PIERS 2003

Progress In Electromagnetics Research Symposium

Program

October 13–16, 2003
Honolulu, Hawaii, USA

www.emacademy.org
www.piers.org

For more information on PIERS, please visit us online at www.emacademy.org or www.piers.org.

CONTENTS

TECHNICAL PROGRAM SUMMARY

Monday AM, October 13, 2003

Monday PM, October 13, 2003

Tuesday AM, October 14, 2003

Tuesday PM, October 14, 2003

Wednesday AM, October 15, 2003

Wednesday PM, October 15, 2003

Thursday AM, October 16, 2003

Thursday PM, October 16, 2003

Progress in Electromagnetics Research Symposium
October 13–16, 2003
Honolulu, Hawaii, USA

PIERS 2003 ORGANIZATION

PIERS Chair

J. A. Kong, MIT, USA

PIERS 2003 General Chair

M. Iskander, University of Hawaii, USA

PIERS 2003 Technical Program Committee

C. O. Ao	F. Ares-Pena	G. Berginc	H. Braunisch
K. S. Chen	M. Cheney	W. C. Chew	G. F. Crosta
T. J. Cui	J. Dowling	M. A. Fiddy	T. M. Grzegorczyk
Y. Hara	W. Hong	D. Jackson	Q. Jiang
J. Johnson	D. Kasilingam	N. Khazenie	K. Kobayashi
Y. Kotsuka	J. S. Lee	D. Lesselier	L.-W. Li
K. M. Luk	S. Maci	O. Martin	A. Massa
G. McNeal	M. Miyakawa	D. P. Nyquist	K. O'Neil
J. Pribetich	R. Radlinski	T. Sengor	C. Seo
M. S. Shahriar	R. Shin	A. Sivhola	D. R. Smith
L. Tsang	H. A. Zebker	Y. Zhang	

PIERS 2003 International Advisory Committee

S. Anderson	D. Briggs	V. Browning	L. Felsen
T. M. Habashy	H. Huang	A. Ishimaru	R. Lang
K. F. Lee	M. S. Leong	C. Luther	S. Mano
R. McCoy	R. C. McPhedran	H. Ogura	P. Pampaloni
B. Perlman	M. Pollack	A. Priou	Y. Rahmat-Samii
M. Raugi	H. Rott	J. Saillard	W. Stachnik
G. L. Tyler	W. Wiesbeck	W. X. Zhang	

PIERS 2003 SESSION ORGANIZERS

D. J. Bergman	N. Blaunstein	M. Bozzi	H. Braunisch
V. Browning	S. Caorsi	K. P. Esselle	L. Fishman
L. Gürel	G. R. Hadley	G. W. Hanson	H. E. Hernández-Figueroa
W. Hong	J. Huang	E. D. Isaacs	H. Kikuchi
K. Kobayashi	J.-F. Lee	L.-W. Li	S. Mainguy
F. P. Mariotte	O. J. F. Martin	E. Marx	A. Massa
W. C. Meecham	M. Moghaddam	A. V. Osipov	G. W. Pan
L. Perregrini	Ch. Y. Pichot	J. Pribetich	P. Pribetich
K. Radhakrishnan	R. Ramer	R. Ramiz	L. Sarger
S. Y. Semenov	M. S. Shahriar	Y. Shestopalov	D. R. Smith
M. I. Stockman	D. Stuerga	T. Takenaka	M. M. Tentzeris
T. Thio	A. B. Yakovlev	M. S. Zhdanov	

PIERS 2003 SPONSORSHIP

- The Electromagnetics Academy
- MIT Lincoln Laboratory
- Office of Naval Research
- Mitsubishi Electric Corporation
- Cold Regions Research and Engineering Laboratory
- MIT Department of Electrical Engineering and Computer Science
- MIT Center for Electromagnetic Theory and Applications, Research Laboratory of Electronics

SYMPOSIUM SITE AND OFFICE LOCATION

The 2003 Progress in Electromagnetics Research Symposium will be held on October 13–16, 2003, at the Sheraton Waikiki Hotel, Honolulu, Hawaii, USA. During the symposium, the PIERS Office will be in *WAIMEA CANYON* at the Sheraton Waikiki Hotel (Tel.: 808-922-4422). The PIERS Office will open at 1:00 PM on Sunday, October 12, 2003.

REGISTRATION

The PIERS technical sessions begin on Monday morning, October 13, 2003 at the Sheraton Waikiki Hotel, Honolulu, Hawaii, USA. You may register in the PIERS Office at the Sheraton Waikiki Hotel on Sunday, October 12, from 1:00 PM to 7:00 PM, or during the symposium from 7:30 AM through 5:00 PM, October 13-16, 2003.

The on-site registration fee is US$397. The student registration fee is US$195; a valid student ID is required. If you have pre-registered, your badge and symposium program will be ready for you to pick up at the registration desk during the symposium.

PROJECTION FACILITIES

Overhead and LCD projectors will be provided in each meeting room. Please note, however, that computers/laptops will not be provided.

SPECIAL EVENTS

Opening Reception

On Sunday afternoon, October 12, 2003, from 3 to 5 PM, join your PIERS hosts and other participants for an informal opening reception at the Sheraton Waikiki Hotel.

Conference Dinner

A conference dinner is planned for PIERS participants and their guests on Wednesday evening, October 15, 2003. Tickets will be sold at a price of US$25 on a first-come, first-served basis. Detailed information can be obtained from the PIERS 2003 office.

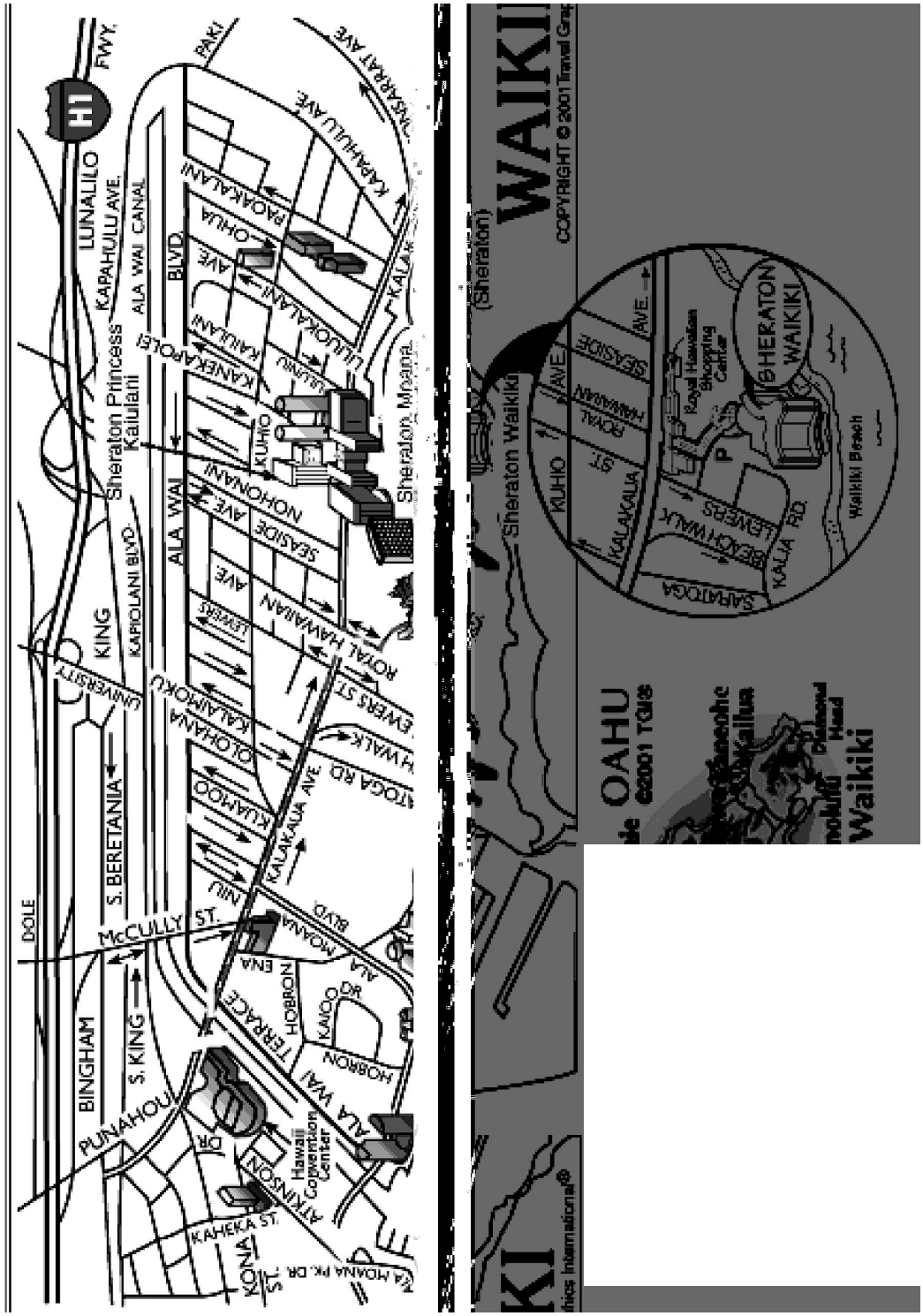
PIERS ONLINE

Information on PIERS 2003 and future PIERS is posted on the World Wide Web at www.emacademy.org or www.piers.org.

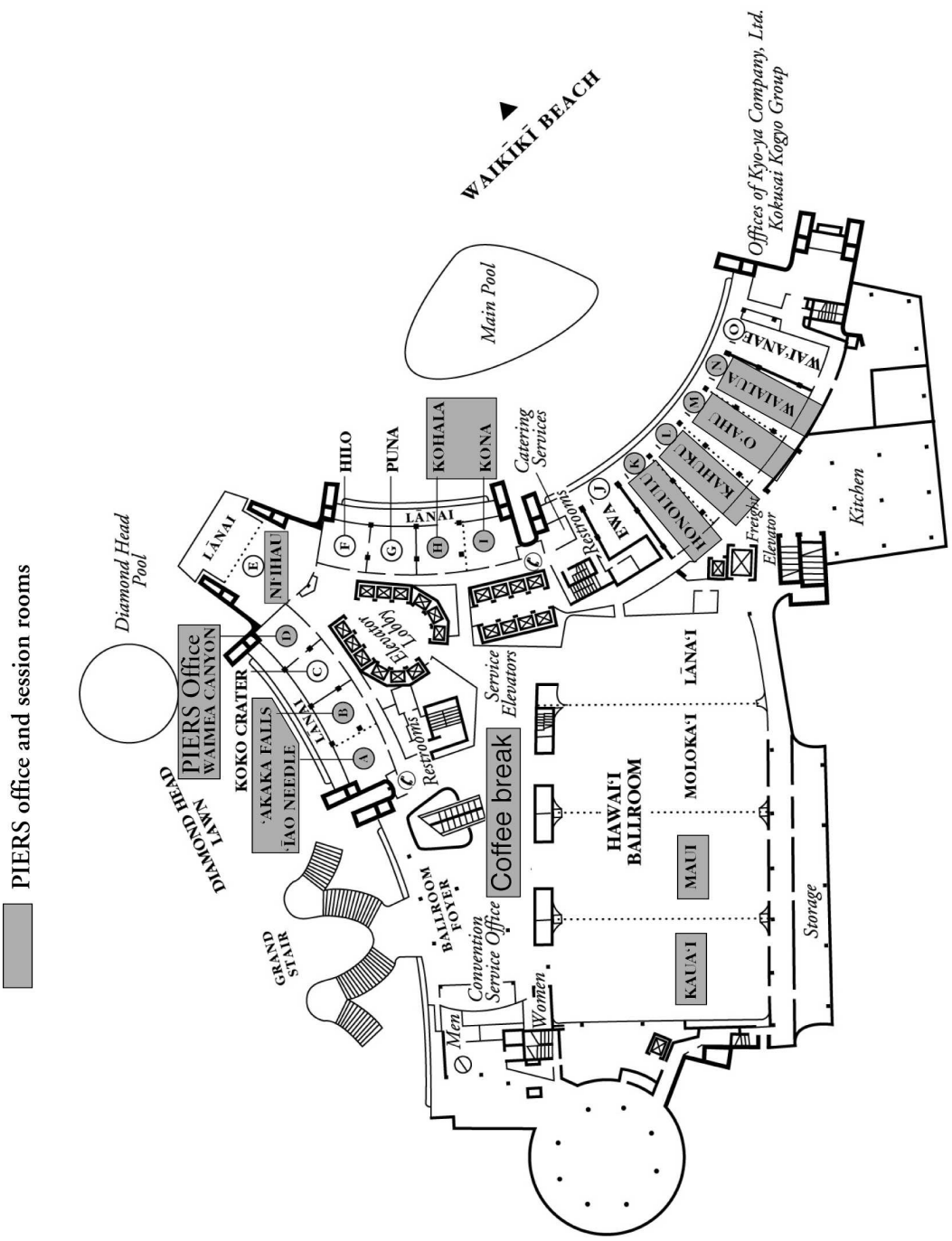
METAMATERIAL WORKSHOP ANNOUNCEMENT

All participants are invited to attend the workshop entitled 'Workshop on Left-Handed Metamaterials', which will be held on Wednesday, October 15, 2003, at the Kauai Ballroom.

HONOLULU AREA MAP



HOTEL MEETING FLOOR MAP



PIERS 2003 TECHNICAL PROGRAM

Session 1A1
Negative Refraction and Related Phenomena in Electromagnetic Metamaterials I

Monday AM, October 13, 2003

Kauai Ballroom

Organized by David R. Smith, Olivier J. F. Martin

Chaired by David R. Smith, Olivier J. F. Martin

8:00 Determination of Material Parameters and Performance of Negative Index Media at Microwave Frequencies
P. V. Parimi, P. Vodo, W. T. Lu, S. Sridhar (*Northeastern University, USA*); *J. S. Derov, B. Turchinetz* (*AFRL/SNHA, USA*);

8:20 An Overview of the Role of Space-Filling Curves in Radiation and Scattering Problems, Part 2: Artificial Magnetic Conductors
John A. McVay (*Villanova University, USA*); *Nader Engheta* (*University of Pennsylvania, USA*); *Ahmad Hoorfar* (*Villanova University, USA*);

8:40 Sub-Wavelength Resonant Structures Containing Double-Negative (DNG) or Single-Negative (SNG) Media: Planar, Cylindrical and Spherical Cavities, Waveguides, and Open Scatterers
Andrea Alù (*University of Roma Tre, Italy*); *Nader Engheta* (*University of Pennsylvania, USA*);

9:00 An Overview of the Role of Space-Filling Curves in Radiation and Scattering Problems, Part 1: Electrically Small Antennas
Jinhui Zhu, Ahmad Hoorfar (*Villanova University, USA*); *Nader Engheta* (*University of Pennsylvania, USA*);

9:20 Negative Refraction of Microwaves in Metallic Photonic Crystals
S. Sridhar, P. V. Parimi, P. Vodo, W. T. Lu (*Northeastern University, USA*); *J. S. Derov, B. Turchinetz* (*AFRL/SNHA, USA*);

9:40 Conformal Lens: Microwave Analog Exploration
M.-C. Chen, J.-S. Lih, C. J. Cheng, J.-L. Chern (*National Chiao Tung University, Taiwan*); *L.-E. Li* (*Chip Implementation Center, Taiwan*);

10:00 **Coffee Break**

10:20 Grating-like Interpretation of the Meta-Material using in Directive Emission
Y.-C. Huang, J.-S. Lih, J.-L. Chern (*National Chiao Tung University, Taiwan*); *L.-E. Li* (*Chip Implementation Center, Taiwan*);

10:40 A Perfectly Matched Layer for Negative Index Material Simulations
Steven A. Cummer (*Duke University, USA*);

11:00 Meaning of Negative Refraction in Photonic Crystals Near the Photonic Band Edge
Masaya Notomi (*NTT Basic Research Laboratories, Japan*);

11:20 "Ideal" Virtual Image Formation and Wave Tunneling in a Lens Made of a Pair of Epsilon-Negative (ENG) and Mu-Negative (MNG) Slabs
Andrea Alù (*University of Roma Tre, Italy*); *Nader Engheta* (*University of Pennsylvania, USA*);

11:40 Analysis of the Focusing of Point-Like Sources by Physical Left-Handed Slabs
Ricardo Marqués (*Universidad de Sevilla, Spain*);

Session 1A2
EBG/PBG Structures - I

Monday AM, October 13, 2003

Maui Ballroom

Organized by Karu P. Esselle

Chaired by Karu P. Esselle, Yahya Rahmat-Samii

8:20 The Marvels of Electromagnetic Band Gap (EBG) Structures
Yahya Rahmat-Samii (*University of California, Los Angeles, USA*);

9:00 2D Distributed Periodic Structures with Anisotropic LH and RH Characteristics
Atsushi Sanada, Christophe Caloz, Tatsuo Itoh (*University of California, Los Angeles, USA*);

9:20 Layer-by-Layer 3-D Electromagnetic Bandgap Resonator Antenna with Metallic Image Plane
Andrew R. Weily, Karu P. Esselle, Levente Horvath, Barry C. Sanders (*Macquarie University, Australia*); *Trevor S. Bird* (*CSIRO Telecommunications and Industrial Physics, Australia*);

9:40 Implementation of Coplanar Waveguide Low Pass Filters by Using Electromagnetic Band-Gap Structures
Francisco Falcone (*Public University of Navarre, Spain*); *Ferran Martín, Jordi Bonache* (*Universitat Autònoma de Barcelona, Spain*); *Miguel A. G. Laso* (*Public University of Navarre, Spain*); *Txema Lopetegi* (*European Space Agency, The Netherlands*); *Mario Sorolla* (*Public University of Navarre, Spain*);

10:00 **Coffee Break**

10:20 A Simplified Model for Planar Electromagnetic Band-Gap Structures Formed by Metal Patches and Via Holes
K. Rambabu, A. Tennent, J. Bornemann (*University of Victoria, Canada*);

10:40 Fourier Transform Using Microstrip Non-Uniform Periodic Structures: Survey of Potential Applications
Miguel A. G. Laso, Txema Lopetegi, Francisco Falcone (*Public University of Navarre, Spain*); *Ferran Martín* (*Universitat Autònoma de Barcelona, Spain*); *David Benito, Mario Sorolla* (*Public University of Navarre, Spain*); *Tapani Närhi* (*European Space Agency, The Netherlands*);

11:00 Wave Dispersion Properties of Artificial Surfaces
Stefano Maci (*University of Siena, Italy*);

11:20 Group Velocity Manipulation in Coaxial Photonic Crystals
William M. Robertson, J. N. Munday, C. Brad Bennett (*Middle Tennessee State University, USA*);

11:40 Advances in the Design Synthesis of Electromagnetic Bandgap Metamaterials
Douglas H. Werner, Douglas J. Kern, Pingjuan L. Werner (*The Pennsylvania State University, USA*); *Michael J. Wilhelm* (*Sciperio, Inc., USA*); *Agostino Monorchio, Luigi Lanuzza* (*University of Pisa, Italy*);

Session 1A3
Applications of Radar in Subsurface and Subcanopy Characterization

Monday AM, October 13, 2003

Kahuku

Organized by Mahta Moghaddam

Chaired by Mahta Moghaddam

8:40 Three-Dimensional Electromagnetic Modeling of Various GPR Problems
Levent Gürel, Uğur Oğuz (*Bilkent University, Turkey*);

