surface and lateral waves by microstrip patch antennas, J. Williams, D. Jackson, S. Long, University of Houston, USA

10:50 Reflections on the electric dyadic Green's function, its singularity, and the potential method, W. Johnson*, L. Warne, R. Jorgenson, J. Kotulski, Sandia National Laboratories, USA, C. Butler, Clemson University, USA

11:10 A viable model for power focussing in a lossy cylinder, J. Wait, K. Nabulsi, King Abdulaziz University, Saudi Arabia

Wednesday Morning
AP Session 70 Convention Center Ballroom I

DUAL BAND MICROSTRIP ANTENNAS
Session Chairs: R. Haupt and F. De Flaviis

8:05 Opening Remarks

8:10 Dual band dual linear polarization elliptical microstrip ring antenna, R. Ramirez*, F. De Flaviis, University of California at Irvine, USA

8:30 Dual band dual polarized radiating subarray for synthetic aperture radar, C. Mangenot*, J. Lorenzo, Alcatel Space Industries, France

8:50 Single-feed dual-frequency microstrip anntenna with two patches, S. Pan*, Yung Ta College of Technology and Commerce, Taiwan, W. Hsu, National Sun Yat-Sen University, Taiwan

9:10 Reactively loaded microstrip antenna for dual-frequency operation, H. Chen, National Kaohsiung Institute of Technology, Taiwan

9:30 Compact dual-frequency operation of rectangular microstrip antennas, K. Yang*, K. Wong, National Sun Yat-Sen University, Taiwan

9:50 Break

10:10 Dual-frequency operation of single-feed triangular microstrip antennas, J. Lu, National Kaohsiung Institute of Marine Technology, Taiwan

Wednesday Morning
AP Session 71 Convention Center Ballroom IX

MICROSTRIP REFLECTARRAYS
Session Chairs: G. Diemond and T. Itoh

8:05 Opening Remarks

8:10 Ka-band beam steering reflectarry study, J. McSpadden*, L. Fan, K. Chang, Texas A&M University, USA, J. Huang, Jet Propulsion Laboratory, USA

8:30 Microstrip patches for a reflectarray, K. Sze*, L. Shafai, University of Manitoba, Canada

8:50 Inflatable microstrip reflectarray antennas at X and Ka-Band frequencies, J. Huang, A. Feria, Jet Propulsion Laboratories, USA

9:10 A novel phase conjugator for retrodirective array application, R. Miyamoto, Y. Qian, T. Itoh, University of California, Los Angeles, USA

9:30 Analysis and design of a planar two-dimensional retrodirective array reflector, W. Tseng, S. Chung*, Chiao Tung University, Taiwan

Wednesday Morning
AP Session 72 Coral Room C

NUMERICAL METHODS: HYBRID METHODS
Session Chairs: T. Durham and P.M. van den Berg

8:05 Opening Remarks

8:10 Analysis of a charge probe and its response near metallic and dielectric interface, C. Ozzaim*, C. Butler, Clemson University, USA

8:30 Developing adaptive models and estimating the uncertainty of presampled spectral data, E. Miller, New Mexico, USA

8:50 A new approach for accurate analysis of antennas above real ground, B. Kolundzija*, A. Dordevic, V. Petrovikc, University of Belgrade, Yugoslavia

9:10 Accurate model of arbitrary wire antennas in free space, above or inside lossy ground, T. Chi, W. Chew, University of Illinois at Urbana-Champaign, USA

9:30 A new approach for microstrip active antennas using modal F.F.T. – Algorithm, R. N'Gongo*, H. Baudrand, E.N.S.E.E.H.I.T., France

9:50 Break

10:10 The hybrid^2 method: Combination of the FE/BE hybrid method with the UTD, M. Alaydrus*, V. Hansen, University of Wuppertal, Germany

10:30 Matrix Padé Via Lanczos for FEM problems, R. Slone*, R. Lee, Ohio State University, USA

10:50 Reduced-order models for the field analysis of hybrid systems, L. Li*, I. Ciric, University of Manitoba, Canada

11:10 Higher order MoM implementation to solve integral equations, K. Donepudi, K. Gang, J. Song, J. Jin, W. Chew, University of Illinois at Urbana-Champaign, USA

Wednesday Morning
AP Session 73 Palani Sailfish

PERIODIC STRUCTURES: FSS, ARRAYS, OTHER
Session Chairs: C. Christodoulou and H. Delgado

8:05 Opening Remarks

8:10 A new genetic-algorithm-based frequency selective surface design for dual frequency applications, G. Manara, A. Monorchio*, University of Pisa, Italy, R. Mittra, University of Pennsylvania, USA

8:30 Multi-bandwidth frequency selective surfaces for near infrared filtering: design and optimization, T. Cwik*, Jet Propulsion Laboratory, USA, S. Fernandez, Ciencia, Inc., USA, A. Ksendzov, C. La Baw, P. Maker, R. Muller, Jet Propulsion Laboratories, USA

8:50 Rational Krylov reduced order modeling of frequency selective surfaces through the blazing onset using Woodbury singularity extraction, D. Weile*, E. Michielssen, University of Illinois at Urbana-Champaign, USA

9:10 A fractal based FSS with dual band characteristics, J. Romeu, Y. Rahmat-Samii, University of California, Los Angeles, USA

9:30 Scattering by resistively loaded, multilayer frequency selective surfaces over two-octave bandwidth, K. Zink*, G. Wunsch, D. Schaubert, University of Masachusettes, USA

9:50 Break

10:10 Scattering by multilayered periodic structures containing asymmetric dielectric and metallic components, M. Jiang*, T. Tamir, Polytechnic University, USA

10:30 Computation of radar cross section of waveguide arrays, K. Chan*, Chan Tech Inc., Canada, K. Chadwick, DMSS, DND, Canada

10:50 Filtering characteristics of thin, planar 3D printed element arrays, H. Contopanagos, University of California, Irvine, USA, C. Kyriazidou, W. Merrill, University of California, Los Angeles, USA, N. Alexopoulos, University of California, Irvine, USA,

11:10 Revisited generalized Wood anomalies, C. Lee, U. Cho, Y. Cho*, Kyungpook National University, Korea

11:30 Surface wave scattering by finite periodic structure of arbitrary profile in a ground plane: TE case, C. Lee*, U. Cho, Y. Cho, Kyungpook National University, Korea

Wednesday Morning
AP Session 74 Koi

RADAR IMAGERY
Session Chairs: R. McGahan and D. Garmatyuk

8:05 Opening Remarks

8:10 Ultrawide-band noise synthetic aperture radar: Theory and experiment, D. Garmatyuk*, R. Narayanan, University of Nebraska-Lincoln, USA

8:30 SAR turntable experiments using a coherent ultrawideband random noise radar, D. Bell*, R. Narayanan, University of Nebraska-Lincoln, USA

8:50 An optimal algorithm for radar imaging, A. Milman, Northrop Grumman Integrated Systems & Aerostructures, USA

9:10 Advance path measurement for automotive radar, S. Tsang*, E. Hoare, P. Hall, University of Birmingham, UK

9:30 Clutter reduction for synthetic aperture radar images using adaptive wavelet packet transform, H. Deng*, H. Ling, University of Texas at Austin, USA

9:50 Break

10:10 Bistatic scattering characterization of a complex object, R. Eigel, Jr., A. Terzuoli, Jr., Air Force Institute of Technology, USA

10:30 A fast multilevel domain decomposition algorithm for radar imaging, A. Boag, Israel Aircraft Industries, Israel

10:50 Probe pulse shape estimation in synthetic aperture method, V. Kovalenko, National Academy of Sciences of Ukraine, Ukraine

11:10 Simulation model and eigen-analysis for polarimetric scattering in SAR imaging, Y. Jin, N. Zhang, M. Chang, Fudan University, China

Wednesday Morning
JOINT AP/URSI A Session 75 Labrid

NEAR FIELD ANTENNA MEASUREMENT
Session Chairs: P. Rousseau and R. Cotton

8:05 Opening Remarks

8:10 Elemental probes for planar near-field antenna measurements, P. Rousseau, The Aerospace Corporation, USA

8:30 Uni-polar scanning method for near-field measurements of antennas, P. Kabacik, Wroclaw University of Technology, Poland

8:50 Fast and reliable antenna array diagnostics using mean-field neural net, G. Castaldi, V. Pierro, M. Pinto*, University of Sannio at Benevento, Italy

9:10 Remote measurement of antenna input impedance, E. Caswell*, W. Davis, Virginia Polytechnic Institute and State University, USA

9:30 Small antenna efficiency by the reflection and the Q measurement methods, R. Johnston, J. McRoy, University of Calgary, Canada

9:50 Break

10:10 Low distortion positioning equipment for mobile antenna pattern measurements, R. Narayanan, E. Borissov*, University of Nebraska, USA, J. Sullivan, J. Winter, Centurion International, Inc., USA

10:30 Classification of small probes, J. Appel-Hansen*, T. Johansen, T. Kristensen, Technical University of Denmark, Denmark

10:50 Design and characterization of diagonal horn antennas using the UCLA Bi-polar near-field measurement and imaging facilities, W. Eberwein, Y. Rahmat-Samii, University of California, Los Angeles, USA

Wednesday Morning
AP Session 76 Convention Center Ballroom X

NUMERICAL METHODS: CIRCUIT APPLICATIONS
Session Chairs: A. Peterson and A. Dreher

8:05 Opening Remarks

8:10 Quasi-static analysis of asymmetric cylindrical coplanar waveguide, A. Al-Zoubi, K. Obeidat, N. Dib*, Jordan University of Science and Technology, Jordan

8:30 Analysis of shielded CPW spatial power combiners, A. Khalil, A. Yakovlev, M. Steer, North Carolina State University, USA

8:50 Surface integral equations for three-dimensional surfaces containing circuit analog sheets, E. Topsakal, J. Volakis, University of Michigan, USA, D. Ross, Sikorsky Aircraft Corporation, USA

9:10 Design and simulation of active spiral inductors for RF integrated circuits, G. D'Angelo, A. Granchi, A. Monorchio*, B. Neri, University of Pisa, Italy

9:30 Discrete mode matching method for the analysis of quasi-planar structures, A. Ioffe*, A. Dreher, German Aerospace Center (DLR), Germany

