PIERS 2006 Cambridge

Progress In Electromagnetics Research Symposium

Program

March 26–29, 2006
Cambridge, USA

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Progress in Electromagnetics Research Symposium
March 26–29, 2006
Cambridge, USA

PIERS 2006 CAMBRIDGE ORGANIZATION

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- The Electromagnetics Academy
- IEEE Geoscience and Remote Sensing Society
- MIT Lincoln Laboratory
- Office of Naval Research
- Mitsubishi Electric Corporation
- Cold Regions Research and Engineering Laboratory
- The Electromagnetics Academy at Zhejiang University
- MIT Center for Electromagnetic Theory and Applications, Research Laboratory of Electronics

SYMPOSIUM SITE

The 2006 Progress in Electromagnetics Research Symposium will be held on March 26-29, 2006, at the Royal Sonesta Hotel, Cambridge, Massachusetts, USA. During the Symposium, the PIERS office will be located in the room 'University' at the Royal Sonesta Hotel (Tel.: 617-806-4216).

REGISTRATION

The PIERS technical sessions and short courses will begin on Sunday morning, March 26, 2006 at the Royal Sonesta Hotel in Cambridge, Massachusetts, USA. You may register in the PIERS Office Saturday, March 25, from 1:00 PM to 6:00 PM, or during the Symposium from 8:00 AM through 5:00 PM, March 26-29.

The on-site registration fee is US$500. The student registration fee is US$300; a valid student ID is required. If you have pre-registered, your name badge and symposium program will be ready for you to pick up at the registration desk during the symposium. Please wear your name badge throughout the meeting. Access will be prohibited to the exhibition, break, interactive areas, and technical sessions if a name badge is not visible.

SPECIAL EVENTS

Opening Reception

On Saturday, March 25, 2006, from 3:00 to 5:00 PM, join your PIERS hosts and other participants for an informal opening reception at the Royal Sonesta Hotel.

Symposium Banquet

On Monday evening, March 27, 2006, a symposium banquet is planned for PIERS participants and their guests. A limited number of banquet tickets will be sold on a first-come, first-served basis.

PIERS ONLINE

Information on PIERS 2006 Cambridge and future PIERS is posted at www.piers.org.

GUIDELINES FOR PRESENTERS

Oral Presentations

Each session room is equipped with a stationary computer connected to a LCD projector (beamer). A standard overhead projector for transparencies is also available. Presenters choosing to use electronic presentation must load their presentation files in advance onto the central PIERS computer in the PIERS office and use the session computer for their presentation. Presenters are not allowed to detach the session computer and attach their own notebook/laptop to the LCD projector.

The PIERS computer is equipped with a USB port and a CD-ROM drive. To load your presentation to the PIERS computer, please email it to us ahead of time or load it directly on our computers when you receive your conference material.

A USB flash or CD-ROM can be used to transfer the presentation files (Power Point, Acrobat Reader, Windows Media Player and other main support available) into the PIERS computer. A technician personnel will be available to assist you. Presenters can test their presentation at the PIERS office no later than half-day before their session.

Scheduled time slots for presentation are 20 minute each, including questions and discussions. Presenters are required to report to their session room and to their session Chair at least 10 minutes prior to the start of their session. The session chair must be presented in the session room at least 15 minutes before the start of the session and must strictly observe the starting time and time limit of each paper and refrain from changing paper presentation sequence.

Poster Presentations

Presenters are requested to stand by their posters during their session.

One panel (about 100 x 200 cm) will be available for each poster. Pins or thumbtacks are provided to mount your posters on the board.

The poster session 1 will be 9:00 AM to 11:00 AM and the poster session 2 will be 2:00 PM to 4:00 PM on Monday, March 27, 2006. All presenters are required to mount their papers one hour before the session and remove them at the end of their sessions.

PIERS 2006 CAMBRIDGE SHORT COURSES

PIERS 2006 in Cambridge will be hosting short courses given by distinguished lecturers of the Electromagnetics community. To attend one or more of these courses, please fill out the short course registration form completely and submit it to the PIERS office prior to the start of the short course. We accept checks and credit cards. PIERS reserves the right to cancel any or all of the listed short courses. All short courses participants must register for PIERS 2006.

Participants should send the short course registration form to:

PIERS Office
c/o Professor J. A. Kong
Room 26-305
77 Massachusetts Avenue
Cambridge, MA 02139, USA
Fax: +1-617-258-8766
E-mail: piers@ewt.mit.edu, tpc@piers.org
http://www.piers.org

Detailed descriptions of all short courses can be found on the PIERS website at www.piers.org. Updated information regarding the short course status, including scheduling and announcements of possible new additions and cancellations can also be found on the PIERS website.

ACCOMMODATION

Participants are responsible for making their own housing arrangements. The information below is provided for your convenience. For detailed information, please visit www.piers.org.

Royal Sonesta Hotel Accommodations

Royal Sonesta Hotel
5 Cambridge Parkway
Cambridge, MA 02142

Phone: 617-806-4216
Fax: 617-806-4232
US$169 (single/double)

PIERS 2006 Symposium site, the Royal Sonesta Hotel, is located on the Charles River, overlooks Boston's historic Beacon Hill and is minutes from Cambridge high tech centers, MIT, and Harvard. Its amenities include a health club featuring a sparkling indoor/outdoor pool with retractable roof, a full-service spa, an elegant restaurant and bar/lounge with patio seating and valet/laundry, and indoor parking for guests. The Hotel offers spacious and comfortable rooms (smoking and non-smoking), as well as business-class guest rooms equipped with computers, fax machines and data lines.

To secure your reservation, please complete and return the special reservation from (downloadable from the PIERS home page www.piers.org) directly to the Royal Sonesta Hotel, If you call to make reservation, refer to PIERS for the special rate. Reservation requests will be accepted until Feb. 22, 2006, on a first-come, first-served basis. Late reservations will be accepted on a space and rate availability basis. Each reservation must be accompanied by first night's deposit, a guarantee from your company, or a major credit card number. Parking at the Royal Sonesta is US$23 per day for overnight guests. PIERS participants not residing at the hotel may park in the hotel garage at an hourly rate.

TRANSPORTATION

The closest international airport is Logan International Airport. From Logan Airport, the participants can take a taxi to Royal Sonesta Hotel, which is the conference site. Taxi fare from the Logan Airport to Royal Sonesta Hotel can range from US$18 to US$30, depending on traffic conditions.

For driving directions from Logan International Airport to Royal Sonesta Hotel, you may use the map on the following page. From Logan International Airport to the Royal Sonesta Hotel, follow the arrows on the enclosed map. Take the main airport roadway (one-way) out of the airport and follow signs for "Sumner Tunnel, Boston/Route 93 North." Go through the tunnel and follow signs for Storrow Drive. Proceed onto Storrow Drive and take the left exit for "Government Center." Take a right at the top of the ramp onto the Longfellow Bridge. Proceed to first traffic signal and take a right onto Third Street. Proceed to first traffic signal and take a right onto Binney Street and proceed to end. At traffic signal take a left onto Edwin Land Blvd and the hotel entrance/garage are located on the right at the next traffic signal, across from the CambridgeSide Galleria. The hotel is approximately three and a half miles from the airport.

Public transportation from the airport to the Royal Sonesta is inexpensive, although cumbersome, and takes approximately 40 minutes. At the airport, take the shuttle bus (free) from your terminal to the Airport subway station. Enter the subway, at a cost of US$1.25, take the Blue Line train in-bound to Government Center, proceed to the upper level for the Green Line; take an out-bound Green Line train to the Lechmere station. Exit and follow signs to Cambridge Street. Cross to First Street and walk along the CambridgeSide Galleria to Charles Street/Cambridgeside Place. Take left and the Hotel will be at the end of the block.

GENERAL INFORMATION

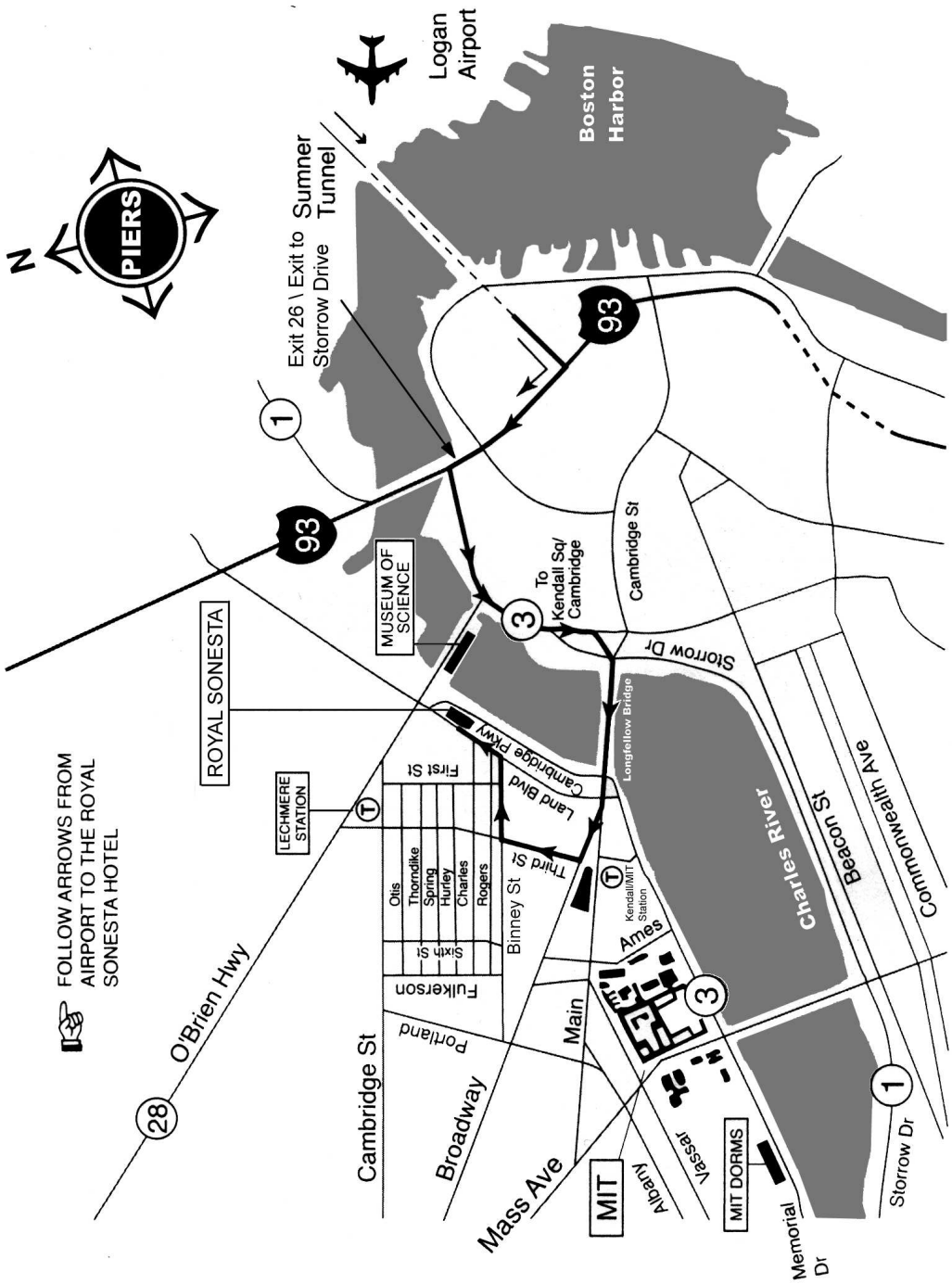
Sightseeing

Boston and Cambridge offer a wide variety of daytime and evening activities, boasting a combination of tradition and trend. Historic Faneuil Hall and Quincy Hall Marketplace, with their many fascinating shops, craftstands and restaurants, are popular gathering places for area residents and visitors from all over the world. The Copley Place shopping mall adds a different dimension to Bostons Copley Square, Back Bay and Prudential Center areas. Attractions of particular interest are the USS Constitution, the John F. Kennedy Presidential Library, and the Museum of Fine Arts. The historic Freedom Trail takes visitors from the Boston Common through the popular market areas of the North End and the waterfront district. Harvard Square, the Cambridge Common, and the university museums are but a few of the points of interest on the opposite site of the Charles River.
One or two hours north and south of Boston stretches a magnificent and varied coast: from the rocky shore of Maine, to the stately mansions and sandy beaches of New Hampshire, along to fishing villages and art colonies of Cape Ann, further to Provincetown. The New Hampshire White Mountains are only 2 to 3 hours away.

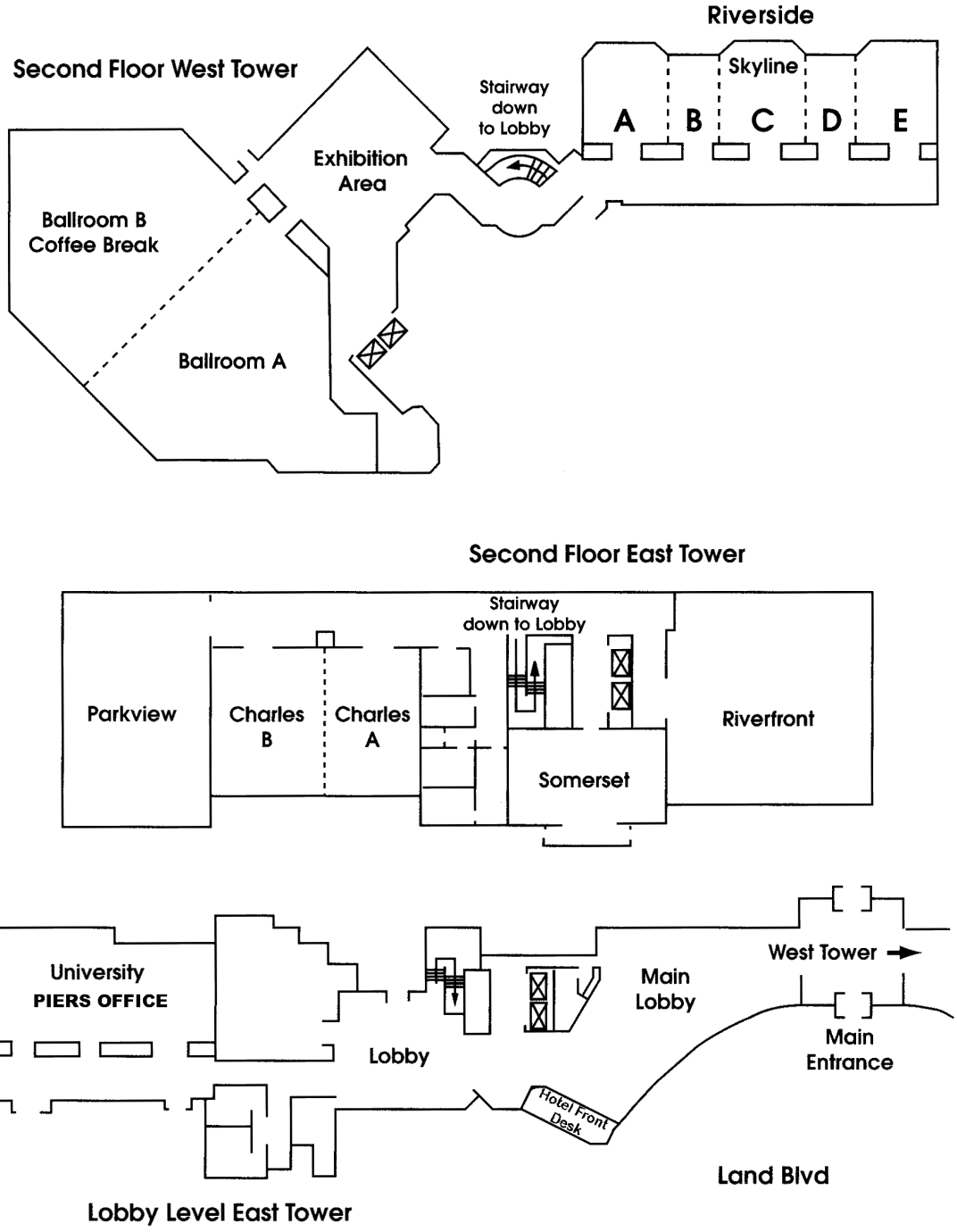
Climate and Dress

Boston weather in March is generally cool. The daytime average temperature is approximately 40 degrees Fahrenheit (4 degrees Celsius).

CAMBRIDGE BOSTON AREA MAP



MAP OF CONFERENCE SITE



PIERS 2006 CAMBRIDGE TECHNICAL PROGRAM

Session 0A1a
New Results and Prospective Co-operative Research Directions on Metamaterials: the Metamorphose Network

Sunday AM, March 26, 2006

Room: Ballroom A

Organized by Sergei A. Tretyakov and Ari H. Sihvola

Chaired by Sergei A. Tretyakov and Ari H. Sihvola

08:20 Modeling Isotropic DNG Media for Microwave Applications
I. Vendik (*St. Petersburg Electrotechnical University, Russia*); *O. Vendik* (*St. Petersburg Electrotechnical University, Russia*); *M. S. Gashinova* (*St. Petersburg Electrotechnical University, Russia*); *I. Kolmakov* (*St. Petersburg Electrotechnical University, Russia*); *M. Odit* (*St. Petersburg Electrotechnical University, Russia*); *L. Jylhä* (*Helsinki University of Technology, Finland*); *S. Maslovski* (*Helsinki University of Technology, Finland*); *S. Tretyakov* (*Helsinki University of Technology, Finland*); *O. Ouchetto* (*Laboratoire de Génie Electrique de Paris LGEP-Supélec, France*); *S. Zouhdi* (*Laboratoire de Génie Electrique de Paris LGEP-Supélec, France*);

08:40 Optical Properties of Nanostructured Metamaterials
I. Romero (*Donostia International Physics Center, Spain*); *S. Riikonen* (*Donostia International Physics Center, Spain*); *F. J. G. de Abajo* (*Donostia International Physics Center, Spain*);

09:00 Losses in the PEMC Boundary
I. V. Lindell (*Helsinki University of Technology, Finland*); *A. H. Sihvola* (*Helsinki University of Technology, Finland*);

09:20 Microwave Applications of Left/Right-handed Transmission Lines
I. Vendik (*St.-Petersburg Electrotechnical University, Russia*); *O. Vendik* (*St.-Petersburg Electrotechnical University, Russia*); *D. Kholodnyak* (*St.-Petersburg Electrotechnical University, Russia*); *S. Zubko* (*St.-Petersburg Electrotechnical University, Russia*); *I. Kolmakov* (*St. Petersburg Electrotechnical University, Russia*); *I. Kolmakova* (*St.-Petersburg Electrotechnical University, Russia*); *E. Serebryakova* (*St.-Petersburg Electrotechnical University, Russia*); *I. Nefedov* (*Helsinki University of Technology, Finland*); *S. Tretyakov* (*Helsinki University of Technology, Finland*); *F. Martín* (*Universitat Autònoma de Barcelona, Spain*); *J. Bonache* (*Universitat Autònoma de Barcelona, Spain*); *J. García-García* (*Universitat Autònoma de Barcelona, Spain*); *I. Gil* (*Universitat Autònoma de Barcelona, Spain*);

09:40 Mode Coupling at the Periodic Boundary of Metamaterial
G. Granet (*Universite Blaise Pascal, France*); *A. Poyedinchuk* (*IRE NAS of Ukraine, Ukraine*); *N. Yashina* (*IRE NAS of Ukraine, Ukraine*);

10:00 **Coffee Break**

Session 0A1b
Metamaterials with Negative Index and Related Phenomena

Sunday AM, March 26, 2006

Room: Ballroom A

Organized by Willie J. Padilla

Chaired by Willie J. Padilla

10:20 THz Metamaterials
W. J. Padilla (*Los Alamos National Laboratory, USA*); *R. Averitt* (*Los Alamos National Laboratory, USA*);

10:40 The Positive and Negative Goos-Hänchen Shifts with Left-handed Slabs
J. B. J. Chen (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *B.-I. Wu* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

11:00 Sensitivity Analysis of the Full Wave Solution of a Near-Perfect Lens with $\boldsymbol{n} = -1$
O. E. French (*University of Nottingham, UK*); *K. I. Hopcraft* (*University of Nottingham, UK*); *E. Jakeman* (*University of Nottingham, UK*);

11:20 Existence of Negative Refraction Index in Periodic Semiconductor-ferrite Composite in Microwave Frequencies
R. X. Wu (*Nanjing University, China*); *J. Q. Xiao* (*University of Delaware, USA*);

11:40 Electric Metamaterials
D. Schurig (*Duke University, USA*); *D. R. Smith* (*Duke University, USA*); *J. J. Mock* (*Duke University, USA*); *J. B. Pendry* (*Imperial College, England*); *T. F. Starr* (*Sensor Metrix, USA*);

Session 0A4
Electromagnetic Near Field Effects in Problems of Wave Radiation from and Scattering by Ordered and Disordered Media

Sunday AM, March 26, 2006

Room: Skyline E

Organized by Yury Barabanenkov

Chaired by Yury Barabanenkov and S. V. Sukhov

08:20 A Doppler Method to Measure Forward Scattering of Radiowaves at Near Grazing Angles
G. Koh (*U. S. Army ERDC-CRREL, USA*); *S. A. Arcone* (*U. S. Army ERDC-CRREL, USA*);

08:40 Extended Unitarity for S-matrix and Electromagnetic Radiation Transfer in Dielectric Random Media with Effects of Near Fields and Opposite Wave Streams' Interference
Y. N. Barabanenkov (*Russian Academy of Sciences, Russia*); *M. Y. Barabanenkov* (*Russian Academy of Sciences, Russia*);

09:00 Energy Invariants of Composition Rules for Scattering and Transfer Matrices of Propagating and Evanescent Electromagnetic Waves in Dielectric Structures
Y. N. Barabanenkov (*Russian Academy of Sciences, Russia*); *M. Y. Barabanenkov* (*Russian Academy of Sciences, Russia*);

09:20 Near Fields in Electromagnetic Wave Multiple Scattering in Random Media
Y. N. Barabanenkov (*Russian Academy of Sciences, Russia*); *M. Y. Barabanenkov* (*Russian Academy of Sciences, Russia*);

09:40 Local Dielectric Measurement by Waveguide-type Microscopic Aperture Probe
T. Suzuki (*Nippon Institute of Technology, Japan*); *K. Sugimoto* (*Nippon Institute of Technology, Japan*); *Y. Yamagami* (*Nippon Institute of Technology, Japan*); *T. Negishi* (*Nippon Institute of Technology, Japan*); *Y. Watanabe* (*Nippon Institute of Technology, Japan*);