9:00 Use of a Dual-Frequency Interferometric SAR for Estimating Below Canopy Topography, Canopy Structure, and Bare Surface Soil Dielectrics
Paul Siqueira, Scott Hensley (*Jet Propulsion Laboratory, USA*);

9:20 Wideband Radars for Mapping of Near Surface Internal Layers to Estimate Accumulation Rate
S. Gogineni, P. Kanagaratnam, R. Parthasarathy, D. Braaten (*The University of Kansas, USA*);

9:40 Synthetic Aperture Processor Prototype for a Tower-Based UHF and VHF Soil Moisture Radar
Ernesto Rodriguez, Mahta Moghaddam, Delwyn Moller (*Jet Propulsion Laboratory, USA*);

10:00 **Coffee Break**

10:20 Estimating Soil Moisture from Surface to Depth Using a Multiple Low-Frequency Tower Radar
Mahta Moghaddam, Ernesto Rodriguez, James Hoffman (*Jet Propulsion Laboratory, USA*);

10:40 The Application of Radar Sounders to the Investigation of Planets and Small Bodies
A. Safaeinili (*Jet Propulsion Laboratory, USA*);

11:00 Low-Frequency Imaging Radar for Subsurface Geologic Studies in Arid Regions
Tom G. Farr (*Jet Propulsion Laboratory, USA*);

Session 1A4
Wavelet / Multiwavelet Applications in Electromagnetics

Monday AM, October 13, 2003

Honolulu

Organized by George W. Pan, Manos M. Tentzeris

Chaired by George W. Pan, Manos M. Tentzeris

8:20 Asymptotically Optimal BEM Solvers for Electromagnetics Based on Variable Order Wavelets
Johannes Tausch (*Southern Methodist University, USA*);

8:40 A BMIA/AIM Multi-Resolution Analysis of Large Printed Arrays
Paolo De Vita, Alessandro Mori, A. Freni (*University of Florence, Italy*); *Francesca Vipiana, Paola Pirinoli, Giuseppe Vecchi* (*Polytechnic of Turin, Italy*);

9:00 Two Port Equivalent of Microwave Devices in the Wavelet Domain
Sami Barmada, Antonino Musolino, Marco Raugi (*University of Pisa, Italy*);

9:20 Bipolar Transistor Modeling with Bolzmann Transport Equation Using Multiwavelets
Ke Wang, George W. Pan (*Arizona State University, USA*); *Barry Gilbert* (*Mayo Foundation, USA*);

9:40 Advantages of Prolate Spheroidal Wavelets
Gilbert G. Walter (*University of Wisconsin-Milwaukee, USA*);

10:00 **Coffee Break**

10:20 On the Construction and Application of Boundary- and Interior B-Spline Wavelets and Dual-Wavelets to Many-Body EM Scattering Problems
Ali R. Baghai-Wadji, R. Kolm (*Vienna University of Technology, Austria*);

10:40 Modeling and Design of EBG and MEMS RF Structures Using a Composite-Cell MRTD Technique
Nathan A. Bushyager, Manos M. Tentzeris (*Georgia Institute of Technology, USA*);

11:00 Multiwavelet Based Galerkin Procedure in Sobolev Space
George W. Pan, Meisong Tong (*Arizona State University, USA*); *Barry Gilbert* (*Mayo Foundation, USA*);

11:20 Wavelet-Based Analysis of Transient Electromagnetic Wave Propagation in Photonic Crystals
Yair Shifman, Yehuda Leviatan (*Technion-Israel Institute of Technology, Israel*);

Session 1A5
Modeling and Design of High Power Microwave Applicators

Monday AM, October 13, 2003

Waialua

Organized by D. Stuerga, P. Pribetich

Chaired by D. Stuerga, P. Pribetich

8:40 Effect of Electric and Magnetic Fields at Microwave Frequencies on the Material Processing
D. Agrawal, R. Roy, R. Peelamedu, J. P. Cheng, Y. Fang (*The Pennsylvania State University, USA*);

9:00 Improving the Heating Uniformity in Multimode Microwave Applicators by the Optimization of the Position of Multiple Feeds
J. M. Catalá-Civera, J. Pitarch, T. Canós, F. Peñaranda-Foix, J. V. Balbastre, E. de los Reyes (*Universidad Politécnica de Valencia, Spain*);

9:20 Full-Wave Analysis of Cylindrical Microwave Applicators
C. Lohr, P. Pribetich, D. Stuerga (*Université de Bourgogne, France*);

9:40 Applicators with Matched Interfaces for Polymeric Material Curing
M. Delmotte, C. Moré (*Laboratoire de Microstructure et Mécanique des Matériaux, France*);

10:00 **Coffee Break**

10:20 Finite Difference Frequency Domain Model for Lossy Loaded Rectangular Waveguide
D. Stuerga, P. Pribetich, A. Calmels (*Université de Bourgogne, France*);

10:40 Modeling of Microwave Kilns with Isothermal Barrier Walls
M. Sato (*National Institute for Fusion Science, Japan*);

11:00 Design of Microwave Applicator for Microwave Heating of Smart Cards
D. Stuerga (*Université de Bourgogne, France*);

Session 1A6
Theory of Guided Waves

Monday AM, October 13, 2003

Niihau

Chaired by Ammar B. Kouki, Susan Hallman

8:20 Guiding Characteristics of Waveguides with Two-Dimensionally Periodic Walls of Finite Thickness
Song-Tsuen Peng (*National Chiao-Tung University, Taiwan*); *Ruey-Bing Hwang* (*National Chi Nan University, Taiwan*);

8:40 A Study of Hierarchal Shape Functions for Guiding Structures
Tahar Ezzeddine (*École de Technologie Supérieure, Canada*); *Ahmed Khebir* (*Electromagneticworks Inc., Canada*); *Ammar B. Kouki* (*École de Technologie Supérieure, Canada*); *Ammar Bouallegue* (*École Nationale D'ingénieurs de Tunis, Tunisia*);

9:00 Liénard-Wiechert Field Computations for Single Electron Radiation in a Planer Undulator with a Parallel Plate Waveguide
Susan Hallman, Luis R. Elias (*University of Hawaii at Mãnoa, USA*);

9:20 Excitation of Circular Waveguides with Radial Coaxial Probe Feeds
Victor A. Klymko, Alexander B. Yakovlev, Ahmed A. Kishk, Allen W. Glisson (*The University of Mississippi, USA*);

9:40 Theoretical and Experimental Study of Propagation in Closed Space
Kazunori Uchida, C. K. Lee, T. Matsunaga (*Fukuoka Institute of Technology, Japan*);

10:00 **Coffee Break**

10:20 Bound and Leaky Modes on Waveguides with Periodic Side Walls
Song-Tsuen Peng (*National Chiao-Tung University, Taiwan*); *Ruey-Bing Hwang* (*National Chi Nan University, Taiwan*); *Arthur A. Oliner* (*Polytehnic University, USA*);

10:40 Fourier Series Approach to the Computation of Currents on Multiple Cables Enclosed in a Shielded Enclosure
Habib Rahman (*Saint Louis University, USA*);

11:00 Convergence Rate Improvement in FEM Modal Analysis of a Waveguides with Re-Entrant Corners
Tuptim Angkaew, Suvicharn Kawahara (*Chulalongkorn University, Thailand*);

11:20 Analysis of the Propagation Characteristics of Generalized Ridge Waveguides Using 2-D Finite Difference Frequency Domain Method
Jian-bin Liu, Xi-lang Zhou, Hui-yue Yi (*Shanghai Jiaotong University, China*);

Session 1A7
Transmission Lines and Filters

Monday AM, October 13, 2003

Kohala/Kona

Chaired by Jen-Tsai Kuo, Yasushi Horii

8:20 A Basic Study of Microstrip Coupled-Line Bandpass Filters Using Different Resonators
Kouji Wada, Yoshihiro Aoki, Takanobu Ohno, Osamu Hashimoto (*Aoyama Gakuin University, Japan*);

8:40 An Experimental Study on a Microstrip Line Bandpass Filter Using Tapper Coupled-Line for Low Spurious Responses
Kouji Wada, Makoto Tatsumi, Tomohide Kamiyama, Osamu Hashimoto (*Aoyama Gakuin University, Japan*);

9:00 On the Computer Aided Tuning of Microwave Filters
Raafat R. Mansour (*University of Waterloo, Canada*);

9:20 Design of Parallel-Coupled Microstrip Filters with a Dual-Passband Response
Jen-Tsai Kuo, Tsung-Hsun Yeh (*National Chiao Tung University, Taiwan*);

9:40 An Improved Formula for Design of Wideband Parallel-Coupled Microstrip Bandpass Filters
Kuo-Sheng Chin, Liu-Yang Lin, Jen-Tsai Kuo (*National Chiao Tung University, Taiwan*);

10:00 **Coffee Break**

10:20 Chaos-Assisted Tunneling in Whispering-Gallery Resonators
Evgenii E. Narimanov, Viktor A. Podolskiy (*Princeton University, USA*);

10:40 A Band Elimination Filter Composed of a Grounded-Pad Embedded in an LTCC Microstrip Line Substrate
Yasushi Horii (*Kansai University, Japan*);

11:00 Microstrip Bandpass Filters with a Dielectric Overlay for Suppressing the Spurious Resonances
Meshon Jiang, Jen-Tsai Kuo (*National Chiao Tung University, Taiwan*);

11:20 High Frequency Crosstalk Analysis of PCB Layouts Using FDTD Method
C. N. Pai, C. H. Ding, J. H. Chou (*National Cheng Kung University, Taiwan*);

Session 1A8a
Rough Surface Scattering

Monday AM, October 13, 2003

Oahu

Chaired by Valerian I. Tatarskii

8:00 Scattering from Layered Rough Surfaces Using the Forward Backward Method with Spectral Acceleration
Christopher D. Moss, Tomasz M. Grzegorczyk, Hsiu C. Han, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

8:20 Converging Expansion for Rough Surface Scattering Problem with the Dirichlet Boundary Condition
Valerian I. Tatarskii (*Zel Technologies and NOAA/ETL, USA*);

8:40 Mode Coupling and Diffusion in Quantized Systems with Random Rough Surfaces
Alexander Edward Meyerovich (*University of Rhode Island, USA*);

9:00 Analysis of the Mueller Matrix for Scattering of Electromagnetic Waves from Two-Dimensional Anisotropic Rough Surfaces
Gérard Berginc (*Thalès Optronique, France*); *Christophe Bourlier, P. Schott* (*Ecole Polytechnique de l'Université de Nantes, France*);

9:20 Polarized Radiative Transfer Calculations in Multilayer Systems with Smooth or Rough Interfaces
Jérôme Caron, Christine Andraud, Jacques Lafait (*Université Pierre et Marie Curie, France*);

9:40 Acceleration of Mode-Expansion Method
Jie Lu (*Massachusetts Institute of Technology, USA*); *Yan Zhang* (*Jet Propulsion Laboratory, USA*); *Tomasz M. Grzegorczyk, Bae-Ian Wu, Joe Pacheco, Christopher D. Moss, Jin Au Kong* (*Massachusetts Institute of Technology, USA*);

Session 1A8b
Recent Advances in Reflection and Propagation Problems

Monday AM, October 13, 2003

Oahu

Organized by William C. Meecham, Louis Fishman

Chaired by William C. Meecham, Louis Fishman

10:20 Rough Surface Scattering Treated Using the Stochastic Expansion; Compared with Lambert Law ($\cos^2\theta$) Angular Distribution and High Frequency Gaussian Angular Distribution for Gaussian Surfaces
William C. Meecham (*University of California, Los Angeles, USA*); *Wuu-Wen Lin* (*Yung Ta Institute of Technology and Commerce (YTIT), Taiwan*);

10:40 Propagation Issues for Geoacoustic Inversion
A. Tolstoy (*ATolstoy Sciences, USA*);

11:00 Floquet-Bloch Decomposition of the Maxwell Equations
David J. Wall (*University of Canterbury, New Zealand*);

Session 1P1
Negative Refraction and Related Phenomena in Electromagnetic Metamaterials II

Monday PM, October 13, 2003

Kauai Ballroom

Organized by David R. Smith, Olivier J. F. Martin

Chaired by David R. Smith, Olivier J. F. Martin

13:00 Double-Split-Ring-Resonators: Towards an Efficient Isotropic Magnetic Resonant Particle for Metamaterial Design
Juan Domingo Baena, Ricardo Marqués, Francisco Medina, Jesús Martel (*Universidad de Sevilla, Spain*);

13:20 Analysis of Spiral Resonators for Metamaterial Design
Juan Domingo Baena, Ricardo Marqués, Francisco Medina, Jesús Martel (*Universidad de Sevilla, Spain*);

13:40 Simulation and Measurements of the Performance of Optical Elements Constructed with Negative Index of Refraction Materials
Claudio G. Parazzoli, Robert B. Greegor (*The Boeing Company, Phantom Works, USA*);

14:00 A Route to Left Handed Meta and Real Materials at Far Infrared Frequencies
Sheldon Schultz (*University of California, San Diego, USA*);

14:20 Sensitivity of the Properties of Certain Electromagnetic Metamaterials to Structural Parameters
D. W. Rule (*Naval Surface Warface Center, USA*); *David R. Smith* (*University of California, San Diego, USA*); *R. A. Stark* (*Naval Surface Warface Center, USA*); *David C. Vier* (*University of California, San Diego, USA*);

14:40 Optical Properties of Plasmonic Nanowires: Surface Plasmon Modes and Negative Refractive Index Composites
Andrey K. Sarychev (*Purdue University, USA*); *Viktor A. Podolskiy* (*Princeton University, USA*); *Vladimir M. Shalaev* (*Purdue University, USA*);

15:00 **Coffee Break**

15:20 Breaking Diffraction Limit with Meta-Materials: Microwave Exploration
J.-S. Lih, Y.-S. Wang, M.-C. Lu, M.-C. Chen, Y.-C. Huang, K.-H. Chen, J.-L. Chern (*National Chiao Tung University, Taiwan*); *L.-E. Li* (*Chip Implementation Center, Taiwan*);

15:40 Distortion Suppression Using Composite Right/Left-Handed Metamaterials
Christophe Caloz, Atsushi Sanada, Tatsuo Itoh (*University of California, Los Angeles, USA*);

16:00 Analytical and Numerical Studies of Wire-Mesh Metallic Photonic Crystals
A. L. Efros, A. L. Pokrovsky (*University of Utah, USA*);

16:20 New Lens Based Upon Left-Handed Materials
A. L. Efros, A. L. Pokrovsky (*University of Utah, USA*);

16:40 A Numerical Study of the Amplification of Evanescent Fields in Backward-Wave Slabs
Mikko K. Kärkkäinen, Sergei Tretyakov, Stanislav Maslovski, Pavel Belov (*Helsinki University of Technology, Finland*);

17:00 Left-Handed Materials and Negative Refraction: Transfer Matrix and FDTD Calculations
C. M. Soukoulis, S. Foteinopoulou (*Iowa State University, USA*); *E. N. Economou* (*Research Center of Crete - FORTH, Greece*); *Peter Markos* (*Slovak Academy of Sciences, Slovakia*);

17:20 Surpassing the Diffraction Limit with a Planar Left-Handed Transmission-Line Lens
A. Grbic, George V. Eleftheriades (*University of Toronto, Canada*);

Session 1P2
EBG/PBG Structures - II

Monday PM, October 13, 2003
Maui Ballroom
Organized by Karu P. Esselle
Chaired by Karu P. Esselle, Sajeev John

13:20 Photonic Band Gap Materials: Semiconductors of Light
Sajeev John (*University of Toronto, Canada*);

14:00 Bloch Mode Modelling of Propagation in Photonic Crystal Waveguide Devices
Lindsay C. Botten (*University of Technology, Australia*); *Thomas P. White* (*The University of Sydney, Australia*); *Ara A. Asatryan, Timothy N. Langtry* (*University of Technology, Australia*); *Ross C. McPhedran, C. Martijn De Sterke* (*The University of Sydney, Australia*);

14:20 Photon Focusing Phenomenon: from Basic Idea to WDM Devices
Dmitry N. Chigrin, Clivia M. Sotomayor Torres (*University of Wuppertal, Germany*);

14:40 Pulse Propagation in Two-Dimensional Photonic Crystal Couplers with Defect Coupling Region
Alessandro Albertoni, Antonella D'Orazio, Marco De Sario, Vincenzo Petruzzelli, Francesco Prudenzano, M. Bozzetti (*Politecnico di Bari, Italy*);

15:00 **Coffee Break**

15:20 Analysis and Fabrication of a Heterostructure Microlaser using 2D-PBG Mirrors
Antonella D'Orazio, Marco De Sario, Valeria Marrocco, Vincenzo Petruzzelli, Francesco Prudenzano (*Politecnico di Bari, Italy*); *Tiziana Stomeo, Massimo De Vittorio, Maria T. Todaro, Vincenzo Vitale, Roberto Cingolani* (*Università di Lecce, Italy*);

15:40 One-Dimensional Photonic Crystals Based on Multiple Quantum Well Structures: Opportunities for Optical Spectrum Engineering
Lev I. Deych, Mikhail Erementchouk, Alexander Lisyansky (*Queens College of CUNY, US*);

16:00 Photonic Quasicrystals for WDM Applications
Javier R. Vivas, Dmitry N. Chigrin, Clivia M. Sotomayor Torres (*University of Wuppertal, Germany*);

16:20 Design of Coupling Structures for Photonic Crystal Devices
Amir Boag, Ben Z. Steinberg, Orli Bushmakin (*Tel Aviv University, Israel*);

Session 1P3a
Sub-Surface Imaging by Means of Inverse Scattering Technique: Theoretical, Algorithmic, and Technological Advances

Monday PM, October 13, 2003

Kahuku

Organized by Christian Y. Pichot, Andrea Massa, Salvatore Caorsi

Chaired by Christian Y. Pichot, Andrea Massa

13:00 Diffraction-Tomography Based Ground Penetrating Radar Imaging
Peter Meincke (*Technical University of Denmark, Denmark*);

13:20 Migration Technique Based on the Time-Domain Model of the Ground Penetrating Radar
Bart Scheers, Marc Acheroy (*Royal Military Academy, Belgique*);

13:40 2D-TE and 2D-TM Polarization Inverse Scattering Algorithm for Buried Objects
E. Le Brusq, I. Aliferis, J. Y. Dauvignac, Ch. Pichot (*University of Nice-Sophia Antipolis/CNRS, France*);

14:00 Optimization Techniques for Sub-Surface Imaging: from Two-Dimensional to Three-Dimensional Imaging
Salvatore Caorsi (*University of Pavia, Italy*); *Andrea Massa, Anna Martini* (*University of Trento, Italy*); *Matteo Pastorino, Mirco Raffetto, Andrea Randazzo* (*University of Genoa, Italy*);

14:20 Learning-by-Examples Strategies for Sub-Surface Imaging: from Regression to Classification Approach
Emanuela Bermani, Andrea Boni (*University of Trento, Italy*); *Salvatore Caorsi* (*University of Pavia, Italy*); *Massimo Conci, Massimo Donelli, Andrea Massa* (*University of Trento, Italy*);

14:40 Nonlinear Inversion Algorithms Applied to the Reconstruction of Immersed Objects from Laboratory-Controlled Data
Bernard Duchene, A. Joisel, M. Lambert, C. Conessa (*CNRS-Supélec, France*);