9:50 Break

10:10 Numerical techniques for the analysis of microstrip, stripline, and waveguide Rotman lenses, A. Peterson, E. Rausch, Georgia Institute of Technology, USA

10:30 Impedance calculation of complex surfaces-wire structures with multilevel fast multipole algorithm and variational formulation, H. Chao, W. Chew, J. Song, E. Michielssen, University of Illinois at Urbana-Champaign, USA

10:50 Circuital analysis of a two-port angular sector, F. Peñarando-Foix*, M. Ferrando-Bataller, Universidad Politécnica de Valencia, Italy

11:10 S-Parameter extraction of 3-D microwave structures by using 3D-FDFD method in conjunction with asymptotic waveform evaluation technique, J. Liang, W. Hong, Southeast University, China

11:30 Accurate and efficient computation of the periodic Green's function in multilayered media via a hybrid spectral/spatial summation with optimized comples images, R. Shubair, Etisalat University College of Engineering, United Arab Emirates

Wednesday Morning
JOINT AP/URSI F Session 77 **Convention Center Ballroom XI**

FDTD APPLICATIONS III
Session Chairs: M. Gribbons and L. Gurel

8:05 A hybrid uniform theory of diffraction finite-difference time-domain method for scattered waves, B. Randhawa, A. Papatsoris, A. Marvin, Applied Electromagnetics Group, UK

8:10 Infinite phased array analysis using FDTD periodic boundary conditions-pulse scanning in oblique directions, H. Holter, H. Steyskal, Royal Institute of Technology, Sweden

8:30 Numerical amplification of the excitation source in waveguide structures, L. Ho, L. Liou, Wright Patrick Air Force Base, USA

8:50 Modeling of Gaussian beam diffraction from a thick single-slit perfectly conducting screen: Finite-difference time-domain method vs. rigorous theory, M. Alvarez-Cabanillas, R. Tyan, Y. Fainman, University of California, USA

9:10 FDTD computed numerical diffraction coefficients for infinite material wedges, V. Anantha, A. Taflove, University of Wisconsin-Madison, USA

9:30 Three-dimensional FDTD analysis of an ultrawideband antenna-array element for confocal microwave imaging of nonpalpable breast tumors, S. Hagness, J. Bridges, A. Taflove, University of Wisconsin-Madison, USA

9:50 Break

10:10 Employing PML absorbers in the design and simulation of ground penetrating radars, L. Gurel, U. Oguz, Bilkent University, Turkey

10:30 An enhanced higher-order FDTD technique for the construction of efficient reflectionaless PMLs in 3-D generalized curvilinear coordinates, N. Kantartzis, J. Juntunen, T. Tsiboukis, Aristotle University of Thessaloniki, Greece

10:50 A hybrid FDTD/radiative transfer method for modeling remote sensing observation of snow, J. Wallace, M. Jensen, Brigham Young University, USA

WEDNESDAY, JULY 14TH, AFTERNOON

Wednesday Afternoon
URSI B Session 78 Convention Center Ballroom IX

NOVEL PLANAR ANTENNAS
Session Chairs: R. Simons and M. Kesler

1:15 Opening Remarks

1:20 Radiation properties of microstrip elements on metalo-dielectric PBG substrates, C. Kyriazidou, University of California, Los Angeles, USA, H. Contopanagos, University of California, Irvine, USA, W. Merrill, University of California, Los Angeles, USA, N. Alexópoulo, University of California, Irvine

1:40 Metallic photonic bandgap materials for Ka and V band antenna applications, L. Desclos, C&C Media Laboratories, Japan, G. Poilasne, C. Terret, LAT University of Rennes, France, M. Madihian, C&C Media Laboratoies, Japan

2:00 A novel magnetic ground plane for wireless communications antennas, K. Ma, F. Yang, Y. Qian, T. Itoh, University of California, Los Angeles, USA

2:20 A resonant frequency and Q-factor computation for multi-region resonator antenna structures, A. Glisson, University of Mississippi, USA

2:40 A periodicity-induced generalizeed Fourier transform pair, F. Capolino, Universita deli Studi di Siena, Spain

3:00 Novel, planar antennas designed using the genetic algorithm, J. Maloney, P. Harms, M. Kesler, T. Fountain, Georgia Tech Research Institute, USA, G. Smith, Georgia Institute of Technology, USA

3:20 Wideband printed circuit fractal loop antennas, X. Yang*, L. Susman, APTI, Inc., USA

3:40 Ka-band holographic antennas, K. Lévis, L. Roy, P. Berini, University of Ottowa, Canada, A. Ittipiboon, A. Petosa, Communications Research Centre, Canada

4:00 Design of low-cost 2D beam-steering antenna using the CTS technology, M. Iskander, Z. Yun, R. Jensen, S. Redd, University of Utah, USA

4:20 A study of a new suspended microstrip line fed slot coupled linear tapered slot antenna for millimeter wave applications, C. Wu, J. Litva, Litva Antenna Enterprises, Canada

4:40 Design of broadband vertical transitions for tapered slot antennas, R. Lee*, R. Simons, NASA Lewis Research Center, USA

Wednesday Afternoon
URSI B Session 79 Convention Center Ballroom I

NUMERICAL METHODS - INTEGRAL EQUATIONS
Session Chairs: S. Gedney and D. Wilton

1:15 Opening Remarks

1:20 High-order Nyström solution of the EFIE in 3D for structures with edge singularities, S. Gedney, University of Kentucky, USA

1:40 The reduced matrix technique and diakoptics, M. Waller, T. Shumpert, Auburn University, USA

2:00 T-matrix analysis of 2-D periodic structure composed of dielectric scatteres, F. Wu*, K. Whites, University of Kentucky, USA

2:20 Solving volume integral equations by a domain decomposition method on parallel systems, J. Lin, National Taiwan Ocean University, China, W. Chew, University of Illinois at Urbana-Champaign, USA

2:40 Paper Withdrawn

3:00 Break

3:20 Analysis of vertical conductors in multilayer dielectric media using closed form Green's functions, A. Badawi, A. Sebak, University of Manitoba, Canada

3:40 An alternative method for estimating the error in moment-method current distributions on printed circuit boards and MIC structures, V. Jevremovic, E. Kuester*, University of Colorado at Boulder, USA

4:00 Residual error bounds for solutions of certain Fredholm integral and integro-differential equations of the first kind, T. Schwengler, E. Kuester*, University of Colorado at Boulder, USA

4:20 Use of time-domain deconvolution to reduce platform-dependent interference, T. Roberts, Hanscom Air Force Base, USA

4:40 Generalized network method applied to the scattering by an open cavity and a slit, X. Nie, D. Ge*, Y. Yan, Xidian University, China

Wednesday Afternoon
AP Sessoin 80 Coral Room A

PHOTONIC BANDGAP MATERIALS AND APPLICATIONS
Session Chairs: A. Daryoush and J. Colburn

1:15 Opening Remarks

1:20 Scattering of plane waves by two-dimensional periodic impedance surface, R. Hwang, National Center for High Performance Computing, Taiwan, S. Peng, National Chiao Tung University, Taiwan

1:40 Mixed metallic photonic band-gap material and BRAGG mirror, G. Poilasne*, P. Pouliguen, K. Mahdjoubi, L. Desclos, C. Terret, University de Rennes I, France

2:00 The field transmitted into a PBG crystal due to an electric line source, W. Merrill*, C. Kyriazidou, H. Contopanagos, University of California, Los Angeles, USA, N. Alexopoulos, University of California at Irvine, USA

2:20 Effective permittivity and permeability functions of metal-dielectric photonic band gap materials, C. Kyriazidou, University of California, Los Angeles, USA, H. Contopanagos, University of California, Irvine, W. Merrill, University of California, Los Angeles, N. Alexopoulos, University of California, Irvine, USA

2:40 Physical realization of magnetic walls using finite-thickness 3D printed arrays, H. Contopanagos, University of California, Irvine, USA, C. Kyriazidou, W. Merrill, University of California, Los Angeles, USA, N. Alexopoulos, University of California, Irvine, USA

3:00 Break

3:20 PBG-assisted gain enhancement of patch antennas on high-dielectric constant substrate, F. Yang, R. Coccioli, Y. Qian, T. Itoh, University of California, Los Angeles, USA

3:40 Microstrip line fed slot antenna with PBG superstrate, L. Zhang*, University of California, Los Angeles, USA, N. Alexopoulos, University of California, Irvine, USA, E. Yablonovitch, University of California, Los Angeles, USA

4:00 External substrate perforation applied to patch antennas for mitigating surface wave effects, J. Colburn, HRL Laboratories, USA, Y. Rahmat-Samii, University of California, Los Angeles, USA

Wednesday Afternoon
AP Session 81 Coral Room B

MICROWAVE MATERIALS, MEASUREMENTS, PROPERTIES AND APPLICATIONS
Session Chairs: R. Solberg, Jr and S. Trabelsi

1:15 Opening Remarks

1:20 Static permittivity of a multiphase system of spheres, K. Whites, University of Kentucky, USA

1:40 Fundamental limit on the performance of radar absorbing materials, C. Brewitt-Taylor, Defense Evaluation and Research Agency, UK

2:00 Precise dielectric properties determination of laminar-shaped materials in a partially-filled waveguide, J. Catalá-Civera, F. Peñaranda-Foix, D. Sánchez-Hernández, E. de los Reyes, Universidad Politécnica de Valencia, Spain

2:20 Characterization of complex dielectric properties of materials using a hybrid iterative method, H. Esteban, J. Catalá, S. Cogollos, V. Boria*, Universidad Politécnica de Valencia, Spain

2:40 Vectorial waveguide reflectometer for dielectric characterization of materials under power microwaves, J. Mallorqui*, A. Aguasca, S. Ribo, Universitat Politecnica de Catalunya, Spain

3:00 Microstrip antennas for dielectric property measurement, C. Deffendol, C. Furse, University of Utah, USA.