10:00 **Coffee Break**

10:20 Power Absorption of Near Field of Elementary Radiators in Proximity of a Composite Layer
M. Y. Koledintseva (*University of Missouri-Rolla, USA*); *P. C. Ravva* (*University of Missouri-Rolla, USA*); *J. L. Drewniak* (*University of Missouri-Rolla, USA*); *M. Sabirov* (*Moscow Power Engineering Institute (Technical University), Russia*); *V. V. Bodrov* (*Moscow Power Engineering Institute (Technical University), Russia*); *I. V. Sourkova* (*Moscow Power Engineering Institute (Technical University), Russia*); *V. I. Sourkov* (*Moscow Power Engineering Institute (Technical University), Russia*);

10:40 The Imbedding Method in the Theory of Horn Array Antennas. Hypershort Impulses and the Near Fields
V. L. Kouznetsov (*Moscow State Technical University of Civil Aviation, Russia*);

11:00 Near-field Response in Lossy Media with Exponential Conductivity Inhomogeneity
R. J. Riddolls (*Defence R&D Canada, Canada*);

11:20 Surface and Volume Scattering from Rough Heterogeneous Media in the Optical Domain
H. Chanal (*ONERA Centre de Toulouse, France*); *J. P. Segaud* (*ONERA Centre de Toulouse, France*); *P. Borderies* (*ONERA Centre de Toulouse, France*); *M. Saillard* (*Université de Toulon et du Var, France*);

11:40 Optical Properties of Metal Nanoclusters on a Substrate
S. V. Sukhov (*Institute of Radio Engineering and Electronics of RAS, Ulyanovsk Branch, Russia*); *S. G. Moiseev* (*Military Communications University, Ulyanovsk Branch, Russia*);

Session 0A9
Advances in Integral Equation Techniques for Planar Circuits

Sunday AM, March 26, 2006

Room: Riverfront

Organized by Ammar B. Kouki

Chaired by Ammar B. Kouki and Irsadi M. Aksun

08:40 Conformal Meshing in FFT Based EM Analysis
J. C. Rautio (*Sonnet Software, Inc., USA*);

09:00 An Analysis of Coaxial Line Slot Antenna for Hyperthermia Treatment by Spectral Domain Approach
T. Nakata (*Ritsumeikan University, Japan*); *H. Yoshitake* (*Ritsumeikan University, Japan*); *K. Wakino* (*Ritsumeikan University, Japan*); *Y. D. Lin* (*Ritsumeikan University, Japan*); *T. Kitazawa* (*Ritsumeikan University, Japan*);

09:20 Spectral Domain Analysis of Coupled Microstrip Using Spheroidal Wave Functions with Edge Conditions
C. A. Carter (*Stevens Institute of Technology, USA*);

09:40 Application of the Space Domain MoM Technique to the Analysis of Planar Guiding Structures
M. B. Ben Salah (*Ecole Polytechnique de Tunisie, Tunisia*); *M. Souden* (*Ecole Polytechnique de Tunisie, Tunisia*); *A. B. Kouki* (*Ecole Polytechnique de Tunisie, Tunisia*); *A. Samet* (*Ecole Polytechnique de Tunisie, Tunisia*);

10:00 **Coffee Break**

10:20 On the Limitations of the Space Domain Formulation of the MoM Method for Planar Circuits
K. Kochlef (*Ecole Polytechnique de Tunisie, Tunisia*); *A. B. Kouki* (*Ecole Polytechnique de Tunisie, Tunisia*); *A. Samet* (*Ecole Polytechnique de Tunisie, Tunisia*);

10:40 Critical Study of DCIM, and Development of Efficient Simulation Tool for 3D Printed Structures in Multilayer Media
M. I. Aksun (*Koc University, Turkey*); *T. Onal* (*Koc University, Turkey*);

11:00 Thick Metal Models
J. C. Rautio (*Sonnet Software, Inc., USA*);

11:20 Analysis of Cylindrical Microstrip Line with Finite Thickness of Conductor
H. Miyagawa (*Ritsumeikan University, Japan*); *T. Nishikawa* (*Ritsumeikan University, Japan*); *K. Wakino* (*Ritsumeikan University, Japan*); *Y. D. Lin* (*Ritsumeikan University, Japan*); *T. Kitazawa* (*Ritsumeikan University, Japan*);

Session 0P1
Inverse Problems

Sunday PM, March 26, 2006

Room: Ballroom A

Organized by Margaret Cheney and Oliver Dorn

Chaired by Margaret Cheney and Oliver Dorn

13:00 Microlocal Analysis of RADAR
C. Nolan (*University of Limerick, Ireland*);

13:20 Detection of Small Tumors in Microwave Medical Imaging Using Level Sets and Music
N. Irishina (*Universidad Carlos III de Madrid, Spain*); *M. Moscoso* (*Universidad Carlos III de Madrid, Spain*); *O. Dorn* (*Universidad Carlos III de Madrid, Spain*);

13:40 The Mie Solution for Improving the Evolution Strategy in Breast Cancer Imaging
S. Pandalraju (*University of Arkansas, USA*); *P. Rashidi* (*University of Arkansas, USA*); *M. El-Shenawee* (*University of Arkansas, USA*); *D. Macias* (*Université de Technologie de Troyes, France*);

14:00 Radiative Transport Theory for Optical Molecular Imaging
A. D. Kimn (*University of California, USA*);

14:20 Reconstructing Absorption and Diffusion Shape Profiles in Optical Tomography Using a Level Set Technique
M. Schweiger (*University College London, England*); *O. Dorn* (*Universidad Carlos III de Madrid, Spain*); *V. Kolehmainen* (*University of Kuopio, Finland*); *A. Zacharopoulos* (*University College London, England*); *S. Arridge* (*University College London, England*);

14:40 3D Shape Based Reconstruction for Optical Tomography Using Spherical Harmonics and BEM
A. Zacharopoulos (*University College London, UK*); *S. Arridge* (*University College London, UK*); *O. Dorn* (*Universidad Carlos III de Madrid, Spain*); *V. Kolehmainen* (*University of Kuopio, Finland*); *J. Sikora* (*Warsaw University of Technology, Poland*);

15:00 **Coffee Break**

15:20 Detection of Inclusions in the Radiative Transfer Regime
G. Bal (*Columbia University, USA*);

15:40 A Parametric Level-set Approach to Tomographic Reconstruction
A. B. Tarokh (*Brigham and Women's Hospital, USA*); *E. L. Miller* (*Northeastern University, USA*);

16:00 Shape Reconstruction in Diffuse Optical Tomography Using the Radiative Transfer Equation and Level Sets
O. Dorn (*Universidad Carlos III de Madrid, Spain*); *M. Moscoso* (*Universidad Carlos III de Madrid, Spain*);

16:20 Time-reversal and Signal Subspace Methods for Imaging and Inverse Scattering of Multiply Scattering Targets
E. A. Marengo (*Northeastern University, USA*); *F. K. Gruber* (*Northeastern University, USA*);

16:40 Approximation of the Scattering Coefficients for a Non-RAYLEIGH Obstacle
G. F. Crosta (*Università degli Studi Milano - Bicocca, Italy*);

17:00 Three Satellite Geolocation from TDOA and FDOA Measurements
B. A. Kemp (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *B.-I. Wu* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

17:20 Inversion of Partial Information from the Polarisation Scattering Matrix in the Presence of Noise
S. Anderson (*Defence Science and Technology Organisation, Australia*);

Session 0P4
Coherent Effects in Random Media

Sunday PM, March 26, 2006

Room: Skyline E

Organized by Valentin Freilikher

Chaired by Valentin Freilikher

13:00 Validity of Kinetic Models for Waves in Random Media
G. Bal (*Columbia University, USA*);

13:20 On the Intermittency of the Light Propagation in Disordered Optical Materials
Y. A. Godin (*University of North Carolina at Charlotte, USA*); *S. Molchanov* (*University of North Carolina at Charlotte, USA*);

13:40 Model of the Electromagnetic Contribution to Wurface Enhanced Raman Scattering (SERS)
V. Giannini (*Consejo Superior de Investigaciones Científicas, Spain*); *J. A. Sánchez-Gil* (*Consejo Superior de Investigaciones Científicas, Spain*); *J. V. García-Ramos* (*Consejo Superior de Investigaciones Científicas, Spain*); *E. R. Méndez* (*División de Física Aplicada, México*);

14:00 The Local Density of States in Finite Size Photonic Structures, Small Particles Approach
V. Prosentsov (*University of Twente, The Netherlands*); *A. Lagendijk* (*FOM-Institute for Atomic and Molecular Physics, The Netherlands*);

14:20 Spatial Wave Intensity and Field Correlations in Quasi-one-dimensional Wires
G. Cwilich (*Yeshiva University, USA*);

14:40 Near-field Intensity Correlations in Semicontinuous Metal-dielectric Films
H. Cao (*Northwestern University, USA*); *K. Seal* (*Northwestern University, USA*); *A. K. Sarychev* (*Ethertronics Inc., USA*); *D. A. Genov* (*Purdue University, USA*); *V. M. Shalaev* (*Purdue University, USA*); *A. Yamilov* (*Northwestern University, USA*); *H. Noh* (*Northwestern University, USA*); *Z. C. Ying* (*National Institute of Standards and Technology, USA*);

15:00 **Coffee Break**

15:20 Cones, Spirals, and Möbius Strips in Multiply Scattered Light
I. Freund (*Bar-Ilan University, Israel*);

15:40 Absorption Induced Confinement of Lasing Modes in Diffusive Random Medium
A. Yamilov (*Northwestern Unversity, USA*); *A. L. Burin* (*Tulane University, USA*); *X. H. Wu* (*Northwestern Unversity, USA*); *H. Cao* (*Northwestern Unversity, USA*);

16:00 Exploiting Multiple Scattering of Waves in Random Media
J. A. Scales (*Colorado School of Mines, USA*); *K. van Wijk* (*Colorado School of Mines, USA*);

16:20 Coherent-potential-approximation Multiple-scattering Scheme for the Study of Photonic Crystals with Substitutional Disorder
V. Yannopapas (*University of Patras, Greece*);

16:40 Two-dimensional Randomly Rough Surfaces that Act as Gaussian Schell-model Sources
E. R. Méndez (*División de Física Aplicada, Mexico*); *T. A. Leskova* (*University of California, USA*); *A. A. Maradudin* (*University of California, USA*);

17:00 The Design of Two-dimensional Randomly Rough Surfaces with Specified Scattering Properties: Non-normal Incidence
A. A. Maradudin (*University of California, USA*); *T. A. Leskova* (*University of California, USA*);

Session 1A1
Poster Session 1

Monday AM, March 27, 2006
9:00 AM - 11:00 AM
Room: Ballroom A

1 An Improved Electrical Model of a Biological Cell Taking Electroporation into Account
N. Citro (*University of Salerno, Italy*); *V. Tucci* (*University of Salerno, Italy*); *B. de Vivo* (*University of Salerno, Italy*); *P. Lamberti* (*University of Salerno, Italy*);

2 A Novel Multiband and Broadband Fractal Patch Antenna
J. J. Huang (*Tsinghua University, China*); *F. Q. Shan* (*Tsinghua University, China*); *J. Z. She* (*Tsinghua University, China*);

3 Improvement of Reflectarray Performances at Millimeter Waves by Reduction of the Cell Size
J. Lanteri (*Université de Nice Sophia-antipolis, France*); *C. Migliaccio* (*Université de Nice Sophia-antipolis, France*); *J. Y. Dauvignac* (*Université de Nice Sophia-antipolis, France*); *C. Pichot* (*Université de Nice Sophia-antipolis, France*);

4 Optical Near-field Study of Dielectric Nanostructures
M. Y. Mahmoud (*Université Djilali Liabès de Sidi Bel-Abbes, Algérie*); *G. Bassou* (*Université Djilali Liabès de Sidi Bel-Abbes, Algérie*); *L. Salomon* (*Université de Bourgogne, France*); *Z. Chekroun* (*Université Djilali Liabès de Sidi Bel-Abbes, Algérie*); *N. A. Djamai* (*Université Djilali Liabès de Sidi Bel-Abbes, Algérie*);

5 Array Patterns Synthesizing Using Genetic Algorithm
J. Jin (*Institute of Communications Engineering, PLAUST, China*); *H. L. Wang* (*Institute of Communications Engineering, PLAUST, China*); *W. M. Zhu* (*Institute of Communications Engineering, PLAUST, China*); *Y. Z. Liu* (*Institute of Communications Engineering, PLAUST, China*);

6 Space-filling Patch Antennas with CPW Feed
M. R. Haji-Hashemi (*Isfahan University of Technology, Iran*); *H. Mir-Mohammad* (*Isfahan University of Technology, Iran*); *V. M. Moghtadai* (*Isfahan University of Technology, Iran*);

7 The Power Line Transmission Characteristics for an OFDM Signal
A. Mori (*Musashi Institute of Technology, Japan*); *Y. Watanabe* (*Musashi Institute of Technology, Japan*); *M. Tokuda* (*Musashi Institute of Technology, Japan*); *K. Kawamoto* (*Sumitomo Electric Industries, Ltd., Japan*);

8 Relation between Balance-unbalance Conversion Factor and Leaked Electric Field in Power Line with Branch for PLC
Y. Watanabe (*Musashi Institute of Technology, Japan*); *M. Tokuda* (*Musashi Institute of Technology, Japan*);

9 Ground Wave Propagation over Complex Topography
L. B. Liu (*U.S. Army ERDC-CRREL, USA*); *S. A. Arcone* (*U.S. Army ERDC-CRREL, USA*); *E. Rohrbach* (*University of Connecticut, USA*);

10 A Design of a Quadplexer Consisting of BPFs Using Different Tapped Resonators
T. Ohno (*Aoyama Gakuin University, Japan*); *K. Wada* (*The University of Electro-Communications, Japan*); *O. Hashimoto* (*Aoyama Gakuin University, Japan*);

11 Basic Study on Relaxation of Uneven Heating in an Industrial Microwave Oven
R. Suga (*Aoyama Gakuin University, Japan*); *O. Hashimoto* (*Aoyama Gakuin University, Japan*); *T. Takatomi* (*Daiwa Can Company, Japan*); *T. Ijuin* (*Daiwa Can Company, Japan*); *S. Watanabe* (*Aoyama Gakuin University, Japan*);

12 Measurement for Complex Permittivity Tensor Based on Free-space Transmission Method in Millimeter-wave Band
T. Sakai (*Aoyama Gakuin University, Japan*); *O. Hashimoto* (*Aoyama Gakuin University, Japan*);

13 Analysis of Ultra-wideband Antennas for GPR Prospecting
G. Leone (*Università "Mediterranea" di Reggio Calabria, Italy*); *F. Soldovieri* (*Istituto per il Rilevamento Elettromagnetico dell'ambiente (IREA-CNR), Italy*); *R. Persico* (*Istituto per il Rilevamento Elettromagnetico dell'ambiente (IREA-CNR), Italy*); *G. Prisco* (*Seconda Università di Napoli, Italy*);

Session 1A2
Effective Parameters of Metamaterials: Difficulties in Definition, Characterization, and Interpretation of Measurements

Monday AM, March 27, 2006

Room: Skyline A

Organized by Ari H. Sihvola and Sergei A. Tretyakov

Chaired by Ari H. Sihvola and Sergei A. Tretyakov

08:00 On Effective Parameters of Periodical Metamaterials
S. Tretyakov (*Helsinki University of Technology, Finland*);

08:20 Characterization of Metamaterials as General Bianisotropic Effective Media
X. D. Chen (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

08:40 Negative-definite Media
I. V. Lindell (*Helsinki University of Technology, Finland*); *A. H. Sihvola* (*Helsinki University of Technology, Finland*);

09:00 Effective Metamaterial Representation by Parameter-fitting of Dispersion Models
G. Lubkowski (*Technische Universität Darmstadt, Germany*); *R. Schuhman* (*Technische Universität Darmstadt, Germany*); *T. Weiland* (*Technische Universität Darmstadt, Germany*);

09:20 Homogenisation Theory for Resonant Nonlinear Optical Metamaterials
J. M. Arnold (*University of Glasgow, UK*);

09:40 The Study of Effective Permittivity and Permeability of Curved Meta-materials
F. Yu (*Xi'an Jiaotong University, China*); *J. Wu* (*China Research Institute of Radiowave Propagation, China*); *J.-P. Song* (*Xi'an Jiaotong University, China*);

10:00 **Coffee Break**

10:20 Restrictions and Limitations of Parameters in the Description of Complex Media
A. H. Sihvola (*Helsinki University of Technology, Finland*); *I. V. Lindell* (*Helsinki University of Technology, Finland*);

10:40 Experimental Extraction of the Effective Properties of Metamaterials from Measured S-parameters
V. V. Varadan (*University of Arkansas, USA*);

11:00 Metamaterials: Mechanisms of Subwavelength Imaging
E. Shamonina (*University of Osnabrück, Germany*); *L. Solymar* (*Imperial College, UK*);

11:20 FDTD Simulation of Perfect Lens Imaging System
J. B. J. Chen (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *B.-I. Wu* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

11:40 Permeability and Permittivity of Metamaterials Determined by the Field Summation Method
J.-M. Lerat (*CEA Le Ripault, France*); *N. Malléjac* (*CEA Le Ripault, France*); *O. Acher* (*CEA Le Ripault, France*);

Session 1A3a
Scattering and Propagation in Random Media and Rough Surfaces

Monday AM, March 27, 2006

Room: Skyline C

Organized by Saba Mudaliar

Chaired by Saba Mudaliar and Ezekiel Bahar

08:00 Designer Emissivities
T. A. Leskova (*University of California, USA*); *A. A. Maradudin* (*University of California, USA*);

08:20 On the Application of the Radiative Transfer Approach to Scattering from a Random Medium Layer with Rough Boundaries
S. Mudaliar (*Air Force Research Laborotory/SNHE, USA*);

08:40 Polarization Dependent Backscatter Cross Sections of Composite Random Rough Surfaces for Normal to Near Grazing Incidence
E. Bahar (*University of Nebraska, USA*); *P. Crittenden* (*Air Force Institute of Technology, USA*);

09:00 Time-reversal Strategies for Extended Target Imaging and Focusing, and Clutter Nulling
E. A. Marengo (*Northeastern University, USA*);

09:20 A New Fractal-based Approach to Model Scattering from Natural Surfaces with Hurst Exponent H(R)
A. K. Sultan-Salem (*Stanford University, USA*); *G. L. Tyler* (*Stanford University, USA*);

09:40 A Semi-rigorous Method for Scattering from 2D Rough Heterogeneous Surfaces
P. Mallet (*Universite Paul Cezanne, France*); *C. A. Guérin* (*Universite Paul Cezanne, France*); *A. Sentenac* (*Universite Paul Cezanne, France*); *J. P. Segaud* (*ONERA Centre de Toulouse, France*);

10:00 **Coffee Break**

Session 1A3b
Interaction of Microwaves with Vegetation

Monday AM, March 27, 2006

Room: Skyline C

Organized by Paolo Ferrazzoli

Chaired by Paolo Ferrazzoli and Roger H. Lang

10:20 Scattering by a Vertical Tree Trunk over a Flat Ground: A Comparison between Analytical and Numerical Approach
P. de Matthaeis (*The George Washington University, USA*); *R. H. Lang* (*The George Washington University, USA*);

10:40 Experimental and Model Investigation about Forest Emission at L Band
A. D. Vecchia (*Tor Vergata University, Italy*); *P. Ferrazzoli* (*Tor Vergata University, Italy*); *L. Guerriero* (*Tor Vergata University, Italy*); *M. Guglielmetti* (*Institute of Terrestrial Ecology, Switzerland*); *M. Schwank* (*Institute of Terrestrial Ecology, Switzerland*); *H. Flühler* (*Institute of Terrestrial Ecology, Switzerland*); *C. Mätzler* (*Institute of Applied Physics, Switzerland*);

11:00 Angular Normalization of ENVISAT ASAR Data over Sahelian Grassland Using a Coherent Scattering Model
A. Monsiváis (*Université Paul Sabatier, France*); *I. Chênerie* (*Université Paul Sabatier, France*); *F. Baup* (*Université Paul Sabatier, France*); *E. Mougin* (*CNES/CNRS/UPS, France*); *K. Sarabandi* (*The University of Michigan, USA*);

11:20 Model Approaches for Scattering and Extinction of Thin Stems
A. D. Vecchia (*Tor Vergata University, Italy*); *P. Ferrazzoli* (*Tor Vergata University, Italy*); *L. Guerriero* (*Tor Vergata University, Italy*);

Session 1A4
Bioelectronics and Medical Electromagnetics

Monday AM, March 27, 2006

Room: Skyline E

Chaired by Jan Vrba and Ezekiel Bahar

08:20 A Review of the Mechanisms of Interaction between the Extremely Low Frequency Electromagnetic Fields and Human Biology
H. A. Sadafi (*Royal Melbourne Hospital, Australia*); *Z. Mehboodi* (*Amirkabir University, Iran*); *D. Sardari* (*Amirkabir University, Iran*);

08:40 Calculating SAR in two Models of the Human Head Exposed to Mobile Phones Radiations at 900 and 1800 MHz
S. Khalatbari (*Amirkabir University, Iran*); *D. Sardari* (*Amirkabir University, Iran*); *A. A. Mirzaee* (*Amirkabir University, Iran*); *H. A. Sadafi* (*Royal Melbourne Hospital, Australia*);

09:00 Total Body Water Measured by Electromagnetic Resonant Cavity Perturbation
D. A. Stone (*University of York, UK*); *M. P. Robinson* (*University of York, UK*); *B. Oldroyd* (*University of Leeds, UK*); *J. Truscott* (*University of Leeds, UK*); *A. Wright* (*MRC Human Nutritional Centre, UK*);

09:20 Influence of Electric Field Variation on Intracelluar K+ Ion Variations and Its Implication on Electrochemical Treatment
H. B. Kim (*Solco Biomedical Institute, Korea*); *S. B. Sim* (*Catholic University, Korea*); *S. Y. Ahn* (*Solco Biomedical Institute, Korea*); *W. Chang* (*China-Japan Hospitality Hospital, China*); *J.-H. Li* (*China-Japan Hospitality Hospital, China*); *Y.-L. Xin* (*China-Japan Hospitality Hospital, China*);

09:40 Qualitative Analysis of Human Semen Using Microwaves
A. Lonappan (*Cochin University of Science and Technology, India*); *A. V. Praveen Kumar* (*Cochin University of Science and Technology, India*); *G. Bindu* (*Cochin University of Science and Technology, India*); *V. Thomas* (*Cochin University of Science and Technology, India*); *K. T. Mathew* (*Cochin University of Science and Technology, India*);

10:00 **Coffee Break**

10:20 Microwave Thermotherapy — Technical and Clinical Aspects
J. Vrba (*Czech Technical University, Czech Republic*); *L. Oppl* (*Czech Technical University, Czech Republic*); *J. H. Trefna* (*Czech Technical University, Czech Republic*); *T. Drizdal* (*Czech Technical University, Czech Republic*); *R. Zajicek* (*Czech Technical University, Czech Republic*); *J. Kvěch* (*Institute of Radiation Oncology , Czech Republic*); *J. Kubeš* (*Institute of Radiation Oncology, Czech Republic*);