Session 1P3b
Subsurface Imaging and GPR

Monday PM, October 13, 2003

Kahuku

Chaired by Giovanni Picardi

15:20 MARS Advanced Radar for Subsurface and Ionosphere Sounding (MARSIS): Data Processing
Daniela Biccari, Marco Cartacci, Andrea Cicchetti, Cesare Iorio, Giovanni Picardi, Roberto Seu (*"La Sapienza" University of Rome, Italy*); *Rosanna Bicocchi, Pietro T. Melacci* (*University of Perugia, Italy*); *Roberto Orosei* (*CNR / IAS, Italy*); *Enrico Zampolini* (*Alenia Spazio, Italy*);

15:40 Recent Development of Ultra-Wideband Ground-Penetrating Radar for NDE of Civil Infrastructures
Joong-Suk Park (*Texas A&M University, USA*); *Jeong-Soo Lee* (*Filtronic Solid State, USA*); *Cam Nguyen* (*Texas A&M University, USA*);

16:00 GPR: A Tool for Determining Complex Geological Structures from Cavern Boreholes
Voker Gundelach (*Golder Associates GmbH, Germany*); *Dieter Eisenburger* (*Federal Institute for Geosciences and Natural Resources, Germany*);

16:20 3-D Image Reconstruction of Near-Surface Buried Objects Using Time Domain Data
Hui Zhou, Takashi Takenaka, Toshiyuki Tanaka (*Nagasaki University, Japan*);

16:40 Subsurface Imaging of the Plate Boundaries along the Longitudinal Valley, Eastern Taiwan
Chow-Son Chen (*National Central University, Taiwan*);

17:00 Broadband Analytical Solution of the Electromagnetic Induction (EMI) Response by Spheroidal Objects Under Arbitrary Excitation
Benjamin E. Barrowes, Tomasz M. Grzegorczyk, Jin Au Kong (*Massachusetts Institute of Technology, USA*); *Kevin O'Neill* (*Cold Regions Research and Engineering Laboratory, USA*);

Session 1P4
Integral-Equation Methods

Monday PM, October 13, 2003

Honolulu

Organized by Levent Gürel, Jin-Fa Lee

Chaired by Levent Gürel, Jin-Fa Lee

13:00 Anterpolation Precorrected FFT Algorithm for Integral Equations
W. C. Chew, G. L. Wang (*University of Illinois at Urbana-Champaign, USA*);

13:20 EFIE, MFIE, and CFIE Solutions of Electromagnetic Scattering Problems
Levent Gürel, Özgür Ergül (*Bilkent University, Turkey*);

13:40 Higher-Order Solutions of Integral Equations of Wave Scattering
K. C. Donepudi, X. Wang, W. C. Chew, J. M. Jin (*University of Illinois at Urbana-Champaign, USA*);

14:00 Multilevel Non-Uniform Grid Approach for Fast Field Evaluation
Amir Boag (*Tel Aviv University, Israel*); *Eric Michielssen* (*University of Illinois at Urbana-Champaign, USA*);

14:20 MR Analysis of Large Antennas and Circuits
Paola Pirinoli, Giuseppe Vecchi, Francesca Vipiana, Mario Orefice (*Polytechnic of Turin, Italy*);

14:40 A Low-Rank IE-QR Algorithm for Matrix Compressions in Volume Integral Equations
Nilufer Ozdemir, Jin-Fa Lee (*The Ohio State University, USA*);

15:00 **Coffee Break**

15:20 An Augmented Time-Domain Electric Field Integral Equation Solution Technique
Daniel Seth Weile (*University of Delaware, USA*);

15:40 Coupling of a Dielectric Body of Revolution to a Waveguide through a Slot in a Ground Plane
Islam A. Eshrah, Ahmed A. Kishk, Alexander B. Yakovlev, Allen W. Glisson (*The University of Mississippi, USA*);

16:00 A Novel Technique for the Generation of Method of Moments Matrices
Junho Yeo, Sinan Koksoy, Raj Mittra, V. V. S. Prakash (*The Pennsylvania State University, USA*);

16:20 Composite Finite Array Analysis with Supporting Structure Using a Multi-Dimensional, Multi-Cell Hybrid Array Decomposition-Fast Multipole Method
R. W. Kindt (*University of Michigan, Ann Arbor, USA*); *K. Sertel* (*The Ohio State University, USA*); *J. L. Volakis* (*University of Michigan, USA*);

16:40 Higher-Order Large-Domain MoM-PO Solution to EFIE-MFIE
Miroslav Djordjevic, Branislav M. Notaros (*University of Massachusetts Dartmouth, USA*);

Session 1P5
Quantum Effects and Quantum Computing

Monday PM, October 13, 2003

Waialua

Organized by M. S. Shahriar

Chaired by N. P. Bigelow, Zameer Hasan

13:20 Derivation of a Generalized Formula to Calculate Resonance of a Molecule in Quantum Electrodynamics
K. S. Sathivel (*Pondicherry Engineering College, India*); *G. Kamla* (*Sri Manakula Vinayagar Engineering College, India*);

13:40 Electron-Electron Bound States in Maxwell-Chern-Simons-Proca QED3
Manoel M. Ferreira Jr (*Universidade Federal do Maranhão, Brazil*); *Humberto Belich, Jose Abdalla Helayel-Neto* (*Centro Brasileiro de Pesquisas Fisicas, Brazil*);

14:00 Momentum-Position Realization of the Einstein-Podolsky-Rosen Paradox
John C. Howell, Ryan S. Bennink, Sean J. Bentley, Robert W. Boyd (*University of Rochester, USA*);

14:20 Optical Hole-Burning Based Spectral Storage – From Classical to Quantum Memories
Zameer Hasan (*Temple University, USA*);

14:40 Quantum Teleportation of a Massive Object: From Single Atoms to Crystalline Solids
M. S. Shahriar, P. Kumar (*Northwestern University, USA*); *P. R. Hemmer* (*Texas A&M University, USA*); *A. Agarwal, A. Heifetz, G. Cardoso, V. Gopal* (*Northwestern University, USA*);

15:00 **Coffee Break**

15:20 Holeburning in Quantum-Dots and Their Arrays for Scalable Quantum Computing
Aras Konjhodzic, Deepika Chhabria, Omer Salihoglu, Zameer Hasan (*Temple University, USA*);

15:40 Entanglement of Trillions of Atoms Using Coherent Laser Light
N. P. Bigelow (*University of Rochester, USA*);

16:00 Observation of the Bloch-Siegert Oscilllation and its Application to Wavelength Teleportation
G. Cardoso, P. Pradhan (*Northwestern University, USA*); *J. Morzinski* (*Massachusetts Institute of Technology, USA*); *M. S. Shahriar* (*Northwestern University, USA*);

16:20 Cavity QED Based Quantum Computing
M. Suhail Zubairy (*Texas A&M University, USA*);

16:40 Quantum Analogues of Electromagnetic Effects in Left-Handed Materials
David Meyer (*University of California, San Diego, USA*);

Session 1P6a
Electromagnetic Wave Theory I

Monday PM, October 13, 2003

Niihau

Chaired by Ismo V. Lindell, Habib Rahman

13:00 Electrostatic Image Theory for the Anisotropic Boundary
Ismo V. Lindell, Jari J. Hanninen, Keijo I. Nikoskinen (*Helsinki University of Technology, Finland*);

13:20 Polarizability of Conducting Sphere-Doublets Using Series of Images
Henrik Wallén, Ari Sihvola (*Helsinki University of Technology, Finland*);

13:40 Possible Role of Space Electromagnetism for Saturn's Rings Existence
Vladimir V. Tchernyi, Andrew Y. Pospelov (*Institute of General Physics of Russian Academy of Science, Russia*);

14:00 Image Recognition Using Fractal Transformation
Deepayan Bhowmik (*Visvesvaraya National Institute of Technology, India*);

14:20 Fourier Factorization of Maxwell Equations in Nonlinear Optics
Nicolas Bonod, Evgueni Popov, Michel Neviere (*Institute Fresnel - CNRS, France*);

14:40 Spectral Expansion over Whole Line of Green's Function for Three Layers Medium with Respect to Fundamental Functions of Not Self-Adjoint Sturm-Liouville Operator
Evgueni G. Saltykov (*M. V. Lomonosov Moscow State University, Russia*);

Session 1P6b
Electromagnetic Wave Theory II

Monday PM, October 13, 2003

Niihau

Chaired by Peter Meincke, I. R. Ciric

15:20 New Surface Integral Equations for Static and Quasistationary Fields
I. R. Ciric (*University of Manitoba, Canada*);

15:40 A Study of Scattering by the Location of Zeros of Far-Zone Pattern on the Complex Plane
Masahiro Hashimoto (*Osaka Electro-Communication University, Japan*);

16:00 Verification of Approximate Boundary Value Conditions on Thin Dielectric Layers Using the Method of Contour Integral Equations
Yury Shestopalov (*Karlstad University, Sweden*);

16:20 A Theoretical Estimation of Losses in a Dielectric Using Kramers-Kronig Relations
Jason E. Chan, Kondagunta U. Sivaprasad (*University of New Hampshire, USA*);

16:40 Solution of Volume Integral Equations Using Higher-Order Hierarchical Legendre Basis Functions
Oleksiy S. Kim, Erik Jørgensen, Peter Meincke, Olav Breinbjerg (*Technical University of Denmark, Denmark*);

17:00 Moore's Law and the Visualization of Electromagnetic Quanta
J. F. Nystrom (*Texas A&M University - Corpus Christi, USA*);

17:20 Application Extended Information Polarizing Parameters of an Electromagnetic Wave for Preliminary Detection of the Dangerous Meteorological Phenomena and Definitions Structures of Atmospheric Formations with Bi-Static Reception of a Signal
Arcady Borisovich Shupiatsky (*Russian Federation, Russia*);

Session 1P7
Wireless Communication

Monday PM, October 13, 2003

Kohala/Kona

Chaired by Hong Siang Tan, Anthony F. Starr

13:00 Interference Relief and Cell Breathing in TDD/CDMA Cellular System with Unbalanced Traffic Using Tilted Antenna Pattern
Ran Jiang, Ronghong Jin (*Jiaotong University, China*);

13:20 Capacity of MIMO Systems in 3G Micro- and Picocells Based on Directional Channel Model Simulations
Pedro Manuel Vieira (*Instituto Superior de Engenharia de Lisboa, Portugal*); *António Rodrigues* (*Instituto Superior Técnico, Portugal*);

13:40 A Novel Scheme for AGC and I/Q Imbalances Compensation at Quadrature Demodulator
Yun-Jeong Song (*Electronics and Telecommunications Research Institute, S. Korea*); *Sung-Woong Rha* (*ChungNam National University, S. Korea*);

14:00 Indoor Channel Modeling for 5GHz Band MIMO System
Jung Ha Kim, Se Woong Kwon, Seong Hyun Ryu, Young Joong Yoon (*Yonsei University, Korea*);

14:20 Propagation Model for Outdoor WLAN Service at 5.25GHz in an Campus Environments
Jae-ho Seok (*Ministry of Information and Communication, Korea*); *Ki H. Kim, Jung Ha Kim, Young Joong Yoon* (*Yonsei University, Korea*);

14:40 Modeling of Interference from IMT-2000 Base Transceiver Stations to Satellites - Part I: Approach and Features
Tien M. Nguyen, James Yoh, Jennie P. Yeh (*The Aerospace Corporation, USA*);

15:00 **Coffee Break**

15:20 A Flat Multimedia Vehicular Front-End for Mobile Satellite Systems
Ferdinando Tiezzi, Stefano Vaccaro (*JAST Antenna Systems, Switzerland*); *Tomasz M. Grzegorczyk* (*Massachusetts Institute of Technology, USA*); *Juan Mosig* (*Swiss Federal Institute of Technology, Switzerland*);

15:40 Computation of VHF Radiowave Mean Path Loss Inside Forests Using a Parabolic Equation Model - Comparisons with Experiments
Marc Le Palud (*Ecoles de Coetquidan, France*);

16:00 RF Performance and Phase Error Calibration in Smart Antenna System Based on W-CDMA
Dong-Han Lee, Il-Kyo Lee, Sang-gee Kang, Kwang-Sun Kim, Heon-Jin Hong (*Electronics and Telecommunications Research Institute, South Korea*);

16:20 Path Loss Bounds and Cell Coverage Prediction for Microcellular Communications in a Street-Grid Environment
Q. Sun, Hong Siang Tan, Soon Yim Tan (*Nanyang Technology University, Singapore*);

16:40 Outage Analysis of a Dual Polarized Fixed Satellite System Interfered by Two Adjacent Satellites
Athanasios D. Panagopoulos, T. D. Kritikos, S. Bourgiotis, J. D. Kanellopoulos (*National Technical University of Athens, Greece*);

Session 1P8
Scattering by Wedges

Monday PM, October 13, 2003

Oahu

Organized by Egon Marx, Andrey V. Osipov

Chaired by Egon Marx, Andrey V. Osipov

13:00 Scattering by Wedges
Egon Marx (*National Institute of Standards and Technology, USA*);

13:20 An Algorithm for Generating Meixner's Series
Andrey V. Osipov (*Microwaves and Radar Institute, Germany*);

13:40 Exact Scattering by Penetrable Wedges
Piergiorgio L. E. Uslenghi (*University of Illinois at Chicago, USA*);

14:00 Wiener-Hopf Technique in Wedge Shaped Regions
Vito G. Daniele (*Politecnico di Torino, Italy*);

14:20 Diffraction by a Dielectric Wedge by Use of the Dual Integral Equations
Jung-Woong Ra (*Kwangju Institute of Science and Technology, Korea*);

14:40 Numerical Experiments in Scattering by a Dielectric Wedge
Egon Marx (*National Institute of Standards and Technology, USA*);

15:00 **Coffee Break**

15:20 Impedance Wedge Diffraction at Skew Incidence
Vito G. Daniele, Guido Lombardi (*Politecnico di Torino, Italy*);

15:40 *Exact* Solution for Edges in Planar Impedance Surfaces at Skew Incidence
Roberto Tiberio, Alberto Toccafondi (*University of Siena, Italy*);

16:00 An Incremental Theory of Diffraction for Edges in Planar Impedance Surfaces
Roberto Tiberio, Alberto Toccafondi, Alessia Polemi (*University of Siena, Italy*);

16:20 Improving Physical Optics with Incremental Length Diffraction Coefficients
Arthur D. Yaghjian, Robert A. Shore (*Air Force Research / SNHA, USA*);

16:40 Simple Approximations for Diffraction Coefficients of an Impedance Wedge
Andrey V. Osipov (*Microwaves and Radar Institute, Germany*);

Session 2A1a
Applications Using Left-Handed Structures

Tuesday AM, October 14, 2003

Kauai Ballroom

Chaired by Ricardo Marques, Richard J. Blaikie

8:20 Application of Modified Split-Ring Resonators to the Design of Small Microstrip and CPW Filters
Jesús Martel, Ricardo Marqués, Juan Domingo Baena, Francisco Medina (*Universidad de Sevilla, Spain*); *Francisco Falcone, Mario Sorolla* (*Public University of Navarre, Spain*); *Ferran Martín* (*Universitat Autònoma de Barcelona, Spain*);

8:40 Left-Handed Metamaterials and Enhanced Near-Field Lithography with Phononic and Plasmonic Materials
Gennady Shvets (*Illinois Institute of Technology, USA*);

9:00 Manipulating the Near Field with "Swiss Rolls", an Anisotropic Metamaterial
Michael C. Wiltshire, J. B. Pendry, Joseph V. Hajnal (*Imperial College, UK*); *David Edwards* (*University of Oxford, UK*);

9:20 Polarizing Capabilities of Uniaxial Metamaterials
N. Madhusudhan, Tomasz M. Grzegorczyk, Bae-Ian Wu, Joe Pacheco, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

9:40 Reflection and Transmission Properties of Anisotropic Left-Handed Media
Joe Pacheco, Tomasz M. Grzegorczyk, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

Session 2A1b
Meta-Materials for Wireless Communications

Tuesday AM, October 14, 2003

Kauai Ballroom

Organized by Eric D. Isaacs, David R. Smith

Chaired by Eric D. Isaacs, David R. Smith

10:20 Wide Field of View, Narrow Bandwidth Filters Using Photonic Bandgap Metamaterials
Richard J. Blaikie (*University of Canterbury, New Zealand*); *Tim D. Drysdale, David R. S. Cumming, Harold M. H. Chong, I. G. Thayne* (*University of Glasgow, UK*);

10:40 A Novel Composite Right/Left-Handed Textured Radiative Surface
Christophe Caloz, Atsushi Sanada, Katie Allen, Tatsuo Itoh (*University of California, Los Angeles, USA*);

11:00 Spatial Filtering Using Media with Indefinite Permittivity and Permeability Tensors
David Schurig, David R. Smith (*University of California, San Diego, USA*);

11:20 The Physics of Modern Multiantenna Communications and Possible Applications to Metamaterials
Steven Simon (*Lucent Technologies, USA*);

11:40 Potential Applications of Metamaterials for Wireless Communications
Eric D. Isaacs, P. M. Platzman (*Lucent Technologies, USA*); *David R. Smith* (*University of California, San Diego, USA*); *A. F. Starr* (*SensorMetrix™ San Diego, USA*); *J. J. Mock* (*University of California, San Diego, USA*);

Session 2A2
Numerical Modeling of Photonic Crystal Structures

Tuesday AM, October 14, 2003

Maui Ballroom

Organized by G. R. Hadley

Chaired by G. R. Hadley, Martin J. Cryan

8:00 Loss Analysis in 2D Photonic Crystal Waveguides Using the 3D Finite Difference Time Domain (FDTD) Method
M. J. Cryan, I. J. Craddock, S. Yu, C. J. Railton, J. Rorison (*University of Bristol, UK*);

8:20 Bistability in Photonic Crystals and Photonic Crystal Fibers
Marin Soljacic, Elefterios Lidorikis, M. Ibanescu, S. G. Johnson (*Massachusetts Institute of Technology, USA*); *S. Fan* (*Stanford University, USA*); *Chiyan Luo, Yoel Fink, J. D. Joannopoulos* (*Massachusetts Institute of Technology, USA*);

8:40 Numerical Schemes for PBGS
Hugo E. Hernández-Figueroa (*Universidade Estadual de Campinas (UNICAMP), Brazil*);

9:00 Experimental Study of Ultra-Small Photonic-Crystal-Waveguide-Based Elements for Ultra-Fast Optical Planar Integrated Circuits
Kuon Inoue (*Chitose Institute of Science and Technology, Japan*); *Yoshimasa Sugimoto, Kiyoshi Asakawa* (*The Femtosecond Technology Research Association, Japan*);

9:20 Coupling into Single-Row-Defect Photonic Crystal Waveguides Using a Photonic Crystal Exhibiting Negative Refraction
D. W. Peters, G. R. Hadley, G. A. Vawter, G. S. Subramania, J. R. Wendt, J. Guo (*Sandia National Laboratories, USA*);

9:40 Comparison of Simulation and Experimental Pulse Compression in Photonic Crystal Coupled Cavity Waveguides
Tim J. Karle (*University of St Andrews, UK*); *Yew Jun Chai, Chris Morgan, Ian H. White* (*University of Cambridge, UK*); *Thomas F. Krauss* (*University of St. Andrews, UK*);