3:20 Density-and structure-independent calibration method for microwave moisture determination in granular materials, S. Trabelsi*, A. Kraszewski, S. Nelson, U.S. Department of Agriculture, USA

3:40 FDTD modeling of an artificially-snythesized absorbing medium, W. Yu, R. Mittra, D. Werner, Pennsylvania State University, USA

4:00 Development of a conductive-polymer, composite, direction-finding antenna, R. Solberg, Jr.*, P. Siemsen, Southwest Research Institute, USA

4:20 Experiment research on MM wavelength radar absorbing materials, C. ZhiPing*, Z. Qi, X. Shan-Jia, University of Science & Technology of China, China

4:40 On the incompatibility of chirality parameter α and chirality admittance ε of chiral media, S. Uckun, T. Ege, University of Gaziantep, Turkey

Wednesday Afternoon
AP SPECIAL SESSION Session 82 Coral Room C

SPECIAL SESSION HONORING RALPH HIATT
Session Chairs: V. Liepa and C.T. Tai

1:20 Opening Remarks

1:40 Measured back scattering cross section of thin wires, V. Liepa, University of Michigan, USA, S. Chang, MIT Lincoln Laboratory, USA

2:00 Electromagnetic interference from wind turbines, D. Sengupta, University of Michigan, USA

2:20 The world's first comparison of outdoor RCS test ranges, E. Knott, Tomorrow's Research, USA

2:40 A novel design of an ultra-fast wideband polarimetric radar, A. Nashashibi*, K. Sarabandi, P. Frantzis, R. De Roo, F. Ulaby, University of Michigan, USA

3:00 Break

3:20 Far-field antenna patterns determined from infrared holograms, C. Stubenrauch*, USA, J. Norgard, University of Colorado, USA, J. Will, SUN Microsystems, USA, K. MacReynolds, National Institute of Standards and Technology, USA

3:40 Adaptive nulling with spherical arrays using a genetic algorithm, Y. Chung*, R. Haupt, University of Nevada, USA

4:00 Polarimetric radar measurements for vehicle control and warning applications, E. Li, EMAG Technologies, Inc., USA, K. Sarabandi, University of Michigan, USA

4:20 Far field analysis of radiation sources, E. Miller, USA

Wednesday Afternoon
AP Session 83 Convention Center Ballroom II

APPLICATION OF TIME DOMAIN METHODS
Session Chairs: G. Gothard and S. Schneider

1:15 Opening Remarks

1:20 An anisotropic perfectly matched layer (APML) absorber for mesh truncation in the context of a multiresolution time domain scheme, Q. Cao, Y. Chen*, Hong Kong Polytechnic University, Hong Kong, R. Mittra, Pennsylvania State University, USA

1:40 Beamforming in time-domain arrays, J. Tyo, C. Buchenauer, J. Schoenberg, Air Force Research Laboratory/DEPE, USA

2:00 A time domain physical optics approach to passive intermodulation scattering problems, P. Bolli, A. Naldini, G. Pelosi, C. Pochini, S. Selleri*, University of Florence, Italy

2:20 Time-domain analysis of the electromagnetic coupling in satellite environments, G. Marrocco, M. Monti, F. Bardati, University of Roma “Tor Vergata”, Italy

2:40 Numerical calculation of the volterra integral equation for a time-varying medium, K. Yemelyanov, Kharkov State University, Ukraine, A. Nerukh, Kharkov Technical University of Radioelectronics, Ukraine

Wednesday Afternoon
AP Session 84 Convention Center Ballroom IV

ARRAY OPTIMIZATION, SYNTHESIS AND CONTROL
Session Chairs: J. Rodriguez and D. Linden

1:15 Opening Remarks

1:20 Design of low sidelobe circular ring arrays by element radius optimization, B. Preetham Kumar, G. Branner, University of California, Davis, USA

1:40 Optimization of linear array antenna performance, G. Branner, B. Preetham Kumar, University of California, Davis, USA

2:00 Array pattern synthesis with high radiation efficiency for transmission antenna arrays, P. Zhou*, M. Ingram, Georgia Institute of Technology, USA

2:20 Null control for linear arrays by phase-only or amplitude-only modification of the excitations, R. Vescovo, Università di Trieste, Italy

2:40 Recalculating linear array antennas to compensate for failed elements while maintaining fixed nulls, M. Lozano, J. Rodriguez, F. Ares*, Universidad de Santiago de Compostela, Spain

Wednesday Afternoon
JOINT AP/ URSI A Session 85 Convention Center Ballroom X

DIVERSITY RECEPTION AND MOBILE ANTENNAS
Session Chairs: J. Bernhard and K. Kelly

1:15 Opening Remarks

1:20 Omnidirectional-dual polarized antenna for wireless indoor applications at millimeter waves, K. Hettak, G. Delisle, Laval University, Canada

1:40 Performance of the adaptive antenna array system utilizing the eigenvector method in a CDMA channel, S. Choi*, I.Oh, S. Kwon, Hanyang University, Korea

2:00 Optimization of the antenna-diversity-effectiveness of complex FM-Car-Antenna systems, H. Lindenmeier, J. Hopf, L. Reiter, R. Kronberger, University of the Bundewsehr Munich, Germany

2:20 An analysis and design tool for evaluation of integrated antenna diversity systems in portable wireless devices, P. Irazoqui-Pastor*, E. Swanson, C. Short, J. Bernhard, University of New Hampshire, USA

2:40 2.4 GHz ISM band antenna for PC cards, A. Ng, J. Lau, D. Murch, Hong King University of Science and Technology, Hong Kong

3:00 Break

3:20 Planar handset antennas with electronically steerable parameters, P. Kabacik, A. Kucharski, Wroclaw Univeristy of Technology, Poland

3:40 Microstrip patch antenna for GSM 1800 handsets, J. Barrieros, P. Cameirão, C. Peixeiro*, Technical University of Lisbon, Portugal

4:00 Significant RX antenna diversity gain in 30 GHz broadband radio channels subject to fading, U. Karthaus, R. Noe, University of Paderborn, Germany

Wednesday Afternoon
AP Session 86 Convention Center Ballroom XII

MICROSTRIP PHASED ARRAY
Session Chairs: B. Tomasic and D. McGrath

1:15 Opening Remarks

1:20 Efficient printed antenna array synthesis including coupling effects using evolutionary genetic algorithms, Z. Sabet*, D. Jones, J. Cheng, EMAG Technologies, USA, L. Katehi, K. Sarabandi, University of Michigan, USA, J. Harvey, The Army Research Office, USA

1:40 Distributed aperture design for low profile earth station antennas, A. Zaghloul*, O. Kilic, L. Sun, COMSAT Laboratories, USA, M. Lieberman, COMSAT World Systems, USA

2:00 Fast spectral domain analysis of large finite microstrip patch arrays, A. Enneking, F. Arndt, University of Bremen, Germany

2:20 Super lightweight planar array antenna with stretched structure for satellite communication systems, T. Takahashi, Y. Konishi, S Makino, Mitsubishi Electric Corporation, Japan

2:40 Beamforming by magnetostatic wave microstrip antennas, A. Rezvanov*, S. Zagriadski, St. Petersburg State University, Russia

Wednesday Afternoon
AP Session 87 Convention Center Ballroom XI

MILLIMETER WAVE PRINTED ANTENNAS
Session Chairs: D. Jackson and D. Eaton

1:15 Opening Remarks

1:20 Wideband single layer microstrip array at 28 GHz, M. Clenet*, L .Shafai, University of Manitoba, Canada

1:40 A millimeter-wave cavity-backed suspended substrate stripline antenna, R. Simons, NASA Lewis Research Center, USA

2:00 Millimeter-wave photodection and direct integration with microstrip slot antenna array, K. Li*, J. Ge, T. Matsui, M. Izutsu, Communications Research Laboratory (CRL), Japan

2:20 Development of a tri-plate ring-slot antenna for mm-wave frequency band, K. Lim*, Communications Research Laboratory, T. Matsui, Communications Research Laboraty, S. Nam, K. Kim, Samsung Advanced Institute of Technology, Korea

2:40 Characteristics of 60 GHz band conical beam radial line slot antennas, A. Akiyama*, J. Hirokawa, M. Ando, Tokyo Institute of Technology, Japan, E. Takeda, Hitachi Co., Ltd., Japan, Y. Arai, Taisei Co., Ltd., Japan

Wednesday Afternoon
JOINT AP/URSI A&B Session 88 Japanero

INVERSE SCATTERING: MEDIA AND TARGET RECONSTRUCTION
Session Chairs: M. Morgan and F. Chen

1:15 Opening Remarks

1:20 Imaging Ipswich targets from limited data, A. Morales-Porras, University of Massachusetts, USA, R. McGahan, Hanscom AFB, USA, M. Testorf, M. Fiddy, University of Massachussetts, USA

1:40 Imaging Ipswich targets using tailored cepstral filter, R. McGahan, Hanscom AFB, USA, H. Harada, A. Morales-Porras, M. Testorf, M. Fiddy, University of Massachusetts, USA

2:00 Code-division multiplexing and frequency-division multiplexing for nonlinear inverse scattering, F. Chen, Qualcomm Incorporated, USA, W. Chew, University of Illinois, USA

2:20 A 2.5-D diffraction tomography inversion scheme for ground penetrating radar, P. Johansen, Technical University of Denmark, Denmark

2:40 An improved renormalization technique for profile inversion, M. Akhtar, A. Omar, University of Magdeburg, Germany

3:00 Break

3:20 2D-TE inverse medium scattering: An improved variable metric method, W. Rieger, A. Buchau, M. Haas, C. Huber, G. Lehner, W. Rucker, Universitat Stuttgart, Germany

3:40 Nonlinear inversion in three-dimensional cross-well induction logging using full-vectorial multi-frequency data, A. Abubakar*, K. Haak, P. Van den Berg, Delft University of Technology, The Netherlands

4:00 Shape reconstruction of a perfectly conducting cylinder using real-coded genetic algorithm, A. Qing*, C. Lee, Nanyang Technological University, Singapore

4:20 Imaging of shallow buried target using frequency sweep method, J. Yansheng*, Z. Anxue, W. Wenbing, Xi'an Jiaotong University, China

Wednesday Afternoon
JOINT AP/URSI A Session 89 Koi

GROUND REFLECTOR ANTENNAS AND G/T MEASUREMENTS
Session Chairs: G. Hopkins and H. Viskum

1:15 Opening Remarks

1:20 A shaped reflector antenna for mobile communications, J. Bergmann, F. Hasselmann, CETUC-Center for Telecommunications Studies of the Catholic Univeristy, Brasil, M. Branco, Fundação CPqD, Brasil

1:40 Design & development of co-polarized Ku-band ground terminal system for very small aperture terminal (VSAT) application, H. Moheb*, C. Robinson, J. Kijesky, Prodelin Corporation, USA