10:40 Relative Absorption of Electromagnetic Energy in Adjacent Tissues
Y. V. Narayana (*ANITS Engineering College, India*); *G. N. Devi* (*55-1-26, J.R. Nagar, Venkojipalem, India*); *G. S. N. Raju* (*AU College of Engineering, India*);

11:00 Detection and Identification of Bio-medical Materials Possessing Chirality Using the Mueller Matrix
E. Bahar (*University of Nebraska-Lincoln, USA*);

11:20 Co-design Planar Antenna for "UWB"
T.-P. Vuong (*Institute National Polytechnique de Grenoble, France*); *Y. Duroc* (*Institut National Polytechnique de Grenoble, France*); *S. Tedjini* (*Institut National Polytechnique de Grenoble, France*); *G. Fontgalland* (*LEMA de l'Universidade Federal de Campina Grande, Brazil*);

Session 1A5
Microelectronic Packaging

Monday AM, March 27, 2006

Room: Parkview

Organized by Henning Braunisch and Kaladhar Radhakrishnan

Chaired by Henning Braunisch and Kaladhar Radhakrishnan

08:20 A Hybrid Time-domain Method for Electromagnetic Problems in Microelectronic Packaging
T. Xiao (*Duke University, USA*); *M. Chai* (*Duke University, USA*); *Q. H. Liu* (*Duke University, USA*);

08:40 Effects from the Thin Metallic Substrate Sandwiched in Planar Multilayer Microstrip Lines
L. Zhang (*Iowa State University, USA*); *J. M. Song* (*Iowa State University, USA*);

09:00 Modeling of Randomly Rough Surface Effects on Absorptions by Conductors at Microwave Frequencies
X. Gu (*University of Washington, USA*); *L. Tsang* (*University of Washington, USA*); *H. Braunisch* (*Intel Corporation, Components Research, USA*);

09:20 Krylov Model Order Reduction of Finite Element Models of Packaging Structures with Embedded Frequency-dependent Multiports
H. Wu (*University of Illinois at Urbana-Champaign, USA*); *A. C. Cangellaris* (*University of Illinois at Urbana-Champaign, USA*);

09:40 Enabling Accelerated Boundary-element Design Tools for Packaging and Interconnects
S. Chakraborty (*University of Washington, USA*); *V. Jandhyala* (*University of Washington, USA*);

10:00 **Coffee Break**

10:20 Noise Source Characterization on the PDN for EMI
M. Lai (*University of Missouri Rolla, USA*); *V. Ricchiuti* (*Siemens C.N.X., Italy*); *A. Orlandi* (*University of L'Aquila, Italy*); *B. Archambeault* (*IBM, USA*); *G. Antonini* (*University of L'Aquila, Italy*); *D. J. Pommerenke* (*University of Missouri Rolla, USA*); *J. L. Drewniak* (*University of Missouri Rolla, USA*);

10:40 Fast Method for Analysis of Electromagnetic Bandgap Structures Used in Power Delivery Networks
A. Tavallaee (*McGill University, Canada*); *R. Abhari* (*McGill University, Canada*);

11:00 Extraction of Chip Power Delivery Current and Activity Variations
I. Kantorovich (*Intel Corporation, USA*); *V. Drabkin* (*Intel Corporation, USA*); *C. Houghton* (*Intel Corporation, USA*); *J. St. Laurent* (*Intel Corporation, USA*);

11:20 High Speed and Low Noise Packaging Design Methodologies for 40 Gbps SerDes Channel with PBGA Type Package
D. G. Kam (*Korea Advanced Institute of Science and Technology (KAIST), Korea*); *J. Yu* (*Amkor Technology Korea, Korea*); *H. Choi* (*Amkor Technology Korea, Korea*); *K. Bae* (*Amkor Technology Korea, Korea*); *J. Kim* (*Seoul National University, Korea*); *D.-K. Jeong* (*Seoul National University, Korea*); *C. Lee* (*Amkor Technology Korea, Korea*); *J. Kim* (*Korea Advanced Institute of Science and Technology (KAIST), Korea*);

11:40 3D-SOP Millimeter-wave Functions for High Data Rate Wireless Systems Using LTCC and LCP Technologies
J.-H. Lee (*Georgia Institute of Technology, USA*); *D. Thompson* (*Georgia Institute of Technology, USA*); *S. Pinel* (*Georgia Institute of Technology, USA*); *J. Papapolymerou* (*Georgia Institute of Technology, USA*); *M. M. Tentzeris* (*Georgia Institute of Technology, USA*);

Session 1A6a
Steerable Reflect-array Antennas

Monday AM, March 27, 2006

Room: Charles B

Organized by Orest G. Vendik

Chaired by Orest G. Vendik and Robert R. Romanofsky

08:00 Principles of Synthesis of Steerable Reflect-array Antennas
O. G. Vendik (*Electrotechnical University, Russia*);

08:20 Tunable Impedance Surfaces for Low-cost Beam Steering and Conformal Antennas
D. Sievenpiper (*HRL Laboratories LLC, USA*);

08:40 Unique Issues and Features of a Scanning Reflectarray Antenna Based on Ferroelectric Thin Film Phase Shifters
R. R. Romanofsky (*NASA Glenn Research Center, USA*);

09:00 Design of a Steerable Reflect-array Antenna with Semiconductor Tunable Varactor Diodes
M. D. Parnes (*MPA, Haofe Street 8, Ashkelon, 78172, Israel*); *O. G. Vendik* (*Electrotechnical University, Russia*); *V. D. Korolkov* (*Resonance, Engels Street, Bldg. 27, St. Petersburg, 194156, Russia*);

09:20 Modeling of Low-profile Reflect Array Antenna
M. S. Gashinova (*St.-Petersburg Electrotechnical University, Ruassia*); *O. G. Vendik* (*St.-Petersburg Electrotechnical University, Ruassia*);

09:40 Increasing Efficiency or Bandwidth of Electrically Small Transmit Antennas by Impedance Matching with Non-foster Circuits
S. E. Sussman-Fort (*EDO Corporation, USA*); *R. M. Rudish* (*EDO Corporation, USA*);

10:00 **Coffee Break**

Session 1A6b
Antennas and Resonators

Monday AM, March 27, 2006

Room: Charles B

Chaired by Ahmed A. Kishk and G. S. N. Raju

10:20 Admittance Characteristics of Open Slot Radiators
G. S. N. Raju (*AU College of Engineering, India*); *Y. V. Narayana* (*ANITS Engineering College, India*);

10:40 Wide Axial Ratio Bandwidth Circular Polarized Dielectric Resonator Antenna
R. Chair (*University of Mississippi, USA*); *S. L. S. Yang* (*City University of Hong Kong, Hong Kong*); *A. A. Kishk* (*University of Mississippi, USA*); *K. F. Lee* (*University of Mississippi, USA*); *K. M. Luk* (*City University of Hong Kong, Hong Kong*);

11:00 Radiation Q and Efficiency of Ideal Dipoles inside a Spherical Shield
J. C.-E. Sten (*Technical Research Centre of Finland, Finland*); *A. Hujanen* (*Technical Research Centre of Finland, Finland*);

11:20 Theory of Size Reduction of DRA Resonators
A. A. Kishk (*University of Mississippi, USA*);

11:40 Waveform Prediction of a Pulse Communication Link between Antennas Modeled by a Combination of Thin-wires
F. Sagnard (*IETR, UMR 6164, INSA, France*); *G. El Zein* (*IETR, UMR 6164, INSA, France*);

Session 1A7
Microwave and Optical Devices, Propagation

Monday AM, March 27, 2006

Room: Charles A

Organized by Rodica Ramer

Chaired by Rodica Ramer

08:20 Fabrication of Multimode Interference Devices Based on Ge-doped Silica-on-silicon Waveguides by HC-PECVD and RIE
Gangding Peng (*The University of New South Wales, Australia*); *Zhe Jin* (*The University of New South Wales, Australia*);

08:40 On the Spatial Characterstics of Cellular Mobile Channel in Low Antenna-height Environments
N. M. Khan (*The University of New South Wales, Australia*); *M. T. Simsim* (*The University of New South Wales, Australia*); *R. Ramer* (*The University of New South Wales, Australia*); *P. B. Rapajic* (*The University of New South Wales, Australia*);

09:00 Investigating the Standard Deviation of the Distribution of Scatterers in Cellular Environments
M. T. Simsim (*University of New South Wales, Australia*); *N. M. Khan* (*University of New South Wales, Australia*); *R. Ramer* (*University of New South Wales, Australia*); *P. B. Rapajic* (*University of New South Wales, Australia*);

09:20 Mathematical Modeling of Nonlinear Waves and Oscillations in Gyromagnetic Structures by Bifurcation Theory Methods
G. S. Makeeva (*Penza State University, Russia*); *O. A. Golovanov* (*Penza Military Institute of Artillery, Russia*); *M. Pardavi-Horvath* (*The George Washington University, USA*);

09:40 Miniaturized Cross-slotted Dual-mode Filter for Mobile and Satellite Communications
S. Shen (*University of New South Wales, Australia*); *G. M. Banciu* (*National Institute of Materials Physics, Romania*); *R. Ramer* (*University of New South Wales, Australia*);

10:00 **Coffee Break**

10:20 Near-field Scatterers and Mutual Coupling in Multi-antenna Systems
S. Krusevac (*Australian National University and National ICT, Australian*); *R. A. Kennedy* (*Australian National University and National ICT, Australian*); *P. B. Rapajic* (*University of Greenwich, UK*);

10:40 Current-induced Bistability and Dynamic Range of Microwave Generation in Magnetic Nano-structures
A. N. Slavin (*Oakland University, USA*); *V. S. Tiberkevich* (*Oakland University, USA*);

11:00 Nonlinear Self-phase-locking in an Array of Current-driven Magnetic Nano-contacts
A. N. Slavin (*Oakland University, USA*); *V. S. Tiberkevich* (*Oakland University, USA*);

11:20 Adaptive Turbo Multiuser Decision Feedback Detection for DS-CDMA on Unknown Multi-path Channels
V. D. Trajkovic (*National ICT Australia, Australia*); *P. B. Rapajic* (*University of Greenwich, UK*); *R. A. Kennedy* (*National ICT Australia, Australia*);

11:40 A Novel Approach for Tunable Filters
R. R. Mansour (*University of Waterloo, Canada*); *R. Zhang* (*University of Waterloo, Canada*);

Session 1A9
Novel Methods for Solving the Forward and Inverse Problems of Radiative Transport

Monday AM, March 27, 2006

Room: Riverfront

Organized by Vadim A. Markel

Chaired by Vadim A. Markel

08:00 Analytical Cumulant Solution of the Radiative Transfer Equation for Light Scattering in Turbid Media
W. Cai (*City College of New York, USA*); *M. Xu* (*City College of New York, USA*); *X. Ni* (*City College of New York, USA*); *R. R. Alfano* (*City College of New York, USA*);

08:20 Radiative Transport in Rotated Reference Frames
G. Y. Panasyuk (*University of Pennsylvania, USA*); *J. C. Schotland* (*University of Pennsylvania, USA*); *V. A. Markel* (*University of Pennsylvania, USA*);

08:40 Numerical Solution of the Radiative Transport Equation for Modulated Imaging of Tissues
A. D. Kimn (*University of California, USA*);

09:00 Inverse Transport with Diffusion-type Measurements
G. Bal (*Columbia University, USA*);

10:00 **Coffee Break**

10:20 Hybrid Solution Methods for the Radiative Transport Equation
S. Arridge (*University College London, UK*); *M. Schweiger* (*University College London, UK*); *T. Tarvainen* (*University of Kuopio, Finland*); *V. Kolehmainen* (*University of Kuopio, Finland*); *M. Vauhkonen* (*University of Kuopio, Finland*); *J. Kaipio* (*University of Kuopio, Finland*);

10:40 Fourier-Laplace Structure of the Inverse Medium Problem for the Radiative Transfer Equation
J. C. Schotland (*University of Pennsylvania, USA*);

11:00 A PDE-constrained Optimization Algorithm for Frequency Domain Optical Tomography
A. H. Hielscher (*Columbia University, USA*); *K. Ren* (*Columbia University, USA*); *X. Gu* (*Columbia University, USA*); *A. K. Klose* (*Columbia University, USA*); *G. Abdoulaev* (*Columbia University, USA*);

Session 1P1
Poster Session 2

Monday PM, March 27, 2006

2:00 PM - 4:00 PM

Room: Ballroom A

1 Mobile Wireless Communication System Antennas for 260MHz-band
H. Kawakami (*Antenna Giken Corp., Japan*);

2 Compact Surface-mount UWB Monopole Antenna for Mobile Applications
T. Y. Wu (*Industrial Technology Research Institute, Taiwan*); *C. L. Tang* (*Industrial Technology Research Institute, Taiwan*); *A. C. Chen* (*Industrial Technology Research Institute, Taiwan*);

3 TEC Measurements through GPS and Artificial Intelligence
V. Barrile (*Univ. Mediterranea, Italy*); *M. Cacciola* (*Univ. Mediterranea, Italy*); *F. Cotroneo* (*Univ. Mediterranea, Italy*); *F. C. Morabito* (*Univ. Mediterranea, Italy*); *M. Versaci* (*Univ. Mediterranea, Italy*);

4 Reliability and Availability of GPS Measures in Airport Landing Systems
V. Barrile (*Univ. Mediterranea, Italy*); *M. Cacciola* (*Univ. Mediterranea, Italy*); *F. Cotroneo* (*Univ. Mediterranea, Italy*);

5 Electromagnetic Scattering by Rough Surfaces with Spatially Varying Impedance
M. Spivack (*University of Cambridge, UK*); *N. S. Basra* (*University of Cambridge, UK*);

6 Development of the Pulsed Direct Current Iontophoresis and Its Clinical Application
M. Akimoto (*Kanto Gakuin University, Japan*); *M. Kawahara* (*I.C.I. Cosmetics Japan, Japan*); *M. Matsumoto* (*I.C.I. Cosmetics Japan, Japan*); *H. Matsubayashi* (*I.C.I. Cosmetics Japan, Japan*);

7 Design of Reduced-size Branch-line Couplers with Series Capacitors
T. Kawai (*University of Hyogo, Japan*); *Y. Kokubo* (*University of Hyogo, Japan*); *I. Ohta* (*University of Hyogo, Japan*);

8 Plane Wave Scattering by an Array of Pseudochiral Cylinders
M. Polewski (*Gdansk University of Technology, Poland*); *R. Lech* (*Gdansk University of Technology, Poland*); *J. Mazur* (*Gdansk University of Technology, Poland*);

9 Electromagnetic Field for Randomly Oriented Particle Located in Laser Beam
Y. P. Han (*Xidian University, China*); *H. Y. Zhang* (*Xidian University, China*);

10 Corrector Packaging for Heating inside a Domestic Microwave Oven
A. Rhattoy (*Université Moulay Ismail Meknes, Morocco*); *S. Bri* (*Université Moulay Ismail Meknes, Morocco*); *M. Audhuy-Peudeceder* (*ENSEEIHT-INPT, France*);

11 A WEB Application for Electromagnetic Structures
A. S. B. Lopes (*CEFETRN/NUTEL, Brazil*); *F. M. Sales Junior* (*CEFETRN/NUTEL, Brazil*); *J. R. S. Oliveira* (*CEFETRN/NUTEL, Brazil*);

12 Computation of Resonant Frequencies of Any Shaped Dielectric Resonators by CFDTD
A. Shahvarpour (*K. N. Toosi University of Technology, Iran*); *M. S. Abrishamian* (*K. N. Toosi University of Technology, Iran*);

13 A Novel Transmission Line Model for Analyzing Bowtie Patch Antennas
K. Moussakhani (*Amirkabir University of Technology, Iran*); *A. Ghorbani* (*Amirkabir University of Technology, Iran*);

Session 1P2
Electromagnetic Modeling in Optoelectronics

Monday PM, March 27, 2006

Room: Skyline A

Organized by Phillip Sewell

Chaired by Phillip Sewell and Ana Vukovic

13:20 Simulation of Self-assembled Photonic Crystals with Embedded Waveguide Using FDTD Method
J.-U. Lee (*University of Minnesota, USA*); *K.-H. Baek* (*University of Minnesota, USA*); *C. Olson* (*University of Minnesota, USA*); *D. M. Kim* (*University of Minnesota, USA*); *A. Gopinath* (*University of Minnesota, USA*);

13:40 Modal Analysis and Beam Propagation in Bent Fibers
G. R. Hadley (*Sandia National Laboratories, USA*);

14:00 Hybrid Methods for Efficient Electromagnetic Simulation
T. M. Benson (*University of Nottingham, UK*); *P. Sewell* (*Univeristy of Nottingham, UK*); *A. Vukovic* (*University of Nottingham, UK*); *C. Christopoulos* (*University of Nottingham, UK*); *D. W. P. Thomas* (*University of Nottingham, UK*); *A. Nosich* (*University of Nottingham, UK*);

14:20 Applying Oblique Coordinates in the Method of Lines
S. F. Helfert (*University of Hagen, Germany*);

14:40 Mixed-mode Optical Design for Optoelectronic Applications
N. Danz (*Fraunhofer Institute for Applied Optics and Precision Engineering, Germany*); *D. Michaelis* (*Fraunhofer Institute for Applied Optics and Precision Engineering, Germany*); *P. Schreiber* (*Fraunhofer Institute for Applied Optics and Precision Engineering, Germany*); *C. Wähter* (*Fraunhofer Institute for Applied Optics and Precision Engineering, Germany*); *U.-D. Zeitner* (*Fraunhofer Institute for Applied Optics and Precision Engineering, Germany*);

15:00 **Coffee Break**

15:20 Modelling of Time-varying Phenomena in Electroabsorption Modulators
A. Vukovic (*The University of Nottingham, UK*); *E. Bekker* (*The University of Nottingham, UK*); *P. Sewell* (*The University of Nottingham, UK*); *T. M. Benson* (*The University of Nottingham, UK*);

15:40 High-Q Photonic Crystal Microcavities in Diamond
S. Tomljenovic-Hanic (*University of Sydney, Australia*); *M. J. Steel* (*RSoft Design Group, Inc., Australia*); *C. M. de Sterke* (*University of Sydney, Australia*);

16:00 Nonlinear Pulse Propagation and Modulation Instability in Periodic Media with and without Defects
V. Grimalsky (*National Institute for Astrophysics, Mexico*); *S. Koshevaya* (*Autonomous University of Morelos, Morelos*); *J. Sanchez-Mondragon* (*National Institute for Astrophysics, Mexico*); *M. Tecpoyotl-Torres* (*Autonomous University of Morelos, Mexico*); *J. Escobedo-Alatorre* (*Autonomous University of Morelos, Mexico*);

16:20 Nonlinear Vector Finite Element Simulation of Optical Photonic Devices
A. Fisher (*University of California, USA*); *D. White* (*Lawrence Livermore National Laboratory, USA*); *G. Rodrigue* (*University of California, USA*);

16:40 Modelling of Bragg Gratings and Application in Cascaded Cavities
A. Melloni (*Politecnico di Milano, Italy*); *F. Morichetti* (*Politecnico di Milano, Italy*); *M. Martinelli* (*Politecnico di Milano, Italy*);

17:00 Spectral-element Discontinuous Galerkin (SEDG) Simulations for Metallic Nanoparticles
M. Min (*Mathematics and Computer Science Division, USA*); *P. F. Fischer* (*Mathematics and Computer Science Division, USA*);

Session 1P3a
Microwave Remote Sensing of Snow

Monday PM, March 27, 2006

Room: Skyline C

Organized by Martti Hallikainen

Chaired by Martti Hallikainen and Howard A. Zebker

13:00 Assessing the Impact of Measurement Spatial Resolution on Passive Microwave Observations of Snow from the Cold Land Processes Experiment
R. E. J. Kelly (*University of Maryland Baltimore County, USA*); *M. Tedesco* (*University of Maryland Baltimore County, USA*); *E. J. Kim* (*University of Maryland Baltimore County, USA*); *J. L. Foster* (*University of Maryland Baltimore County, USA*); *D. K. Hall* (*University of Maryland Baltimore County, USA*);

13:20 Spatial Scaling Behavior of Brightness Temperatures during CLPX and Appropriate Satellite Sensor Resolution
E. J. Kim (*NASA Goddard Space Flight Center, USA*); *M. Tedesco* (*GEST-NASA Goddard Space Flight Center, USA*);

13:40 SAR Remote Sensing of Snow Parameters in Norwegian Areas – Current Status and Future Perspective
R. Storvold (*Norut IT, Norway*); *E. Malnes* (*Norut IT, Norway*); *K. A. Hogda* (*Norut IT, Norway*); *S.-E. Hamran* (*University of Oslo, Norway*); *K. Mueller* (*University of Oslo, Norway*); *K. Langley* (*University of Oslo, Norway*);

14:00 Electromagnetic Models for Passive Microwave Remote Sensing of Snow and Application to Experimental Data
M. Tedesco (*GEST-NASA Goddard Space Flight Center, USA*); *E. J. Kim* (*NASA Goddard Space Flight Center, USA*);

Session 1P3b
Remote Sensing and Imaging

Monday PM, March 27, 2006

Room: Skyline C

Chaired by Howard A. Zebker and H. Deng

14:20 On the Analysis of Geophysical Networks from Multiscale DEMs
L. T. Tay (*Multimedia University, Malaysia*); *B. S. D. Sagar* (*Multimedia University, Malaysia*); *H. T. Chuah* (*Multimedia University, Malaysia*);

14:40 Buried Cylinders Geometric Parameters Measurement by Means of GPR
B. A. Yufryakov (*Scientific and Technical Centre of System Modeling, Russia*); *O. N. Linnikov* (*Scientific and Technical Centre of System Modeling, Russia*);

15:00 **Coffee Break**

15:20 Automatic Ground Clutter Rejection Processing Using Doppler-angle Domain Image Features Based Processing (DAIP)
H. Deng (*The University of North Texas, USA*);

15:40 InSAR with Multiple Baselines—Comparison of Height Retrieval and Phase Unwrapping Techniques
M. C. Yeung (*Massachusetts Institute of Technology, USA*); *W. D. Wong* (*Massachusetts Institute of Technology, USA*); *B.-I. Wu* (*Massachusetts Institute of Technology, USA*); *Y. Hara* (*Mitsubishi Electric Corporation, Japan*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

16:00 Effect of Rain on Zenith Path Sky Noise Temperature at 29.9 GHz at Tropical Site Amritsar
P. Sharma (*Guru Nanak Dev University, India*); *I. S. Hudiara* (*KC College of Engg., India*); *M. L. Singh* (*Guru Nanak Dev University, India*);

16:20 Enhanced Detection and Classification of Buried Mines with an UWB Multistatic GPR
A. J. Dumanian (*MIT Lincoln Laboratory, USA*); *C. Rappaport* (*Northeastern University, USA*);