10:00 **Coffee Break**

10:20 Losses in 2D Photonic Crystal Waveguides Revisited
G. R. Hadley (*Sandia National Laboratories, USA*);

10:40 Emission Properties of Two-Dimensional Photonic Crystal Microcavities
Ryoko Shimada (*Kyoto University, Japan*); *Ian R. Sellers, Alan D. Bristow* (*University of Sheffield, UK*); *Abbes Tahraoui, Thomas F. Krauss* (*University of St. Andrews, UK*); *Vasily N. Astratov* (*University of North Carolina at Charlotte, USA*); *David M. Whittaker, Maurice S. Skolnick* (*University of Sheffield, UK*);

11:00 Analytical Modal Expansion Method Applied to Highly Conducting 3D Metallic Layer-by-Layer Photonic Crystals
Ihab El-Kady, Shawn-Yu Lin (*Sandia National Laboratories, USA*); *Zhi-Yuan Li, Kai-Ming Ho* (*Iowa State University, USA*);

11:20 Light Propagation and Localization in Photonic Crystals
Toshihiko Baba (*Yokohama National University, Japan*);

11:40 Nonlinear Photonic Crystals and Circuits: Towards All-Optical Technologies
Yuri S. Kivshar (*Australian National University, Australia*);

Session 2A3
Three-Dimensional Subsurface Electromagnetic Imaging and Inversion

Tuesday AM, October 14, 2003

Kahuku

Organized by Michael S. Zhdanov

Chaired by Michael S. Zhdanov, Robert G. Ellis

8:00 3D Transient Electromagnetic Inversion Problem Formulation and Solution
Gregory A. Newman (*Sandia National Laboratories, USA*); *Michael Commer* (*University of Cologne, Germany*);

8:20 Three-Dimensional Interpretation of the Sea Bed Logging Data Using LQL Method
Ken Yoshioka, Michael S. Zhdanov (*University of Utah, USA*);

8:40 Three-Dimensional Interpretation of Electromagnetic Data, a Review and Recent Advancement at LBNL
Hung-Wen Tseng, Ki H. Lee (*Lawrence Berkeley National Laboratory, USA*); *Michael J. Wilt* (*Electromagnetic Instrument Inc., USA*);

9:00 Micro-Resistivity Imaging in an Anisotropic Formation
Tsili Wang (*Baker Atlas, USA*);

9:20 An Algebraic Multigrid Method for Maxwell's Equations in the Frequency Domain
Jonathan J. Hu, Gregory A. Newman, Raymond S. Tuminaro (*Sandia National Laboratories, USA*);

9:40 Single-Hole Electromagnetic Imaging Using the Spectral Lanczos Decomposition Method
Michael S. Zhdanov, Alexander Gribenko (*University of Utah, USA*);

10:00 **Coffee Break**

10:20 Challenges in the 3D Airborne Electromagnetic Inverse Problem for Mineral Exploration
Robert G. Ellis (*BHP Billiton World Exploration Inc., Canada*);

10:40 FD Modeling of 3D EM Fields in Anisotropic Media Using Vector-Scalar Potential Formulations: A Comparison with Direct EM Field Formulations
Junsheng Hou, Carlos Torres-Verdin (*The University of Texas at Austin, USA*);

11:00 Three-Dimensional Edge Finite Element Modeling of Magnetotelluric Data
Yuji Mitsuhata, Toshihiro Uchida (*National Institute of Advanced and Industrial Science and Technology, Japan*);

11:20 The Affects of Anisotropy on 3D Single-Well Imaging
David Alumbaugh, Robert Mallen (*University of Wisconsin-Madison, USA*);

Session 2A4
Novel Mathematical Methods in Electromagnetics I

Tuesday AM, October 14, 2003

Honolulu

Organized by Yury Shestopalov, Kazuya Kobayashi
Chaired by Kazuya Kobayashi, Yury Shestopalov

8:20 Volume Singular Integral Equations Method for Solving of Diffraction Problem on Dielectric Body Located in Rectangle Resonator
Youri Smirnov, Alexey Tsupak (*Penza State University, Russia*);

8:40 Wiener-Hopf Analysis of the Diffraction by a Circular Waveguide Cavity: Axial Symmetric Case
Dozyslav B. Kuryliak (*National Academy of Sciences of Ukraine, Ukraine*); *Kazuya Kobayashi* (*Chuo University, Japan*); *Shoichi Koshikawa* (*Antenna Giken Co., Ltd., Japan*); *Zinoviy T. Nazarchuk* (*National Academy of Sciences of Ukraine, Ukraine*);

9:00 Scattering of a Gaussian Beam by a Kerr-Type Dielectric Cylinder
Mitsuhiro Yokota (*Miyazaki University, Japan*);

9:20 Recent Research in the Field of Backward-Wave Metamaterials and Related Devices
Sergei Tretyakov, Stanislav Maslovski, Mikko K. Kärkkäinen, Pavel Belov (*Helsinki University of Technology, Finland*);

9:40 Typical Design Examples for a Microwave Amplifier Using "Neural Performance Data Sheets"
Filiz Güneş (*Yildiz Technical University, Turkey*); *Yavuz Cengiz* (*Süleyman Demirel University, Turkey*);

10:00 **Coffee Break**

10:20 Diffraction at Edges in Penetrable and Coated Planar Screens (a Heuristic Extension of an Exact Solution)
Roberto Tiberio, Alberto Toccafondi, Alessia Polemi (*University of Siena, Italy*);

10:40 Spatially Partially-Coherent Wave Scattering by a Body in a Random Medium
Mitsuo Tateiba (*Kyushu University, Japan*); *Zhi Q. Meng* (*Fukuoka University, Japan*); *H. El-Ocla* (*Lakehead University, Canada*);

11:00 Applications of Spherical-Wave Source Scattering-Matrix Analysis of Lossless, Reciprocal Antennas
Robert A. Shore, Arthur D. Yaghjian (*Air Force Research / SNHA, USA*);

11:20 Computed Images of Dielectric Strips on a Substrate
Egon Marx (*National Institute of Standards and Technology, USA*);

11:40 Scattering of a Gaussian Beam by Chiral Cylinders
Mitsuhiro Yokota, Masami Kinoshita (*Miyazaki University, Japan*);

Session 2A5
Antenna Applications

Tuesday AM, October 14, 2003

Waialua

Chaired by Byungje Lee

8:00 Cascaded CPW Feeding Circuit for CA-RLSA
Bo Liu, Ronghong Jin, (*Jiaotong University, China*);

8:20 Broadband Linearly- and Circularly-Polarised Microstrip Antennas for High Speed Wireless Communication Systems
Yuehe Ge, Karu P. Esselle (*Macquarie University, Australia*); *Trevor S. Bird* (*CSIRO Telecommunications and Industrial Physics, Australia*);

8:40 A Dual-Band Dual-Polarized Antenna for GPS and DAB Systems
Ki-Hyun Kong, Byungje Lee (*Kwangwoon University, Korea*); *Frances J. Harackiewicz* (*Southern Illinois University, USA*);

9:00 Triple Band Bended Internal Antenna for Mobile Handsets
Byung-Woon Jung, Byungje Lee (*Kwangwoon University, Korea*); *Byung-Chan Kim* (*ETRI, Korea*);

9:20 Broadband Loop Antenna for Mobile Telephones — Performance in Proximity of the Human Head
Kris Caputa, Maria Stuchly (*University of Victoria, Canada*);

9:40 Experimental Investigation of Indoor Propagation Characteristics and Performance for Wireless LAN at 2.4/5.3 GHz
Y. S. Shin, J. W. Lim, Jong-Gwan Yook, H. K. Park (*Yonsei University, Korea*);

10:00 **Coffee Break**

10:20 High-Gain Low-Cost Antenna Systems for WLAN and HyperLAN Point to Point Links
R. Gardelli, G. La Cono, Matteo Albani (*University of Messina, Italy*);

10:40 New Advances in the Verification of Compliance of Digital Mobile Radio Base Stations to Limitations of Exposure of the General Public to Electromagnetic Fields
Antonio Martínez-González, David Sánchez Hernández (*Technical University of Carthagene, Spain*);

11:00 MIMO Antennas for Small Handheld Devices
Christian Waldschmidt, Werner Wiesbeck (*Univeristy of Karlsruhe, Germany*);

11:20 Miniature Cavity-Backed Cross-Slot Antenna for Anti-Jam GPS Array
Ruey-Shi Chu, Sheng Yeng Peng (*AntStar Corp., USA*);

11:40 Compact Microstrip Antenna with Slots for Dual Frequency Operation
R. M. Vani, Sara F. Farida, P. V. Hunagund (*Gulbarga University, India*);

Session 2A6
Surface Plasmon Resonances, Random Lasing, and Near-Field Optics

Tuesday AM, October 14, 2003

Niihau

Organized by David J. Bergman, Mark I. Stockman

Chaired by David J. Bergman, Mark I. Stockman

8:20 Plasmonics: Nanoscale Manipulation of the Plasmon Response
Naomi Halas (*Rice University, USA*);

8:40 Simulating Nanoscale Optical Microscopy and Spectroscopy
Garnett W. Bryant, Javier Aizpurua (*National Institute of Standards and Technology, USA*);

9:00 Nano-Localized Surface Plasmon States Near a Metallic Cluster
David Bergman (*Tel Aviv University, Israel*); *Mark Stockman* (*Georgia State University, USA*);

9:20 Plasmonic Nanoantennas
Andrey K. Sarychev, Vladimir M. Shalaev (*Purdue University, USA*);

9:40 Electronic Structure, Plasmon Resonances and Optical Properties of Metallic Nanoshells
Peter Nordlander (*Rice University, USA*);

10:00 **Coffee Break**

10:20 Lasing in Closely Packed Resonant Nanoscatterers
Hui Cao, Xiaohua Wu, Alexey Yamilov, Eric Seelig, Robert Chang (*Northwestern University, USA*);

10:40 Quantum Nanoplasmonics: Surface Plasmon Amplification by Stimulated Emission of Radiation (SPASER) and Other Phenomen
Mark Stockman (*Georgia State University, USA*); *David Bergman* (*Tel Aviv University, Israel*);

11:00 Strongly Confined Multiexcitons and Multicolor Lasing in Semiconductor Nanocrystals
Victor I. Klimov (*Los Alamos National Laboratory, USA*);

11:20 Electric Forces between Metallic Nanospheres in a Dielelctric Host
Xiangting Li, David Bergman (*Tel Aviv University, Israel*);

Session 2A7
Microwave, Mm-wave and Sub Mm-wave Devices

Tuesday AM, October 14, 2003

Kohala/Kona

Chaired by Erick Kim, Simone Falco

8:20 A Planar Duplexer for 60 GHz
Dong Suk Jun, Dong Young Kim (*Electrons and Telecommunications Research of Institute, Korea*);

8:40 Broadband 3-Bit Phase Shifter Using New Switched Networks
Soon Young Eom, Soon Ick Jeon (*Electronics and Telecommunications Research Institute, Korea*);

9:00 A Novel Method to Estimate the Mismatches of a Weaver-Type Up-Conversion Mixer
Yusin Kim, Heejin Yoo, Eunsuk Kwak (*Hanbat National University, Korea*); *Youngwan Kim* (*Electronics and Telecommunications Research Institute, Korea*); *Change-Seok Lee* (*Hanbat National University, Korea*);

9:20 Development of the Ka-Band Group-Delay Equalized Dual-Mode Filter for CBS Payload System
S. Kahng, J. W. Eun, S. P. Lee, Man Seok Uhm (*Electronics and Telecommunications Research Institute, Korea*);

9:40 Design of a Sub-Harmonic Cascode FET Mixer with a Zero Bias Current for a Direct Conversion W-CDMA Receiver
Jeongpyo Kim, Sanghui Kim, Jaehoon Choi (*Hanyang University, Korea*);

10:00 **Coffee Break**

10:20 Terahertz Electromagnetic Waves in n-GaAs Films Device
S. Koshevaya (*Autonomous University of State Morelos (UAEM), Mexico*); *V. Grimalsky* (*National Institute for Astrophysics, Optics, and Electronics (INAOE), Mexico*); *J. Sánchez-Mondragón, M. Tecpoyotl-Torres, J. Escobedo-Alatorre, M. A. Basurto-Pensado* (*Autonomous University of State Morelos (UAEM), Mexico*);

10:40 Proximity Effect Between Long and High Speed Interconnects
Simone Falco (*Universitá Federico II di Napoli, Italy*); *Fulvio Schettino* (*Universitá di Cassino, Italy*); *Luigi Verolino* (*Universitá Federico II di Napoli, Italy*);

11:00 Position/Signal Difference Method for High Resolution Mapping of Near-Field Electric Intensities
Roman Kantor, Igor V. Shvets (*Trinity College, Ireland*);

11:20 Development of a Power Amplifier Module Using LTCC Process for K-PCS Band Mobile Phone
Erick Kim, Young-Shin Lee, Chan-Sei Yoo, Woo-Seong Lee, Jong-Cheol Park (*Korea Electronics Technology Institute, Korea*); *Dae-Hee Lee, Jaehak Lee* (*WAVICS Co., Ltd., Korea*);

Session 2A8
Ocean and Land Remote Sensing

Tuesday AM, October 14, 2003

Oahu

Chaired by Scott Hensley

8:20 Satellite Real-Time Monitoring of Apparently Strange Sea State in Relation to a Distant Storm in the Ocean
Shigehisa Nakamura (*Kyoto University, Japan*);

8:40 Peculiarities of Spatial Size's and Radio Contrast's Distributions of Sea Surface Radio Thermal Image's Natural Origin Signatures
Astghik Hambaryan (*ECOSERV Remote Observation Centre Co. Ltd., Armenia*); *Artashes Arakelyan* (*Institute of Radophysics and Electronics of Armenian National Academy of Sciences, Armenia*);

9:00 Recent Results in Vegetation Parameter Extraction Using Geosar
Scott Hensley, Ernesto Rodriguez, Paul Siqueira, Elaine Chapin, Thierry Michel, Marc Simard (*Jet Propulsion Laboratory, USA*);

9:20 A Complex of Polarimetric, Combined Active-Passive Sensors of L-, S-, C-, X-, and Ku-Band of Frequencies for Platform, Vessel and Airborne Application
Astghik Hambaryan (*ECOSERV Remote Observation Centre Co. Ltd., Armenia*); *Artashes Arakelyan* (*Institute of Radophysics and Electronics of Armenian National Academy of Sciences, Armenia*);

9:40 Remote Sensing of Seismic Hazards
Valery Korepanov, Georgy Lizunov (*Institute of Space Research, Ukraine*);

10:00 **Coffee Break**

10:20 A Statistical Model Relating Interferometric Correlation Magnitude to Instrument Parameters and Its Application to Volumetric Height Estimates
Paul Siqueira, Scott Hensley, Ernesto Rodriguez (*Jet Propulsion Laboratory, USA*);

10:40 State of the Art Inversion Techniques for Subsurface Moisture Profiles
Alexander Brandelik (*Institute of Meteorology and Climate Research, Germany*); *Christof Hübner* (*University of Cooperative Education Heidenheim, Germany*); *Stefan Schlaeger* (*Institute of Technical Chemistry, Water and Geotechnology, Germany*); *Martin Norgren* (*Royal Institute of Technology, Sweden*);

11:00 Sea Surface Radar Image Natural Origin Signatures Spatial Size and Radar Contrast Distribution Properties for Various Meteorology and Seas
Artashes Arakelyan (*Institute of Radophysics and Electronics of Armenian National Academy of Sciences, Armenia*); *Astghik Hambaryan* (*ECOSERV Remote Observation Centre Co. Ltd., Armenia*);

11:20 Radar Method for Atmospheric Stratification Condition Unambiguous Determination by Synergy Data of Sea Surface Altimetric and Scatterometric Observations
Artashes Arakelyan (*Institute of Radophysics and Electronics of Armenian National Academy of Sciences, Armenia*); *Astghik Hambaryan* (*ECOSERV Remote Observation Centre Co. Ltd., Armenia*);

Session 2P1
Analysis and Measurements of Left-Handed Structures

Tuesday PM, October 14, 2003

Kauai Ballroom

Chaired by Laszlo Solymar

13:00 Properties of Magneto-Inductive Waves
Laszlo Solymar (*University of Oxford, UK*);

13:40 The Dielectric Tensor and Dispersion of a NIM Media
Fang Li, Sui Qiang (*Academia Sinica, China*);

14:00 New Ring Resonator for the Design of Left-Handed Materials at Microwave Frequencies
Tomasz M. Grzegorczyk, Christopher D. Moss, Jie Lu, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

14:20 Experimental Verification of NRI Behavior of a New SRRs/Rods Configuration
Lixin Ran, Xianmin Zhang, Kangsheng Chen (*Zhejiang University, P. R. China*); *Tomasz M. Grzegorczyk, Jin Au Kong* (*Massachusetts Institute of Technology, USA*);

14:40 A Distributed Network Model for Split Ring Resonators (SRR)
Laszlo Solymar (*University of Oxford, UK*); *Ekaterina Shamonina* (*University of Osnabr, Germany*); *M. Shamonin* (*University of Applied Sciences, Regensburg, Germany*); *V. A. Kalinin* (*Transense Technologies Ltd., UK*);

15:00 **Coffee Break**

15:20 Modeling Left-Handed Metamaterials with Magnetoelectric Coupling Using a New FDTD Technique
Alkim Akyurtlu (*University of Massachusetts Lowell, USA*); *Douglas H. Werner* (*The Pennsylvania State University, USA*);

15:40 Characteristics and Electromagnetic Properties of Indefinite Materials in Two-Dimensional Scattering Experiments
A. F. Starr, David R. Smith, David C. Vier, Pavel Kolinko, David Schurig (*University of California, San Diego, USA*);

16:00 Left Handed Media Measurements and Calculations at NRL
F. J. Rachford, D. L. Smith, P. F. Loschialpo, D. W. Forester (*Naval Research Laboratory, USA*);

16:20 Negative Refraction at Optical Frequencies and Nonlinear Wave Propagation
V. M. Agranovich (*The University of Texas at Dallas, USA*); *Y. R. Shen* (*University of California at Berkeley, USA*); *R. H. Baughman, A. A. Zakhidov* (*The University of Texas at Dallas, USA*);

16:40 Transmission Characteristics in Split Ring Resonator Based Left-Handed Coplanar Waveguides
Ferran Martín (*Universitat Autònoma de Barcelona, Spain*); *Francisco Falcone* (*Public University of Navarre, Spain*); *Ricardo Marqués* (*Universidad de Sevilla, Spain*); *Jordi Bonache* (*Universitat Autònoma de Barcelona, Spain*); *Mario Sorolla* (*Public University of Navarre, Spain*);

17:00 Characterization of SRRs Embedded in a Homogeneous Electric Plasma Media
Joe Pacheco, Tomasz M. Grzegorczyk, Bae-Ian Wu, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

17:20 Metamaterial as a Substrate for Antenna Design
Weijen Wang, Bae-Ian Wu, Joe Pacheco, Tomasz M. Grzegorczyk, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

Session 2P2
Surface Plasmon Photonics

Tuesday PM, October 14, 2003

Maui Ballroom

Organized by Tineke Thio

Chaired by Tineke Thio, Henri J. Lezec

13:40 Plasmonic Near-Field Raman Imaging of Molecules and Nanocrystals
Satoshi Kawata (*RIKEN (The Institute of Physical and Chemical Research), Japan*);