2:00 Antennas feasibility study for a LMDS communication system, L. de Haro, UPM, Spain, A. Pino, Universidade de Vigo, Spain, J. Besada, UPM, Spain, A. Arias, J. Rubiños, Universidade de Vigo, Spain

2:20 On the planarity errors of the hologram of the CATR, J. Ala-Laurinaho*, Helsinki University of Technology, Finland, T. Hirvonen, California Institute of Technology, USA, A. Raisanen, Helsinkin Univeristy, Finland

2:40 Compact range reflectors with R-card edge treatment, M. Mahmoud, T. Lee, W. Burnside, Ohio State University, USA

3:00 Break

3:20 Nickel sandwich technology for high precision reflector antennas, G. Valsecchi, C. Franchini, Media Lario, Italy, R. Prieto, K. van't Klooster, ESA-ESTEC NL, Italy

3:40 Improving satellite antenna temperature estimation by high-resolution emission model of the earth, G. Schiavon, P. Ferrazzoli, L. Guerriero, Tor Vergata University, Italy, R. Jorgensen, TICRA, Denmark, S. Badessi, P. de Maagt, ESTEC/D-TEL, The Netherlands, H. Fenech, EUTALSAT, France

Wednesday Afternoon
AP Session 90 Convention Center Ballroom III

NUMERICAL METHODS: SEMIANALYTICAL
Session Chairs: D. SenGupta and C. Repesh

1:15 Opening Remarks

1:20 A fast algorithm for solving CFIE of EM scattering, C. Wang, F. Ling, J. Song, J. Jin, University of Illinois at Urbana-Champaign, USA

1:40 Nonuniform fast cosine transform and the Chebyshev PSTD algorithm, B. Tian*, Q. Liu, New Mexico State University, USA

2:00 Frequency-dependent PSTD method and its applications to GPR modeling, Q. Liu, G. Fan*, New Mexico State University, USA

2:20 Use of boundary element method for the modelling of arbitrarily shaped surfaces in conformal antenna design, T. Bertuch, FGAN Forschungsinstitut für Hochfrequenzphysic, Germany

2:40 Propagation modes in lossy cylindrical structures, F. Peñaranda-Foix*, M. Ferrando-Bataller, Universidad Politécnica de Valencia, Spain

3:00 Break

3:20 Description of G2DMULT moment method algorithm for calculating spectral Green's functions of cylindrical multiconductor structures of arbitrary cross section, P. Kildal, Chalmers Institute of Technology, Sweden

3:40 An analytical array scanning method for field computations of sources within a periodic structure, H. Yang, University of Illinois at Chicago, USA

4:00 An improved approach to the spectral iteration technique, S. Costanzo*, G. Di Massa, Università della Calabria, Italy

4:20 Numerical techniques for VHF/UHF cylinder radiators, C. Repesh, Mission Research Corporation, USA

4:40 Analysis of electric field distribution near car in radio remote control system for electric equipment installed in car, K. Sato*, K. Nishikawa, Y. Kojima, N. Suzuki, Toyota Central Research and Development Laboratories, Inc., Japan

Wednesday Afternoon
AP Session 91 Labrid

RADAR REMOTE SENSING AND IMAGING
Session Chairs: J. Zec and A. Milman

1:15 Opening Remarks

1:20 Neural network techniques in electromagnetic target classification: A comparison study, G. Turhan-Sayan*, Middle East Technical University, USA, T. Ince, University of Massachusetts, USA

1:40 Doppler measurements using a coherent ultrawideband random noise radar, M. Dawood*, R. Narayanan, University of Nebraska, USA

2:00 Impulse radar imaging of moveable objects in opaque media, A. Boryssenko*, O. Boryssenko, V. Tarasjuk, Scientific Research Company DIASCARB Ltd., Ukraine

2:20 Effects of radar polarization on detectability of debris on roads at millimeter-wave frequencies, K. Sarabandi, University of Michigan, USA, E. Li, EMAG Technologies, Inc., USA

2:40 Bias errors of pulse pair estimation in a weather radar, J. Lee, University of Inchon, Korea

3:00 Break

3:20 Three-dimensional imaging of the atmosphere using space and frequency diversity, R. Palmer*, T. Yu, University of Nebraska, USA

3:40 A broadband constant beamwidth reflector antenna for ocean surface remote sensing applications, T. Karlinsey, M. Jensen*, D. Arnold, Brigham Young University, USA

4:00 Gain and G/T of reconfigurable active receive antennas - A parametric approach, U. Kraft, Daimler Chrysler Aerospace, Germany

Wednesday Afternoon
AP Session 92 Margate

THEORETICAL SCATTERING TECHNIQUES
Session Chairs: R. Marhefka and R. Tiberio

1:15 Opening Remarks

1:20 An improved scattering analysis of arbitrary shaped cylinders in a focused beam system using Gabor representation, R. Shavit, Ben-Gurion University of Negev, Israel

1:40 The scattering of an E-polarized plane wave from a metal strip on a ferrite circular rod, K. Yashiro, N. Guan, S. Okhawa, Chiba University, Japan

2:00 Electromeagnetic scattering by a dielectric sphere partially buried in a ground plane, A. Hamid, King Fahd University, Saudi Arabia, M. Hamid*, University of South Alabama, USA

2:20 An approximate slope diffraction coefficient for material plate junctions, A. Aktas, R.J. Marhefka, Ohio State University, USA

2:40 Pattern distortion for corrugated horns open-ended on a finite ground plane, M. Albani, P. Focardi, University of Siena, Italy, A. Freni, University of Florence, Italy, S. Maci, University of Siena, Italy

3:00 Break

3:20 Extended UTD solution for diffraction by dielectric screens, F. Mioc, A. Toccafondi, R. Tiberio, University of Siena, Italy

3:40 Double diffraction at a pair of coplanar skew wedges, M. Albani, F. Capolino, S. Maci, R. Tiberio, University of Siena, Italy

4:00 Diffraction coefficients for an anisotropic impedance wedge: A uniform asymptotic PO solution, C. Gennarilli, University of Salerno, Italy, G. Pelosi, C. Pochini, University of Florence, Italy, G. Riccio*, University of Salerno, Italy

4:20 Terain backscattering coefficient generator, R. Mediavilla, W. O'Connor, V. Pyati, Air Force Institute of Technology, USA

THURSDAY, JULY 15TH, MORNING

Thursday Morning
AP SPECIAL SESSION Session 93 Convention Center Ballroom II

ANTENNA ARRAY ARCHITECTURE: A MEMORIAL SESSION FOR T.T. TAYLOR
Session Chairs: R. Hanson and R. Mailloux

8:05 Opening Remarks

8:10 Contributions of T.T. Taylor to array synthesis, R. Hansen, R.C. Hansen, Inc., USA

8:30 Properties of a large scale multibeam antenna using a phased array fed reflector with radially aligned elements, K. Ueno, NTT Wireless Systems Laboratories, Japan

8:50 Comparison of antenna transmit weighting functions for active arrays, Mark Taylor*, Raytheon Systems Company, USA, K. Virga, University of Arizona, USA, G. Yaccarino, Raytheon Systems Company, USA

9:10 An L/X dual-band dual-polarized shared-aperture array for spaceborne SAR, S. Targonski*, D. Pozar, University of Massachusetts at Amherst, USA

9:30 A 20-GHz active receive phased array antenna for navy surface ship satellite communications applications, M. Chen*, D. Reimer, D. Rasmussen, J. Wallace, H. Redd, R. Ettorre, D. Peterson, R. Bostwick, G. Miller, Boeing Phantom Works, USA

9:50 Break

10:10 A polarimetric antenna model for small conformal arrays including mutual coupling effect, P. Knott, C. Winterfeld, Forschungsinstitut für Hochfrequenzphysik, Germany

10:30 Phased array active loop antenna for digital television receiver, M. Taguchi*, H. Somiya, T. Fujimoto, Nagasaki University, Japan, M. Hirose, Casio Computer Co., Ltd., Japan, K. Komiyama, Electrotechnical Lab., Japan

10:50 Polarization-changeable phased array, M. Tanaka, Kashima Space Research Center, Japan

11:10 Paper will be presented in Session 109

Thursday Morning
AP Session 94 Labrid

REFLECTOR ANTENNA ANALYSIS AND SYNTHESIS
Session Chairs: T. Lee and H. Luh

8:05 Opening Remarks

8:10 A GO-subreflector implementation methodology using a Fourier-Jacobi surface expansion, R. Hoferer, Y. Rahmat-Samii, University of California, Los Angeles, USA

8:30 Characteristics of dual reflector antennas with gaps placed on the subreflector: MoM and PO analysis, B. Khayatian*, Y. Rahmat-Samii, University of California, USA

8:50 Acceleration on the synthesis of shaped relector antennas for contoured beam applications via Gaussian beam approach, H. Chou*, Yuan Ze University, Taiwan, W. Theunissen, University of Pretoria, South Africa, P. Pathak, Ohio State University, USA

9:10 Single reflector synthesis for producing contour radiation pattern and signal null region using genetic algorithms, M. Vall-Ilossera*, J. Ruis, N. Duffo, J. Mallorqui, Universitat Politècnica de Catalynya (UPC), Spain

9:30 An efficient finite difference time-domain (FDTD) technique for modeling a reflector antenna system with partial circular symmetry, D. Arakaki, W. Yu, R. Mittra, Pennsylvania State University, USA

9:50 Break

10:10 Mechanical finite element diffraction synthesis of reconfigurable contour beams from dual offset reflector antennas, W. Theunissen, H. Yoon, G. Washington, W. Burnside, Ohio State University, USA

10:30 Design and analysis of antenna systems properly integrated into a spacecraft structure, T. Lee, Ohio State University, USA

10:50 A simple and efficient technique for optimizing the primary performance in the presence of secondary performance, B. Holmes, R. Ramanujam, Hughes Space and Communications Company, USA

11:10 A simple tool for the design and analysis of multiple-reflector antennas in a multi-disciplinary environment, D. Katz, Jet Propulsion Laboratory, USA, A. Borgioli, University of California at Santa Barbara, USA, T. Cwik*, C. Fu, W. Imbriale, V. Jamnejad, P. Sringer, Jet Propulsion Laboratory, USA