16:40 Electrical Properties of Titan Surface from Cassini Scatterometer and Radiometer Measurements
H. A. Zebker (*Geophysics Stanford University, USA*); *L. Wye* (*Geophysics Stanford University, USA*);

17:00 Preliminary Detection of the Dangerous Meteorological Phenomena and Selections Closed Objects by the Help Radar with Variable Polarization
A. B. Shupiatsky (*141700 Moscow Region, Dolgoprudny, Russia*);

17:20 Apparently Abnormal Satellite Thermal Signals of Infrared Band as a Thermal Plateau on the Sea Surface
S. Nakamura (*Kyoto University-Retired/Geophysical Advisor, Japan*);

Session 1P4
Recent Advances in Bioelectromagnetics Research on Mobile Telephony and Health

Monday PM, March 27, 2006

Room: Skyline E

Organized by Sakari Lang

Chaired by Sakari Lang, James Weaver

13:00 Recent Advances in Bioelectromagnetics Research on Mobile Telephony and Health — An Introduction
S. Lang (*Nokia Corporation, Finland*);

13:20 RF Interactions with Biological Molecules and Processes: Quantifying Thermal and Non-thermal Mechanisms
A. R. Sheppard (*Loma Linda University, USA*);

13:40 Research of Interactions of EM Field and Biological Systems
J. Vrba (*Czech Technical University, Czech Republic*); *L. Vannucci* (*Institute of Microbiology, Czech Republic*); *P. Peschke* (*German Cancer Research Institute, Germany*); *J. Kvěch* (*FN Motol, Czech republic*); *J. Kubeš* (*Institute of Radiation Oncology in Prague, Czech Republic*); *F. Vozeh* (*Charles University, Czech Republic*); *M. Vojtisek* (*National Institute of Health, Czech Republic*);

14:00 An Initial Approach to *in Silico* Bioelectromagnetics for RF Exposures
J. C. Weaver (*Massachusetts Institute of Technology, USA*); *T. R. Gowrishankar* (*Massachusetts Institute of Technology, USA*); *A. T. Esser* (*Massachusetts Institute of Technology, USA*); *D. A. Stewart* (*Massachusetts Institute of Technology, USA*); *K. C. Smith* (*Massachusetts Institute of Technology, USA*); *Z. Vasikoski* (*Massachusetts Institute of Technology, USA*);

14:20 FDTD Calculations of Specific Energy Absorption Rate in a Seated Voxel Model of the Human Body
R. P. Findlay (*Health Protection Agency, UK*); *P. J. Dimbylow* (*Health Protection Agency, UK*);

14:40 Use of Anatomically Correct Head Models and Higher Dielectric Values to Study SAR Difference between Children and Adult's Head and Eye Tissues
J. Keshvari (*Nokia Research Centre, Finland*); *S. Lang* (*Nokia Research Center, Finland*);

15:00 **Coffee Break**

15:20 Overview of RF Genotoxicity Research
M. L. Meltz (*University of Texas Health Science Center at San Antonio, USA*);

15:40 Does Long-term Radiofrequency (RF) Exposure of Laboratory Animals Affect Cancer, Survival and General Health
J. A. Elder (*Motorola Florida Research Labs, USA*);

16:00 Epidemiologic Assessment of Cancer Risk from Mobile Phone Use: Where are We
A. Auvinen (*STUK–Radiation and Nuclear Safety, Finland*); *A. Lahkola* (*STUK–Radiation and Nuclear Safety, Finland*); *K. Tokola* (*STUK–Radiation and Nuclear Safety, Finland*); *P. Kurttio* (*STUK–Radiation and Nuclear Safety, Finland*);

16:20 Enzymatic Alteration of Rat Brain Chronically Exposed to Low Level Microwave Radiation
R. Paulraj (*Jawaharlal Nehru University, India*); *J. Behari* (*Jawaharlal Nehru University, India*);

16:40 Investigation of 900 MHz Electromagnetic Radiation for Effects on Permeability of the Blood Brain Barrier
L. E. Anderson (*Duke University, USA*); *L. B. Sasser* (*Pacific Northwest National Laboratory, USA*); *J. E. Morris* (*Pacific Northwest National Laboratory, USA*);

17:00 Mobile Phone Use and Health. Self-rated Health, Neurocognitive Function, Neurophysiological Effects Using 900 MHz Wireless Communication Signals. A laboratory-based Exposure Study
B. B. Arnetz (*Uppsala University, Sweden*); *T. Ăkerstedt* (*IPM, Karolinska Institute, Sweden*); *N. Kuster* (*Swiss Federal Inst of Technology, Switzerland*); *A. Lowden* (*IPM, Karolinska Institutet, Sweden*); *M. Berg* (*Uppsala University Hospital, Sweden*); *C. Wiholm* (*Uppsala University, Sweden*); *S. Ebert* (*Swiss Federal Inst of Technology, Switzerland*); *S. D Moffat* (*Wayne State University, USA*); *L. Hillert* (*Stockholm Centre for Public Health, Sweden*);

Session 1P5
Modelling, Imaging and Inversion of Large-Scale Electromagnetic Data

Monday PM, March 27, 2006

Room: Parkview

Organized by Aria Abubakar and Tarek M Habashy

Chaired by Aria Abubakar and Tarek M Habashy

13:20 On the Low-frequency Modeling of Coupled Obstacles Buried in Earth-like Medium
A. Breard (*CNRS-SUPÉLEC-UPS, France*); *G. Perrusson* (*CNRS-SUPÉLEC-UPS, France*); *D. Lesselier* (*CNRS-SUPÉLEC-UPS, France*);

13:40 NSA Calculation of Anechoic Chamber Using Method of Moment
T. Sasaki (*Musashi Institute of Technology, Japan*); *Y. Watanabe* (*Musashi Institute of Technology, Japan*); *M. Tokuda* (*Musashi Institute of Technology, Japan*);

14:00 Optimal Grids for the Forward and Inverse Electric Impedance Tomography Problems
F. Guevara Vasquez (*Rice University, USA*); *L. Borcea* (*Rice University, USA*); *V. Druskin* (*Schlumberger-Doll Research, USA*);

14:20 Finite-difference Solution of the 3D EM Problem Using Integral Equation Type Preconditioners
M. Zaslavsky (*Schlumberger-Doll Research, USA*); *S. Davydycheva* (*Schlumberger-Doll Research, USA*); *V. Druskin* (*Schlumberger-Doll Research, USA*); *L. Knizhnerman* (*Schlumberger-Doll Research, USA*); *A. Abubakar* (*Schlumberger-Doll Research, USA*); *T. M. Habashy* (*Schlumberger-Doll Research, USA*);

14:40 An Effective Inversion Method Based on the Padé Via Lanczos Process
R. F. Remis (*Delft University of Technology, The Netherlands*);

15:00 **Coffee Break**

15:20 Inversion of Large-scale Electromagnetic Data through the Iterative Multizooming Reconstruction of Nonmeasurable Equivalent Current Densities
M. Donelli (*University of Trento, Italy*); *D. Franceschini* (*University of Trento, Italy*); *M. Benedetti* (*University of Trento, Italy*); *A. Massa* (*University of Trento, Italy*); *G. L. Gragnani* (*University of Genoa, Italy*);

15:40 QN Inversion of Large-scale MT Data
A. Avdeeva (*Dublin Institute for Advanced Studies, Ireland*); *D. Avdeev* (*Dublin Institute for Advanced Studies, Ireland*);

16:00 2.5 D Algorithm for Tomographic Imaging of the Deep Electromagnetic Geophysical Measurement
A. Abubakar (*Schlumberger-Doll Research, USA*); *T. M. Habashy* (*Schlumberger-Doll Research, USA*); *V. Druskin* (*Schlumberger-Doll Research, USA*); *D. Alumbaugh* (*Schlumberger-Doll Research, USA*); *P. Zhang* (*Schlumberger-Doll Research, USA*); *M. Wilt* (*Schlumberger-Doll Research, USA*); *L. Knizhnerman* (*Central Geophysical Expedition, Russia*);

16:20 A Rigorous Three-dimensional Magnetotelluric Inversion
D. Avdeev (*Russian Academy of Sciences, Russia*); *A. Avdeeva* (*Dublin Institute for Advanced Studies, Ireland*);

16:40 Contrast Source Inversion of 3D Electromagnetic Data
P. M. van den Berg (*Delft University of Technology, The Netherlands*); *A. Abubakar* (*Schlumberger-Doll Research, USA*); *T. M. Habashy* (*Schlumberger-Doll Research, USA*);

Session 1P6a
Volume and Rough Surface Scattering: Theory and Photonic Applications

Monday PM, March 27, 2006

Room: Charles B

Organized by Gerard Berginc

Chaired by Gerard Berginc

13:00 Phase Fluctuations in Scattered Radiation
S. M. Watson (*University of Central Florida, USA*); *K. D. Ridley* (*QinetiQ, UK*);

13:20 Scattering of an Electromagnetic Wave from 3-dimensional Rough Layers: Small-amplitude Method and Small-slope Approximation
G. Berginc (*Thales Optronique S. A., France*); *C. Bourrely* (*Centre de Physique Thérique, France*);

13:40 Fast Modeling of Reflectance Image of Turbid Medium with Full-field Illumination
C. Chen (*East Carolina University, USA*); *R. S. Brock* (*East Carolina University, USA*); *D. W. Pravica* (*East Carolina University, USA*); *X.-H. Hu* (*East Carolina University, USA*); *J. Q. Lu* (*East Carolina University, USA*);

14:00 Optical Tomography of Arbitrarily Shaped Object with Randomly Rough Boundaries
G. Berginc (*Thales, France*); *M. Jouffroy* (*Thales, France*);

14:20 Statistical Distribution of Field Scattered by 1-Dimensional Random Slightly Rough Surfaces
R. Dusséaux (*Université de Versailles Saint-Quentin en Yvelines, France*); *R. de Oliveira* (*Université de Versailles Saint-Quentin en Yvelines, France*);

14:40 Experimental and Theoretical Studies of Specular and Diffuse Scattering of Light from Randomly Rough Metal Surfaces
E. I. Chaikina (*Centro de Investigación y de Educación Superior de Ensenada, México*); *E. R. Méndez* (*Centro de Investigación y de Educación Superior de Ensenada, México*); *A. G. Navarette Alcalá* (*Centro de Investigación y de Educación Superior de Ensenada, México*); *A. A. Maradudin* (*University of California, USA*); *T. A. Leskova* (*University of California, USA*);

15:00 **Coffee Break**

Session 1P6b
Guided Waves

Monday PM, March 27, 2006

Room: Charles B

Chaired by Marina Y. Koledintseva and Ross A. Speciale

15:20 Guide-Wave Propagation on 2D Doubly-Periodic Clusters of Multi-Port Resonators
R. A. Speciale (*Research and Development Inc., USA*);

15:40 Dispersion Characteristics of Coplanar Waveguides at Subterahertz Frequencies
J. J. Zhang (*University of Rochester, USA*); *T. Y. Hsiang* (*University of Rochester, USA*);

16:00 A Multi Conductor Transmission Line Model for the Evaluation of the Rotor Shaft Voltages in Adjustable Speed Drive Motors
B. de Vivo (*University of Salerno, Italy*); *C. Petrarca* (*University of Naples "Federico II", Italy*); *V. Tucci* (*University of Salerno, Italy*); *M. Vitelli* (*Second University of Naples, Italy*);

16:20 Frequency-selective Power Transducers: Hexagonal Ferrite Resonator-semiconductor Element
M. Y. Koledintseva (*University of Missouri Rolla, USA*);

16:40 Analysis of Guided Modes in Shielded Slot Line
F. Kuroki (*Kure National College of Technology, Japan*); *K. Miyamoto* (*Kure National College of Technology, Japan*);

17:00 Propagation of Light in Random Waveguide Systems with Slightly Random Imperfections
A. Komiyama (*Osaka Electro-Communication University, Japan*);

Session 1P9
Numerical Method

Monday PM, March 27, 2006

Room: Riverfront

Organized by Jin-Fa Lee

Chaired by Marinos Vouvakis and Romanus Dyczij-Edlinger

13:20 An Efficient *hp* Adaptive Finite Element Solver for Time-harmonic Electromagnetic Fields
V. Hill (*Saarland University, Germany*); *O. Farle* (*Saarland University, Germany*); *P. Ingelstrom* (*Saarland University, Germany*); *P. Nickel* (*Saarland University, Germany*); *R. Dyczij-Edlinger* (*Saarland University, Germany*);

13:40 Challenges for Computational Electromagnetics for Low Frequencies
W. C. Chew (*University of Illinois, USA*); *M. K. Li* (*University of Illinois, USA*); *Y. A. Liu* (*University of Illinois, USA*); *Z. G. Qian* (*University of Illinois, USA*); *J. Xiong* (*University of Illinois, USA*); *L. Sun* (*University of Illinois, USA*); *I. T. Chiang* (*University of Illinois, USA*); *L. J. Jiang* (*IBM TJ Watson Research Center, USA*); *Y. H. Chu* (*Agilent Technologies, USA*);

14:00 Multi-level Multiplicative Schwarz Preconditioner for Solving Matrix Equations from DD-FE-BEM Formulation
K. Z. Zhao (*The Ohio State University, USA*); *J.-F. Lee* (*The Ohio State University, USA*);

14:20 Higher Order Hierarchical FEM Solutions with Enhanced Efficiency and Practicality
B. M. Notaroš (*University of Massachusetts Dartmouth, USA*); *M. M. Ilić* (*University of Massachusetts Dartmouth, USA*); *A. Ž. Ilić* (*University of Massachusetts Dartmouth, USA*);

14:40 Combining an FEM Domain Decomposition Method with BEM for Accurate Antenna Array Analysis
M. N. Vouvakis (*University of Massachusetts-Amherst, USA*); *S.-C. Lee* (*The Ohio State University, USA*); *K. Z. Zhao* (*The Ohio State University, USA*); *S. M. Seo* (*The Ohio State University, USA*); *J.-F. Lee* (*The Ohio State University, USA*);

15:00 **Coffee Break**

Session 2A1
Waves on Metamaterial Elements and Their Applications

Tuesday AM, March 28, 2006

Room: Ballroom A

Organized by Laszlo Solymar

Chaired by Laszlo Solymar and Ekaterina Shamonina

08:00 Subwavelength Tunneling of Electromagnetic Waves
H. Wen (*The University of British Columbia, Canada*); *B. Hou* (*The Hong Kong University of Science and Technology, China*); *W. J. Wen* (*The Hong Kong University of Science and Technology, China*);

08:20 Reflection at the Boundary of Two Periodic Media: a Generic Approach Applicable to Metamaterials
L. Solymar (*Imperial College, UK*); *R. R. A. Syms* (*Imperial College, UK*);

08:40 Waves on Coupled Lines of Resonant Metamaterial Elements: Theory and Experiments
A. Radkovskaya (*M.V. Lomonosov Moscow State University, Russia*); *O. Sydoruk* (*University of Osnabrück, Germany*); *E. Shamonina* (*University of Osnabrück, Germany*); *C. J. Stevens* (*University of Oxford, UK*); *D. J. Edwards* (*University of Oxford, UK*); *L. Solymar* (*Imperial College, UK*);

09:00 Quasi-static Waves on Resonant Elements in Non-chiral Periodic Media and Metamaterials: a Historical Survey
L. Solymar (*Imperial College London, UK*); *E. Shamonina* (*University of Osnabrück, Germany*);

09:20 Wave Propagation in Grounded Dielectric Slabs with Double Negative Metamaterials
W. Shu (*Iowa State University, USA*); *J. M. Song* (*Iowa State University, USA*);

09:40 On the Microstrip Characterization of Artificial Magneto-dielectric Structures
C. R. Simovski (*Helsinki University of Technology, Finland*); *P. Ikonen* (*Helsinki University of Technology, Finland*); *S. Tretyakov* (*Helsinki University of Technology, Finland*);

10:00 **Coffee Break**

10:20 Traveling Waves along the Metasolenoid
L. Jylhä (*Helsinki University of Technology, Finland*); *S. Maslovski* (*Helsinki University of Technology, Finland*); *S. Tretyakov* (*Helsinki University of Technology, Finland*);

10:40 Plasmonic-polaritonic Photonic-prystal Superlattices as Left-handed Metamaterials
V. Yannopapas (*University of Patras, Greece*); *A. Moroz* (*Wave-scattering.com, Germany*);

11:00 Electroinductive Waves on Chains of Resonators
M. Beruete (*Universidad Pública de Navarra, Spain*); *M. J. Freire* (*University of Seville, Spain*); *R. Marqués* (*Universidad de Sevilla, Spain*); *F. J. Falcone* (*Universidad Pública de Navarra, Spain*); *J. D. Baena* (*Universidad de Sevilla, Spain*);

11:20 New Experimental Results and Physical Interpretation of a Near-field Planar Magneto-inductive Lens for 3D-subwavelength Imaging
M. J. Freire (*University of Seville, Spain*); *R. Marques* (*University of Seville, Spain*); *J. D. Baena* (*University of Seville, Spain*);

11:40 Analysis and Visualization of Fields and Waves inside a PEMC Waveguide
A. H. Sihvola (*Helsinki University of Technology, Finland*); *I. V. Lindell* (*Helsinki University of Technology, Finland*); *M. Pitkonen* (*Helsinki University of Technology, Finland*);

Session 2A2
Plasmonic Nanophotonics

Tuesday AM, March 28, 2006

Room: Skyline A

Organized by Din Ping Tsai

Chaired by Che Ting Chan and Lisa M. Zurk

08:20 Optical Response of Metal Nanoparticle Chains
K. H. Fung (*The Hong Kong University of Science and Technology, China*); *C. T. Chan* (*The Hong Kong University of Science and Technology, China*);

08:40 Focusing Using Single-negative Medium
J. Li (*The Hong Kong University of Science and Technology, China*); *C. T. Chan* (*The Hong Kong University of Science and Technology, China*);

09:00 Fabrication and Characterization of High Sensitivity Visible Light Photonic Crystal Biosensors
N. Ganesh (*University of Illinois at Urbana-Champaign, USA*); *B. T. Cunningham* (*University of Illinois at Urbana-Champaign, USA*);

09:20 Thermal Emission by Photonic Micro-textured Surfaces
J. T. K. Wan (*Hong Kong University of Science and Technology, Hong Kong*); *C. T. Chan* (*Hong Kong University of Science and Technology, Hong Kong*);

09:40 Calculation of Scattering from Polyethylene Particles Compared with Terahertz Measurements
L. M. Zurk (*Portland State University, USA*); *B. Jouni* (*Portland State University, USA*); *F. Farahbakhshian* (*Portland State University, USA*); *D. P. Winebrenner* (*University of Washington, USA*); *E. Thorsos* (*University of Washington, USA*); *M. R. Leahy-Hoppa* (*University of Maryland, USA*); *L. M. Hayden* (*University of Maryland, USA*);

10:00 **Coffee Break**

10:20 Slow Electromagnetic Waves and Resonance Phenomena in Photonic Crystals
A. Figotin (*University of California at Irvine, USA*); *I. Vitebskiy* (*University of California at Irvine, USA*);

10:40 The Dispersion Relations of the Sub-skin-depth Metal Particles
S. C. Chen (*Far East College, Taiwan*); *T. M. Chang* (*National Taiwan University, Taiwan*); *D. P. Tsai* (*National Taiwan University, Taiwan*);

11:00 Photonic Crystal Made of Dichroic Filters
M. Beruete (*Public University of Navarre, Spain*); *M. Sorolla* (*Public University of Navarre, Spain*); *I. Campillo* (*Labein Centro Tecnológico, Spain*);

11:20 Magnonic-photonic Crystals with Application to Tunable Microwave Devices
S. A. Nikitov (*Russian Academy of Sciences, Russia*); *C. S. Tsai* (*University of California, USA*); *Y. V. Gulyaev* (*Russian Academy of Sciences, Russia*); *Y. A. Filimonov* (*Russian Academy of Sciences, Russia*);

Session 2A3
New Applications of Radar for Non-destructive Testing

Tuesday AM, March 28, 2006

Room: Skyline C

Organized by Lorenzo Capineri and Colin G. Windsor

Chaired by Lorenzo Capineri and Colin G. Windsor

08:40 Detection of Groundwater by Ground Penetrating Radar
S. I. Elkhetali (*Academy of Graduate Studies, Libya*);

09:00 Detection of Buried Objects in Periodic Structures with Ground Penetrating Radar Mounted on Moving Vehicles
P. Falorni (*University of Florence, Italy*); *L. Capineri* (*University of Florence, Italy*); *L. Masotti* (*University of Florence, Italy*); *C. G. Windsor* (*116, New Road, East Hagbourne, OX11 9LD, UK*);

09:20 Development of High Speed GPR for Railtrack Assessment
S. Bandyopadhyay (*University of Liverpool, UK*); *J. Gascoyne* (*Zetica, UK*); *W. Al-Nuaimy* (*University of Liverpool, UK*);

09:40 Automatic Processing of Train-mounted GPR Data for Ballast Inspection
A. Doshi (*University of Liverpool, UK*); *W. Al-Nuaimy* (*University of Liverpool, UK*);

10:00 **Coffee Break**

10:20 Frequency and Time Domain Error in Buried Target Radar Signature Extraction
I. van den Bosch (*Royal Military Academy, Belgium*); *P. Druyts* (*Royal Military Academy, Belgium*); *M. Acheroy* (*Royal Military Academy, Belgium*); *I. Huynen* (*Microwaves and Communications laboratory, Belgium*);

10:40 GPR Ground Bounce Removal Methods Based on Blind Source Separation
J.-X. Liu (*Civil Aviation University of China, China*); *B. Zhang* (*Civil Aviation University of China, China*); *R.-B. Wu* (*Civil Aviation University of China, China*);

11:00 Detection and Characterization of Targets Buried Below a Rough Surface
K. Belkebir (*CNRS, France*); *O. Cmielewski* (*CNRS, France*); *A. Litman* (*CNRS, France*); *M. Saillard* (*CNRS, France*); *H. Tortel* (*CNRS, France*);

11:20 Non-Destructive Evaluation of Dielectric Structural Materials by Holographic Subsurface Radar
S. Ivashov (*Bauman Moscow State Technical University, Russia*); *V. Razevig* (*Bauman Moscow State Technical University, Russia*); *A. Sheyko* (*Bauman Moscow State Technical University, Russia*); *I. Vasilyev* (*Bauman Moscow State Technical University, Russia*); *T. Bechtel* (*Enviroscan, Inc., USA*);

Session 2A4
Non-linear Inverse Problems in Electromagnetic Medical Imaging

Tuesday AM, March 28, 2006

Room: Skyline E

Organized by Michele Piana

Chaired by Michele Piana and Joseph Coyle

08:20 Inverse Electromagnetic Scattering Problems for Partially Coated Objects
F. Cakoni (*University of Delaware, USA*); *D. Colton* (*University of Delaware, USA*); *P. Monk* (*University of Delaware, USA*);