14:00 Surface-Plasmon-Mediated Effects in Near Field Photolithography
Richard J. Blaikie, David Melville (*University of Canterbury, New Zealand*);

14:20 Subwavelength Scale Plasmonic Devices
Harry Atwater, Stefan Maier, Pieter Kik, Luke Sweatlock, Beth Lachut (*California Institute of Technology, USA*);

14:40 Coherent Plasmon Coupling in Two-Dimentional Arrays of Silver Nanoparticles
George Chumanov, Serhiy Malynych (*Clemson University, USA*);

15:00 **Coffee Break**

15:20 Enhanced Transmission through Subwavelength Hole Arrays Driven by Phase-Shifted Diffracted Waves
Henri J. Lezec (*ISIS, Université Louis Pasteur, France*);

15:40 Enhanced Transmission and Beaming of Light Through a Subwavelength Aperture
Luis Martín-Moreno (*Universidad de Zaragoza, Spain*); *Jorge Bravo-Abad* (*Universidad Autonoma de Madrid, Spain*); *Henri J. Lezec, Thomas Ebbesen* (*ISIS, Université Louis Pasteur, France*); *Francisco Jose García-Vidal* (*Universidad Autonoma de Madrid, Spain*);

16:00 Leaky Surface-Plasmon Theory for Dramatically Enhanced Transmission through a Sub-Wavelength Aperture
David R. Jackson (*University of Houston, USA*); *Arthur A. Oliner* (*Polytehnic University, USA*); *Tianxia Zhao, Jeffery T. Williams* (*University of Houston, USA*);

16:20 Role of Surface Corrugation Geometry in Giant Light Transmission through Subwavelength Aperture Arrays
Tineke Thio, Kelly M. Pellerin (*NEC Research Institute, USA*); *Michael W. Phaneuf* (*Fibics Incorporated, Canada*);

Session 2P3
Modeling and Analysis Relating to the Subsurface

Tuesday PM, October 14, 2003

Kahuku

Chaired by Mitsuo Tateiba

13:00 A Hybrid Time Domain Solution of Electromagnetic Induction Scattering from Axisymmetric Objects
Christopher D. Moss, Tomasz M. Grzegorczyk, Jin Au Kong (*Massachusetts Institute of Technology, USA*); *Kevin O'Neill* (*Cold Regions Research and Engineering Laboratory, USA*);

13:20 2D Inversion of VES Data and Dipole-Dipole Profile in Wadi El-Farigh Area, Egypt
M. A. Abd Alla (*National Research Institute of Astronomy and Geophysics, Egypt*);

13:40 A Subcell FDTD Model of Electrically Thin Frequency-Dispersive Layers
Mikko K. Kärkkäinen (*Helsinki University of Technology, Finland*);

14:00 Analysis of Passive Structures in a Lossy Layered Medium by Means of a 3-D Boundary Integral Equation
M. W. F. de Block (*Eindhoven University of Technology, The Netherlands*); *G. Dolmans* (*Philips Research Laboratories, The Netherlands*); *M. C. van Beurden, A. G. Tijhuis, B. P. de Hon* (*Eindhoven University of Technology, The Netherlands*);

14:20 Applications of Phenomenology-Based Inverse Scattering
Leonid Perlovsky, Chris Mutz, Bertus Weijers, Robert Linnehan, John Schindler (*Air Force Research Laboratory, USA*); *Roger Brockett* (*Harvard University, USA*);

14:40 Calculation of Transient Fields in the Presence of a Multilayered Medium
Vitaliy Lomakin, Mengyu Lu, Shuqing Q. Li, Eric Michielssen (*University of Illinois at Urbana-Champaign, USA*);

15:00 **Coffee Break**

15:20 Asymptotic Expansions of the Prolate Angular Spheroidal Wave Function for Complex Size Parameter
Benjamin E. Barrowes, Tomasz M. Grzegorczyk, Jin Au Kong (*Massachusetts Institute of Technology, USA*); *Kevin O'Neill* (*Cold Regions Research and Engineering Laboratory, USA*);

15:40 Comparison of Surface and Volume Scatterings from Moist Soil for Application to Detection of Moisture in Soil
Tsuyoshi Matsuoka, Mitsuo Tateiba (*Kyushu University, Japan*);

16:00 FDTD Equations in Inhomogeneous Regions
Qing-Xin Chu, Ying Feng (*Xidian University, China*);

16:20 Fixed-Offset Ground Penetrating Radar Scattering Analysis Using the Extended Born Approximation
Peter Meincke, Xian-Yao Chen (*Technical University of Denmark, Denmark*);

16:40 Fundamental Mode Approach in Electromagnetic Induction Scattering and Inversion
Xudong Chen (*Massachusetts Institute of Technology, USA*); *Kevin O'Neill* (*Cold Regions Research and Engineering Laboratory, USA*); *Tomasz M. Grzegorczyk, Benjamin E. Barrowes, Christopher D. Moss, Bae-Ian Wu, Joe Pacheco, Jin Au Kong* (*Massachusetts Institute of Technology, USA*);

Session 2P4
Novel Mathematical Methods in Electromagnetics II

Tuesday PM, October 14, 2003

Honolulu

Organized by Yury Shestopalov, Kazuya Kobayashi

Chaired by Andrey S. Andrenko, Dozyslav B. Kuryliak

13:20 Method of Electric Field Integral Equation in Problem of Electromagnetic Diffraction on System of Open and Closed Screens
Youri Smirnov (*Penza State University, Russia*);

13:40 Diffraction by a Truncated, Semi-Infinite Cone: Comparison of the Wiener-Hopf and Semi-Inversion Methods
Dozyslav B. Kuryliak (*National Academy of Sciences of Ukraine, Ukraine*); *Kazuya Kobayashi* (*Chuo University, Japan*); *Shoichi Koshikawa* (*Antenna Giken Co., Ltd., Japan*); *Zinoviy T. Nazarchuk* (*National Academy of Sciences of Ukraine, Ukraine*);

14:00 Double Diffraction at a Pair of Arbitrarily Placed (not necessarily coplanar) Wedges
Matteo Albani (*University of Messina, Italy*);

14:20 Virtual Ray-Tracing for E-Polarized Diffraction by a Composite Wedge
Se-Yun Kim (*Korea Institute of Science and Technology, Korea*);

14:40 On the Influence of the Improper Poles on the Uniform Asymptotic TM Green's Function of a Semi-Infinite Dielectric Medium
Stefano Maci (*University of Siena, Italy*);

15:00 **Coffee Break**

15:20 Scattering of Electromangetic Waves by Multilayered Dielectric Gratings with Inhomogeneous Media Consisting of Inhomogeneous Layer
Tsuneki Yamasaki, Takashi Hinata, Toshio Hosono (*Nihon University, Japan*);

15:40 Numerical Analysis of EM Wave Effects in Artificial Planar Periodic Substrates
Andrey S. Andrenko (*Fujitsu Laboratories LTD., Japan*);

16:00 Characterisations of Electromagnetic Scattering and Horn/Reflector Antennas Using FMM and MLFMA
Le-Wei Li (*National University of Singapore, Singapore*); *Jian-Ying Li* (*Singapore-MIT Alliance (SMA), Singapore*); *Tat-Soon Yeo* (*National University of Singapore, Singapore*);

16:20 A Wiener-Hopf Solution for a Semi-Infinite Array of Minimum Scattering Dipoles
Matteo Albani (*University of Messina, Italy*); *Filippo Capolino* (*University of Siena, Italy*);

16:40 Transient Waves in Rectangular Waveguides Filled with Dispersive Materials
Taner Sengor (*Yildiz Technical University, Turkey*);

Session 2P5
Antenna Theory

Tuesday PM, October 14, 2003

Waialua

Chaired by Samir F. Mahmoud, Luigi Boccia

13:20 Radiation Characteristics of a Shorted Elliptical Patch Antenna
Giandomenico Amendola, Luigi Boccia, Giuseppe Di Massa (*Università della Calabria, Italy*);

13:40 SAR Characteristics of Perpendicularly Oriented, Electrically Small TM Dipoles
Dong Hyuk Choi, Seong-Ook Park (*Information and Communications University, Korea*);

14:00 Employing Wire Antenna Theory as a Tool for Inductors Evaluation
Uri Suissa (*Negev Academic College of Engineering, Israel*); *Lev Frumkis, Ben-Zion Kaplan* (*Ben-Gurion University of the Negev, Israel*);

14:20 Near Field EMC Antenna Design Using an Evolutionary Learning Technique
Yee Hui Lee, Brian J. Cahill, Stuart J. Porter, Andrew C. Marvin (*Nanyang Technological University, Singapore*);

14:40 Antenna with Broadened Widths of Radiation Characteristic
Wladyslaw Kolosowski, Marian Wnuk, Andrzej Jeziorski (*Military Unviersity of Technology, Poland*); *Edward Sedek* (*Telecommunications Research Institute, Poland*);

15:00 **Coffee Break**

15:20 High Gain Strip-Slot Inverted Patch Antenna
P. M. Hadalgi, R. M. Vani, B. S. Makal, S. N. Mulgi, P. V. Hunagund (*Gulbarga University, India*); *J. S. Kadadevaramath* (*Karnatak University, India*);

15:40 A Multiband Microstrip Patch Antenna with Two-Pin Loading
Samir F. Mahmoud (*Kuwait University, Kuwait*);

16:00 Coplanar-Fed Bow-Tie Microstrip Antenna Analysis Using the FDTD Method
M. Soleimani, A. H. Yamini (*Iran University of Science and Technology, Iran*);

16:20 Resonant Frequency and QFactor of Trapped Rectangular Dielectric Resonator Antenna
Mamta Senger, S. C. Shrivastava (*Maulana Azad National Institute of Technology, India*);

Session 2P6
Generators, Motors, and Power Devices

Tuesday PM, October 14, 2003

Niihau

Chaired by Erich Schmidt

13:40 Analytical Solution of the 3D Diffusion Equation for Eddy Currents in the Stator Clamping Plate of Synchronous Generators
Erich Schmidt (*Vienna University of Technology, Austria*); *George Traxler-Samek* (*ALSTOM Power Ltd., Switzerland*);

14:00 A Generalized Discrete-Time State-Space Averaging Approach to Power Electronics Modelling
Alessandro Gandelli (*Politecnico di Milano, Italy*); *Antonello Monti, Ferdinanda Ponci, Enrico Santi* (*University of South Carolina, USA*);

14:20 Behavior of a Magnet Over a Conductor Rotating Disc
A. J. S. Oliveira, A. C. Pereira, J. M. R. dos Santos (*Universidade Federal do Maranhão, Brazil*); *J. R. S. Oliveira* (*Centro Federal de Educação Tecnológica do Rio Grande do Norte, Brazil*);

14:40 On the Saturation Dependency of the Magnetic Surface Force Density at the Lateral Slot Wedge of Electrical Machines
Christian Grabner (*Graz University of Technology, Austria*); *Erich Schmidt* (*Vienna University of Technology, Austria*);

15:00 **Coffee Break**

15:20 Superresolution in Low-Frequency EM Holography
Michael A. Morgan (*Naval Postgraduate School, USA*);

15:40 Modeling, Simulation, and Analysis of Permanent-Magnet Brushless DC Motor Drive Using Different Speed Controllers
Prerna Gaur, Amit Gupta (*N.S.I.T., Delhi University, India*);

16:00 Direct Torque Control of Permanent Magnet Synchronous Motor (PMSM)
Prerna Gaur, Dipti Saxena (*N.S.I.T., Delhi University, India*);

16:20 Analysis of Three Phase Self Excited Induction Generator Using MATLAB/SIMULINK
Prerna Gaur (*N.S.I.T., Delhi University, India*); *Avinash Kishore* (*N.S.I.T., India*);

Session 2P7a
Microwave Devices

Tuesday PM, October 14, 2003

Kohala/Kona

Organized by Rodica Ramer

Chaired by Rodica Ramer, Daniel D. Stancil

13:00 Simplified Electromagnetic-Torque Calculations
F. R. Morgenthaler (*Massachusetts Institute of Technology, USA*);

13:20 Shape Modes in the FMR of Finite Size Planar Ferrites
Martha Pardavi-Horvath (*The George Washington University, USA*);

13:40 RF Channel Properties of Heating and Ventilation Ducts
Daniel D. Stancil, Pavel V. Nikitin, Ahmet G. Cepni, Ariton E. Xhafa, Ozan K. Tonguz, Ben E. Henty (*Carnegie Mellon University, USA*); *Dagfin Brodtkorb* (*ABB Corporate Research, Norway*);

14:00 Miniature Conductor-Loaded Resonators
Raafat R. Mansour (*University of Waterloo, Canada*);

14:20 New Quasi-Fractal Dual-Mode Filter
M. G. Banciu, Rodica Ramer (*University of New South Wales, Australia*);

14:40 RF Electronics for GSM / GPRS Smart Antennas
M. G. Banciu, P. Rapajic, Rodica Ramer (*University of New South Wales, Australia*);

Session 2P7b
Actual Problem of Outdoor and Indoor Radio Propagation for New Generations of Wireless Networks

Tuesday PM, October 14, 2003

Kohala/Kona

Organized by Nathan Blaunstein

Chaired by Nathan Blaunstein, Yehuda Ben-Shimol

15:20 Effects of Wave Fading Phenomena on Load Balancing and Grade of Service Performance in Fixed Wireless Systems
R. Hassanov, Nathan Blaunstein (*Ben-Gurion University of the Negev, Israel*);

15:40 Cell Splitting and Frequency Reuse Performance for Various Microcell Urban Environments
J. Gavan (*Holon Academic Institute of Technology, Israel*);

16:00 Spatial Techniques to Enhance Wireless Network Capacity
A. Freedman (*Tel Aviv University, Israel*);

16:20 Theoretical Aspects of Radio Propagation in Terrestrial Communication Links Based on Quantum Field Theory
Nathan Blaunstein (*Ben-Gurion University of the Negev, Israel*);

16:40 Frequency Planning and Link Budget Design for Various Terrestrial Communication Links
Y. Ben-Shimol, Dan Censor (*Ben-Gurion University of the Negev, Israel*);

17:00 Multimedia Transmission Over Wireless Networks
S. Greenberg, N. Tzuri (*Ben-Gurion University of the Negev, Israel*);

Session 2P8
Progress in Inverse Scattering Optimization Strategies

Tuesday PM, October 14, 2003

Oahu

Organized by Andrea Massa, Salvatore Caorsi, Takashi Takenaka

Chaired by Andrea Massa, Takashi Takenaka

13:20 Microwave Tomography from Phaseless Measurements of the Total Field
Ovidio M. Bucci, Lorenzo Crocco (*Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Italy*); *Michele D'urso, Tommaso Isernia* (*Universitá di Napoli Federico II, Italty*);

13:40 Filtered FBTS Algorithm with Multigrid for 2-D Inverse Scattering Problem
Toshiyuki Tanaka, Takashi Takenaka (*Nagasaki University, Japan*);

14:00 Time Reversal Retrofocusing and Inverse Scattering of Electromagnetic Wave Fields
Mats Gustafsson (*Lund Institute of Technology, Sweden*); *Lars Jonsson* (*University of Toronto, Canada*);

14:20 Full Vectorial 3D Inversion using the Multiplicative Regularized Constrast Source Inversion Method
Aria Abubakar (*Schlumberger-Doll Research, USA*); *Peter M. Van den Berg* (*Delft University of Technology, The Netherlands*);

14:40 Current Trends and Future Challenges on Nonlinear Inverse Scattering Strategies Based on Optimization Algorithms
Salvatore Caorsi (*University of Pavia, Italy*); *Andrea Massa* (*University of Trento, Italy*); *Matteo Pastorino* (*University of Genoa, Italy*);

15:00 **Coffee Break**

15:20 Forward-Backward Time-Stepping Method Combined with Genetic Algorithm Applied to Cross-Borehole Radar Imaging
Zhi Q. Meng (*Fukuoka University, Japan*); *Hongting Jia* (*Kyusyu University, Japan*); *Takashi Takenaka* (*Nagasaki University, Japan*);

15:40 Automatic Regularization Method for Deblurring Problems
Aria Abubakar, Tarek M. Habashy (*Schlumberger-Doll Research, USA*); *Peter M. Van den Berg* (*Delft University of Technology, The Netherlands*); *Henning Braunisch* (*Intel Corporation, USA*);

16:00 Synthesis of Variable Dielectric Profile Antennas Via Inverse Scattering
Ovidio M. Bucci (*Università di Napoli "Federico II", Italty*); *Ilaria Catapano, Lorenzo Crocco* (*Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Italy*); *Tommaso Isernia* (*Universitá di Napoli Federico II, Italty*);

16:20 Second Generation Microwave Imaging System: Phantom and Early Clinical Experience
Paul M. Meaney, Dun Li, Qianqian Fang, Sarah A. Pendergrass, Margaret W. Fanning, Keith D. Paulsen (*Dartmouth College, USA*);

Session 3A1
Workshop on Left-Handed Metamaterials I

Wednesday AM, October 15, 2003

Kauai Ballroom

Organized by V. Browning

Chaired by V. Browning

8:10 Workshop Opening

8:20 "Focusing" Evanescent Waves with Indefinite Media
David Schurig, David R. Smith (*University of California, San Diego, USA*);

8:40 Simulations of Evanescent Wave Growth and Subwavelength Focusing in Finite Negative Refractive Index Materials
Steven A. Cummer (*Duke University, USA*);

9:00 Some Interesting Surface Wave Properties of Meta-Materials
L. Zhou, Jensen Li, C. T. Chan (*Hong Kong University of Science and Technology, Hong Kong*);

9:20 May Cavities and Waveguides be Ultra-Thin and Still Support Resonant Modes When They Contain Double-Negative (DNG) or Single-Negative (SNG) Media?
Nader Engheta (*University of Pennsylvania, USA*); *Andrea Alù* (*University of Roma Tre, Italy*);

9:40 Reconstruction of Evanescent Waves Using Double-Negative (DNG) or Single-Negative (SNG) Media
Nader Engheta (*University of Pennsylvania, USA*); *Andrea Alù* (*University of Roma Tre, Italy*);

10:00 **Coffee Break**

10:20 Modeling and Experimental Studies of the Complex Electromagnetic Properties of Metamaterials
Vasundara V. Varadan (*The Pennsylvanaia State University, USA*); *Anilkumar Tellakula* (*HVS Technologies, Inc., USA*);

10:40 Wave Propagation in Plane-Parallel Metamaterial and Constitutive Relations
Akira Ishimaru, Yasuo Kuga, John Thomas, Seung-Woo Lee (*University of Washington, USA*);

11:00 Representation of Constitutive Relation Tensors of Metamaterials: An Approximation for FFFB Media
Le-Wei Li, Hong-Xuan Zhang, Zhi-Ning Chen (*National University of Singapore, Singapore*);

11:20 Effect of the Guided Mode on the Sub-Wavelength Focusing by a LHM Slab
Jie Lu, Tomasz M. Grzegorczyk, Bae-Ian Wu, Joe Pacheco, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

11:40 A New Route to Achieve Anisotropic Left-Handed Materials
X. K. Zhang, Z. F. Lin, Y. W. Zhao, D. Streilein, D. Shridhar, S. T. Chui, J. Q. Xiao (*University of Delaware, USA*); *R. X. Wu* (*Nanjing University, China*);