11:30 Analysis of offset circular reflector antenna with a large aperture by complex source-dual series approach, T. Oguzer, Dokuz Eylul University, Turkey

Thursday Morning
AP Session 95 Coral Room B

SPATIAL COMBINING: CHARACTERIZATION AND SYSTEMS
Session Chairs: L.W. Pearson and A. Mortazawi

8:05 Opening Remarks

8:10 Network characterization of a finite array of folder-slot antennas for spatial power comibing application, M. Abdulla, U. Mughal, M. Steer, North Carolina State University, USA

8:30 Modeling of waveguide-based spatial power combining systems, A. Khalil, M. Ozkar, A. Mortazawi, North Carolina State University, USA, M. Steer, University of Leeds, UK

8:50 Local oscillator radiation from active integrated antennas, G. Ma, P. Hall, P. Gardner, University of Birmingham, UK, M. Hajian, IRCTR, The Netherlands

9:10 Two-dimensional array beam scanning via externally and mutually injection locked coupled oscillators, R. Pogorzaelski, Jet Propulsion Laboratories, USA

9:30 A perpendicular aperture-fed patch antenna for quasi-optical amplifier arrays, S. Ortiz, A. Mortazawi, North Carolina State University, USA

9:50 Break

10:10 Millimeter wave dual band bowtie oscillator array, L. Sun*, Comsat Laboratories, USA, R. Weikle II, University of Virginia, USA, A. Zaghoul, Comsat Laboratories, USA

10:30 A 141-GHz integrated quasi-optical slot antenna tripler, S. Hollung*, J. Stake, L. Dillner, E. Kollberg, Chalmers University of Technology, Sweden

10:50 A fully planar power combiner using microstrip patch arrays, H. Song, University of Queensland, Australia, M. Biakowski*, Nanyang Technological University, Singpapore

11:10 Modified rectangular oscillating patch antenna with bipolar transistors, D. Bonefacic*, J. Bartolic, University of Zagreb, Croatia

Thursday Morning
AP Session 96 Convention Center Ballroom I

ADVANCED ANTENNAS FOR MOBILE COMMUNICATIONS
Session Chairs: X. Wu and K. Trott

8:05 Opening Remarks

8:10 Design and characterization of single and multiple beam MM-wave circularly polarized substrate lens antennas for wireless communications, X. Wu*, G. Eleftheriades, E. van Deventer, University of Toronto, Canada

8:30 A 12-sector antenna using proximity coupled taper slot, K. Mori*, H. Arai, Yokohama National University, Japan, Y. Ebine, NTT Mobile Communication Network Inc., Japan

8:50 A boradband plate antenna with slits, K. Noguchi*, M. Mizusawa, H. Matsutani, S. Betsudan, Kanazawa Institute of Technology, Japan

9:10 A coaxial multi-slot antenna used for LEO-MSAT, Z. Xie, E. Yung, R. Chen, Y. Fan, City University of Hong Kong, Hong Kong

9:30 Analysis and design of a coaxial slot antenna for mobile telecommunications, Y. Han, K. Yung, Z. Xie, R. Chen, City University of Hong Kong, Hong Kong

9:50 Break

10:10 Gain and efficiency of linear slot arrays on thick substrates for millimeter-wave wireless applications, G. Eleftheriades*, M. Simcoe, Univeristy of Toronto, Canada

10:30 A smart indoor receiving antenna in the PCS band, K. Winand, TR Labs, Canada, R. Johnston, University of Calgary, Canada, E. Tung, TR Labs, Canada

10:50 A multiport antenna for indoor PCS smart receiver, E. Tung, TR Labs, Canada, R. Johnston, University of Calgary, Canada

11:10 Design of shaped lenses for non-symmetric cells in MBS, C. Fernandes, Technical University of Lisbon, Portugal

11:30 A novel leaky wave antenna for the base station in an inovative indoors cellular mobile communication system, K. Lam*, E. Yung, City University of Hong Kong, Hong Kong

11:50 Using directive antennas to reduce multipath fading in indoor PCN systems, L Talbi, G. Delisle, Laval University

Thursday Morning
URSI B Session 97 Convention Center Ballroom X

ABSORBING AND IMPEDANCE BOUDARY CONDITIONS
Session Chairs: E. Newman and L. Zhao

8:05 Opening Remarks

8:10 An impedance boudary condition for coated 3-D objects, O. Marceaaux, B. Stupfel*, CESTA, France

8:30 A sheet impedance approximation for electrically thick material shields, E. Newman, Ohio State University, USA

8:50 A geometrical analysis of the PML concept, F. Teixeira*, W. Chew, University of Illinois at Urbana-Champaign, USA

9:10 Reflection properties of anisotropic absorbing layers in non-cartesian orthogonal coordinate systems, L. Zhao*, ANSYS Inc., USA, A. Cangellaris, University of Illinois at Urbana-Champaign, USA

9:30 Exact absorbing boundary condition for 2D FDTD simulations based on the multilevel plane-wave time-domain algorithm, J. Wang*, B. Shanker, M. Lu, E. Michielssen, University of Illinois at Urbana-Champaign, USA

Thursday Morning
URSI B Session 98 Koi

RADAR CROSS SECTION
Session Chairs: J. Volakis and H. Ling

8:05 Opening Remarks

8:10 Bistatic scattering measurement using a near-field scanning system, D. Zahn, K. Sarabandi, University of Michigan, USA

8:30 RCS of a dihedral corner reflector in the presence of mechanical deformations in the structure, P. Corona, Instituto Universitario Navale, Italy, C. Gennarelli, Universita di Salerno, Italy, G. Pelosi, Università di Firenze, Italy, G. Riccio, Università di Salerno, Italy, G. Toso*, Università di Firenze, Italy

8:50 Dynamic signature simulation using the shooting and bouncing ray technique, R. Bhalla*, H. Ling, University of Texas at Austin, USA, J. Schmitz, DEMACO Inc., USA

9:10 A study on the contribution of engine inlets to RCS, J. Odendaal, University of Pretoria, South Africa, D. Grygier, Kentron, South Africa

9:30 An under-relaxation IPO method for large open cavity scattering, D. Ge*, Y. Yan, X. Nie, Xidian University, China

Thursday Morning
AP Session 99 Convention Center Ballroom III

MICROSTRIP ANTENNA DESIGN AND FEEDING TECHNIQUES
Session Chairs: J.T. Williams and K. Chang

8:05 Opening Remarks

8:10 Inset-fed Ku-band circular patch antennas, J. McSpadden*, L. Fan, K. Chang, Texas A&M University, USA

8:30 Microstrip antenna feeding from a parallel-plate dielectric waveguide: Analysis and experimentation, G. Kwan, N. Das, Polytechnic University, USA

8:50 An improved configuration of a printed antenna fed by a coplanar waveguide without spurious mode, G. Mazzarella, G. Montisci*, University di Cagliari, Italy

9:10 Half-wave stacked patch antenna with dieletric feed, V. Viopio*, J. Ollikainen, P. Vainikainen, Helsinki University of Technology, Finland

9:30 Methods of controlling the input impedance of a microstrip patch antenna, M. Chrysomallis, Demokritos University of Thrace, Greece, C. Christodoulou, University of New Mexico, USA

9:50 Break

10:10 Effect of element spacing and curvature on the radiation patterns of patch antenna arrays mounted on cylindrical multilayer structures, S. Raffaelli, Z. Sipus, P. Kidal, Chalmers University of Technology, Sweden

10:30 Figure of merit for the design of microstrip patch antennas, D. Kokotoff*, R. Waterhouse, RMIT University, Australia, J. Aberle, Arizona State University, USA

10:50 On the analysis of the radiating properties of chiral printed antennas, P.Pirinoli, Politecnico di Torino, Italy, R. Zich, Politecnico di Milano, Italy

11:10 An investigation of the low directivity cylindrical strip radiators, A. Vykhodets, T. Tsaliev*, Ukrainian Scientific Research Institute of Radio and TV, Ukraine

11:30 Using analysis method to calculate the mutual impedence of microstrip antennas, Y. Fengchun, Z. Qi, X. Shanjia, University of Science and Technology of China, China

Thursday Morning
AP Session 100 Convention Center Ballroom XI

NUMERICAL MODELLING
Session Chairs: D. Tammen and L. Felsen

8:05 Opening Remarks

8:10 Green's function for a planar phased sectoral arrays of dipoles: Synthesis via canonical constituents, F. Capolino, S. Maci, University of Siena, Italy, L. Felsen, Boston University, USA

8:30 Characterization of mutual coupling in a multi-function antenna system, X. Zhu*, H. Chao, J. Jin, E. Michielssen, W. Chew, University of Illinois at Urbana-Champaign, USA

8:50 Efficient modeling and analysis of infinite periodic antenna arrays by tetrahedral finite elements, D.Filipovic*, J. Volakis, L. Anderson, Univeristy of Michigan, USA

9:10 PHASIM, a sophisticated phased array antenna software simulator implemened in MATLAB 5.2, W. Keizer, TNO Physics and Electronics Laboratory, The Netherlands

9:30 Simultaneous spatial/spectral interpolation of antenna radiation patters, R. Allard, D. Werner, Pennsylvania State University, USA

9:50 Break

10:10 Green's function for a planar phased sectoral arrays of dipoles: Uniform high frequency solution, F. Capolino, S. Maci, University of Siena, Italy, L. Felsen, Boston University, USA

10:30 Simplified analytic treatment in the singular integral equation method, Y. Xu, University of Science and Technology of China, China

10:50 The method of auxiliary sources applied to the analysis of adaptive transverse resonant antennas, R. Zaridze, G. Bit-Babik, K.Tavzarashvili, A. Bijamov, Tbilisi State University, Georgia

11:10 The 3DV-FMM Method to calculate scattering from inhomogeneous dielectric objects, X. Chen, Y. Jin, Fudan University, China

11:30 Transformation of electromagnetic signal frequency spectrum propagating in axisymmetrical turbulent flow, V. Spitsyn, Tomsk State University, Russia

Thursday Morning
JOINT AP/URSI B Session 101 Convention Center Ballroom XII

NUMERICAL METHODS: INTEGRAL METHODS
Session Chairs: E.K. Miller and E. Arves

8:05 Opening Remarks

8:10 Convergence improvement for iterative solutions of the electric fields inegral equation at very low frequencies, J. Zhao, W. Chew, University of Illinois at Urbana-Champaign, USA