08:40 A High-order Finite Element Method for Electrical Impedance Tomography
S. Pursiainen (*Helsinki University of Technology, Finland*); *H. Hakula* (*Helsinki University of Technology, Finland*);

09:00 The Linear Model for Chirp-Pulse Microwave Computerized Tomography: an Analysis of the Applicability Limitations with an Application to Mammography
A. M. Massone (*CNR-INFM, Italy*); *M. Bertero* (*Universita' di Genova, Italy*); *M. Piana* (*Universita' di Genova, Italy*); *F. Conte* (*Universita' di Genova, Italy*); *M. Miyakawa* (*Niigata University, Japan*);

09:20 An Improvement of Born Approximation Based on the Linear Sampling Method
M. Brignone (*Università di Genova, Italy*); *M. Piana* (*Università di Genova, Italy*); *J. Coyle* (*Monmouth University, USA*);

09:40 Computational Validation of a Particle Filtering Approach to the Solution of the Magnetoencephalography (MEG) Inverse Problem
A. Sorrentino (*Università di Genova, Italy*); *M. Piana* (*Università di Verona, Italy*);

10:00 **Coffee Break**

10:20 Resolution and the Linear Sampling Method
J. Coyle (*Monmouth University, USA*); *R. Aramini* (*Universitá di Trento, Italy*);

10:40 Robust Design of the Field in Medical Electromagnetic Systems
P. Lamberti (*University of Salerno, Italy*); *G. Spagnuolo* (*University of Salerno, Italy*); *V. Tucci* (*University of Salerno, Italy*);

11:00 A Class of Non-iterative Methods Applied to Microwave Tomography at a Fixed Frequency
H. Haddar (*INRIA Rocquencourt, France*);

11:20 Time-domain Image Reconstruction in an Experimental Prototype for Breast Cancer Detection
A. Fhager (*Chalmers University of Technology, Sweden*); *P. Hashemzadeh* (*Chalmers University of Technology, Sweden*); *M. Persson* (*Chalmers University of Technology, Sweden*);

Session 2A5
Computational Methods in Electromagnetics

Tuesday AM, March 28, 2006

Room: Parkview

Organized by Fabio Del Frate and Chi Hau Chen

Chaired by Fabio Del Frate and Chi Hau Chen

08:20 Analysis of EM Scattering and Radiation Using Characteristic Basis Function Method with Plane Wave Spectrum Approach
X. F. Que (*University of Electronic Science and Technology of China, China*); *Z.-P. Nie* (*University of Electronic Science and Technology of China, China*);

08:40 The Structures of Fields of Standing Axisymmetric Spherical Electromagnetic Waves with High Localization of Intensity of Electrical and Magnetic Fields
M. V. Pavlova (*Saratov State Technical University, Russia*); *Y. A. Zyuryukin* (*Saratov State Technical University, Russia*);

09:00 The Electromagnetic Effect of Different Sources on Pin-fin Heatsinks
S. B. Chiu (*National Cheng Kung University, Taiwan*); *J. H. Chou* (*National Cheng Kung University, Taiwan*);

09:20 A Fast Solution of Combined Field Volume Integral Equation for EM Scattering
X. C. Nie (*National University of Singapore, Singapore*); *N. Yuan* (*National University of Singapore, Singapore*); *Y. B. Gan* (*National University of Singapore, Singapore*); *L. W. Li* (*National University of Singapore, Singapore*);

09:40 Broadband MLFMA for Electromagnetic Scattering by Dielectric Objects
H. Wallén (*Helsinki University of Technology, Finland*); *S. Järvenpää* (*Helsinki University of Technology, Finland*); *P. Ylä-Oijala* (*Helsinki University of Technology, Finland*); *J. Sarvas* (*Helsinki University of Technology, Finland*);

10:00 **Coffee Break**

10:20 Arbitrary Lagrangian Eulerian Electromechanics in 3D
R. Rieben (*Lawrence Livermore National Laboratory, USA*); *B. Wallin* (*Lawrence Livermore National Laboratory, USA*); *D. White* (*Lawrence Livermore National Laboratory, USA*);

10:40 Hybrid Numerical Simulation of Micro Electro Mechanical Systems
M. Greiff (*University of Hanover, Germany*); *U. B. Bala* (*University of Hanover, Germany*); *W. Mathis* (*University of Hanover, Germany*);

11:00 EM Field Induced in Inhomogeneous Dielectric Spheres by External Sources
G. C. Kokkorakis (*National Technical University of Athens, Greece*); *J. G. Fikioris* (*National Technical University of Athens, Greece*); *G. Fikioris* (*National Technical University of Athens, Greece*);

11:20 Spatial-spectral Hybrid Method in Calculation of Capacitances and Inductances of Ring Conductors in a Stratified Medium
T. J. Dufva (*Helsinki University of Technology, Finland*); *J. C.-E. Sten* (*VTT Technical Research Centre of Finland, Finland*);

Session 2A6
Antennas

Tuesday AM, March 28, 2006

Room: Charles B

Chaired by Seiji Mano and Jan Zehentner

08:00 Synthesis of Aperture-Field Distributions for of High-Gain Phased Arrays
R. A. Speciale (*Research and Development Inc., USA*);

08:20 Advanced Design of Phased Array Beam-Forming Networks
R. A. Speciale (*Research and Development Inc., USA*);

08:40 Slotline Leaky Wave Antenna with a Stacked Substrate
J. Machac (*Czech Technical University, Czech Republic*); *J. Zehentner* (*Czech Technical University, Czech Republic*); *J. Hruska* (*Czech Technical University, Czech Republic*);

09:00 Coplanar Multi-line Antenna Design for Thin Wireless Terminal
K. Takei (*Hitachi Cable Ltd., Japan*); *Y. Shirakawa* (*Hitachi Cable Ltd., Japan*); *M. Ikegaya* (*Hitachi Cable Ltd., Japan*);

09:20 Effect of Distant Scatterers on MIMO Fading Channel Tracking
N. M. Khan (*University of New South Wales, Australia*); *R. Ramer* (*University of New South Wales, Australia*);

09:40 Planar Small Antenna Module for Global Positioning System
T. Ogawa (*Hitachi Cable Ltd., Japan*); *K. Takei* (*Hitachi Cable Ltd., Japan*);

10:00 **Coffee Break**

10:20 Interaction of Electromagnetic Field from Cellular Base Station Antennas on Cardiac Pacemakers
R. Kubacki (*Military Institute of Hygiene and Epidemiology, Poland*); *M. Wnuk* (*Military University of Technology, Poland*); *J. Sobiech* (*Military Institute of Hygiene and Epidemiology, Poland*);

10:40 Computer-Simulation of Near-Field Phased-Array Radiation-Pattern Scanning
R. A. Speciale (*Research and Development Inc., USA*);

11:00 Dual Frequency Rectangular Microstrip Patch Antenna with Novel Defected Ground Structure
J. Sun (*University of Osnabrck, Singapore*); *E.-P. Li* (*University of Osnabrck, Singapore*); *Y.-J. Zhang* (*University of Osnabrck, Singapore*);

11:20 Modeling of High Power Broadband THz Antennas
A. S. Podgorski (*Air Force Research Laboratory, USA*); *J. T. MacGillivray* (*Air Force Research Laboratory, USA*); *W. D. Prather* (*Air Force Research Laboratory, USA*);

Session 2A9
Space-Time Dynamics of Pulsed Beam Fields in Complex Media

Tuesday AM, March 28, 2006

Room: Riverfront

Organized by Kurt E. Oughstun

Chaired by Kurt E. Oughstun and Natalie A. Cartwright

08:00 Uniform Signal Contribution of the Step Function Modulated Sine Wave
N. A. Cartwright (*University of Vermont, USA*); *K. E. Oughstun* (*University of Vermont, USA*);

08:20 Fast Time Domain Integral Equation Solver for Simulation of Propagation of Wide-band Pulses through Dispersive Media
E. Bleszynski (*Monopole Research, Thousand Oaks, USA*); *M. Bleszynski* (*Monopole Research, Thousand Oaks, USA*); *T. Jaroszewicz* (*Monopole Research, Thousand Oaks, USA*);

08:40 Observation of Precursor-like Behaviour of Ultra-fast Pulses Propagating in Water
A. Fox (*Dartmouth College, USA*); *U. Österberg* (*Dartmouth College, USA*); *X. Gu* (*Georgia Institute of Technology, USA*); *R. Trebino* (*Georgia Institute of Technology, USA*);

09:00 Optimal Waveform Design for Imaging with an Active Array
L. Borcea (*Rice University, USA*); *G. Papanicolaou* (*Stanford University, USA*); *C. Tsogka* (*University of Chicago, USA*);

09:20 Analytic Pulsed-beam Communication Channels
G. Kaiser (*Center for Signals and Waves, USA*);

09:40 Weak Lacunae of Electromagnetic Waves in Dilute Plasma with Anisotropy
S. V. Tsynkov (*North Carolina State University, USA*);

10:00 **Coffee Break**

10:20 Qualitative Methods in Inverse Electromagnetic Scattering
F. Cakoni (*University of Delaware, USA*);

Session 2P1
Nanostructures and Metamaterials for RF and Optical Applications

Tuesday PM, March 28, 2006

Room: Ballroom A

Organized by Hossein Mosallaei and Nader Engheta

Chaired by Hossein Mosallaei and Nader Engheta

13:00 Exotic Waves in Chains of Silver Nanospheres
C. R. Simovski (*Helsinki University of Technology, Finland*); *A. J. Viitanen* (*Helsinki University of Technology, Finland*); *S. A. Tretyakov* (*Helsinki University of Technology, Finland*);

13:20 Light Scattering on 2D Nanostructured Resonant Gratings
N. V. Ilyin (*Institute of Applied Physics, Russia*); *I. G. Kondrat'ev* (*Institute of Applied Physics, Russia*); *N. V. Sapogova* (*Institute of Applied Physics, Russia*); *A. I. Smirnov* (*Institute of Applied Physics, Russia*);

13:40 New Resonant Elements for Isotropic Magnetic Metamaterials
J. D. Baena (*University of Sevilla, Spain*); *L. Jelinek* (*Czech Technical University, Czech Republic*); *R. Marqués* (*University of Sevilla, Spain*); *J. Zehentner* (*Czech Technical University, Czech Republic*);

14:00 Modified Equivalent Circuit Model of Microwave Filter with LTCC Technique
Y. L. Qin (*Zhejiang University of Technology, China*); *A. Fang* (*Zhejiang University of Technology, China*); *J. Hu* (*Zhejiang Universityn of Technology, China*); *W. W. Zhou* (*Zhejiang University of Technology, China*); *M. Zhang* (*Zhejiang University of Technology, China*);

14:20 Design of a Metafilm-composite Dielectric Shielding Structure Using a Genetic Algorithm
J. Huang (*University of Missouri-Rolla, USA*); *M. Y. Koledintseva* (*University of Missouri Rolla, USA*); *P. C. Ravva* (*University of Missouri-Rolla, USA*); *J. L. Drewniak* (*University of Missouri-Rolla, USA*); *R. E. Du Broff* (*University of Missouri-Rolla, USA*); *B. Archambeault* (*IBM Co., USA*); *K. N. Rozanov* (*Russian Academy of Sciences, Russia*);

14:40 Towards Nano-scales in Photonics
M. Soljačić (*MIT, USA*); *A. Karalis* (*MIT, USA*); *E. Lidorikis* (*MIT, USA*); *M. Ibanescu* (*MIT, USA*); *L. V. Hau* (*Harvard University, MIT*); *J. D. Joannopoulos* (*MIT, USA*);

15:00 **Coffee Break**

15:20 Design and Measurement of a Four-port Device Using Left-handed Metamaterials
Z. M. Thomas (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *B.-I. Wu* (*Massachusetts Institute of Technology, USA*); *X. D. Chen* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

15:40 Embedded-circuit Meta-materials for Surface Wave Suppression
H. Mosallaei (*Northeastern University, USA*);

16:00 Double Clad Fiber Laser with Frequency Selecting by Double Clad Fiber Bragg Grating
T. Wu (*LongYan University, China*); *Z.-D. Xue* (*Fuzhou University, China*);

16:20 Ferroelectric PSTO and Mn: BSTO Thin Films for Wireless Microwave Elements
Z. Yuan (*University of Texas at San Antonio, USA*); *S. W. Liu* (*University of Arkansas, USA*); *C. L. Chen* (*University of Texas at San Antonio, USA*);

16:40 Chain of Metamaterial Nanospheres as Leaky-wave Nanoantennas at Optical Frequencies
A. Alù (*University of Pennsylvania, USA*); *N. Engheta* (*University of Pennsylvania, USA*);

17:00 Epsilon-near-zero (ENZ) Materials as Insulators for Nanocircuit Elements
M. G. Silveirinha (*University of Pennsylvania, USA*); *N. Engheta* (*University of Pennsylvania, USA*);

17:20 Leaky-mode Resonance Properties of Periodic Lattices and Their Applications
R. Magnusson (*University of Connecticut, USA*); *Y. Ding* (*University of Connecticut, USA*);

17:40 Slow-than-light Transportation of Microwave through Subwavelength Fractal Slots
B. Hou (*The Hong Kong University of Science and Technology, China*); *W. J. Wen* (*The Hong Kong University of Science and Technology, China*); *P. Sheng* (*The Hong Kong University of Science and Technology, China*);

Session 2P2
Surface Plasmon Photonics

Tuesday PM, March 28, 2006

Room: Skyline A

Organized by Jose A. Sanchez-Gil and J. Gomez-Rivas

Chaired by Jose A. Sanchez-Gil and J. Gomez-Rivas

13:20 Plasmons in nearly Touching Metallic Nanoparticles: Singular Response in the Limit of Touching Dimers
I. Romero (*Donostia International Physics Center (DIPC), Spain*); *J. Aizpurua* (*Donostia International Physics Center (DIPC), Spain*); *G. W. Bryant* (*National Institute of Standards and Technology, USA*); *F. J. G. de Abajo* (*Donostia International Physics Center (DIPC), Spain*);

13:40 Temporal and Spectral Eependence of the Nonlinear Optical Properties of $Au:Al_2O_3$ and $Cu:Al_2O_3$ Composite Films
H. Fernández (*Instituto de Óptica, CSIC, Spain*); *R. Del Coso* (*Instituto de Óptica, CSIC, Spain*); *J. Solis* (*Instituto de Óptica, CSIC, Spain*); *J. Gonzalo* (*Instituto de Óptica, CSIC, Spain*); *C. N. Afonso* (*Instituto de Óptica, CSIC, Spain*);

14:00 Flasmon Spectroscopy of Metallic Nanoparticles Close to Dielectric Substrates. Analysis of Particle-substrate Interaction Effects
F. Moreno (*University of Cantabria, Spain*); *F. González* (*University of Cantabria, Spain*);

14:20 Metallic Photonic Band Gap Structures for Laser Applications
F. H'Dhili (*RIKEN Nanophotonics Laboratory, Japan*); *T. Okamoto* (*RIKEN Nanophotonics Laboratory, Japan*); *J. Simonen* (*RIKEN Nanophotonics Laboratory, Japan*); *S. Kawata* (*RIKEN Nanophotonics Laboratory, Japan*);

14:40 Surface-plasmon Polariton Scattering from a Finite Array of Nanodefects on Metal Surfaces
J. A. Sánchez-Gil (*Instituto de Estractura de la Materia, Spain*); *T. A. Leskova* (*University of California, USA*); *A. A. Maradudin* (*University of California, USA*);

15:00 **Coffee Break**

15:20 How Light Emerges from an Illuminated Finite Array of Subwavelength Holes
L. Martín-Moreno (*Universidad de Zaragoza-CSIC, Spain*); *A. Degiron* (*Universite Louis Pasteur, France*); *F. Przybilla* (*Universite Louis Pasteur, France*); *C. Genet* (*Universite Louis Pasteur, France*); *J. Bravo-Abad* (*Universidad Autónoma de Madrid, Spain*); *F. J. Garcia-Vidal* (*Universidad Autónoma de Madrid, Spain*); *T. W. Ebbesen* (*Universite Louis Pasteur, France*);

15:40 Experimental Realization of a Low Profile Metallic Bull's-Eye Antenna
M. B. Diaz (*Universidad Pública de Navarra, Spain*);

16:00 Transmission of Light through a Thin Metal Film with Periodically and Randomly Corrugated Surfaces
B. Baumeier (*University of California, USA*); *T. A. Leskova* (*University of California, USA*); *A. A. Maradudin* (*University of California, USA*);

16:20 Terahertz Surface-plasmon Polariton Scattering from Semiconductor Groove Arrays: Gap Formation and Switching
M. Kuttge (*FOM-Institute for Atomic and Molecular Physics, The Netherlands*); *J. Gómez-Rivas* (*FOM-Institute for Atomic and Molecular Physics, The Netherlands*); *J. A. Sánchez-Gil* (*Instituto de Estructura de la Materia, Spain*);

16:40 Surface Modes in Structured Metal Surfaces
F. J. G. de Abajo (*Consejo Superior de Investigaciones Científicas, Spain*); *J. J. Sáenz* (*Universidad Autónoma de Madrid, Spain*);

17:00 Refraction of Surface Polaritons by a Surface Lens
B. Baumeier (*University of California, USA*); *T. A. Leskova* (*University of California, USA*); *A. A. Maradudin* (*University of California, USA*); *J. A. Sánchez-Gil* (*Instituto de Estractura de la Materia, C.S.I.C., Spain*);

Session 2P3
Physics Based and Statistical Methods in Subsurface Imaging

Tuesday PM, March 28, 2006

Room: Skyline C

Organized by Eric L. Miller

Chaired by Eric L. Miller

13:00 A Novel Modeling and Inversion Method to Image Weakly Scattering Sub-cellular Structure
E. Karbeyaz (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*);

13:20 The Effective Permittivity of Inhomogeneous Objects Reconstructed by Inverse Scattering Methods
N. V. Budko (*Delft University of Technology, Netherlands*); *R. F. Remis* (*Delft University of Technology, Netherlands*);

13:40 Neural Networks as Statistical Indicator of Breast Cancer Using Scattered Electromagnetic Data
P. Rashidi (*University of Arkansas, USA*); *D. Woten* (*University of Arkansas, USA*); *J. Lusth* (*University of Arkansas, USA*); *M. El-Shenawee* (*University of Arkansas, USA*);

14:00 Some New Results for Shape Reconstruction in 3D Low-frequency Electromagnetic Induction Tomography Using Level Sets
O. Dorn (*Universidad Carlos III de Madrid, Spain*);

14:20 Single Value Decomposition and Degree-of-ill-posedness Assessment in Microwave Imaging
P. M. Meaney (*Dartmouth College, USA*); *Q. Q. Fang* (*Dartmouth College, USA*); *K. D. Paulsen* (*Dartmouth College, USA*);

14:40 Radar Detection of Subsurface Objects Using Correlation Imaging
S. Matzner (*Portland State University, USA*); *L. M. Zurk* (*Portland State University, USA*); *A. I. Timchenko* (*National Academy of Sciences of Ukraine, Ukraine*);

15:00 **Coffee Break**

15:20 Statistical and Adaptive Signal Processing for UXO Discrimination for Next-generation Sensor Data
S. L. Tantum (*Duke University, USA*); *Y. Q. Wang* (*Duke University, USA*); *L. M. Collins* (*Duke University, USA*);

15:40 A Lossy Half-space Green's Function Forward Model and Inversion Method for Geophysics Problem
H. Zhan (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*); *M. Farid* (*Northeastern University, USA*); *E. L. Miller* (*Northeastern University, USA*);

16:00 Optimal Ultrasonic Surface Displacement and Velocity Estimation in the Presence of Surface Roughness
P. Ratilal (*Northeastern University, USA*); *N. Donabed* (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*); *D. Fenneman* (*US Army RDECOM CERDEC Night Vision and Electron., USA*);

16:20 One-dimensional Inverse Scattering: Localization of Planar Interface
R. Barresi (*Università degli Studi Maediterranea di Reggio Calabria, Italy*); *G. Leone* (*Università degli Studi Maediterranea di Reggio Calabria, Italy*); *R. Solimene* (*Università degli Studi Maediterranea di Reggio Calabria, Italy*);

16:40 A Unified Surface Source Model for Discrimination of Subsurface Metallic Objects by Magnetometry and UWB Electromagnetic Induction
F. Shubitidze (*Dartmouth College, USA*); *K. O'Neill* (*Dartmouth College, USA*); *S. Billings* (*Sky Research Inc., USA*); *L. Pasion* (*Sky Research Inc., USA*); *D. Oldenburg* (*UBC Geophysical Inversion Facility, Canada*);

Session 2P4
Neural Network and/or Remote Sensing Inversion Problems

Tuesday PM, March 28, 2006

Room: Skyline E

Organized by Fabio Del Frate and Chi Hau Chen

Chaired by Fabio Del Frate and Chi Hau Chen

13:00 Neural Networks for Satellite-Based Estimation of Precipitation
F. W. Chen (*MIT Lincoln Laboratory, USA*);

13:20 Neural Network Retrievals of Atmospheric Temperature and Moisture Profiles from High-resolution Infrared and Microwave Sounding Data
W. J. Blackwell (*Massachusetts Institute of Technology, USA*);

13:40 Ozone Profiles Retrieval: Intercomparison between Neural Networks Inversion and Other Estimation Techniques
M. Iapaolo (*Università di Roma Tor Vergata, Italy*); *F. Del Frate* (*Università di Roma Tor Vergata, Italy*); *S. Casadio* (*Karl Franzens University of Graz, Italy*);

14:00 Application of Artificial Neural Networks and Genetic Algorithms to the Retrieval of Snow Parameters from Passive Microwave Remote Sensing Data
M. Tedesco (*University of Maryland Baltimore County, USA*); *E. J. Kim* (*NASA Goddard Space Flight Center, USA*);

14:20 On the Robustness of Neural Network Algorithms for Oil Spill Detection
E. Angiuli (*Università Tor Vergata, Italy*); *F. Del Frate* (*Università Tor Vergata, Italy*); *S. Di Giosia* (*Università Tor Vergata, Italy*); *L. Salvatori* (*Università Tor Vergata, Italy*);

14:40 Neural Network Ozone Retrieval System for Total Ozone and Ozone Profile Retrieval from Gome Uv/Vis Spectra (Nnorsy-gome)
A. K. Kaifel (*Zentrum für Sonnenenergie-und Wasserstoff-Forschung, Germany*); *M. D. Müller* (*NASA Goddard Space Flight Center, USA*); *J. Kaptur* (*Zentrum für Sonnenenergie-und Wasserstoff-Forschung, Germany*);

15:00 **Coffee Break**

15:20 Analysis of Urban SAR Data Using Morphological Pre-processing and Neural Networks
J. A. Benediktsson (*University of Iceland, Iceland*); *S. O. Sigurjonsson* (*University of Iceland, Iceland*); *G. Lisini* (*University of Pavia, Italy*); *P. Gamba* (*University of Pavia, Italy*); *J. Chanussot* (*LIS / INPG, France*); *J. R. Sveinsson* (*University of Iceland, Iceland*);