Session 3A2
Periodic Structures for Space Application

Wednesday AM, October 15, 2003

Maui Ballroom

Organized by Maurizio Bozzi, Luca Perregrini

Chaired by Maurizio Bozzi, Luca Perregrini

8:40 Metallodielectric Frequency Selective Surfaces and Electromagnetic Band Gap Structures with Defects
A. Chauraya, A. P. Feresidis, J. C. Vardaxoglou (*Loughborough University, UK*); *Peter de Maagt* (*European Space Research and Technology Centre (ESTEC), The Netherlands*);

9:00 New Developments in the Analysis of Periodic Structures by the MoM/BIRME Method
Maurizio Bozzi, Luca Perregrini (*University of Pavia, Italy*);

9:20 Design of an X/Ka-Band Dichroic Mirror for Deep Space Antennas
Piermario Besso (*European Space Agency, Germany*); *Maurizio Bozzi, Luca Perregrini* (*University of Pavia, Italy*); *Luca S. Drioli* (*Telecom Italia Laboratory, Italy*);

9:40 Ray Description of Large Rectangular Phased Arrays
Stefano Maci (*University of Siena, Italy*);

10:00 **Coffee Break**

10:20 A Novel Approach for Analyzing the Interaction between a Phased Array Antenna and an FSS Radome with Dissimilar Periodicities
Raj Mittra (*The Pennsylvania State University, USA*);

10:40 Multi-Layer Metallodielectric EBG Resonant Cavities for Broadband Directive Planar Antennas
A. P. Feresidis, J. C. Vardaxoglou (*Loughborough University, UK*);

11:00 PBG Technology for the Space- and Ground-Segment
Peter de Maagt (*European Space Research and Technology Centre (ESTEC), The Netherlands*); *Ramon Gonzalo* (*Universidad Publica de Navarra, Spain*); *Jean-Marc Baracco* (*MARDEL, France*);

11:20 Some New Theoretical Insights in the Modeling of Microstrip Antennas with High Impedance Ground Planes
Lucio Vegni, Filiberto Bilotti, Andrea Alù (*University of Roma Tre, Italy*);

Session 3A3
Microelectronic Packaging

Wednesday AM, October 15, 2003

Kahuku

Organized by Henning Braunisch, Kaladhar Radhakrishnan

Chaired by Henning Braunisch, Kaladhar Radhakrishnan

8:00 New Approaches to Full-Wave Layered Interconnect Simulation
Zhaohui Zhu, Xing Wang, Chris Kibbey, Steven L. Dvorak, John L. Prince (*The University of Arizona, USA*);

8:20 Application of Model Order Reduction Techniques to Compact Finite Difference Method for Interconnects Analysis
Dagang Wu, Ji Chen (*University of Houston, USA*);

8:40 Solving Maxwell's Equations at Very Low Frequencies
W. C. Chew, L. J. Jiang, Y. H. Chu, Y. C. Pan, J. S. Zhao (*University of Illinois at Urbana-Champaign, USA*);

9:00 Study of Interactions of Large Number of Vias in Multi-Layered Structure
Chung-Chi Huang (*University of Washington, Seattle, USA*); *Leung Tsang* (*City University of Hong Kong, China*); *Houfei Chen, Qin Li, Kevin Gu, Vikram Jandhyala* (*University of Washington, Seattle, USA*);

9:20 Efficient Hybrid Methodology for Analyzing Power Distribution Networks in High-Speed Systems
Jinwoo Choi, Sung-Hwan Min, Sidharth Dalmia, Madhavan Swaminathan (*Georgia Institute of Technology, USA*); *Joong-Ho Kim* (*Intel Corporation, USA*); *Wendemagegnehu Beyene, Chuck Yuan* (*Rambus Inc., USA*);

9:40 The Power Grid Transient Simulation in Linear Time Based on 3D Alternating-Direction-Implicit Method
Yu-Min Lee (*University of Wisconsin at Madison, USA*); *Chung-Ping Chen* (*National Taiwan University, Taiwan*);

10:00 **Coffee Break**

10:20 High-Speed Performance of Compliant Die-Package Interconnects
Henning Braunisch, Kyu-Pyung Hwang, Richard D. Emery (*Intel Corporation, USA*);

10:40 Passive Macromodeling of High-Speed Packaging Subnetworks Characterized by Measured/Simulated Data
D. Saraswat, R. Achar, M. Nakhla (*Carleton University, Canada*);

11:00 Electromagnetic Coupling in Mixed Signal Systems with Embedded Passives
Vinu Govind, Sidharth Dalmia, Madhavan Swaminathan (*Georgia Institute of Technology, USA*);

11:20 System-on-Package (SOP) Architectures for Compact Wireless Modules
Manos M. Tentzeris, J. Laskar, J. Papapolymerou (*Georgia Institute of Technology, USA*);

11:40 3D Electromagnetic Simulation of Integrated Optical Devices Compatible with CMOS Processing
Paul Davids, Bruce Block, Miriam Reshotko, Ken Cadien, Vivek Singh (*Intel Corporation, USA*);

Session 3A4a
Computational and Analytical Wave Electromagnetics: Part I - Photonics

Wednesday AM, October 15, 2003

Honolulu

Organized by Hugo E. Hernandez-Figueroa

Chaired by Hugo E. Hernandez-Figueroa, Phillip D. Sewell

8:00 Numerical Modeling of Bragg Fibers
G. R. Hadley (*Sandia National Laboratories, USA*);

8:20 Analysis of 3D Angled Fibre-Rib Waveguide Interfaces
P. Sewell, T. M. Benson, A. Vukovic (*University of Nottingham, United Kingdom*); *R. J. Bozeat* (*Bookham Technology Plc, United Kingdom*);

8:40 Dispersion and Dispersion Slope Compensation through Photonic Crystal Fibers
M. Fuochi, F. Poli, S. Selleri, A. Cucinotta (*University of Parma, Italy*);

9:00 The Free Space Radiation Mode Method for the Analysis of Periodic Dielectric Waveguides
A. Vukovic, P. Sewell, T. M. Benson (*University of Nottingham, United Kingdom*);

9:20 Photonic Crystal Fibers for Raman Amplification
M. Fuochi, F. Poli, S. Selleri, A. Cucinotta (*University of Parma, Italy*);

9:40 The Influence of Fabrication on the Electromagnetic Properties of Fluoride Glass Rib Waveguides
J. Lousteau, D. Furniss, A. B. Seddon, P. Sewell, A. Vukovic, T. M. Benson (*University of Nottingham, United Kingdom*);

Session 3A4b
Computational and Analytical Wave Electromagnetics: Part II - Microwaves and Electronics

Wednesday AM, October 15, 2003

Honolulu

Organized by Hugo E. Hernandez-Figueroa

Chaired by Hugo E. Hernandez-Figueroa, Oswaldo P. Paixao

10:20 Piecewise Constant Differential Forms Bridging FDTD and FETD Approaches
Wilson A. Artuzi Jr. (*Federal University of Parana, Brazil*);

10:40 Mutual Coupling Between Dielectric Resonator Antennas by Using 3-D FEM and Spherical Modes
Jesús Rubio (*Universidad de Extremadura, Spain*); *Miguel A. González, Juan Zapata* (*Universidad Politécnica de Madrid, Spain*);

11:00 Domain Decomposition Method with Shur Complement Techniques for Three-Dimensional Full-Wave Electromagnetic Analysis of Large Waveguide Sructures
Oswaldo Pedreira Paixão (*Tecnologia em Solução Numérica, Brazil*);

11:20 Nonlinear Propagation of Electromagnetic Waves and Heating of Carriers in Semiconductor and Gas-Discharge Plasma
Yuri Gurevich, Merab Kvimsadze (*CINVESTAV del IPN, Mexico*); *Heorhiy Lohvinov, Luis Niño de Rivera* (*Instituto Politecnico Nacional, Mexico*);

Session 3A5
Antenna Technology and Arrays

Wednesday AM, October 15, 2003

Waialua

Chaired by The-Nan Chang

8:00 Scattering Characteristics of a Train of Grounded-Pads Embedded in a Microstrip Line Substrate
Yasushi Horii (*Kansai University, Japan*);

8:20 Bandwidth and Gain Enhancement of Patch Antenna for Bluetooth Application
Mo Chung Lee, Cheng-Fu Yang (*Chinese Air Force Academy, Taiwan*);

8:40 Even Mode Current in High Power Phased Array
Xianhua (Shinwa) Yang, Steve Floyd, Robert Jacobsen, Vladimir Leonov, Simon London, Mike McCarrick (*BAE SYSTEMS Advanced Technologies, USA*);

9:00 Modeling and Analysis of Finite Phased Arrays of Microstrip Antennas - An Eigenvector Approach
Dave Bekers, Stef J. L. Van Eijndhoven, Alphons A. F. Van de Ven, A. G. Tijhuis (*Eindhoven University of Technology, The Netherlands*); *Peter-Paul Borsboom* (*Thales Nederland, The Netherlands*); *Evert W. Kolk* (*Thales Air Defense, France*);

9:20 Circularly Polarized Microstrip Reflectarray
The-Nan Chang (*Tatung University, Taiwan*);

9:40 Design and Analysis on Antenna Arrays Using Various Slotted Waveguide Structure
Lim Kasing, Koo Voon Chet, Jonas N. Djuanda, Lim Tien Sze (*Multimedia University, Malaysia*);

10:00 **Coffee Break**

10:20 Intelligent System to Find Multiple AOA and Interference Cancelling for Planar Antenna Arrays
Osmar de Araújo Dourado Júnior, Adrião Duarte Dória Neto, Wilson Da Matta (*Federal University of Rio Grande do Norte, Brazil*);

10:40 A New Method for Improving the Pointing Direction of Phased Arrays
Wenhui Shen, Xi-lang Zhou (*Shanghai Jiaotong University, China*);

11:00 Optimization of Non-Uniformly Spaced Planar Array Geometry for Maximum Side-Lobe Reduction
Ji-Hoon Bae, Nak-Seon Seong, Cheol-Sig Pyo, Soon Ick Jeon (*Electronics and Telecommunications Research Institute, Korea*);

11:20 Beam Steering Using Amplitude Distribution in Antenna Arrays
K. S. Sathivel (*Pondicherry Engineering College, India*);

Session 3A6
Poster I

Wednesday AM, October 15, 2003
Niihau

1 Complete Analysis of the Electromagnetic Scattering Properties in Cascaded Optical Waveguides: Application to waveguide Photonic Crystals
Jose Garcia Rodriguez, O. Hidalgo, S. Fernandez, I. Ibanez (*University of Oviedo, Spain*);

2 Exact and Approximate Formulation of the Time Response of a Parabolic Reflector Antenna
Rodrigo De Oliveira (*CNRS/UP6/UVSQ, France*); *Marc Hélier, Walid Tabbara* (*CNRS/Supelec/UP6, France*);

3 The Use of Slepian Theorem in One-Port Theory
Sonia Leva, Adriano P. Morando (*Politecnico di Milano, Italy*);

4 Modelling of Electromagnetic Substrate Coupling in Large Design Mixed-signal Integrated Circuits
Sadettin Sali (*University of Newcastle, UK*);

5 Low-Profile Planar Spiral Monopole Antenna for GSM/DCS/PCS Mobile Phone
Fu-Ren Hsiao, Kin-Lu Wong (*National Sun Yat-Sen University, Taiwan*); *Shyh-Tirng Fang* (*Industrial Technology Research Insitute, Taiwan*);

6 Spectrophotometric Mapping of the Human Body for Clinical Applications
V. A. Milyaev, Dmitrii A. Rogatkin, Vladimir V. Tchernyi (*Institute of General Physics of Russian Academy of Science, Russia*);

7 Optical Lattices: A New Type of Quantum Crystals?
Alexander Edward Meyerovich (*University of Rhode Island, USA*);

8 Effects of Deposition Temperature on ZnO Crystal Growth and FBAR Devices Fabrication
Munhyuk Yim, Donghyun Kim, Dongkyu Chai, Giwan Yoon (*Information and Communications University, Korea*);

9 Coupled Line Phase Shifters and its Equivalent Phase Delay Line for Compact Broadband Phased Array Antenna Applications
Sang-Min Han, Koo Hyung Kwon, Young-Sik Kim (*Korea University, Korea*);

10 A Broadband Stubby Antenna for PCS/IMT2000 Application
Dong-Uk Sim, Seong-Ook Park, Jung-Ick Moon (*Information and Communications University, Korea*);

11 Surface Impedance Model Analytic Solution for Axisymmetric Eddy-Current Problems
K. A. S. N Jayasekera, I. R. Ciric (*University of Manitoba, Canada*);

12 Comparison of Linear and Non-Linear Sweep Rate Regimes in Variable Frequency Microwave Technique
Christian Antonio, Rowan Deam, Alex Taube (*Industrial Research Institute Swinburne (IRIS), Australia*);

13 Analysis of Large Patch Antennas with the BMIA/AIM Method Based on Different Green's Functions Factorization
Francesca De Vita, Alessandro Mori, Paolo De Vita, A. Freni, Mario Calamia (*University of Florence, Italy*);

14 The Analysis of an Electric Field on an Asymmetric Model Human Heart by the Singular Integral Equations Method
Liudmila Nickelson, Stepanas Ashmontas (*Semiconductor Physics Institute, Lithuania*); *Vadim Engelson* (*Linköping University, Sweden*);

Session 3A7
Wireless Communication Systems: Theory and Applications

Wednesday AM, October 15, 2003

Kohala/Kona

Organized by Refet Ramiz

Chaired by Refet Ramiz, Takehiko Tsukiji

8:40 Optimum Shielding Material for Buildings Under the Electromagnetic Field Radiation of the GSM 900 Base Station Antennas
Refet Ramiz (*Yildiz Technical University, GSM System Test and Measurement Lab. (YildizCell), Turkey*);

9:00 Indoor Spatio-Temporal Channel Modelling for MIMO Applications
Ananda M. Sanagavarapu (*University of Technology, Sydney (UTS), Australia*); *Zhongwei Tang* (*University of Technology, Australia*);

9:20 A Proposal of the Double Loaded Folded Monopole Antenna
Takehiko Tsukiji (*Fukuoka Universtiy, Japan*); *Takayoshi Konishi* (*NEC TOKIN Corporation, Japan*);

9:40 Characterization of the Indoor Channel by an Optimised Simulation of the Radio Wave Propagation
Rudolf Vauzelle, F. Escarieu (*University of Poitiers, France*);

10:00 **Coffee Break**

10:20 Comparison of Measured and Predicted Path-Loss for UMTS and GSM 900 Systems in Istanbul Macro-Cell Model
Refet Ramiz (*Yildiz Technical University, GSM System Test and Measurement Lab. (YildizCell), Turkey*); *Ekrem Ozorbeyi, Akin Özözlü* (*Turkcell İletişim Hizmetleri A.Ş. Turkcell Maltepe Plaza, Turkey*);

10:40 RF Dosimetry for Biological Samples at Mobile Communication Frequencies
Davide Forigo, Andrea Schiavoni, Mauro Francavilla (*Telecom Italia Laboratory, Italy*);

11:00 Evaluating and Selecting the Most Appropriate Key Performance Indicators (KPIs) to Maximise the Visibility of Network Performance
Mehmet Beyaz (*Telsim Mobil Telekomünikasyon Hizmetleri A.S., Turkey*); *Refet Ramiz* (*Yildiz Technical University, GSM System Test and Measurement Lab. (YildizCell), Turkey*);

11:20 Neutralising Electromagnetic Radiation Caused by the Cell Phone Towers, Satellite Antennas for Any Biological Systems
Friedrich J. Bauer (*Bio Protective Systems, Germany*); *Refet Ramiz* (*Yildiz Technical University, GSM System Test and Measurement Lab. (YildizCell), Turkey*);

Session 3A8
Electromagnetic Waves in Random and Complex Media

Wednesday AM, October 15, 2003

Oahu

Chaired by Hanjo Lim, Ari Sihvola

8:40 Stability and Convergence via Lyapunov-like Functionals of Diffusion Equations in a Random Environment
M. J. Anabtawi (*American University of Sharjah, UAE*); *S. Sathananthan* (*Tennessee State University, USA*);

9:00 Three Dimensional FDTD Calculations of Optical Properties of Random Media
John Schultz (*Georgia Tech, USA*);

9:20 Wave Propagation in a Multiscale Randomly Inhomogeneous Medium
Mikhail Valentinovich Tinin (*Irkutsk State University, Russia*);

9:40 Clusters, Dumbbells, and Fused Dielectric Spheres: Application to Snow Modeling
Ari Sihvola, Pasi Ylä-Oijala, Seppo Järvenpää, Matti Taskinen (*Helsinki University of Technology, Finland*);

10:00 **Coffee Break**

10:20 A Metamaterial with Extreme Properties: The Chiral Nihility
Sergei Tretyakov, Igor Nefedov, Ari Sihvola, Stanislav Maslovski, Constantin Simovski (*Helsinki University of Technology, Finland*);

10:40 Resonant Magnetic Concentrators
Michael C. Wiltshire (*Imperial College, UK*); *Ekaterina Shamonina* (*University of Osnabr, Germany*); *Ian R. Young* (*Imperial College of Science, Technology and Medicine, Hammersmith Hospital, UK*); *Laszlo Solymar* (*University of Oxford, UK*);

11:00 Reflection, Refraction and Diffraction of Magneto-Inductive (MI) Waves in 2-D Metamaterials
Ekaterina Shamonina (*University of Osnabr, Germany*); *R. R. A. Syms* (*Imperial College of Science, UK*); *Laszlo Solymar* (*University of Oxford, UK*);

11:20 Theory of the Propagation of Coupled Waves in Arbitrarily-Inhomogeneous Stratified Media: Application to the Electromagnetic Wave Propagation in Chiral and Phase-Conjugating Media
Kihong Kim (*Ajou University, South Korea*); *Dong-Hun Lee* (*Kyung Hee University, South Korea*); *Hanjo Lim* (*Ajou University, South Korea*);

Session 3P1
Workshop on Left-Handed Metamaterials II

Wednesday PM, October 15, 2003

Kauai Ballroom

Organized by V. Browning

Chaired by V. Browning

13:00 Study of Metamaterials and their Applications
W. C. Chew, J. M. Jin (*University of Illinois at Urbana-Champaign, USA*);

13:20 Toward Photonic-Crystal Metamaterials: Creating Magnetic Emitters in Photonic Crystals
Michelle L. Povinelli, S. G. Johnson, J. D. Joannopoulos (*Massachusetts Institute of Technology, USA*); *J. B. Pendry* (*Imperial College, UK*);

13:40 Exciton-Polariton Approach to Negative Refraction at Optical Frequencies in Molecular Meta-Materials
A. A. Zakhidov, V. M. Agranovich (*The University of Texas at Dallas, USA*);

14:00 Imaging and Waveguide Elements with Periodic or Negative Refractive Index Materials
D. W. Ward, E. Statz (*Massachusetts Institute of Technology, USA*); *M. Yang* (*Purdue University, USA*); *K. A. Nelson, K. J. Webb* (*Massachusetts Institute of Technology, USA*);

14:20 Novel Microwave Applications Using Composite Right/Left-Handed Circuits and Structure
Christophe Caloz, Tatsuo Itoh (*University of California, Los Angeles, USA*);

14:40 A Wideband Directive Antenna Using Metamaterials
Joe Pacheco, Tomasz M. Grzegorczyk, Bae-Ian Wu, Jie Lu, Jin Au Kong (*Massachusetts Institute of Technology, USA*);