8:30 Method of moments analysis of electrically large circular-loop antennas: non-uniform currents, L. Li, C. Lim, M. Leong, National University of Singapore, Singapore

8:50 Integral equation solution for truncated slab structures by using a fringe current formulation, E. Jorgensen, University of Denmark, Denmark, A. Toffacondi, S. Maci, University of Siena, Italy

9:10 Convergence and use of node equations in G2DMULT for MM analysis of 2D structures, M. Lundmark, P. Kildal, Chalmers University of Technology, Sweden, Y. Kimura, Tokyo Institute of Technology, Japan

9:30 A hybrid physical optics-moment method for large nose radome antennas, Z. Shen, J. Volakis, University of Michigan, USA

9:50 Break

10:10 A compact moment method for determining the electromagnetic scattering of bodies of revolution, S. Datthanasombat*, A. Prata, Jr., University of Southers California, USA

10:30 Penetration through slots on conducting body of revolution structures, K. Yegin, A. Martin, Clemson University, USA

10:50 Electromagnetic scattering from material coated PEC objects: A hybrid volume and surface integral, C. Lu, University of Kentucky, USA, W. Chew, Universtiy of Illinois at Urbana-Champaign, USA

11:10 An efficient algorithm for the RCS modulation prediction from jet inlet-engines, A. Barka*, G. Bobillot, ONERA, France

Thursday Morning
URSI D Session 102 Convention Center Ballroom IV

ELECTRONICS AND PHOTONICS
Session Chairs: M. Jensen and M. Piket-May

8:05 Opening Remarks

8:10 Finite-aperture wire grid polarizers: FDTD and mode-matching analysis, M. Jensen, Brigham Young University, USA

8:30 New type of nonlinear directional coupler for optical signal processing, B. Rawat*, University of Nevada, USA, K. Yasumoto, Kyushu University, Japan, Y. Naciri, H. Li, A. Sharaiha, J. Le Bihan, Laboratoire RESO-Ecole Nationale d'Ingénieurs de Brest, France

8:50 A 10 GHz radar motion sensor using multilayers thick film technology, J. Floch, L. Desclos, INSA/LCST, France, P. Morillon, SAGEM/STCE, France

9:10 Distortion of pulses in cascaded microstrip lines, S. Kusasani, C. Nguyen*, Texas A&M University, USA

9:30 Surface wave analysis for periodic surfaces, P. Kelly, M. Piket-May, University of Colorado at Boulder, USA, S. Hagness, University of Wisconsin-Madison, USA

9:50 Break

10:10 High speed packaging design and analysis, A. Byers, I. Rumsey, B. Boots, P. Vichot, T. Lammers, P. Kelly, M. Piket-May, University of Colorado at Boulder, USA, K. Thomas, Silicon Graphics, USA, R. Gravrok, Sequent Computer Systems, USA

10:30 Accurate calculation of coupling coefficients and form birefringence for 13 linear array single-mode fiber couplers based on the boundary integral analysis, S. Huang, H. Chang*, National Taiwan University, Taiwan

10:50 Rigorous analysis of fiber-core effect for fused fiber-optic couplers, T. Wu. National Sun Yat-sen University, Taiwan

11:10 Effects of uniaxial anisotropy of the dielectric resonators Q-factors, N. Aknin, A. El Moussaoui, M. Essaaidi, Abdelmalek Esaadi University, Morocco

11:30 Diffraction elements of the MM-Wave planar integral optics, I. Minin, O. Minin, Institute of Applied Physics Problems, Russia

Thursday Morning
URSI B Session 103 Convention Center Ballroom IX

ELECTROMAGNETIC THEORY II
Session Chairs: R.W. Ziolkowski and A. Hoorfar

8:05 Opening Remarks

8:10 Electromagnetic scattering from nonlinear bianisotropic cylinders, D. Schlueter*, Motorola, USA, P. Uslenghi, University of Illinois at Chicago, USA

8:30 LC characteristics of a single wire loop inside an infinite slotted PEC shell, J. Young*, C. Butler, Clemson University, USA

8:50 Radiating and nonradiating sources and the inverse source problem, E. Marengo*, R. Ziolkowski, University of Arizona, USA

9:10 A periodicity-induced generalized Fourier transform pair, F. Capolino, Università degli Studi di Siena, Italy

9:30 Symmetry and scattering from wire loops, O. Mamuar, D. Jaggard, University of Pennsylvania, USA

9:50 Break

10:10 Particulate media as radar reflectors, R. Bardo, E. Fischer, P. Sarman, A. Stoyanov, H. Uberall, Naval Surface Warfare Center, USA

10:30 Homogenization theory multiresolution and the reflection of an electromagnetic wave from a complex laminate - a paradigm experiment, B. Steinberg, Tel Aviv University, Israel

10:50 Radiation of a point source surrounded by plasma cylinder, T. Bichoutskaia, G. Makarov*, St. Petersburg State University, Russia

Thursday Morning
AP SPECIAL SESSION Session 104 Coral Room A

APPLICATIONS OF ARTIFICIAL NEURAL NETWORKS
Session Chairs: K.C. Gupta and Q.J. Zhang

8:05 Opening Remarks

8:10 New directions in model development for RF/microwave components utilizing artificial neural networks and space mapping, J. Bandler, M. Ismail, J. Rayas-Sanchez, Q. Zhang, McMaster University, Canada

8:30 Neural network structures for EM/microwave modeling, Q. Zhang, F. Wang, V. Devabhaktuni, Carleton University, Canada

8:50 Applications of neural netowrks optimized by the genetic algorithm to microwave systems, M. Vai, S. Prasad, Northeastern University, USA

9:10 Neural network processing for adaptive array antennas, C. Christodoulou*, University of New Mexico, USA, A. El Zooghby, M. Georgiopoulos, University of Central Florida, USA

9:30 Knowledge based EM-ANN models for the design of wide bandwidth CPW patch/slot antennas, P. Watson*, G. Creech, Wright-Patterson AFB, USA, K. Gupta, University of Colorado at Boulder, USA

9:50 Break

10:10 EM-ANN modeling of overlapping open-ends in multilayer microstrip lines for design of bandpass filters, C. Cho, K. Gupta, University of Colorado at Boulder, USA

10:30 Identifying buried objects using the neural network approach, R. Mittra, J. Ma, W. Yu, Pennsylvania State University, USA

10:50 Sidelobes reduction and steerable nulling of antenna arrays using neural networks, S. El-Khamy, Alexandria University, Egypt, M. Aboul-Dahab, K. Hijjah, Arab Academy for Science and Technology, Egypt

11:10 An artificial neural network for the analysis of profiled corrugated circular horns, G. Fedi, R. Giomi, M. Giustini, R. Nesti, G. Pelosi, S. Selleri*, University of Florence, Italy

11:30 Neural net aided fault diagnostics of large antenna arrays, G. Castaldi, V. Pierro, I. Pinto, University of Sannio at Benevento, Italy.

Thursday Morning
URSI F Session 105 Japanero

REMOTE SENSING TECHNIQUES AND MODELS
Session Chairs: C. Furse and D. Chatterjee

8:05 Opening Statements

8:10 A layered forest model for radar target simulation, W. Merrill*, University of California, Los Angeles, USA, N. Alexopoulos, University of California, Irvine, USA, O. Brovko, Raytheon Systems Company, USA

8:30 Electromagnetic scattering from closed, convex lossy dielectric scatterers with applications to spaceborne scatterometry, D. Chatterjee*, S. Taherion, R. Moore, University of Kansas, USA

8:50 Technology for geosynchronous microwave sounding and imaging, M. Shields, M. MacDonald, A. Vogel, MIT Lincoln Laboratory, USA, L. Hilliard, Goddard Space Flight Center, USA, J. Hesler, University of Virginia, USA, R. Brand, K. Hamm, K. Leinhaupel, R. Davis, Applied Aerospace Structures Corp., USA, M. Schlueter, M. McLean, Composite Optics, Inc., USA

9:10 Development of new electronics for antenna impedance measurements in the ionosphere, C. Fish, C. Furse, C. Swenson, Utah State University, USA

9:30 Optimization of a cross-borehole prospecting technique for delineation of burid conductive ore deposits in a resistive host, C. Furse, Utah State Univeristy, USA, D. Johnson, Rio Tinto Exploration, Australia, E. Cherkaeva, A. Tripp, University of Utah, USA

9:50 Break

10:10 The lateral wave effects in the act of radar subsurface survey, A. Boryssenko*, O. Boryssenko, Scientific Research Companies DIASCARB Ltd., Ukraine

10:30 Effects of wavefield interactions on simulated GPR signals, H. Raemer, C. Rappaport, E. Miller, Northeastern University, USA

10:50 Paper Withdrawn

11:10 Early results from seawinds scatterometer on Quikscat, W. Jones, J. Zec, University of Central Florida, USA, M. Freilich, Oregon State University, USA, D. Long, Brigham Young University, USA, S. Dunbar, W. Tsai, Jet Propulsion Laboratory, USA

11:30 A rain flag for the seawinds scatterometer on Quikscat, W. Jones, J. Zec, R. Mehershahi, University of Central Florida, USA

THURSDAY, JULY 15TH, AFTERNOON

Thursday Afternoon
JOINT AP/ URSI B Session 106 Coral Room A

APPLICATION OF HIGHER ORDER MODELING IN FEM
Session Chairs: L.S. Andersen and A. Martin

1:15 Opening Remarks

1:20 Condition numbers for various FEM matrices, L. Andersen*, J. Volakis, University of Michigan, USA

1:40 Comparison of iterative convergence in higher-order FEM modeling of periodic structures, Y. Jiang*, A. Martin, Clemson University, USA

2:00 Accurate and efficient simulation of antennas using hierarchical mixed-order tangential vector finite elements for tetrahedra, L. Andersen*, J. Volakis, University of Michigan, USA

2:20 High-order finite element-boundary integral method for scattering by large cavities, M. Zunoubi*, J. Liu, K. Donepudi, J. Jin, University of Illinois at Urbana-Champaign, USA

2:40 The design of microwave absorbers with high-order hybrid finite element method, Y. Jiang*, A. Martin, Clemson University, USA