15:40 Speckle Reduction of SAR Images Using Independent Component Analysis
C. H. Chen (*University of Massachuetts Dartmouth, USA*); *X. J. Wang* (*Univesity of Massachusetts Dartmouth, USA*);

16:00 Markov Random Fields and Neural Network for Improving Multi-source Data Interpretation
P. Gamba (*Università di Pavia, Italy*); *G. Trianni* (*Università di Pavia, Italy*); *S. Caorsi* (*Università di Pavia, Italy*);

16:20 Neural Networks for the Electromagnetic Near Field Subsurface Sensing
S. Caorsi (*University of Pavia, Italy*); *G. Cevini* (*University of Pavia, Italy*);

16:40 Combination Approaches in Neural Classifiers Fusion for Image Classification
K.-S. Chen (*National Central University, Taiwan*); *Y.-C. Tzeng* (*National United University, Taiwan*);

17:00 Cloud Cover Assessment of Quickbird Imagery Using NEURANUS Software
Z. Bergen (*Digital Globe, USA*);

17:20 Retrieving Cloud Information with Neural Network Ensembles
D. G. Loyola R. (*German Aerospace Center (DLR), Germany*);

17:40 Neural Networks for Tropospheric Profiling from GPS-LEO Radio Occultation
P. Basili (*University of Perugia, Italy*); *S. Bonafoni* (*University of Perugia, Italy*); *P. Ciotti* (*University of L'Aquila, Italy*); *E. Maltempi* (*University of Perugia, Italy*);

Session 2P5
Electromagnetic Modeling and Inversion and Applications 1

Tuesday PM, March 28, 2006

Room: Parkview

Organized by Ganquan Xie and Michael Oristaglio

Chaired by Ganquan Xie, Michael Oristaglio, and Jianhua Li

13:00 New GL Method and Its Advantages for Resolving Historical Difficulties
G. Q. Xie (*GL Geophysical Laboratory, USA*); *F. Xie* (*GL Geophysical Laboratory, USA*); *J. H. Li* (*GL Geophysical Laboratory, USA*);

13:20 Optical Distance and Optical Distance Difference in Moving Systems
G. Korom (*Faraday Institute for Theoretical Physics, Hungary*);

13:40 An Incremental Inductance Approach to Proximity Effect Calculations of Differential Striplines
S. Asgari (*Ansoft Corporation, USA*); *M. Tsuk* (*Ansoft Corporation, USA*);

14:00 Matlab Simulink Based DQ Modeling and Dynamic Characteristics of Three Phase Self Excited Induction Generator
A. Kishore (*Birla Institute of Technology, India*); *R. C. Prasad* (*Birla Institute of Technology, India*); *B. M. Karan* (*Birla Institute of Technology, India*);

14:20 Estimation of Higher Order Correlation between Electromagnetic and Sound Waves Leaked from VDT Environment Based on Fuzzy Probability and the Prediction of Probability Distribution
A. Ikuta (*Prefectural University of Hiroshima, Japan*); *M. Ohta* (*Hiroshima University, Emeritus, Japan*); *H. Ogawa* (*Prefectural University of Hiroshima, Japan*);

14:40 Single Phase Single Stage AC/DC Converter with High Input Power Factor and Tight Output Voltage Regulation
A. K. Jha (*Birla Instt. of Technology, India*); *B. G. Fernandes* (*Indian Institute of Technology, India*); *A. Kishore* (*Birla Instt. of Technology, India*);

15:00 **Coffee Break**

15:20 A New Generalized Space Vector Modulation Algorithm for Neutral-point-clamped Multilevel Converters
P. Purkait (*Birla Institute of Technology, India*); *R. S. Sriramakavacham* (*Birla Institute of Technology, India*);

15:40 Improved Mesh Conforming Boundaries for the TLM Numerical Method
I. J. G. Scott (*University of East Anglia, UK*); *D. de Cogan* (*University of East Anglia, UK*);

16:00 A Fast Matlab-based 3D Finite Difference Frequency Domain (FDFD) Method and Its Application to Subsurface Scatterers
Q. Z. Dong (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*);

16:20 Modeling Electromagnetic Scattering from Particles
M. J. Berg (*Kansas State University, USA*); *C. M. Sorensen* (*Kansas State University, USA*); *A. Chakrabarti* (*Kansas State University, USA*); *M. I. Mishchenk* (*Kansas State University, USA*);

16:40 The Spectral Expansion on the Entire Real Line of Green's Function for a Three-layer Medium in the Fundamental Functions of a Nonself-adjoint Sturm-liouville Operator
E. G. Saltykov (*Moscow State University, Russia*);

17:00 Simulation of Electromagnetic Fields of Electromagnetic in Separator
X. F. Tan (*Hunan Institute of Science and Technology, China*);

Session 2P7
Electromagnetic Theory and Dielectric Waveguides and Antennas

Tuesday PM, March 28, 2006

Room: Charles A

Organized by Kemin Sheng

Chaired by Gurevich Yuri and Hamid Mirmohammad-Sadeghi

13:00 Theory of Rain Fades; Measurement Done at Ku-band Satellite Link in a Tropical Region
V. Kumar (*University of the South Pacific, Fiji*); *V. Ramachandran* (*University of the South Pacific, Fiji*);

13:20 The Characteristics of Millimetre-wave Gyrotropic Magnetic Material for Use in Quasi-optical Non-reciprocal Devices
B. Yang (*Queen Mary, University of London, UK*); *R. S. Donnan* (*Queen Mary, University of London, UK*); *D. H. Martin* (*Queen Mary, University of London, UK*);

13:40 "Wiggly-line" Perturbation Applying to Ground Plane Aperture for Multispurious Rejection in Microstrip Parallel Coupled Line Filter
M. Moradian (*Isfahan University of Technology, Iran*); *M. R. Hajhashemi* (*Isfahan University of Technology, Iran*); *S. V. Mirmoghtadaie* (*Isfahan University, Iran*);

14:00 Design of a Non-uniform High Impedance Surface for a Low Profile Antenna
M. Hosseini (*Iran Telecommunication Research Center (ITRC), Iran*); *A. Pirhadi* (*Tarbiat Modares University, Iran*); *M. Hakkak* (*Tarbiat Modares University, Iran*);

14:20 Axial Focusing Properties of Cosine-Gaussian Beam by a Lens with Spherical Aberration
Q. F. Wang (*Southwest Jiaotong University, China*); *X. Q. Wang* (*Southwest Jiaotong University, China*); *L. Wang* (*Southwest Jiaotong University, China*); *J. J. Lin* (*Southwest Jiaotong University, China*); *J. S. Tang* (*Southwest Jiaotong University, China*); *K. Sheng* (*Southwest Jiaotong University, China*);

14:40 Some Applications of the High-mode-merging Method
J. S. Tang (*Southwest Jiaotong University, China*); *X. Q. Wang* (*Southwest Jiaotong University, China*); *L. Wang* (*Southwest Jiaotong University, China*); *S. Y. Cao* (*Southwest Jiaotong University, China*); *Z. Wang* (*NC A&T State University, USA*); *J. Gao* (*Southwest Jiaotong University, China*); *K. Sheng* (*Southwest Jiaotong University, China*);

15:00 **Coffee Break**

15:20 Analysis of Circular Cavity with Metalized Dielectric Posts or Corrugated Cylinders
R. Lech (*Gdansk University of Technology, Poland*); *J. Mazur* (*Gdansk University of Technology, Poland*);

15:40 UWB Textile Antennas for Wearable Applications
M. Klemm (*Swiss Federal Institute of Technology, Switzerland*); *G. Troester* (*Swiss Federal Institute of Technology, Switzerland*);

16:00 Propagation of Strong Electromagnetic Waves in Semiconductors with S-shaped Current Voltage Characteristics
Y. G. Gurevich (*Universidad de Salamanca, Spain*); *J. E. Velázquez-Pérez* (*Universidad de Salamanca, Spain*);

16:20 Effect of Surface Defects on the Amplification of Anomalous Transmission in Dielectric and Metallic Photonic Band Gap Materials: Calculation and Experimental Verification
S. Massaoudi (*Université Pairs-Sud, France*); *A. Ourir* (*Université Pairs-Sud, France*); *A. de Lustrac* (*Université Pairs-Sud, France*);

16:40 Dielectric Waveguide Filter with Cross Coupling
D. S. Jun (*Electronics and Telecommunications Research Institute, Korea*); *H. Y. Lee* (*Electronics and Telecommunications Research Institute, Korea*); *D. Y. Kim* (*Electronics and Telecommunications Research Institute, Korea*); *S. S. Lee* (*Electronics and Telecommunications Research Institute, Korea*); *E. S. Nam* (*Electronics and Telecommunications Research Institute, Korea*); *K. I. Cho* (*Electronics and Telecommunications Research Institute, Korea*);

Session 2P9
Time Reversal Techniques in Electromagnetics

Tuesday PM, March 28, 2006

Room: Riverfront

Organized by Daniel D. Stancil

Chaired by Hongkai Zhao, Dave Chambers

13:40 Time Reversal: From Acoustics to Electromagnetism
M. Fink (*University Denis Diderot, France*);

14:00 Practical and Theoretical Aspects of Time Reversal of Electromagnetic Waves
J. de Rosny (*Université Paris 7, France*); *G. Lerosey* (*Université Paris 7, France*); *M. Fink* (*Université Paris 7, France*);

14:20 Experimental Wideband Time Reversal of Microwaves
G. Lerosey (*Universite Paris 7, France*); *J. de Rosny* (*Universite Paris 7, France*); *A. Tourin* (*Universite Paris 7, France*); *M. Fink* (*Universite Paris 7, France*);

14:40 Electromagnetic Super-resolution Time-reversal Nulling
D. D. Stancil (*Carnegie Mellon University, USA*); *A. G. Cepni* (*Carnegie Mellon University, USA*); *B. E. Henty* (*Carnegie Mellon University, USA*); *Y. Jiang* (*Carnegie Mellon University, USA*); *Y. Wei* (*Carnegie Mellon University, USA*); *J.-G. Zhu* (*Carnegie Mellon University, USA*); *J. M. F. Moura* (*Carnegie Mellon University, USA*);

15:00 **Coffee Break**

15:20 Decomposition of the Time Reversal Operator for a Small Scatterer of General Shape
D. H. Chambers (*Lawrence Livermore National Laboratory, USA*);

15:40 Time Reversal Based Multi-tone Imaging Algorithm
H. K. Zhao (*University of California, USA*);

16:00 Selective Focusing of Ultrawideband Fields in Dispersive and Continuous Random Media via DORT
M. E. Yavuz (*The Ohio State University, USA*); *F. L. Teixeira* (*The Ohio State University, USA*);

16:20 Broadband Time Reversal Scheme for Target Detection in Highly Cluttered Field
J.-G. Zhu (*Carnegie Mellon University, USA*); *Y. Jiang* (*Carnegie Mellon University, USA*); *J. Moura* (*Carnegie Mellon University, USA*); *D. D. Stancil* (*Carnegie Mellon University, USA*); *Y. Jin* (*Carnegie Mellon University, USA*); *A. G. Cepni* (*Carnegie Mellon University, USA*); *B. E. Henty* (*Carnegie Mellon University, USA*);

Session 3A1a
Automatic Classification of Spectral Signatures and Scattering Patterns

Wednesday AM, March 29, 2006

Room: Ballroom A

Organized by Giovanni Franco Crosta and Elisabetta Binaghi

Chaired by Giovanni Franco Crosta and Ignazio Gallo

08:00 A New Approach to Polarimetric SAR Image Classification
J. Yang (*Tsinghua University, China*); *T. Xiong* (*Tsinghua University, China*); *Y.-N. Peng* (*Tsinghua University, China*);

08:20 Soft Computing and Neural Adaptive Techniques for High Accuracy Data Classification
E. Binaghi (*Università degli Studi dell'Insubria, Italy*); *I. Gallo* (*Università degli Studi dell'Insubria, Italy*);

08:40 A Method to Solve an Acoustic Scattering Problem Involving Smart Obstacles
F. Zirilli (*Universitá di Roma La Sapienza, Italy*);

09:00 A Neural Adaptive Algorithm for Feature Selection and Classification of Hyperspectral Data
I. Gallo (*Università degli Studi dell'Insubria, Italy*);

09:20 Classification of Single Particle Optical Scattering Patterns
G. F. Crosta (*Università degli Studi Milano - Bicocca, Italy*);

09:40 Feature Extraction by Fractional Order Differentiation
G. F. Crosta (*Università degli Studi Milano - Bicocca, Italy*);

10:00 **Coffee Break**

Session 3A1b
Seabottom Electromagnetic Imaging and Detection Technologies

Wednesday AM, March 29, 2006

Room: Ballroom A

Organized by Michael S. Zhdanov

Chaired by Michael S. Zhdanov

10:20 Modeling and Inversion of Marine CSEM Data
K. Hokstad (*Statoil Research Centre, Norway*); *T. Rø sten* (*Statoil Research Centre, Norway*); *E. Gundersen* (*Statoil, Stavanger, Norway*);

10:40 Experience with the Three-dimensional Imaging of Marine Controlled Source Electromagnetic Data for Hydrocarbon Exploration
J. J. Carazzone (*ExxonMobil Upstream Research Company, USA*); *D. A. Pavlov* (*ExxonMobil Upstream Research Company, USA*);

11:00 New Advances in 3D Imaging of Sea-bottom EM Data for Offshore Petroleum Exploration
M. S. Zhdanov (*University of Utah, USA*);

11:20 Three Dimensional Electromagnetic Modeling and Inverison of Seabottom Electromagnetic Data
G. A. Newman (*Earth Sceinces Division, USA*); *M. Commer* (*Earth Sceinces Division, USA*);

11:40 A Critical View about Marine Controlled Source EM Data Interpretation
P. Dell'Aversana (*Eni S.p.A., Italy*);

Session 3A2
Optics and Photonics

Wednesday AM, March 29, 2006

Room: Skyline A

Chaired by Harrison E. Rowe and Toshitaka Kojima

08:00 Numerical Analysis of Light-wave Scattering from Blue Laser Optical Disk Models with Random Rough Surfaces
T. Kojima (*Kansai University, Japan*); *T. Kawai* (*Kansai University, Japan*);

08:20 Optically Tunable Photonic Crystal Reflectance Filter
D. W. Dobbs (*University of Illinois at Urbana-Champaign, USA*); *B. T. Cunningham* (*University of Illinois at Urbana-Champaign, USA*);

08:40 Focal Switch Effect of Focused Cosine Gaussian Beam
C. J. Peng (*Jingdezhen Comprehensive College, China*); *J. L. Chen* (*MinJiang University, China*); *F. X. Lu* (*Fuzhou Kaixin Real Estate Co., Ltd, China*);

09:00 Band-stop Filters in Microstrip Technology with Non-periodic Frequency Responses
I. Arnedo (*Universidad Pública de Navarra, Spain*); *T. Lopetegi* (*Universidad Pública de Navarra, Spain*); *D. Benito* (*Universidad Pública de Navarra, Spain*); *F. J. Falcone* (*Universidad Pública de Navarra, Spain*); *M. A. G. Laso* (*Universidad Pública de Navarra, Spain*);

09:20 Time-domain Statistics of Multi-layer Optical Filters
H. E. Rowe (*Stevens Institute of Technology, USA*);

09:40 Direct Light to RF Fiber Antenna
J. Flattery (*Syracuse University, USA*); *T. L. Jamison* (*NASA Goddard Space Flight Center, USA*); *P. Kornreich* (*Syracuse University, USA*);

10:00 **Coffee Break**

10:20 Efficient Tool for Bend Optimization in Photonic Crystals
L. Dekkiche (*University Djillali Liabes of Sidi-Bel-Abbes, Algeria*); *R. Naoum* (*University Djillali Liabes of Sidi-Bel-Abbes, Algeria*);

10:40 Statistical Dynamics of Dispersion-managed Optical Solitons
A. Biswas (*Delaware State University, USA*);

11:40 A Boundary Element Method for the Analysis of Inhomogeneous Photonic Crystals
F. Seydou (*University of Oulu, Finland*); *T. Seppanen* (*University of Oulu, Finland*);

Session 3A3
Sensor Array Signal Processing

Wednesday AM, March 29, 2006

Room: Skyline C

Organized by Renbiao Wu and Jian Li

Chaired by Renbiao Wu and Jian Li

08:00 Survey on Interference Mitigation via Adaptive Array Processing in GPS
D. Lu (*Civil Aviation University of China, China*); *Q. Feng* (*Civil Aviation University of China, China*); *R. B. Wu* (*Civil Aviation University of China, China*);

08:20 A Simulation Tool for Space-time Adaptive Processing in GPS
W. Y. Zhao (*Civil Aviation University of China, China*); *L. F. Xu* (*Civil Aviation University of China, China*); *R. B. Wu* (*Civil Aviation University of China, China*);

08:40 Analysis and a Novel Design of the Beamspace Broadband Adaptive Array
W. Liu (*University of Sheffield, UK*); *R. B. Wu* (*Civil Aviation University of China, China*); *R. Langley* (*University of Sheffield, UK*);

09:00 A Subspace-based Robust Adaptive Capon Beamforming
G. S. Liao (*Xidian University, China*); *H. Q. Liu* (*Xidian University, China*); *J. Li* (*Xidian University, China*);

09:20 Signal Processing of Pyroelectric Arrays for Industrial Laser Applications
G. Biagini (*Università di Firenze, Italy*); *L. Capineri* (*Università di Firenze, Italy*); *L. Masotti* (*Università di Firenze, Italy*); *M. Mazzoni* (*CNR-IFAC, Italy*);

09:40 Optimal Sensor Placement for the Localization of an Electrostatic Source
B. A. Kemp (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

10:00 **Coffee Break**

10:20 Amplitude Estimation of Multichannel Signal in Spatially and Temporally Correlated Noise
K. J. Sohn (*Stevens Institute of Technology, USA*); *H. B. Li* (*Stevens Institute of Technology, USA*); *B. Himed* (*Air Force Research Laboratory/SNRT, USA*);

Session 3A4
Microwave Imaging for NDE/NDT Applications

Wednesday AM, March 29, 2006

Room: Skyline E

Organized by Andrea Massa, S. Caorsi, and Matteo Pastorino

Chaired by Andrea Massa, S. Caorsi, and Matteo Pastorino

08:20 Issues and Problems in 3D Microwave Tomography (and Possible Answers)
I. Catapano (*Istituto per il Rilevamento Elettromagnetico Dell'Ambiente IREA-CNR, Italy*); *L. Crocco* (*Istituto per il Rilevamento Elettromagnetico Dell'Ambiente IREA-CNR, Italy*); *M. D'Urso* (*DIET Università di Napoli Federico II, Italy*); *T. Isernia* (*DIMET Università Mediterranea di Reggio Calabria, Italy*);

08:40 On the Retrieval of Small Electromagnetic 3-D Scatterers via MUSIC
E. Iakovleva (*Laboratoire des Signaux et Systèmes (CNRS-SUPÉLEC-UPS), France*); *D. Lesselier* (*Laboratoire des Signaux et Systèmes (CNRS-SUPÉLEC-UPS), France*); *G. Perrusson* (*Laboratoire des Signaux et Systèmes (CNRS-SUPÉLEC-UPS), France*); *H. Ammari* (*Centre de Mathématiques Appliquées (CNRS-Ecole Polytechnique), France*);

09:00 A Bayesian Approach to Microwave Imaging of Hybrid Targets
O. Féron (*C.N.R.S. - Supélec - Université Paris-Sud 11, France*); *B. Duchêne* (*C.N.R.S. - Supélec - Université Paris-Sud 11, France*); *A. Mohammad-Djafari* (*C.N.R.S. - Supélec - Université Paris-Sud 11, France*);

09:20 A Non-destructive Microwave Approach for the Detection of Multiple Defects in Industrial Products
M. Benedetti (*University of Trento, Italy*); *D. Franceschini* (*University of Trento, Italy*); *A. Massa* (*University of Trento, Italy*); *A. Rosani* (*University of Trento, Italy*); *M. Pastorino* (*University of Genoa, Italy*);

09:40 Improving Inverse Scattering Solution Procedures by Means of a Preliminary Support Estimation: Rationale and Test on Real Data
I. Catapano (*Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Italy*); *L. Crocco* (*Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Italy*); *M. D'Urso* (*DIET Università di Napoli Federico II, Italy*); *T. Isernia* (*DIMET Università Mediterranea di Reggio Calabria, Italy*);

10:00 **Coffee Break**

10:20 A Neural Network Approach for Electromagnetic Diagnostic Applications
S. Caorsi (*University of Pavia, Italy*); *G. Cevini* (*University of Pavia, Italy*);

10:40 Faithfull Phaseless Microwave Tomography
I. Catapano (*Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Italy*); *L. Crocco* (*Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Italy*); *M. D'Urso* (*DIET Università di Napoli Federico II, Italy*); *T. Isernia* (*DIMET Università Mediterranea di Reggio Calabria, Italy*);

11:00 A Point Source Method for Reconstructing of Conducting Bodies Buried under a Rough Surface
H. Şahintürk (*Yıldız Technical University, Turkey*); *A. Yapar* (*Istanbul Technical University, Turkey*); *Y. Altuncu* (*Istanbul Technical University, Turkey*);

11:20 Broadband Spatiotemporal Differential-operator Representations for Velocity-dependent Scattering
D. Censor (*Ben Gurion University of the Negev, Israel*);

Session 3A5
Electromagnetic Modeling and Inversion and Applications 2

Wednesday AM, March 29, 2006

Room: Parkview

Organized by Ganquan Xie and Michael Oristaglio

Chaired by Ganquan Xie, Michael Oristaglio, and Jianhua Li

08:20 Compact LTCC BPF Design Using Lumped Elements
J. W. Ha (*Yonsei University, Korea*); *Y. J. Yoon* (*Yonsei University, Korea*);

08:40 2.5D AGILD Electromagnetic Modeling and Inversion
G. Q. Xie (*GL Geophysical Laboratory, USA*); *J. H. Li* (*GL Geophysical Laboratory, USA*); *F. Xie* (*GL Geophysical Laboratory, USA*);

09:00 Measured Electromagnetic Pulses Verify Asymptotics and Analysis for Linear Dispersive Media
T. M. Roberts (*Air Force Research Laboratory, USA*);

09:20 Electromagnetic Modeling for Interpretation of Airborne SAR Imagery
L. M. Zurk (*Portland State University, USA*); *S. Matzner* (*Portland State University, USA*); *F. Farahbakhshian* (*Portland State University, USA*); *R. Toengi* (*Portland State University, USA*);

09:40 Forward Problem Solution Using the Finite-difference Time-domain method combined with Frequency Scaling
C. E. Vasios (*Harvard Medical School, USA*); *L. M. Angelone* (*Harvard Medical School, USA*); *M. S. Hamalainen* (*Harvard Medical School, USA*); *J. W. Belliveau* (*Harvard Medical School, USA*); *G. Bonmassar* (*Harvard Medical School, USA*);