15:00 **Coffee Break**

15:20 Open Discussion

Session 3P2
Analysis of Photonic Bandgap Structures

Wednesday PM, October 15, 2003

Maui Ballroom

Chaired by Kihong Kim, Geraldine R. Guida

13:20 The Design of Novel One-Dimensional Electromagnetic Bandgap Structures
Seunghwan Kim, Jaehoon Choi (*Hanyang University, Korea*);

13:40 The Method of Lines for the Analysis of Photonic Bandgap Structures
Stefan F. Helfert, Agnieszka Barcz, Reinhold Pregla (*Fern Universität in Hagen, Germany*);

14:00 Plasmonic Band Gap Laser
Takayuki Okamoto, Satoshi Kawata (*RIKEN (The Institute of Physical and Chemical Research), Japan*);

14:20 Tunable Resonant Transmission of Electromagnetic Waves in Electromagnetic Stop Bands of a Magnetized Plasma Slab
Chul-Sik Kee, Hanjo Lim, Kihong Kim (*Ajou University, South Korea*);

14:40 A New Compact 1-D PBG Microstrip Filter with Wide Stopband
Wenmei Zhang, Junfa Mao (*Shanghai JiaoTong University, China*); *Xiaowei Sun* (*Shanghai Institute of Microsystem and Information Technology, China*);

15:00 **Coffee Break**

15:20 Dispersion Surface of 1D Photonic Bandgap Probed by Ellipsometry
Xiang Zhang (*University of California, Los Angeles, USA*);

15:40 3D Pseudo-Spectral Analysis of Photonic Crystals with Defects Utilizing Problem-Specific Bloch- and Wannier Functions
Ali R. Baghai-Wadji (*Vienna University of Technology, Austria*); *K. Varis* (*Helsinki University of Technology, Finland*);

16:00 Analysis of Photonic Crystals by Single Integral Equations
Fad Seydou (*University of Oulu, Finland*); *Ramani Duraiswami* (*University of Maryland, USA*); *Tapio Seppanen* (*University of Oulu, Finland*);

16:20 Nonlinear Photonic Crystals
G. Guida, G. Berginc, A. Priou (*Université Paris X, France*);

16:40 Theory of the Coherent Trapping of Polaritons in Dispersive and Photonic Band Gap Materials
Mahi R. Singh, D. Mukherji (*University of Western Ontario, Canada*);

Session 3P3a
Ultra Short Light Pulses

Wednesday PM, October 15, 2003

Kahuku

Organized by Frederic P. Mariotte, Laurent Sarger

Chaired by Frederic P. Mariotte, Laurent Sarger

13:00 A Review of the LIL Program (Laser MegaJoule First Bundle) — First Results of the Start-up and Qualification Programs
Frederic P. Mariotte (*CEA-CESTA, France*);

13:20 Ultrashort Laser Pulses. Generation, Measurement and Control of Femtosecond Electromagnetic Fields
Laurent Sarger, Bruno Bousquet (*Université Bordeaux I, France*);

13:40 Multiphotonic Microscopy
Lionel Canioni, Arnaud Brocas, Laurent Sarger (*Université Bordeaux I, France*);

14:00 A New Method Using Phase Shift to Detect Weak Incident Laser in Intense Background Noise
Gao-shi Yan, Zhi-yong Zhang (*Unviersity of Electronic Science and Technology of China, China*);

14:20 On Interplay of Polarizability of Scatterer and Lorentzian Field in the Modeling of Complex Media
Ari Sihvola (*Helsinki University of Technology, Finland*);

14:40 Non-Linear Propagation of Short Optical Pulses: New Effects
Charles Hirlimann, Jean-Frédéric Lami, Stéphane Petit, Benjamin Thomas (*IPCMS-GONLO, France*);

Session 3P3b
Scattering of Light

Wednesday PM, October 15, 2003

Kahuku

Chaired by Toshitaka Kojima, Giovanni F. Crosta

15:20 About One Lemma in Light Scattering Theory
Dmitrii A. Rogatkin, Vladimir V. Tchernyi (*Institute of General Physics of Russian Academy of Science, Russia*);

15:40 Large Angle Two Angular Optical Scattering (LA TAOS) Patterns and their SEM Micrographes for Various Bio- and Nobio-Aerosols
Yongle Pan, Mario Surbek, Kevin Aptowicz, Ilona Kretzschmar, Richard Chang (*Yale University, USA*);

16:00 Chaotic Light Scattering by Asymmetric Particles
Viktor A. Podolskiy, Evgenii E. Narimanov (*Princeton University, USA*);

16:20 Numerical Analysis of Light-Wave Scattering from a Capillary Vessel Model with Rough Surfaces
Toshitaka Kojima, Akio Asai (*Kansai University, Japan*);

16:40 Propagation of Light in Waveguide Systems with Random Imperfections: a Case of the Short Correlation Length
Akira Komiyama (*Osaka Electro-Communication University, Japan*);

17:00 Classification and Recognition of Limited Aperture Scattered Intensity Patterns from TAOS Experiments
Giovanni F. Crosta (*University Milan Bicocca, Italy*); *Simeone Zomer* (*University of Bristol, Great Britain*); *Stephen Holler* (*Sandia National Laboratories, USA*); *Yongle Pan* (*Yale University, USA*); *Changmo Sung* (*University of Massachusetts - Lowell, USA*);

17:20 Heterogeneous Cylindrical Resonators: Trace Species Detection by a Resonance Frequency Shift
Stephen Holler (*Sandia National Laboratories, USA*); *Seongsik Chang* (*Phosistor Technologies, Inc., USA*);

Session 3P4
Advances in Computational Electromagnetics

Wednesday PM, October 15, 2003

Honolulu

Chaired by Michael A. Morgan

13:20 Constructing Multipole Expansions Without Addition Theorems
Ali R. Baghai-Wadji (*Vienna University of Technology, Austria*); *Er-Ping Li* (*Institute of High Performance Computing, Singapore*);

13:40 Inductance Extraction in ICs Using a Meshless Stochastic Approach
Kausik Chatterjee, P. Matos (*California State University, Fresno, USA*);

14:00 Implementation of Material Flaking in a Coupled Finite Element Analysis
Christian Grabner (*Graz University of Technology, Austria*); *Erich Schmidt* (*Vienna University of Technology, Austria*);

14:20 Application of Equivalence Principle with Finite Element Method for Determining the External Magnetic Field due to Sources within a Ferromagnetic Enclosure
Xiao-Bang Xu (*Clemson University, USA*);

14:40 An Improved Hybrid Physical Optics - Moment Method Technique Using Higher-Order Basis Functions
Erik Jørgensen (*TICRA, Denmark*); *Peter Meincke, Olav Breinbjerg* (*Technical University of Denmark, Denmark*);

15:00 **Coffee Break**

15:20 Full Wave Analysis of Radial Line Slot Antennas Using an Efficient Ray-Mode Expansion of the Green's Function for a Large Circular Cavity
Matteo Albani, G. La Cono (*University of Messina, Italy*); *A. Freni* (*University of Florence, Italy*);

15:40 Efficient Grid Generation for the IVMCEM Solver
J. F. Nystrom, Carryn Bellomo (*Texas A&M University - Corpus Christi, USA*);

16:00 A New Strategy to Avoid the Truncation Error in Near Field Measurements with Planar and Cylindrical Scanning
Ovidio M. Bucci (*Università di Napoli "Federico II", Italty*); *M. D. Migliore* (*Università di Cassino, Italy*);

16:20 Spatio-Temporal Brain Electrical Imaging Based on Time-Varying Spatial Inverse Filter
Junichi Hori, Masaaki Aiba, Yoshiaki Saitoh (*Niigata University, Japan*); *Bin He* (*University of Illinois at Chicago, USA*);

Session 3P5
Flat Reflector and Reflectarray Antennas

Wednesday PM, October 15, 2003

Waialua

Organized by John Huang

Chaired by Yahya Rahmat-Samii, John Huang

13:20 Historical Review of the Printed Reflectarray Antenna
John Huang (*Jet Propulsion Laboratory, USA*);

13:40 On the Element Shape of Printed Reflectarrays
Maurizio Bozzi, Simone Germani, Luca Perregrini (*University of Pavia, Italy*);

14:00 Analysis and Design of Genetically Optimized Microstrip Reflectarrays
Riccardo E. Zich, M. Mussetta, M. Tovaglieri (*Politecnico di Milano, Italy*); *Paola Pirinoli, Mario Orefice* (*Polytechnic of Turin, Italy*);

14:20 Analysis of Microstrip Reflectarrays Using the Sparse Matrix Canonical Grid Method
King W. Lam, Ka F. Chan, Chi H. Chan (*City University of Hong Kong, China*);

14:40 A Dual-Mode Folded Microstrip Reflectarray Antenna
I-Young Tarn, Yeou-Shin Wang, Shyh-Jong Chung (*National Chiao Tung University, Taiwan*);

15:00 **Coffee Break**

15:20 A Dual-Band Reflectarray for X- and Ka-Bands
Mark Zawadzki, John Huang (*Jet Propulsion Laboratory, USA*);

15:40 A Dual-Frequency 7/32 GHz Reflectarray Antenna
Chulmin Han, Bernd Strassner, Kai Chang (*Texas A&M University, USA*); *John Huang* (*Jet Propulsion Laboratory, USA*);

16:00 Reflectarray Antennas: Far-Field Characterizations for Single and Dual Configurations
Yahya Rahmat-Samii, Berouz Khayatian (*University of California, Los Angeles, USA*);

16:20 Development of Passive and Active Reflectarrays
Luigi Boccia, F. Venneri, Giandomenico Amendola (*Università della Calabria, Italy*); *G. Angiulli* (*Università "Mediterranea" di Reggio Calabria, Italy*); *Giuseppe Di Massa* (*Università della Calabria, Italy*);

16:40 Beam Scanning Characteristics of Microstrip Reflectarray with Offset Feed
Hiroyuki Deguchi, Nobuto Takagi, Mikio Tsuji, Hiroshi Shigesawa (*Doshisha University, Japan*);

Session 3P6
Poster II

Wednesday PM, October 15, 2003
Niihau

1 Electromagnetic Simulations Using the Partial Element Equivalent Circuit (PEEC) Approach
Jonas Ekman (*Luleå University of Technology, Sweden*);

2 Point Charged Particles with Zero Electromagnetic Mass
J. A. E. Roa-Neri (*Universidad Autónoma Metropolitana-Azcapotzalco, México*); *J. L. Jiménez* (*Universidad Autónoma Metropolitana-Iztapalapa, México*); *M. Villavicencio* (*Universidad Nacional Autónoma de México, México*);

3 Collective Radiative Phenomena in Media
J. A. E. Roa-Neri (*Universidad Autónoma Metropolitana-Azcapotzalco, México*); *M. Villavicencio* (*Universidad Nacional Autónoma de México, México*); *J. L. Jiménez* (*Universidad Autónoma Metropolitana-Iztapalapa, México*);

4 Statistical Error Bounds for Electromagnetic Crosstalk between Braided Coaxial Cables
Sadettin Sali (*University of Newcastle, UK*);

5 The Use of Park Transform to Analyse the Radiation of a Three-Phase Line
Sonia Leva, Adriano P. Morando (*Politecnico di Milano, Italy*);

6 Analysis of Lossy Three-Phase Transmission Line by Means of Park Approach
Sonia Leva, Adriano P. Morando (*Politecnico di Milano, Italy*);

7 A Novel Hairpin Type Bandpass Filter (BPF) on Teflon Substrate for 5.8 GHz
Dongkyu Chai, Munhyuk Yim, Donghyun Kim, Giwan Yoon (*Information and Communications University, Korea*);

8 A New Asymmetric Side Coupled Schiffman Phase Shifter on Teflon Substrate
Dongkyu Chai, Donghyun Kim, Munhyuk Yim, Giwan Yoon (*Information and Communications University, Korea*);

9 Determination of Current and Electromagnetic Field Distribution in Cylindrical Antennas Using Moment Method and Wavelets
Sidney A. P. Silva, Wilson Da Matta, Adrião Duarte Dória Neto (*Federal University of Rio Grande do Norte, Brazil*);

10 Water Vapor Distribution Mapping over Mauna Loa, Hawaii, Using Multi-Pass Radar Interferometry
Ramon F. Hanssen (*Delft University of Technology, The Netherlands*); *Steven Businger* (*University of Hawaii, Honolulu, USA*);

11 Performance Evaluation and Theoretical Model for the Polarization Diversity Using Circularly Polarized Waves in N-LOS Radio Environments
Ju-Hyun Lee, Deock Ho Ha (*Pukyong National University, South Korea*);

12 A Novel Blind Beamforming for an Adaptive Array Antenna in CDMA Systems Using CM-DD
Chan-Byoung Chae, Chang-Ho Suh, Hyeon-Woo Lee (*Samsung Electronics Co., LTD, Korea*);

13 Improved OFDM-CDMA Systems with Multiple Antennas Using Space-Time Coding Techniques
Tae-won Jang (*Yonsei University, Korea*); *Youngwhan You* (*Sejong University, KOREA*); *Min-goo Kang* (*Hanshin University, Korea*); *Chang-eon Kang* (*Yongsei University, Korea*);

14 Surface Plasmon Enhanced Illumination and Its Application to Biological Studies
Peter R. Stark (*Harvard Medical School, USA*);

Session 3P7a
Novel Wave Effects on Integrated Circuit Transmission Lines and Interconnects

Wednesday PM, October 15, 2003
Kohala/Kona

Organized by Alexander B. Yakovlev, George W. Hanson

Chaired by Alexander B. Yakovlev, George W. Hanson

13:00 Fundamental Properties of Radiation from a Leaky Mode Excited on a Planar Transmission Line
William L. Langston, Jeffery T. Williams, David R. Jackson (*University of Houston, USA*); *Francisco Mesa* (*University of Seville, Spain*);

13:20 Slot Element Printed on a Parallel-Plate Structure with a Unidirectionally Conducting Substrate for Elimination of the Parallel-Plate Radiation
Wei-Jen Wang, Nirod K. Das (*Polytechnic University, USA*);

13:40 A Rigorous Asymptotic Analysis of Residual-Wave Currents in a Microstrip Line
Paolo Baccarelli, Paolo Burghignoli, Fabrizio Frezza, Alessandro Galli, Paolo Lampariello, Giampiero Lovat, Simone Paulotto (*"La Sapienza" University of Rome, Italy*);

14:00 Leaky Wave Excitation on Three-Dimensional Printed Interconnects
George W. Hanson (*University of Wisconsin-Milwaukee, USA*); *Alexander B. Yakovlev* (*The University of Mississippi, USA*);

14:20 Guided and Leaky Modes on Slotted Planar Transmission Lines
Jan Zehentner, Jan Machac (*Czech Technical University in Prague, Czech Republic*);

14:40 Leakage Effect in Waveguides with Negative Index Materials
António L. Topa (*Technical University of Lisbon, Portugal*);

Session 3P7b
Electromagnetic Compatibility

Wednesday PM, October 15, 2003

Kohala/Kona

Chaired by Wern-Shiarng Jou, Alessandro Gandelli

15:20 A Novel Structure Employing Wove Carbon Fiber Composites with High Electromagnetic Shielding
Wern-Shiarng Jou (*National Kaohsiung University of Applied Sciences, R.O.C.*);

15:40 Analysis of the Electromagnetic Field Radiated by a Lightning Return Stroke by a Wavelet Based Approach
Edoardo Alfassio Grimaldi, Morris Brenna, Alessandro Gandelli, Marco Merlo, Riccardo E. Zich (*Politecnico di Milano, Italy*);

16:00 Electromagnetic Compatibility of PCB-Based Coreless Transformers
Cesare Mario Arturi, Alessandro Gandelli, Flavia Grassi (*Politecnico di Milano, Italy*);

16:20 Mitigation Techniques for Magnetic Fields at Power-Frequencies
Ener Salinas (*South Bank University, UK*); *Anders Bondeson* (*Chalmers University of Technology, Sweden*);

16:40 The Variation of Magnetic Fields with Moving Objects
S. B. Chiu, C. N. Pai, J. H. Chou (*National Cheng Kung University, Taiwan*);

17:00 A VCO with Output Power Improved Using Defected Ground Structure
Haiwen Liu, Xiaowei Sun, Z. Q. Cheng (*Shanghai Institute of Microsystem and Information Technology, China*); *Zheng-fan Li* (*Shanghai Jiao Tong University, China*);

17:20 Characterization of Passive Devices Using Near-Field Measurement Techniques
Lakhdar Bouchelouk, David Baudry, Anne Louis, Belahcène Mazari (*IRSEEM / ESIGELEC, France*);

Session 3P8
Advances in Scattering of Electromagnetic Waves

Wednesday PM, October 15, 2003

Oahu

Chaired by Tat-Soon Yeo, Hassan Kalhor

13:00 Validity of Kirchhoff Theory for Electromagnetic Wave Scattering from Fractal Surfaces
Ahmed Kamal Sultan Salem, G. Leonard Tyler (*Stanford University, USA*);

13:20 Electromagnetic Scattering and Absorption by Lossy Metallic and Dielectric Thin Strips of Lossy Conductors
Hassan Kalhor (*State University of New York, USA*);

13:40 Monte-Carlo Study of Random Wire-Like Aggregates Scattering with the Use of a T-Matrix Algorithm
Sylvain Lecler, Yoshitate Takakura, Patrick Meyrueis (*Louis Pasteur University Strasbourg, France*);

14:00 Coupling Between Incident and Scattered Waves by a Body in a Random Medium
Mitsuo Tateiba (*Kyushu University, Japan*); *Zhi Q. Meng* (*Fukuoka University, Japan*);

14:20 A Fast Volume-Surface Integral Equation Solver for Scattering from Conducting Objects Coated with Lossy Materials
Ning Yuan, Tat-Soon Yeo, Xiaochun Nie, Le-Wei Li, Yeow Beng Gan (*National University of Singapore, Singapore*);

14:40 Scattering of Electromagnetic Waves by Periodic Lamellar Surfaces
Hassan Kalhor (*State University of New York, USA*);

15:00 **Coffee Break**

15:20 New Resonance Scattering Theory and Background Coefficients in the Scattering from Cylindrical Objects
Yonghwa Jung, Sangbong Jeon, Chang-Hoi Ahn, Myoungseon Choi (*Yeungnam University, Korea*);

15:40 Numerical Analysis of the Problem of Plane-Wave Diffraction from a Deep Grating
Daqing Zhou, Yoichi Okuno, Akira Matsushima (*Kumamoto University, Japan*); *Toyonori Matsuda* (*Kumamoto National College of Technology, Japan*);

16:00 Computation of Time Domain Scattering by Arbitrarily Shaped Material and PEC Cylinders
Neelakantam V. Venkatarayalu, Yeow Beng Gan (*National University of Singapore, Singapore*);

16:20 Numerical Analysis of an Electromagnetic Wave Scattering from a Lossy Dielectric Body of Revolution
M. Kawano (*Kumamoto National College of Technology, Japan*); *H. Ikuno* (*Kumamoto University, Japan*);

16:40 Vectorial Elliptical Gaussian Beams Beyond the Paraxial Approximation
Baida Lu, Kailiang Duan (*Sichuan University, China*);

17:00 Density of States Calculations for Fractal Aggregates of Nanospheres with Multipole Interactions
Vadim A. Markel, Vitaly N. Pustovit (*Washington University, USA*);