3:00 Break

3:20 FEM analysis of lossy anisotropic stripline structures with high-order vector elements, I. Gheorma, R.Graglia, P. Savi*, Politecnico di Torino, Italy

3:40 A discretization scheme for improving the accuracy of the finite element-time domain method, G. Manara*, A. Monorchio, University of Pisa, Italy, E. Martini, G. Pelosi, University of Florence, Italy

4:00 On the assembly of 3D higher-order Nédélec curl-conforming tetrahedral elements, L. Garcia-Castillo, Universidad Politécnica de Madrid, Spain, M. Salazar-Palma*, Cuidad Universitaria, Spain

4:20 A simple error estimator for adaptive finite element analysis in waveguiding structures, A. Diaz-Morcillo*, L. Nuno, Universidad Politecnica de Valencia, Spain

4:40 Paper presented in Session 28

Thursday Afternoon
AP/URSI B Session 107 Labrid

NUMERICAL SCATTERING TECHNIQUES
Session Chairs: R. Nevels and J. Hendersen

1:15 Opening Remarks

1:20 Pseudospectral time-domain algorithm applied to electromagnetic scattering from electrically large objects, G. Fan*, Q. Liu, New Mexico State University, USA

1:40 Numerical studies of diffraction by 2D homogeneous and inhomogeneous dielectric wedges, D. Demetriou*, G. Stratis, Motorola, Inc., USA

2:00 Efficient and accurate calculations of radar cross section of curved objects by using the conformal finite difference time domain scheme, S. Dey, R. Mittra, Pennsylvania State University, USA, N. Pegg, British Aerospace, England

2:20 Calculation of fields in dielectric bodies by fast backward recursion, D. Swatek*, I. Ciric, University of Manitoba, Canada

2:40 Marching techniques for electromagnetic scattering, M. Levy, A. Zaporozhets, Rutherford Appleton Laboratory , UK

3:00 A new finite-difference formulation with reduced dispersion for scattering from dielectrics in the frequency domain, E. Forgy, W. Chew, University of Illinois, Urbana-Champaign, USA

3:20 A moment method solution for coated scatterers using physical basis functions, W. Wood, Jr., Wright-Patterson AFB, USA

3:40 Electromagnetic scattering by conducting cylinders with protuberances and indentations, S. Ohnuki*, T. Hinata, Nihon University, Japan

4:00 Rigorous Analysis of scattering by periodic array of cylindrical objects, T. Kushta*, K. Yasumoto, Kyushu University, Japan

4:20 Volume integral equation solution of microwave absorption and scattering by raindrops, H. Chen*, D. Lin, Yuan Ze University, Taiwan

4:40 Shielding effectiveness of bent slots, J. Kiang, S. Chen, Chung-Hsing University, China, C. Hsu, Da-Yeh University, China, C. Lee, National Changhua University of Education, China

Thursday Afternoon
URSI B Session 108 Convention Center Ballroom II

ANTENNAS FOR WIRELESS COMMUNICATIONS
Session Chairs: E. Kuester and S. Stout

1:15 Opening Remarks

1:20 Diversity antenna arrays for wireless indoor communications, K. Nikoskinen, J. Juntunen, Helsinki University of Technology, Finland

1:40 Multi polarization broadband antenna based on monopole combination, L. Desclos, M. Madihian, C&C Media Laboratories, Japan

2:00 Dual band shielded cellphone antenna, El-Badawy El-Sharawy, Arizona State University, USA

2:20 Frequency tunable PIFA as an internal antenna for wireless applications, G. Kadambi*, T. Masek, J. Sullivan, M. Rohde, Centurion International, Inc., USA

2:40 Compact dielectric-loaded patch antennas for L-band mobile satellite applications, S. Stout*, J. Wight, Carleton University, Canada, A. Petosa, A. Ittipiboon, Communications Research Centre, Canada

3:00 Antennas using a surface mounted component concept low profile and printed structures, J. Floc'h, INSA/LCST, France, L. Desclos, C&C Research Laboratories, Japan

3:20 Novel helical antenna with significantly reduced size, A. Safaai-Jazi*, I. Ghoreishian, Virginia Polytechnic Institute and State University, USA

3:40 Hemispherical helical antenna, A. Safaai-Jazi, E. Weeratumanoon, Virginia Polytechnic Institute and State University, USA

4:00 Polarization-diversity planar printed dipole-antenna for 2.4 GHz ISM-band wireless communications, H. Chuang, Y. Wei, National Cheng Kung University, Taiwan, T. Horng, National Sun Yet-Shen University, Taiwan

4:20 Low cost multibeam antennas in the MM-wave regime for radar systems of transport means, I. Minin, O. Minin, Institute of Applied Physics Problems, Russia

Thursday Afternoon
AP Session 109 Convention Center Ballroom III

MULTIFUNCTION/MULTIBAND ANTENNAS
Session Chairs: W. Stutzman and Z. Baharav

1:15 Opening Remarks

1:20 Fractal arrays based on iterated functions system (IFS), Z. Baharav, Hewlett Packard Laboratories, USA

1:40 New techniques for extremely broadband planar slot spiral antennas, M. Nurnberger*, M. Abdelmoneum, J. Volakis, University of Michigan, USA

2:00 A reconfigurable leaky mode/patch antenna controlled by PIN diode switches, B. Chang*, Y. Qian, T. Itoh, University of California, Los Angeles, USA

2:20 Slot coupling in dielectric lens antennas, A. Neto, D.Pasqualini, A. Toffacondi, S. Maci, University of Siena, Italy

2:40 Limits on the radiation Q of electrically small antennas restricted to oblong bounding regions, H. Foltz, J. McLean, University of Texas, USA

3:00 Break

3:20 Design of dual-band dual-polarized wire antennas using a genetic algorithm, B. Porter, G. Noakes, S. Gearhart, University of Wisconsin, USA

3:40 Printed bowtie antenna fed by electromagnetic coupling, L. Le Coq*, S. Von der Mark, M. Drissi, J. Cieterne, Institut National des Sciences Appliquees de Rennes I, France

4:00 Multiband planar inverted-F car antenna for mobile phone and GPS, R. Kronberger, J. Hopf, L. Reiter, H. Lindenmeier, University of the Bundewsehr Munich, Germany

4:20 Low sidelobe characteristics of a dual-frequency base station antenna in the case of electrical beam tilt use, Y. Yamada, National Defense Academy, Japan, Y. Ebine, M. Kijima, NTT Mobile Communications Network Inc., Japan

4:40 Pulse radiation of four-element large current radiator, C. Pochanin, National Academy of Sciences of Ukraine, Ukraine

Thursday Afternoon
URSI B Session110 Coral Room B

NUMERICAL METHODS: HYBRID TECHNIQUES
Session Chairs: T. Cwik and D. Riley

1:15 Opening Remarks

1:20 Radiated field coupling into enclosures via apertures, Z. Pantic-Tanner, F. Gisin, M. Harrison, W. Fung, San Francisco State University

1:40 A hybrid FEM approach to intrasystem EMC analysis, J. Balbastre, L. Nuno, Universidad Politecnica de Valencia, Italy

2:00 Application of AWE in conjunction with SWITCH code, C. Reddy, C. Crockwell, F. Beck, S. Bindiganavale, M. Sancer, Hampton University

2:20 Efficiency, accuracy and stability of hybridized finite-elements, finite-volumes, and finite-differences in transient electromagnetic simulations, D. Riley, Sandia National Laboratories

2:40 Iterative solution of wideband scattering from arbitrarily-shaped PEC targets and dielectric BOR's over a half space, A. Sullivan, L. Carin, Duke University

3:00 Application of the integral equation-asymptotic phase method to three-dimensional scattering, K. Aberegg, A. Peterson, ERIM International

3:20 Solution of the Helmholtz equation using the Laplace solution, T. Sarkar, Syracuse University, USA

3:40 3D-2D combined FEM analysis of guiding structure transitions, G. Biffi-Gentili, E. Martini, S. Selleri, G. Pelosi, University of Florence

4:00 Electromagnetic sounding of cavities in layered lossy media, V. Veremey, J. Ma, W. Yu, R. Mittra, Pennsylvania State University

4:20 A method for incorporating perfect conductors in to the PITD scattering method, J. Miller*, R. Nevels, Texas A&M University

4:40 Methods for incorporating high dielectric constant scatters into the path integral time-domain method, J. Miller*, R. Nevels, Texas A&M University, USA.

Thursday Afternoon
AP Session 111 Convention Center Ballroom IV

MICROSTRIP ARRAYS
Session Chairs: L. Jones and A. Sabban

1:15 Opening Remarks

1:20 Two planar array candidates for LMDS/LMCS subscriber terminal, D. Gray*, L. Shafai, University of Manitoba, Canada

1:40 Design of a foldable low-loss microstrip array antenna, C. Christodoulou, University of New Mexico, USA, P. Wahid, M. Haque, University of Central Florida, USA, M. Bailey, NASA, USA

2:00 A new approach to the design of linear series-fed printed arrays, T. Galia, G. Mazzarella*, G.Montisci, University de Cagliari, Italy

2:20 Ka band microstrip antenna arrays with high efficiency, A. Sabban, Rafael, Israel

2:40 A 64-element array antenna for 58 GHz, T. Sehm*, A. Lehto, A. Raisänen, Helsinki University of Technology, Finland

3:00 Break

3:20 Cross-mesh array antennas for dual LP and CP waves, K. Kawano, H. Nakano, Hosei University, Japan

3:40 A curl array antenna for a linearly polarized wave, K. Hirose*, K. Kawai, Tokyo Denki University, Japan, H. Nakano, Hosei University, Japan

4:00 Experimental study of a microstrip-probe feed for U-slot patch array antennas, S. Rhee, Yosu National University, Korea, G. Lee, Radio Research Laboratory, Korea, J. Ihm, Central R&D Center for SK Telecom, Korea, Y. Lee, Honam University, Korea

4:20 Radiation characteristics of cylindrical microstrip array, G. Hsieh*, K. Wong, National Sun Yat-Sen University, Taiwan

Thursday Afternoon
URSI B SPECIAL SESSION Session 112 Convention Center Ballroom I

SPECIAL SESSION ON CONFORMAL ANTENNAS
Session Chairs: L. Kempel and D. Werner

1:15 Opening Remarks

1:20 Conformal loadbearing antenna structures, S. Schneider*, J. Tenbarge, J. Tuss, Wright Patterson AFB, USA