10:00 **Coffee Break**

10:20 Support Vector Machine Classification of Unexploded Ordnance Based on EMI Spheroidal Scattering Mode Coefficients
B. J. Zhang (*Massachusetts Institute of Technology, USA*); *K. O'Neill* (*Dartmouth College, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

10:40 Environmental Effects on UWB Electromagnetic Induction Inversion Techniques and Forward Modeling of Unexploded Ordnance
B. J. Zhang (*Massachusetts Institute of Technology, USA*); *K. O'Neill* (*Dartmouth College, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

11:00 Analysis of Uniplanar Resonator Using a Wave Concept Iterative Method W.C.I.P.
N. Sboui (*Faculté des Sciences de Tunis, Tunisia*); *A. Gharsallah* (*Faculté des Sciences de Tunis, Tunisia*); *A. Gharbi* (*Faculté des Sciences de Tunis, Tunisia*); *H. Baudrand* (*ENSEEHIT, France*);

11:20 The KMD_EMS System in Chinese Continuous Casting
J. Li (*Hunan Kemeid Mechanicsyco Ltd, China*); *Z. Q. Lai* (*Hunan Kemeid Mechanicsyco Ltd, China*); *J. H. Li* (*GL Geophysical Laboratory, USA*); *G. Q. Xie* (*GL Geophysical Laboratory, USA*);

11:40 A New Formulation for Scattering by Impedant 3D Bodies
B. Collard (*Ecole nationale de l'Aviation Civile, France*); *B. Fares* (*Centre Européen de Recherche et de Formation Avancée pour le Calcul Scientifique, France*); *B. Souny* (*Ecole nationale de l'Aviation Civile, France*);

Session 3A6
Extended/Unconventionl Electromagnetic Theory, EHD/EMHD, and Electrobiology

Wednesday AM, March 29, 2006

Room: Charles B

Organized by Hiroshi Kikuchi

Chaired by Hiroshi Kikuchi and Dirk K. Callebaut

08:20 Chasmas Including Magnetic Effects
D. K. Callebaut (*University of Antwerp, Belgium*); *A. H. Khater* (*University of Beni-Suef, Egypt*);

08:40 Generation of Solar Magnetic Fields Using a Quadripolar Seed Field
D. K. Callebaut (*University of Antwerp, Belgium*);

09:00 Higher Order Fourier Analysis for Multiple Species Plasma
D. K. Callebaut (*University of Antwerp, Belgium*); *G. K. Karugila* (*Sokoine University of Agriculture, Tanzania*); *A. H. Khater* (*University of Beni-Suef, Egypt*);

09:20 Significance of Electric Quadrupole in Laboratory, Atmospheric, and Space Electricity — Helicity and Vortex Generation, Particle Acceleration, and Electric Discharges
H. Kikuchi (*Institute for Environmental Electromagnetics, Japan*);

09:40 Accuracy of Air Ion Field Measurement
T. Vojtek (*Brno University of Technology, Czech Republic*); *T. Skoupil* (*Brno University of Technology, Czech Republic*); *P. Fiala* (*Brno University of Technology, Czech Republic*); *K. Bartušek* (*Brno University of Technology, Czech Republic*);

10:00 **Coffee Break**

10:20 Experimental Verification of Active Traveling Wave Antenna
T. Obata (*Gunma National College of Technology, Japan*); *R. Miyazaki* (*Gunma National College of Technology, Japan*); *H. Kikuchi* (*Institute For Environmental Electromagnetics, Japan*);

10:40 Some Analogy between Negative Shunt Conductance in a Distributed Parameter Line Equivalent to Parametrically Amplifying Traveling-wave Antenna and Negative Resistance in an Equivalent Lumped Circuit of Esaki Diode
H. Kikuchi (*Institute for Environmental Electromagnetics, Japan*);

Session 3A7
Computational Electromagnetics

Wednesday AM, March 29, 2006

Room: Charles A

Chaired by Carey Rappaport and George Fikioris

08:20 A Fast Algorithm for Computing Band Gaps of Three-dimensional Photonic Crystals
C.-C. Chang (*Research Center for Applied Mechanics, Academia Sinica, Taiwan*); *R.-L. Chern* (*National Taiwan University, Taiwan*); *C.-C. Chang* (*Research Center for Applied Mechanics, Academia Sinica, Taiwan*);

08:40 Numerical Simulation of Nonlinear and Parametric Oscillations in a Semiconductor Resonator Structure
G. S. Makeeva (*Penza State University, Russia*); *O. A. Golovanov* (*Penza Military Institute of Artillery, Russia*); *M. P. Horvath* (*The George Washington University, USA*);

09:00 Study of a Simple Geometry Illuminating Convergence Issues in the Method of Auxiliary Sources
G. Fikioris (*National Technical University, Greece*);

09:20 A Parallel Computer Implementation of Fast Low-rank QR Approximation of the Biot-savart Law
D. White (*Lawrence Livermore National Laboratory, USA*); *B. Fasenfest* (*Lawrence Livermore National Laboratory, USA*); *M. Stowell* (*Lawrence Livermore National Laboratory, USA*);

09:40 Complex Coordinate Transformation as a Radiation Condition in Modal Methods
G. Granet (*LASMEA UMR 6602 du CNRS, France*); *J. P. Plumey* (*LASMEA UMR 6602 du CNRS, France*); *K. Edee* (*LASMEA UMR 6602 du CNRS, France*);

10:00 **Coffee Break**

10:20 Full Wave Analysis of RF Signal Attenuation in a Lossy Rough Surface Cave Using a High Order Time Domain Vector Finite Element Method
J. Pingenot (*University of Washington, USA*); *R. Rieben* (*Lawrence Livermore National Laboratory, USA*); *D. White* (*Lawrence Livermore National Laboratory, USA*); *D. Dudley* (*University of Arizona, USA*);

10:40 Direct and Accurate FDTD Modeling of Dispersive Media Using a Fourth-order Rational Conductivity Function
C. Rappaport (*Northeastern University, USA*); *M. Jalalinia* (*Northeastern University, USA*);

11:00 A Matlab-based Virtual Propagation Tool: Surface Wave Mixed-path Calculator
L. Sevgi (*Doğuş University, Turkey*); *Ç. Uluişik* (*Doğuş University, Turkey*);

11:20 Implementation of Arbitrarily Oriented Wires in 3D-TLM Method
B. Larbi (*University of Nice-Sophia Antipolis/CNRS, France*); *J. L. Dubard* (*University of Nice-Sophia Antipolis/CNRS, France*); *C. Pichot* (*University of Nice-Sophia Antipolis/CNRS, France*);

11:40 An Efficient Band Diagonal Preconditioner for Electromagnetic Integral Equations Using Wavelet Packet Bases
A. Geranmayeh (*Amirkabir University of Technology, Iran*);

Session 3P1
Recent Advances in Optical Trapping and Binding

Wednesday PM, March 29, 2006

Room: Ballroom A

Organized by Tomasz M. Grzegorczyk and Jean-Marc Fournier

Chaired by Tomasz M. Grzegorczyk and Jean-Marc Fournier

13:00 Comparison of Methods for the Calculation of Radiation Pressure on Dielectric and Magnetic Particles
B. A. Kemp (*Massachusetts Institute of Technology, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

13:20 Optical Binding of Small Particles
J. Ng (*The Hong Kong University of Science and Technology, China*); *Z. F. Lin* (*The Hong Kong University of Science and Technology, China*); *P. Sheng* (*The Hong Kong University of Science and Technology, China*); *C. T. Chan* (*The Hong Kong University of Science and Technology, China*);

13:40 Advanced Studies in Optical Binding
K. Dholakia (*University of St Andrews, UK*); *N. K. Metzger* (*University of St Andrews, UK*); *E. M. Wright* (*The University of Arizona, USA*);

14:00 Simulating the Optical Force and Torque on Metallic Nano-particles
C. Rockstuhl (*Friedrich Schiller University Jena, Germany*);

14:20 Trapping of Microscopic Particles in Specially Designed Optical Fields
S. Bernet (*Medical University of Innsbruck, Austria*); *M. Ritsch-Marte* (*Medical University of Innsbruck, Austria*);

14:40 Polarization Effects in Optically Bound Particle Arrays
C. D. Mellor (*University of Oxford, UK*); *C. D. Bain* (*Durham University, UK*);

15:00 **Coffee Break**

15:20 Optical Binding in Air
M. Guillon (*Université de Provence, France*);

15:40 Optical Waveguide Manipulation of Micro- and Nanospheres
J. S. Wilkinson (*University of Southampton, UK*); *O. G. Hellesø* (*University of Tromsø, Norway*); *J. P. Hole* (*University of Southampton, UK*); *K. Grujic* (*University of Tromsø, Norway*);

16:00 Towards Efficient Modelling of Optical Micromanipulation of Complex Structures
T. A. Nieminen (*The University of Queensland, Australia*); *V. L. Y. Loke* (*The University of Queensland, Australia*); *A. M. Brańczyk* (*The University of Queensland, Australia*); *N. R. Heckenberg* (*The University of Queensland, Australia*); *H. Rubinsztein-Dunlop* (*The University of Queensland, Australia*);

16:20 Optical Microfluidics
J.-P. Delville (*Université Bordeaux, France*); *R. Wunenburger* (*Université Bordeaux, France*); *C. Baroud* (*LadHyX, France*);

16:40 Light-mediated Particle Interactions in a Laser Trap
G. L. Lippi (*Institut Non Linéaire de Nice, France*); *S. Barland* (*Institut Non Linéaire de Nice, France*); *M. Colombet* (*Institut Non Linéaire de Nice, France*); *J. Farmer* (*Institut Non Linéaire de Nice, France*); *R. Kaiser* (*Institut Non Linéaire de Nice, France*); *J.-M. Fournier* (*Swiss Federal Institute of Technology, Switzerland*);

17:00 Non-lorentzian Electromagnetic Resonances
V. A. Markel (*University of Pennsylvania, USA*);

17:20 Exact Calculations of Optical Forces and Optical Binding in Single and Multiple Beam Optical Traps
O. Moine (*Université Paul Cézanne Aix-Marseille III et Université de Provence, France*); *B. Stout* (*Université Paul Cézanne Aix-Marseille III et Université de Provence, France*);

17:40 Shaping Electromagnetic Fields for Optical Trapping and Binding
J.-M. Fournier (*Imaging and Applied Optics Institute, Switzerland*); *P. Jacquot* (*Imaging and Applied Optics Institute, Switzerland*); *J. Rohner* (*Imaging and Applied Optics Institute, Switzerland*); *R.-P. Salathé* (*Imaging and Applied Optics Institute, Switzerland*);

18:00 Theory and Modeling of Optical Forces within a Collection of Mie Scatterers
T. M. Grzegorczyk (*Massachusetts Institute of Technology, USA*); *B. A. Kemp* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

Session 3P2
Advanced Methods for Light Scattering Analysis in Nanotechnology and Biophotonics

Wednesday PM, March 29, 2006

Room: Skyline A

Organized by Yuri A. Eremin

Chaired by Yuri A. Eremin and Vladimir I. Ivakhnenko

13:00 Numerical Comparison of Light Scattering Results by Particles in Free Space Obtained by Discrete Dipole Approximation and Volume Integral Equation Methods
V. I. Ivakhnenko (*ADE Corporation, USA*);

13:20 Analysis of Evanescent Waves Scattering by a Single Particle in Total Internal Reflection Microscopy
E. Eremina (*University of Bremen, Germany*); *T. Wriedt* (*University of Bremen, Germany*); *L. Helden* (*University of Stuttgart, Germany*);

13:40 T-matrix Simulation of Plasmon Resonances of Particles on or near a Surface
N. Riefler (*University of Bremen, Germany*); *T. Wriedt* (*University of Bremen, Germany*);

14:00 Mean-field Theory of Light Scattering by Naturally Rough Surfaces
V. V. Lopushenko (*Moscow State University, Russia*);

14:20 Rigorous Model for Gold Nanorods Spectra Examination Based on Discrete Sources Method
Y. A. Eremin (*Moscow Lomonosov State University, Russia*);

14:40 Local Biosensor Operation Analysis Based on Discrete Sources Method Model
N. V. Grishina (*Moscow Lomonosov State University, Russia*); *Y. A. Eremin* (*Moscow Lomonosov State University, Russia*);

15:00 **Coffee Break**

15:20 Magnetic Nanostructure Hysteresis Loop Calculation for Modified Thin Film Multi-layer by Ion Irradiation
D. Bajalan (*Vienna University of Technology, Austria*);

15:40 Energetical Model Interpretation of Thermal Stability by Changing Direction of the Magnetization of Nano Magnetic Structure
D. Bajalan (*Vienna University of Technology, Austria*);

16:00 Innovation Use of Nano Technology in Magnetic Storage Devices and Nano Computers
D. Bajalan (*Vienna University of Technology, Austria*); *J. A. Aziz* (*University Sains, Malaysia*);

16:20 Thin Nanoporous Films with a Honeycomb Structure: Internal Fields, Spectral and Scattering Properties
A. N. Ponyavina (*National Academy of Sciences of Belarus, Belarus*); *R. A. Dynich* (*National Academy of Sciences of Belarus, Belarus*); *N. V. Gaponenko* (*Belarusian State University of Informatics and Radioelectronics, Belarus*); *G. K. Malyarevich* (*Belarusian State University of Informatics and Radioelectronics, Belarus*);

16:40 Fast Computation of Diffraction by Finite-size Multilayered Arrays of Cylinders
Y.-J. Zhang (*Institute of High Performance Computing, Singapore*); *E.-P. Li* (*Institute of High Performance Computing, Singapore*);

17:00 A Numerical Method for the Analysis of Electromagnetic Scattering by Three Dimensional Magnetodielectric Body
A. G. Dmitrenko (*Tomsk State University, Russia*); *T. N. Pastuhova* (*Tomsk State University, Russia*);

17:20 Rough Surface Characterization by Profilometer at Spatial Frequencies Appropriate for Light Scattering Predictions
J. C. Stover (*The Scatter Works, Inc., USA*);

17:40 Extended Discrete Sources Method Model for Extremal Scatterers
D. E. Sukhanov (*Moscow Lomonosov State University, Russia*);

Session 3P3
Devices and Circuits

Wednesday PM, March 29, 2006

Room: Skyline C

Chaired by Ruey-Beei Wu and Hugo E. Hernandez-Figueroa

13:00 Application of Finite Network Theory to the Transient Process of Electromagnetic Forming
T. Richter (*Chemnitz University of Technology, Germany*); *A. Farschtschi* (*Chemnitz University of Technology, Germany*); *H.-J. Roscher* (*Fraunhofer Institute IWU, Germany*);

13:20 Tensor Harmonic-balance Analysis of Forced Microwave and Millimeter-wave Circuits
O. P. Paixão (*Universidade Estadual de Campinas, Brazil*); *H. E. Hernández-Figueroa* (*Universidade Estadual de Campinas, Brazil*);

13:40 Split-Torus Configuration of the Toroidal/Helical Electron-Orbits for High-Power-Microwave Amplifiers
R. A. Speciale (*Research and Development Inc., USA*);

14:00 Exact Expressions of the Orbit-Curvature and Curvature-Radius of the Toroidal/Helical Orbits
R. A. Speciale (*Research and Development Inc., USA*);

14:20 Dual-band/broadband Circular Polarizers Designed with Cascaded Dielectric Septum Loadings
T.-Y. Huang (*National Taiwan University, Taiwan*); *Y.-C. Yu* (*National Taiwan University, Taiwan*); *R.-B. Wu* (*National Taiwan University, Taiwan*);

14:40 Mode Transformer between TEM Mode to 1^{st} Higher Mode in Tri-plate Strip Transmission Line
F. Kuroki (*Kure National College of Technology, Japan*); *K. Miyamoto* (*Kure National College of Technology, Japan*);

15:00 **Coffee Break**

15:20 High-Accuracy Approximation to the Integrated Length of Toroidal/Helical Orbits
R. A. Speciale (*Research and Development Inc., USA*);

15:40 Multilevel Modified Nodal/Multiport State-space Approach for Frequency-domain Simulation of Large-scale Nonlinear RF and Microwave Circuits
O. P. Paixão (*Universidade Estadual de Campinas, Brazil*); *H. E. Hernández-Figueroa* (*Universidade Estadual de Campinas, Brazil*);

16:00 Low Cost 60 GHz Gb/s Radio Development
S. Pinel (*Georgia Institute of Technology, USA*); *C.-H. Lee* (*Georgia Institute of Technology, USA*); *S. Sarkar* (*Georgia Institute of Technology, USA*); *B. Perumana* (*Georgia Institute of Technology, USA*); *S. Padvanama* (*Georgia Institute of Technology, USA*); *R. Mukhopadhyay* (*Georgia Institute of Technology, USA*); *J. Laskar* (*Georgia Institute of Technology, USA*);

Session 3P4
Subsurface Imaging through Inverse Scattering Approaches: From Biomedical Applications to UXO Detection

Wednesday PM, March 29, 2006

Room: Skyline E

Organized by Christian Pichot, Andrea Massa, and S. Caorsi

Chaired by Christian Pichot, Andrea Massa, and S. Caorsi

13:20 Beam Manipulation of a Monopole Antenna
C. J. Fox (*Dartmouth College, USA*); *P. M. Meaney* (*Dartmouth College, USA*); *L. Potwin* (*Dartmouth College, USA*); *K. D. Paulsen* (*Dartmouth College, USA*);

13:40 Iterative Reconstruction of Dielectric Rough Surface Profiles through a Single Illumination
I. Akduman (*Istanbul Technical University, Turkey*); *R. Kress* (*University of Goettingen, Germany*); *A. Yapar* (*Istanbul Technical University, Turkey*);

14:00 The Semi-analytic Mode Matching (SAMM) Algorithm for Fast Computation of Scattered Near Fields from a Variety of Dielectric Targets Buried in Lossy Soil Excited by Underground Borehole Dipole Sources
A. W. Morgenthaler (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*);

14:20 Recent Advances on the Use of Kernel-based Learning-by-examples Techniques for Electromagnetic Subsurface Sensing
M. Benedetti (*University of Trento, Italy*); *M. Donelli* (*University of Trento, Italy*); *D. Franceschini* (*University of Trento, Italy*); *A. Rosani* (*University of Trento, Italy*); *A. Boni* (*University of Trento, Italy*); *A. Massa* (*University of Trento, Italy*);

14:40 Application of Spheroidal Mode Approach to the Detection and Discrimination of Buried Objects
X. D. Chen (*National University of Singapore, Singapore*); *K. O'Neill* (*ERDC Cold Regions Research and Engineering Laboratory, USA*); *T. M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *J. A. Kong* (*Massachusetts Institute of Technology, USA*);

15:00 **Coffee Break**

15:20 Subsurface Estimation of the Geometry and Electromagnetic Properties of Buried Anomaly and Half-space Background with Unknown Rough Boundary
R. Firoozabadi (*Northeastern University, USA*); *E. L. Miller* (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*); *A. W. Morgenthaler* (*Northeastern University, USA*);

15:40 The Adjoint-field Method for Reconstructing Breast Cancer Tumors of Irregular Shape
M. El-Shenawee (*University of Arkansas, USA*); *O. Dorn* (*Universidad Carlos III de Madrid, Spain*); *M. Moscoso* (*Universidad Carlos III de Madrid, Spain*);

16:00 Nonlinear Inversion of Multi-frequency Microwave Fresnel Data Using the Multiplicative Regularized Contrast Source Inversion
A. Abubakar (*Schlumberger-Doll Research, USA*); *T. M. Habashy* (*Schlumberger-Doll Research, USA*); *P. M. van den Berg* (*Delft University, The Netherlands*);

16:20 Reconstruction of 3-D Dielectric Objects from Experimental Data in the Time Domain
T. Takenaka (*Nagasaki University, Japan*); *T. Tanaka* (*Nagasaki University, Japan*); *H. Zhou* (*Nagasaki University, Japan*);

Session 3P5
Electromagnetic Modeling and Inversion and Applications 3

Wednesday PM, March 29, 2006

Room: Parkview

Organized by Ganquan Xie and Michael Oristaglio

Chaired by Ganquan Xie and Michael Oristaglio

13:00 New Stochastic AGLID EM Modeling and Inversion
J. H. Li (*GL Geophysical Laboratory, USA*); *G. Q. Xie* (*GL Geophysical Laboratory, USA*); *F. Xie* (*GL Geophysical Laboratory, USA*);

13:20 Advancements in Microwave Tomography of Strong Scatterers
R. Pierri (*Seconda Università di Napoli, Italy*); *G. Leone* (*Università Mediterranea di Reggio Calabria, Italy*); *R. Solimene* (*Università Mediterranea di Reggio Calabria, Italy*);

13:40 Acceleration of the 3D FDTD Algorithm in Fixed-point Arithmetic Using Reconfigurable Hardware
W. Chen (*Northeastern University, USA*); *M. Leeser* (*Northeastern University, USA*); *C. Rappaport* (*Northeastern University, USA*);

14:00 Geometric Optics and Electromagnetic Models for Cylindrical Obstacles
D. Trappeniers (*K. U. Leuven, Belgium*); *R. G. Gonzàlez* (*K. U. Leuven, Belgium*); *E. van Lil* (*K. U. Leuven, Belgium*); *A. van de Capelle* (*K. U. Leuven, Belgium*);

14:20 3D and 2.5D AGLID EMS Stirring Modeling in the Cylindrical Coordinate System
G. Q. Xie (*GL Geophysical Laboratory, USA*); *J. H. Li* (*GL Geophysical Laboratory, USA*); *J. Li* (*GL Geophysical Laboratory, USA*); *F. Xie* (*GL Geophysical Laboratory, USA*);

14:40 Time-domain Source-model Technique Analysis of Two-dimensional Electromagnetic Scattering Problems
A. Ludwig (*Technion - Israel Institute of Technology, Israel*); *Y. Leviatan* (*Technion - Israel Institute of Technology, Israel*);

15:00 **Coffee Break**

15:20 New 2.5D/3D AGILD Geophysical EM Multiple Cross Holes' Imaging
J. Li (*GL Geophysical Laboratory, USA*); *M. Oristaglio* (*Schlumberger-Doll Research, USA*); *F. Xie* (*GL Geophysical Laboratory, USA*); *G. Xie* (*GL Geophysical Laboratory, USA*);

Session 3P6
Novel Mathematical Methods

Wednesday PM, March 29, 2006

Room: Charles B

Organized by Yury Shestopalov and Kazuya Kobayashi

Chaired by Yury Shestopalov and Kazuya Kobayashi

13:00 Far-field RCS Prediction from Measured Near-field Data over Ground Plane
Y. Inasawa (*Mitsubishi Electric Corporation, Japan*); *S. Kuroda* (*Mitsubishi Electric Corporation, Japan*); *S. Morita* (*Mitsubishi Electric Corporation, Japan*); *H. Nishikawa* (*Mitsubishi Electric Corporation, Japan*); *N. Yoneda* (*Mitsubishi Electric Corporation, Japan*); *S. Makino* (*Mitsubishi Electric Corporation, Japan*);

13:20 Estimation of Buried Pipes Diameter and Position by Ground Penetrating Radar Scans
G. Borgioli (*Università di Firenze, Italy*); *P. Falorni* (*Università di Firenze, Italy*); *L. Capineri* (*Università di Firenze, Italy*); *B. Morini* (*Università di Firenze, Italy*); *S. Matucci* (*Università di Firenze, Italy*); *C. G. Windsor* (*116, New Road, East Hagbourne, OX11 9LD, UK*);

13:40 The Parallelization of a 2D Floating Random-walk Algorithm for the Solution of the Nonlinear Poisson-boltzmann Equation
K. Chatterjee (*Massachusetts Institute of Technology, USA*); *J. Poggie* (*Wright-Patterson Air Force Base, USA*);

14:00 Reduction of FDTD Simulation Time with Modal Methods
D. A. Gorodetsky (*University of Cincinnati, USA*); *P. A. Wilsey* (*University of Cincinnati, USA*);

14:20 Approximate Decomposition for the Solution of Boundary Value Problems for Elliptic Systems Arising in Mathematical Models of Layered Structures
Y. Shestopalov (*Karlstad University, Sweden*); *N. Kotik* (*Karlstad University, Sweden*);

14:40 Generation of Diverse Time-series Data though Monitoring a Death-multiple Immigration Population Model
J. O. Matthews (*University of Nottingham, UK*); *K. I. Hopcraft* (*University of Nottingham, UK*); *E. Jakeman* (*University of Nottingham, UK*);

15:00 **Coffee Break**

15:20 Implementation of the PML in the CIP Method
Y. Ando (*The University of Electro-Communications, Japan*); *M. Hayakawa* (*The University of Electro-communications, Japan*);

15:40 Some Elliptic Traveling Wave Solutions to the Novikov-Veselov Equation
J. Nickel (*University of Osnabrück, Germany*); *V. S. Serov* (*University of Oulu, Finland*); *H. W. Schürmann* (*University of Osnabrück, Germany*);

16:00 Source Representations of the Debye Potentials in Spherical Coordinates
M. J. Lahart (*U.S. Army Research Laboratory, USA*);

16:20 On the Stability of the Electromagnetic Field in Inhomogeneous Anisotropic Media With Dispersion
N. V. Budko (*Delft University of Technology, The Netherlands*); *A. B. Samokhin* (*Moscow University of Radioengineering and Electronics, Russia*);

16:40 Scattering of Electromagnetic Waves by Inhomogeneous Dielectric Gratings Loaded with Perfectly Conducting Strips
T. Yamasaki (*Nihon University, Japan*); *T. Ujiie* (*Nihon University, Japan*); *T. Hinata* (*Nihon University, Japan*);

17:00 Effects of the Resonant Scattering of Intensive Fields by Weakly Nonlinear Dielectric Layer
V. Yatsyk (*Nat. Acad. of Sci. of Ukraine, Ukraine*);

17:20 Theoretical Analysis of Convergence of Rao-Wilton-Glisson Method and Subhierarchal Parallel Algorithm for Solving Electric Field Integral Equation
Y. G. Smirnov (*Penza State University, Russia*);

Session 3P7
Modeling and Inverse Problems

Wednesday PM, March 29, 2006

Room: Charles A

Chaired by Lindsay C. Botten and Marian Wnuk

13:20 Modeling of EBG Structures Using the Transmission Matrix Method
K. Bharath (*Georgia Institute of Technology, USA*); *E. Engin* (*Georgia Institute of Technology, USA*); *T. Yoshitaka* (*Georgia Institute of Technology, USA*); *M. Swaminathan* (*Georgia Institute of Technology, USA*);

13:40 Bloch Mode Modelling of the Scattering of Plane Waves and Fano Resonances for a Photonic Crystal Slab
L. C. Botten (*University of Technology, Australia*); *M. A. Byrne* (*University of Technology, Australia*); *A. A. Asatryan* (*University of Technology, Australia*); *N. A. Nicorovici* (*University of Technology, Australia*); *R. C. McPhedran* (*University of Sydney, Australia*);

14:00 Methods for Mitigating the Effect of Split Reference Planes on High Speed Digital System Interfaces
H. Pan (*Intel Corporation, USA*); *H.-Y. Chao* (*National Chiao Tung University, Taiwan*); *C. Pan* (*Intel Corporation, USA*);

14:20 Multipath Reduction of GPS Measures through Heuristic Techniques of Compensation
V. Barrile (*Univ. Mediterranea, Italy*); *M. Cacciola* (*Univ. Mediterranea, Italy*); *F. Cotroneo* (*Univ. Mediterranea, Italy*);

14:40 Accurate Analysis of Practical Diffraction Gratings
H. A. Kalhor (*State University of New York, USA*); *M. R. Zunoubi* (*State University of New York, USA*);

15:00 **Coffee Break**

15:20 Spectrum Properties of Partially Coherent Modified Bessel-Gauss Beams by a Lens with Aperture
X. R. Lin (*Fuzhou University, China*); *Q. S. Wang* (*FuJian Dragon Enterprises Co., Ltd, China*); *C. Y. Peng* (*Putian University, China*);

15:40 Generalized Lorenz-Mie Theory for the Arbitrarily Oriented Shaped Beam Scattering by a Spheroid
F. Xu (*University of Shanghai for Science and Technology, China*); *K. F. Ren* (*Université et INSA de Rouen, France*); *X. S. Cai* (*University of Shanghai for Science and Technology, China*);

16:00 The Radiated Emission Approach to Specific Emitter Identification
J. Dudczyk (*Military University of Technology, Poland*); *M. Wnuk* (*Military University of Technology, Poland*);

16:20 Backscattering from Rectangular Plates Illuminated at Grazing Incidence
R. A. Ross (*17A Phillips Drive, Westford, MA, 01886, USA*);

16:40 Optimized Satellite System-like Data Fitting on a Spherical Shell
J. Sanchez-Mondragon (*Instituto Nacional de Astrofísica, Mexico*); *B. Wolf* (*Centro de Ciencias Físicas, Mexico*); *M. Tecpoyotl-Torres* (*Universidad Autónoma del Estado de Morelos, Mexico*); *J. Escobedo-Alatorre* (*Universidad Autónoma del Estado de Morelos, Mexico*); *M. Torres-Cisneros* (*Facultad de Ingeniería Mecánica, México*);

Session 3P8a
Microwave Related Phenomena in Superconductors

Wednesday PM, March 29, 2006

Room: Somerset

Chaired by Tamio Endo and Yasunori Mawatari

13:20 Experimental Studies on the Macroscopic Anisotropy of High Temperature Superconductor YBaCuO
H. H. Song (*Southwest Jiaotong University, China*); *J. Zheng* (*Southwest Jiaotong University, China*); *X. Z. Wang* (*Southwest Jiaotong University, China*); *S. Y. Wang* (*Southwest Jiaotong University, China*); *J. S. Wang* (*Southwest Jiaotong University, China*); *O. de Haas* (*IFW Dresden, Germany*); *C. Beyer* (*IFW Dresden, Germany*);

13:40 Interaction between Abrikosov and Josephson Vortices Induced by Microwave Magnetic Field and External Magnetic Field in Bi2212 Crystal: Vortex Dynamics under Crossing Field
T. Endo (*Mie University, Japan*); *A. K. Sarkar* (*Mie University, Japan*); *H. Zhu* (*Mie University, Japan*); *K.-I. Nakanishi* (*Mie University, Japan*); *A. Nishio* (*Mie University, Japan*); *M. Okada* (*Mie University, Japan*); *K. Endo* (*National Institute of AIST, Japan*);

14:00 Calculation of the Field Distributions of Superconducting Strips by Conformal Mapping
Y. Mawatari (*National Institute of Advanced Industrial Science and Technology, Japan*);

14:20 Electromagnetism of the Rings of Saturn: The Role of Levitation Force and "Negative Pressure" for the Superconducting Origin of the Thin Radially Streched Structure of the Edges of Gaps and Braid Structure of the F Ring
V. V. Tchernyi (*General Physics Institute, Russian Academy of Sciences, Russia*);

14:40 Magnetic Field Penetration into Granular Superconductors
B. M. Vladimirovich (*General Physics Institute, Russian Academy of Sciences, Russia*); *T. V. Victorovich* (*General Physics Institute, Russian Academy of Sciences, Russia*); *M. P. Viktorovich* (*General Physics Institute, Russian Academy of Sciences, Russia*);

15:00 **Coffee Break**

Session 3P8b
Media

Wednesday PM, March 29, 2006
Room: Somerset
Chaired by Youji Kotsuka and Quanyuan Feng

15:20 Lithium Ferrites for Phase Shifter
F. Q. Yuan (*Southwest Jiaotong University, China*);

15:40 A Novel Thin Microwave Absorber Based on the Concept of Equivalent Transformation Method of Material Constant
Y. Kotsuka (*Tokai University, Japan*); *K. Shimodaira* (*Tokai University, Japan*);

16:00 A Study of RF Absorber for Anechoic Chambers Used in the Frequency Range for Power Line Communication System
K. Shimada (*Riken Eletech Corporation, Japan*); *K. Ishizuka* (*Riken Eletech Corporation, Japan*); *M. Tokuda* (*Musashi Institute of Technology, Japan*);

16:20 Effective Medium Theory for Finite Size Aggregates
C. A. Guérin (*Université Paul-Cézanne, France*); *A. Sentenac* (*Université Paul-Cézanne, France*); *P. Mallet* (*ONERA-CERT/Institut Fresnel, France*);

16:40 One-dimensional Modeling of Plasma-electrode Pockels Cell Driven by One-pulse Process
X. J. Zhou (*University of Electronic Science and Technology of China, China*); *W. Q. Guo* (*University of Electronic Science and Technology of China, China*); *X. J. Zhang* (*China Academy of Engineering Physics, China*); *Z. Sui* (*China Academy of Engineering Physics, China*); *D. S. Wu* (*China Academy of Engineering Physics, China*);

17:00 High Dielectric Constant Samarium Doped Barium Titanate Microwave Ceramics
D. Kaur (*Guru Nanak Dev University, India*); *S. B. Narang* (*Guru Nanak Dev University, India*); *K. S. Thind* (*Guru Nanak Dev University, India*);

PIERS SURVEY

This is to inform you about future Progress in Electromagnetics Research Symposium (PIERS).

Should you be interested in organizing a session, please return this PIERS Survey Form to J. A. Kong, Room 26-305, 77 Massachusetts Avenue, Cambridge MA 02139, USA (fax: 617-258-8766 or 617-258-9525). Please visit also the web site at http://www.emacademy.org or http://www.piers.org.

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A. For the next PIERS to be held on 2–5 August, 2006 in Tokyo, Japan

( ) I will be interested in organizing and chairing a session, the proposed title is

_____

( ) I will attend the Symposium.

( ) I will not be able to attend the Symposium.

B. For the next PIERS Call for Papers

( ) I suggest the following technical topic(s)

_____

be changed to

_____

C. For past PIERS, I attended

( ) 1989 PIERS in Boston	( ) 1991 PIERS in Cambridge	( ) 1993 PIERS in Pasadena
( ) 1994 PIERS in Noordwijk	( ) 1995 PIERS in Seattle	( ) 1996 PIERS in Innsbruck
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( ) 2004 PIERS in Pisa	( ) 2004 PIERS in Nanjing	( ) 2005 PIERS in Hangzhou
( ) 2006 PIERS in Cambridge		

D. I have the following comments about PIERS:

_____

_____

_____

_____

PIERS 2006-Tokyo

Progress in Electromagnetics Research Symposium

2-5 August 2006 **Chuo University, Tokyo, JAPAN**

FINAL CALL FOR PAPERS

The Progress in Electromagnetics Research Symposium (PIERS 2006-Tokyo) will be held on 2-5 August 2006 at Korakuen Campus, Chuo University, Tokyo, Japan.

PIERS provides an international forum for reporting progress and recent advances in the modern development of electromagnetic theory and its new and exciting applications. Suggested topics are listed below, but consideration will be given to papers on other subjects as well.

Symposium Organization

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***PIERS 2006-Tokyo Symposium Committee*:** A. Komiyama, M. Nishimoto, M. Sato, T. Sato, H. Shirai, T. Yamasaki

Sponsorship: The Electromagnetics Academy

Suggested Topics

1. EM theory and nonlinear electromagnetics
2. Computational electromagnetics
3. Fast algorithms and large scale computation
4. Asymptotic methods and high frequency techniques
5. Ultra-wideband, short-pulse electromagnetics
6. Time-domain electromagnetics
7. Scattering and diffraction
8. Periodic structures and photonic/EM bandgap structures
9. Waveguiding structures and discontinuities
10. Wavelet techniques in electromagnetics
11. Neural network techniques in electromagnetics
12. Rough surface scattering
13. Wave scattering and imaging in random media
14. Electromagnetic interaction with natural media
15. Inverse scattering
16. SAR and SAR interferometry
17. ISAR and radio imaging
18. Polarimetric radar sensing
19. GPR and subsurface sensing
20. UXO/Landmine detection
21. Radar applications for atmosphere and ionosphere
22. Remote sensing of the earth, ocean and atmosphere
23. Signal processing in remote sensing
24. Tropospheric and ionospheric propagation
25. Electromagnetic precursors of earthquakes
26. Propagation in wireless communications
27. Antenna theory and measurements
28. Microstrip and printed antennas
29. Mobile antennas
30. Photonics, nonlinear optics and devices
31. Optical sensors and applications
32. Near field optics
33. New LED technology and applications
34. Microwave and optical wave interactions
35. Microwave and millimeter-wave circuits
36. Microwave power transmission
37. Advances in MMIC
38. Superconducting electronics
39. Composite, complex and fractal media
40. Left-handed metamaterials and negative refraction
41. Material measurements
42. Electromagnetic compatibility
43. Medical applications and biological effects
44. Others

ONE-PAGE ABSTRACT MUST BE RECEIVED BY 1 MARCH 2006

(Deadline has been extended)

Abstract Guidelines:
Authors are invited to submit a one-page abstract in English. No full-length paper is required. The abstract should explain clearly the content and relevance of the proposed technical contribution, require no copyright transfer agreement,

and contain no acknowledgements. On a separate page, list the following information: (1) Title of the paper, (2) Name(s) of the author(s), (3) E-mail address of each author, (4) Affiliation(s), (5) Complete mailing address, (6) Telephone/Fax numbers, (7) Corresponding author and presenting author, (8) Topic or Session Organizer, if applicable, (9) State if poster presentation is preferred. Please use the On-Line Submission (http://www.emacademy.org/piers2k6Japan/) to submit your abstract. Authors are recommended to use *.pdf as the file format. Each presenting author is limited to presenting no more than three papers. The submission deadline is **1 March 2006**.

ACCEPTANCE NOTIFICATION BY 15 MARCH 2006
PRESENTING AUTHOR MUST PRE-REGISTER BY 17 APRIL 2006

Acceptance Notification:

Acceptance notification will be sent to the corresponding author of the submitted paper by 15 March 2006.

Full-length Papers:

Author of an accepted abstract is invited to (but is not required to) submit a full-length paper of no more than five pages. A full-length paper should contain Abstract, Introduction, main text, Conclusion, and References. Full-length papers will be peer reviewed and published in the Proceedings after the authors have pre-registered. It is recommended that you use On-Line Submission (http://www.emacademy.org/piers2k6Japan/) to submit a full-length paper. Submission details will be posted on the web. Limited number of top-rated papers will also be accepted by the *Journal of Electromagnetic Waves and Applications*. The deadline for the submission of full-length papers is **17 April 2006**.

Registration:

We strongly recommend that you use the On-Line Registration to pre-register. Each presenting author must pay a non-refundable registration fee and is limited to pre-register for no more than three papers. Before and on 17 April 2006, the pre-registration fee is ¥45,000, and for students with valid identification and senior participants over the age of 70, ¥20,000. After 17 April 2006 and during the symposium, the registration fee will be increased to ¥50,000, and for students and senior participants, ¥25,000. The abstract will be posted in its entirety on the web after the pre-registration is completed. Only pre-registered abstracts will be scheduled in the symposium program.

Participant	Before and on 17 April 2006	After 17 April 2006
Regular	¥45,000	¥25,000
Student and Senior over 70	¥20,000	¥25,000

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ABOUT TOKYO

Tokyo is one of the largest cities in the world with a population of 12.29 million and is the biggest of the 47 prefectures throughout Japan. It can easily be reached from various cities of the world. In fact, 1,600 international flights per week are served at the New Tokyo International Airport in Narita. Tokyo is an ideal center for exploring history and culture, and for natural beauty as well as for shopping. Historically, Tokyo replaced Kyoto as the capital of Japan in 1868 with the advent of the Meiji Restoration. At the same time, the Edo Castle, long used as the seat of the Tokugawa Shogunate Government, was converted into the present Imperial Palace. Visitors to the Imperial Palace grounds can find a few remains of the former Edo Castle and enjoy excellent historical displays. In downtown Tokyo, there are many attractions such as the Meiji Shrine, the Asakusa Kannon Temple, the Tokyo Tower, the National Diet Building. Tokyo also boasts of 240 art museums and galleries and 277 parks and gardens, drawing a large crowd of visitors. In the vicinity of Tokyo, there are many more attractive sightseeing spots. One hour by train from Tokyo, Kamakura is a small and quiet coastal town with many tranquil temple grounds, where most famous among the city's attractions is its giant bronze image of the Buddha, the *Daibustu*. 90 minutes by train from Tokyo, Hakone is a famous resort area set in the beautiful mountains which comprise the Fuji-Hakone-Izu National Park. Mt. Fuji, at 3,776 m in height, is known as the tallest and most beautiful mountain in Japan. In addition, two hours by train from Tokyo, Nikko is probably the best known of Japan's 27 national parks to foreign tourists. During the month of August, the average temperature is about 26°C (79°F) and the relative humidity is around 66%. The Korakuen Campus of Chuo University, the venue of PIERS 2006-Tokyo, is conveniently situated in the heart of Tokyo, and it is easily accessible from the New Tokyo International Airport (80 minutes).

Updated information on World Wide Web http://www.emacademy.org/piers2k6Japan/

	SUNDAY AM 8:00 MARCH 26		SUNDAY PM 13:00 MARCH 26	MONDAY AM 8:00 MARCH 27		MONDAY PM 13:00 MARCH 27	
Ballroom A	0A1a - New Results and Prospective Co-operative Research Directions on Metamaterials	0A1b - Metamaterials with Negative Index and Related Phenomena	0P1 - Inverse Problems	1A1 - Poster Session 1		1P1- Poster Session 2	
Skyline A	SHORT COURSE Capineri, Windsor		SHORT COURSE Kishk	1A2 - Effective Parameters of Metamaterials: Difficulties in Definition, Characterization, and Interpretation of Measurements		1P2 - Electromagnetic Modeling in Optoelectronics	
Skyline C	SHORT COURSE Chew, Jiang		SHORT COURSE Chew, Jiang	1A3a - Scattering and Propagation in Random Media and Rough Surfaces	1A3b - Interaction of Microwaves with Vegetation	1P3a - Microwave Remote Sensing of Snow	1P3b - Remote Sensing and Imaging
Skyline E	0A4 - Electromagnetic Near Field Effects in Problems of Wave Radiation from and Scattering by Ordered and Disordered Media		0P4 - Coherent Effects in Random Media	1A4 - Bioelectronics and Medical Electromagnetics		1P4 - Recent Advances in Bioelectromagnetics Research on Mobile Telephony and Health	
Parkview	SHORT COURSE Xie, Li			1A5 - Microelectronic Packaging		1P5 - Modelling, Imaging and Inversion of Large-Scale Electromagnetic Data	
Charles B	SHORT COURSE Oughstun		SHORT COURSE Kikuchi	1A6a - Steerable Reflect-array Antennas	1A6b-Antennas and Resonators	1P6a - Volume and Rough Surface Scattering: Theory and Photonic Applications	1P6b - Guided Waves
Charles A	SHORT COURSE Boerner		SHORT COURSE Boerner	1A7 - Microwave and Optical Devices, Propagation			
Somerset	SHORT COURSE Maradudin		SHORT COURSE Sihvola	SHORT COURSE Simovski		SHORT COURSE Simovski	
Riverfront	0A9 - Advances in Integral Equation Techniques for Planar Circuits			1A9 - Novel Methods for Solving the Forward and Inverse Problems of Radiative Transport		1P9 - Numerical Method	

	TUESDAY AM 8:00 MARCH 28	TUESDAY PM 13:00 MARCH 28	WEDNESDAY AM 8:00 MARCH 29		WEDNESDAY PM 13:00 MARCH 29	
Ballroom A	2A1 - Waves on Metamaterial Elements and Their Applications	2P1 - Nanostructures and Metamaterials for RF and Optical Applications	3A1a - Automatic Classification of Spectral Signatures and Scattering Patterns	3A1b - Seabottom Electromagnetic Imaging and Detection Technologies	3P1 - Recent Advances in Optical Trapping and Binding	
Skyline A	2A2 - Plasmonic Nanophotonics	2P2 - Surface Plasmon Photonics	3A2 - Optics and Photonics		3P2 - Advanced Methods for Light Scattering Analysis in Nanotechnology and Biophotonics	
Skyline C	2A3 - New Applications of Radar for Non-destructive Testing	2P3 - Physics Based and Statistical Methods in Subsurface Imaging	3A3 - Sensor Array Signal Processing		3P3 - Devices and Circuits	
Skyline E	2A4 - Non-linear Inverse Problems in Electromagnetic Medical Imaging	2P4 - Neural Network and/or Remote Sensing Inversion Problems	3A4 -Microwave Imaging for NDE/NDT Applications		3P4 - Subsurface Imaging through Inverse Scattering Approaches: From Biomedical Applications to UXO Detection	
Parkview	2A5 - Computational Methods in Electromagnetics	2P5 - Electromagnetic Modeling and Inversion and Applications 1	3A5 -Electromagnetic Modeling and Inversion and Applications 2		3P5 - Electromagnetic Modeling and Inversion and Applications 3	
Charles B	2A6 - Antennas		3A6 - Extended/Unconventionl Electromagnetic Theory, EHD/EMHD, and Electrobiology		3P6 - Novel Mathematical Methods	
Charles A		2P7 - Electromagnetic Theory and Dielectric Waveguides and Antennas	3A7 - Computational Electromagnetics		3P7 - Modeling and Inverse Problems	
Somerset	SHORT COURSE Vendik	SHORT COURSE Tentzeris	SHORT COURSE Berginc		3P8a - Microwave Related Phenomena in Superconductors	3P8b - Media
Riverfront	2A9 - Space-Time Dynamics of Pulsed Beam Fields in Complex Media	2P9 - Time Reversal Techniques in Electromagnetics				