1:40 Advances in modeling conformal antennas on cylinders L. Kempel*, Michigan State University, USA

2:00 Analysis and design of a cavity-backed log periodic array antenna, T. Durham*, B. Karr, G. Gothard, Harris Corporation, USA, C. Christodoulou, University of New Mexico, USA

2:20 A technique for analyzing cavity-backed conformal antennas mounted on arbitrarily-shaped conducting bodies, D. Arakaki*, D. Werner, R. Mittra, Pennsylvania State University, USA

2:40 Fast hybrid finite element algorithms for conformal antenna analysis, J. Volakis, T. Eibert, K. Sertel, L. Andersen, D. Filipovic, University of Michigan, USA

3:00 Break

3:20 Integrated antennas for advanced handset communication units: Miniaturization and human interactions reductions, Y. Rahmat-Samii, University of California, Los Angeles, USA

3:40 Pattern synthesis of ARC antenna arrays with directional elements, K. Virga, University of Arizona, USA

4:00 Modelling of a conformal high gain satellite antenna with full spherical coverage, D. Loeffler, E. Gschwendtner, W. Wiesbeck, University of Karlsruhe, Germany

4:20 Full wave analysis of slotted elliptic waveguides, G. Amendola, G. Di Massa, Universita' della Calabria, Italy, G. Mazzarella, Universita' di Cagliari, Italy

Thursday Afternoon
AP Session 113 Convention Center Ballroom X

Session Title: SLOT ANTENNAS
Session Chairs: G. Zhou and S. Massey

1:15 Opening Remarks

1:20 A simple analysis of the short pulse response of a tapered slot line, N. Hojjat, S. Safavi-Naeini*, T. Manku, S. Yarasi, University of Waterloo, Canada

1:40 Aperture coupling versus connectors for the transition between T/R-modules and radiators in large phased arrays, D. Löffler*, E. Gschwendtner, W. Wiesbeck, University of Karlsruhe, Germany

2:00 Design of monopulse radial line slot antennas, M. Castaner*, M. Perez, Ciudad Universitaria, Spain, M. Isasa, University of Vigo, Spain

2:20 A broadband sub-array of U-slotted patches for Ku-band active antenna system, C. Pyo, Korea Electronic & Telecommunications Research Institute, Korea, W. Zhang, Southeastern University, Korea, S. Jeon, S. Lee, Korea Electronic & Telecommunications Research Institute, Korea, N. Myung, Korea Advanced Institute of Science and Technology, Korea

2:40 The aperture-coupled U-slotted patch antenna, W. Zhang*, Southeast University, Korea, C. Pyo, S. Jeon, S. Lee, Korea Electronic & Telecommunications Research Institute, Korea, N. Myung, Korea Advanced Institute of Science and Technology, Korea

3:00 Break

3:20 An L-shaped circularly polarized slot antenna, N. Chang, A. Lin, Tantung Institute of Technology, Korea

Thursday Afternoon
URSI B Session 114 Koi

INVERSE SCATTERING
Session Chairs: R. Stone and A. Boag

1:15 Opening Remarks

1:20 Comparative analysis of the variational PDE and Born-type integral equation approaches for optical diffusion tomography, J. Ye, K. Webb, Purdue University, USA

1:40 Investigation of the K-pulse concept as applied to dielectric coated conducting targets, G. Turhan-Sayan*, M. Kuzuoglu, Middle East Technical University, Turkey, D. Moffatt, Ohio State University, USA

2:00 Electromagnetic source imaging using superluminal cylindrical modes, M. Morgan, Naval Postgraduate School, USA

2:20 Inverse scattering from electrically large regions via a hybrid linear-nonlinear algorithm, B. Rao*, L. Carin, Duke University, USA

Thursday Afternoon
URSI B Session 115 Convention Center Ballroom XI

ANTENNA ANALYSIS

Session Chairs: A. Glisson and F. Niu

1:15 Opening Remarks

1:20 Finite element method applied to inhomogeneously loaded tapered profile monocone antennas, M. Morgan, Naval Postgraduate School, USA

1:40 Analysis and design of large antenna arrays using multi-grid FDTD and Floquet boundary condition, Z. Yun, M. Iskander*, University of Utah, USA, M. White, Raytheon, USA

2:00 FDTD analysis of the wide band feedline network for MMW antenna array applications, L. Shen, McMaster University, Canada, C. Wu, LAE Corp., Canada, K. Wu, COM DEV, Canada, J. Litva, LAE Corp., Canada

2:20 Analysis, design process and correlation with measurements of a printed dipole antenna using HP-HFSS, H. Delgado* Harris Corporation, USA, M. Thursby, Florida Institute of Technology, USA

2:40 The input impedance of an annular slot of arbitrary width, S. Zeilinger, Visteon Automotive Systems, USA, D. Sengupta, University of Detroit Mercy, USA

3:00 Break

3:20 Resonant frequency and Q-factor computation for multi-region dielectric resonator antenna structures, F. Chen, A. Glisson*, A. Kishk, University of Mississippi, USA

3:40 Circuit model, Q and bandwidths of electric antennas, F. Niu, Motorola Inc., USA

4:00 Transient analysis of cylindrical antennas in time-domain with non-harmonious net using polynomial approximation for potential functions, L. Ololoska*, L. Janev, Macedonia

4:20 Application of the FDTD method in solving planar and conformal patch antenna problems, P. Shubitidze, R. Zaridze*, Tbilisi State University, Georgia, D. Economou, D. Kaklamani, N. Uzunoglu, National Technical University of Athens, Greece

Thursday Afternoon
AP Session 116 Convention Center Ballroom IX

LOADED PRINTED ANTENNA STRUCTURES
Session Chairs: R.G. Rojas and D. Purdy

1:15 Opening Remarks

1:20 On the aperture-coupled dielectric resonator antenna using a thick ground plane, K. Leung*, Z. Chen, K. Luk, E. Yung, City University of Hong Kong, Hong Kong

1:40 Study of novel adaptive printed antenna element using surface waves, K. Lee, R. Rojas*, Ohio State University, USA

2:00 Hybrid coupled shorted rectangular microstrip antennas, R. Kapur, G. Kumar, I.I.T. Bombay, India

2:20 The effect of complex loads on the scattering from a microstrip dipole, Y. Wang, N. Shuley, University of Queensland, Australia

2:40 Guided wave and Floquet wave diffraction mechanisms at an array of line sources on a truncated dielectric slab, S. Maci, University of Siena, Italy, E. Jorgensen, Technical University of Denmark, Denmark, L. Borselli, A. Toccafondi, University of Siena, Italy

3:00 Break

3:20 Dielectric resonator antenna excited by a conformal strip, K. Leung, K. Luk, Z. Chen, E. Yung, City University of Hong Kong

3:40 Square arrays of cylindrical dielectric resonator antennas, H. Lo, K. Leung, K. Luk, E. Yung, City University of Hong Kong

4:00 Active element pattern of multilayer and cavity-backed probe-fed microstrip patch arrays, M. Gonzalez, J. Encincar and J. Zapata, Ciudad Universitaria, Spain

Thursday Afternoon
AP Session 117 Japanero

SCATTERING, DIFFRACTION AND RCS
Session Chairs: R. Paknys and E. Crittenden

1:15 Opening Remarks

1:20 Comparative study of lossy dielectric wedge diffraction for radio wave propagation modeling using UTD and FDTD, Y. Wang, S. Safavi-Naeini, S. Chaudhuri, University of Waterloo, Canada

1:40 A new solution of the inhomogeneous plane-wave diffraction by the half plane, M. Lumholt, TICRA, Denmark

2:00 Surface field excitation by a magnetic point source on an impedance cylinder, C. Tokgöz*, R. Marhefka, Ohio State University, USA

2:20 Radiation of a vertical electric dipole over a resistive sheet, C. Gennarelli, University of Salerno, Italy, G. Pelosi, G. Toso, University of Florence, Italy

2:40 Radar cross section of a rectangular cavity in a finite ground plane, R. Paknys*, F. Hyjazie, Concordia University, Canada, S. Kashyap, A. Louie, Defence Research Establishment Ottowa, Canada

3:00 Break

3:20 Approximate calculation of scattered field from three-dimensional narrow cracks, X. Zhu*, J. Jin, University of Illinois at Urbana-Champagne, USA

3:40 A high frequency RCS model for power lines, M. Park*, K. Sarabandi, University of Michigan, USA

4:00 Estimation of Doppler spectrum from a vibrating metallic circular cylinder, K. Sarabandi*, D. Lawrence, University of Michigan, USA

4:20 EM scattering analysis by a loaded through on a ground plane using SIBC - E polarization case, R. Sato*, Niigata University, Japan, H. Shirai, Chuo University, Japan

4:40 Analysis of frequency spectrum and radar cross section of signal scattering on conical turbulent flow, V. Spitsyn, Tomsk State University, Russia

Thursday Afternoon
AP SPECIAL SESSION Session 118 Convention Center Ballroom XII

SPECIAL TOPICS IN ELECTROMAGNETIC THEORY
Session Chairs: N. Engheta and P. Uslenghi

1:15 Opening Remarks

1:20 Electromagnetic forces on point dipoles, A. Yaghjian, Hanscom AFB, USA

1:40 An electrically small dipole antenna loaded with Chuas oscillator: Time-retarded chaos, P. Overfelt, Naval Air Warfare Center Weapons Division, USA

2:00 Mutation-based evolutionary algorithms and their applications to optimization of antennas in layered media, A. Hoorfar, Villanova University, USA

2:20 Exact radiation from two axisymmetric structures containing isorefractive materials, P. Uslenghi, University of Illinois at Chicago, USA

2:40 A general class of self-scalable and self-similar arrays, D. Werner*, P. Werner, Pennsylvania State University, USA

3:00 Break

3:20 The evolution of space-wave and surface-wave leaky modes on printed-circuit lines, F. Mesa, Microwave Group, Spain, D. Jackson, University of Houston, USA, M. Freire, Microwave Group, Spain, C. Di Nallo, University of Rome “La Sapienza”, Italy

3:40 Fourier transform convolution process in incremental scattering and diffraction, R. Tiberio, A. Toccafondi, S. Maci, University of Siena, Italy

4:00 Gabor transform of fractional kernels in radiation problems, N. Engheta, University of Pennsylvania, USA