17:20 Geoelectrical-Hydrogeological Studies at Northern Wadi El-Hodein, NW Shalateen Area, Southeast Egypt
M. A. Abd Alla (*National Research Institute of Astronomy and Geophysics, Egypt*);

Session 4A1
Novel Left-Handed Structures

Thursday AM, October 16, 2003

Kauai Ballroom

Chaired by Nader Engheta, Toshio Fukaya

8:20 Ferromagnetic-Metal Nanocomposite Films: A Possible Candidate for Left-Handed Materials
Satoshi Tomita (*Japan Science and Technology Corporation, Japan*);

8:40 Experiment of NRI Behavior of Metamaterial Composed of Omega-Like Metallic Patterns
Lixin Ran, Xianmin Zhang, Kangsheng Chen (*Zhejiang University, P. R. China*); *Tomasz M. Grzegorczyk, Jin Au Kong* (*Massachusetts Institute of Technology, USA*);

9:00 Electromagnetic Metamaterials for Thermophotovoltaic Energy Conversion
A. Narayanaswamy, G. Chen (*Massachusetts Institute of Technology, USA*);

9:20 Artificial Magnetic Response form Nonmagnetic Conductors at Terahertz Frequencies
Willie J. Padilla (*University of California, San Diego, USA*); *Ta-Jen Yen, Nicholas Fang* (*University of California, Los Angeles, USA*); *D. N. Basov, David C. Vier, David R. Smith* (*University of California, San Diego, USA*); *J. B. Pendry* (*Imperial College, UK*); *Xiang Zhang* (*University of California, Los Angeles, USA*);

9:40 Electromagnetic Properties of Two and Three-Dimensional Wire Arrays: Photons, Plasmons, and Left-Handed Waves
Gennady Shvets (*Illinois Institute of Technology, USA*); *Andrey K. Sarychev, Vladimir M. Shalaev* (*Purdue University, USA*);

10:00 **Coffee Break**

10:20 Studies on Light Propagation Properties of a Periodic Multilayer: Aiming for Realization of a Negatively Refractive Material and a Slab Lens
Toshio Fukaya, Junji Tominaga (*Center for Applied Near-Field Optics Research, AIST, Japan*);

10:40 Left-Handed Characters in Metallic Magnetic Thin Films
R. X. Wu (*Nanjing University, China*); *X. K. Zhang, J. Q. Xiao, Z. F. Lin, S. T. Chui* (*University of Delaware, USA*);

11:00 Metamaterial with Nonlinear Resonant Conductive Elements: A Medium for Direct Interaction of Microwaves
Mikhail Lapine, Maxim Gorkunov (*University of Osnabrück, Germany*);

11:20 Far-Infrared Resonance in Split Ring Resonators
A.-C. Hsu, Y.-K. Cheng, K.-H. Chen, J.-L. Chern (*National Chiao Tung University, Taiwan*); *S.-C. Wu, H.-L. Chen, W.-C. Chiao* (*National Nano Device Laboratories, Taiwan*); *H. Chang, C.-C. Linean, J.-T. Shy* (*National Tsing Hua University, Taiwan*);

Session 4A2a
Applications Using Photonic Bandgap Structures

Thursday AM, October 16, 2003

Maui Ballroom

Chaired by Song-Tsuen Peng, William M. Robertson

8:00 Broad Band and Harmonic Suppression Band Pass Filter Using PBG (Photonic Band Gap) and Aperture
Seungjae Lee, Chulhun Seo (*Soongsil University, Korea*); *Kyuho Park, Heeseok Song* (*KETI, Korea*);

8:20 Radiation Characteristics of a Class of PBG Planar Antennas for SAR Applications
Diego Caratelli, Renato Cicchetti, Danilo Fortini (*University of Rome "La Sapienza", Italy*); *Rodolfo Ravanelli* (*Alenia Spazio, Italy*);

8:40 A Novel Phase Noise Reduction in Oscillator Using PBG (Photonic BandGap Structure) and Feedforward Circuit
Uktae Chang, Chulhun Seo (*Soongsil University, Korea*); *Youngwan Kim* (*Electronics and Telecommunications Research Institute, Korea*);

9:00 Two-Dimensional Photonic Crystal Beamsplitters
Chii-Chang Chen, Hung-Ta Chien, Pi-Gang Luan (*National Central Unviersity, Taiwan*);

9:20 Biosensors Based on Surface Optical Waves in Photonic Band Gap Films
William M. Robertson, Stephen M. Wright, Andrienne Friedli (*Middle Tennessee State University, USA*);

9:40 A Low-Pass Filer of Wide Stopband with a Novel Mutilayer and Fractal Photonic Bandgap Structure
Haiwen Liu, Xiaowei Sun (*Shanghai Institute of Microsystem and Information Technology, China*); *Zheng-fan Li* (*Shanghai Jiao Tong University, China*);

Session 4A3
Radar and Ionospheric Propagation

Thursday AM, October 16, 2003

Kahuku

Chaired by Yoshihisa Hara, K. S. Chen

8:00 Detection of Flying Birds and Estimation of their Velocity Vectors by MRL-5 Meteorological Radar
Leonid Dinerich, Yosi Leshem (*Tel-Aviv University, Israel*);

8:20 Study of Some Characteristics of Atmospheric Radio Noise at 17.4 kHz Over a Tropical Area
Sophie A. Fieve, Philippe Portala (*DGA, France*); *Louis Bertel* (*Université de Rennes 1, France*);

8:40 3-D Digital Terrain Model Visualization Oriented to Design a Clutter Predictor
E. González-Ramírez, I. Cluckie (*University of Bristol, UK*); *M. Tecpoyotl-Torres* (*Autonomous University of State Morelos (UAEM), Mexico*); *M. A. Rico-Ramírez, G. Cerda-Villafaña* (*University of Bristol, UK*); *J. Sánchez-Mondragón* (*Autonomous University of State Morelos (UAEM), Mexico*);

9:00 Measurement of Precipitation with Vertically Pointing Weather Radars
M. A. Rico-Ramírez, I. Cluckie (*University of Bristol, UK*); *M. Tecpoyotl-Torres, J. Sánchez-Mondragón* (*Autonomous University of State Morelos (UAEM), Mexico*); *E. González-Ramírez, G. Cerda-Villafaña* (*University of Bristol, UK*);

9:20 Optimization of LADAR/RADAR Multimode Systems for Maximum Range Cooperative Targets Tracking
J. Gavan, M. Haridim (*Holon Academic Institute of Technology, Israel*);

9:40 Characteristics of the Radiowave Propagating through an Inhomogeneous Ionospheric Layer
Byoung-Chul Kim (*Miryang National University, Korea*); *Sergey Nikolaevich Kolesnik* (*Irkutsk State University, Russia*); *Mikhail Valentinovich Tinin* (*Miryang National University, Korea*); *Nikolay Tikhonovich Afanasiev* (*Irkutsk State University, Russia*);

10:00 **Coffee Break**

10:20 Resolving Diffractive and Guiding Structures in Thick, Complex Atmospheres Using Back Propagation
C. S. Han, G. Leonard Tyler (*Stanford University, USA*);

10:40 Compensating Atmospheric Distortions in SAR Interferograms using Continuous GPS Zenith Wet Delay Time Series Estimates
Fayaz Onn, Howard Zebker (*Stanford University, USA*);

11:00 An Application of Artificial Intelligence Techniques to Weather Radars
G. Cerda-Villafaña, I. Cluckie (*University of Bristol, UK*); *M. Tecpoyotl-Torres, J. Sánchez-Mondragón* (*Autonomous University of State Morelos (UAEM), Mexico*); *E. González-Ramírez, M. A. Rico-Ramírez* (*University of Bristol, UK*);

11:20 Analysis of Rain Fading Effects on the Ka-Band LMDS System Efficiency in Taiwan Area
Chih-Yuan Chu (*Institute of Space Science, Taiwan*); *K. S. Chen* (*National Central University, Taiwan*);

11:40 A Minimally Piloted Airborne Repeat Pass Interferometer for Rapid Hazard Mapping
Paul Rosen, Scott Hensley, Soren Madsen (*Jet Propulsion Laboratory, USA*); *Howard Zebker* (*Stanford University, USA*);

Session 4A4
Numerical Techniques for Electromagnetics

Thursday AM, October 16, 2003

Honolulu

Organized by Le-Wei Li, Wei Hong

Chaired by Le-Wei Li, Wei Hong

8:00 Data Parallelization with Fast Algorithm for Analyzing Electromagnetic Scattering in Shared Memory System
Hong Xin, Le-Wei Li, Yeow Beng Gan (*National University of Singapore, Singapore*);

8:20 Propagation Characteristic Analysis of SIW from a View of Wave Scattering
Z. Q. Lv, Wei Hong, Tie J. Cui (*Southeast University, China*);

8:40 Accurate Simulations of Emissivities in Passive Microwave Remote Sensing Based on Fast Algorithm
Lin Zhou (*University of Washington, Seattle, USA*); *Leung Tsang* (*City University of Hong Kong, China*); *Vikram Jandhyala, Qin Li* (*University of Washington, Seattle, USA*); *Chi H. Chan* (*City University of Hong Kong, China*);

9:00 Solving Electromagnetic Scattering of Mixed Dielectric/Conducting Object Using Volume-Surface Adaptive Integral Method
Wei-Bin Ewe, Le-Wei Li, Mook-Seng Leong (*National University of Singapore, Singapore*);

9:20 Backscattering Enhancement from Anisotropic Rough Surfaces with the First- and Second- Order Shadowed Kirchhoff Approximation in High-Frequency Limit
Christophe Bourlier (*Ecole Polytechnique de l'Université de Nantes, France*); *Gérard Berginc* (*Thalès Optronique, France*);

9:40 A Moment Method Analysis of a Superspheroidal Airborne Radome Excited by a Wire Antenna
Le-Wei Li, Zhong-Cheng Li, Mook-Seng Leong (*National University of Singapore, Singapore*);

10:00 **Coffee Break**

10:20 Analysis of Differential Signal Lines with Parallelized FDTD Method
Er-Ping Li, Hong-Fang Jin, Wei-Liang Yuan (*Institute of High Performance Computing, Singapore*); *Le-Wei Li* (*National University of Singapore, Singapore*);

10:40 Approximate Propagation Schemes in Obstacle Inversion: Results and Problems
Giovanni F. Crosta (*University Milan Bicocca, Italy*);

11:00 The Study of a Gaussian Beam in Lossy Left-Handed Materials
Zhang C. Hao, Tie J. Cui, Wei Hong, Wei B. Lu (*Southeast University, China*);

11:20 Development of Java Applets FDTD-Based Electromagnetic Simulation System
Yun Fan, Er-Ping Li, Yong-Lin Li (*Institute of High Performance Computing, Singapore*); *Le-Wei Li* (*National University of Singapore, Singapore*);

11:40 Topological Backprojection Tomography
Taner Sengor (*Yildiz Technical University, Turkey*);

Session 4A5
Antenna Design

Thursday AM, October 16, 2003

Waialua

Chaired by Mikko K. Kärkkäinen

8:40 Planar CPW-Fed Bow-Tie-Shaped Meander Slot Antenna
Sang-Hyuk Wi, Jung-Min Kim, Jong-Gwan Yook (*Yonsei University, Korea*);

9:00 A Multi-Mode Circular Horn Antenna for Low Side Lobe Characteristic
Byoung Moo Lee, Kyung-soon Park, Young Joong Yoon (*Yonsei University, Korea*); *Joon-ho So* (*Agency for Defense Development, Korea*);

9:20 Miniaturized CPW-Fed Variable Width Meander Slot Antenna
Jung-Min Kim, Sang-Hyuk Wi, Jong-Gwan Yook (*Yonsei University, Korea*);

9:40 The Effect of Different Material Corner Reflectors (CRs) on the Parameters of V-Slot Wave Guide Antenna (V-SWGA)
B. S. Makal (*Sharanabasaweshwar College of Science, India*); *R. M. Vani, P. M. Hadalgi, S. N. Mulgi, P. V. Hunagund* (*Gulbarga University, India*);

10:00 **Coffee Break**

10:20 Coplanar Waveguide Fed Uni-planar Antenna Using a Broadband Balun
Chien-Wen Chiu (*National I-Lan University, Taiwan, R.O.C.*);

10:40 Physically Based Prediction of Wideband, Multi-Antenna Signal Properties for Propagation over Terrestrial Clutter
Dmitry Chizhik (*Lucent Technologies, USA*);

11:00 A New Series of Amplitude Distribution of Linear Arrays
K. S. Sathivel (*Pondicherry Engineering College, India*);

11:20 Slot-Loaded Rectangular Microstrip Antenna
Kiran K. Usha, R. M. Vani, P. M. Hadalgi, S. N. Mulgi, P. V. Hunagund (*Gulbarga University, India*);

Session 4A6
Poster III

Thursday AM, October 16, 2003
Niihau

1 Polar Ice Sheet Propagation Model for Ground-Based Broadband VHF Synthetic Aperture Radar
John Drysdale Paden (*University of Kansas, USA*);

2 Design of GTEM Cells for *In Vitro* Biological Experiments
Giovanna Calò, Antonella D'Orazio, Marco De Sario, Vincenzo Petruzzelli, Francesco Prudenzano (*Politecnico di Bari, Italy*); *Nicola Diaferia, Cataldo Bonaventura* (*ITEL Telecomunicazioni, Italy*);

3 Constructing a Motor with Levitated Rotors Using Diamagnetic Borders
A. J. S. Oliveira, Manoel M. Ferreira Jr, C. B. M. Oliveira, A. C. Pereira (*Universidade Federal do Maranhão, Brazil*); *J. R. S. Oliveira* (*Centro Federal de Educação Tecnológica do Rio Grande do Norte, Brazil*);

4 Generator of Energy with Suspended Rotor
A. J. S. Oliveira, F. A. P. Soares, C. C. Costa, J. M. R. dos Santos (*Universidade Federal do Maranhão, Brazil*); *J. R. S. Oliveira* (*Centro Federal de Educação Tecnológica do Rio Grande do Norte, Brazil*);

5 Classical Equations and Solutions in Planar QED
Manoel M. Ferreira Jr, A. J. S. Oliveira (*Universidade Federal do Maranhão, Brazil*);

6 Transmission of Femtosecond Optical Pulses through Subwavelength Periodic Hole Arrays, FDTD Analysis
Rodney S. Allan, Geoff Anstis (*University of Technology, Sydney, Australia*);

7 A Modified Design of Photonic Bandgap Microstrip Circuits Using Curved Microstrip Lines
Jyy-Shin Ke, Hsiao-Chien Sun, Hao-Hui Chen, Chin-Chih Yeh (*Huafan University, Taiwan, R.O.C.*);

8 Definition of Linear Index for Transmission Lines Stability in Complex Networks
Alberto Berizzi, Alessandro Gandelli, Marco Merlo (*Politecnico di Milano, Italy*);

9 Electromagnetic Compatibility in DC and ULF Bands
Viacheslav Barsukov (*ABService, Ukraine*); *Fedir Dudkin* (*Institute of Space Research, Ukraine*);

10 Effective Performance Evaluation Method of LEDs Using Electrical Derivative Technique
Chan-Byoung Chae, Hyeon-Woo Lee (*Samsung Electronics Co., LTD, Korea*);

11 Fabrication Modified Dual-Mode Bandpass Filter on Al_2O_3 Substrate
Ying-Chung Chen (*National Sun Yat-Sen University, Taiwan*); *Cheng-Fu Yang* (*Chinese Air Force Academy, Taiwan*); *Tsung-Hsien Lee* (*National Sun Yat-Sen University, Taiwan*); *Mo Chung Lee* (*Chinese Air Force Academy, Taiwan*);

12 A Multi-Transmission Line Model to Simulate High-Field Magnetic Resonance Coils
Reinhold Ludwig, John Sullivan, Timothy Fisher, Gene Bogdanov (*Worcester Polytechnic Institute, USA*);

13 On the Design of a Lung RF Coil for Low Field Hyperpolarized Noble Gas MRI
Jianbing J. Chen, Tomasz M. Grzegorczyk, Jin Au Kong (*Massachusetts Institute of Technology, USA*); *Mitchell S. Albert* (*Harvard Medical School, USA*);

Session 4A7
Medical Applications

Thursday AM, October 16, 2003

Kohala/Kona

Organized by Joseph Pribetich

Chaired by Joseph Pribetich, Yoshio Nikawa

8:40 Microwave Applicators for "BPH" Thermotherapy
J. Vrba (*Czech Technical University in Prague, Czech Republic*); *M. Bolmsjö* (*Lund University Hospital, Sweden*); *R. Hlavac* (*Czech Technical University, Czech Rep.*); *L. Oppl* (*Czech Technical University in Prague, Czech Republic*);

9:00 Application of Microwaves and Millimeter Waves for Dental Diagnosis and Treatment
Yoshio Nikawa (*Kokushikan University, Japan*);

9:20 Improvement on Heating Pattern and Input Impedance of Coaxial-Slot Antenna for Thermal Therapies
Koichi Ito, Kazuyuki Saito, Keiko Miyata, Hiroyuki Yoshimura (*Chiba University, Japan*);

9:40 Simulations of Microwave Hyperthermia for Breast Cancer Recurrences in the Chest Wall
J. C. Kumaradas (*Los Alamos National Laboratory, USA*); *Michael D. Sherar* (*Princess Margaret Hospital, Canada*);

10:00 **Coffee Break**

10:20 Waveguide Applicators for Deep Local Treatment of Cancer
J. Vrba, J. Cvek, R. Chovanec, J. Herza, L. Oppl (*Czech Technical University in Prague, Czech Republic*); *J. Kvech, J. Kubes, M. Vesela* (*Institute of Radiation Oncology in Prague, Czech Republic*);

10:40 Study on Heating Uniformity of Medical Waste by Microwave Furnace
Naoki Okamoto, Yoshio Nikawa (*Kokushikan University, Japan*);

11:00 Multifrequency Microwave Radiometry for Thermal Monitoring and Control of Superficial Hyperthermia
Paul R. Stauffer, Daniel G. Neuman, Hans Olav Rolfsnes (*University of California, San Francisco, USA*); *Svein Jacobsen* (*University of Tromso, Norway*); *J. Lawson, D. D. Mawhinney, F. Sterzer* (*MMTC Inc., USA*);

11:20 Study of SAR Simulation on RF Heating in a Human Model for Hyperthermia Treatment
Tetsuyuki Michiyama, Yoshio Nikawa (*Kokushikan University, Japan*);

Session 4A8
SAR and RCS Calculation

Thursday AM, October 16, 2003

Oahu

Chaired by Michel Mandallena

8:00 Original Numerical Methods for the High Frequencies in Radar Cross Section Computations
David Goudin, Michel Mandallena, Katherine Mer-Nkonga, Bruno Stupfel (*CEA / CESTA, France*);

8:20 A New Method of Improving Matching Characteristic of Magnetic EM-Wave Absorber Utilizing Conductive Patterns and Conductive Buffer
Mitsuhiro Amano, Youji Kotsuka (*Tokai University, Japan*);

8:40 Simulation and Understanding of Bistatic SAR Images
Daniel André (*SAR and GMTI Capability Group, UK*);

9:00 InSAR Decorrelation 'Noise' as Signal: Estimating Snow Accumulation Rates in the Earth's Polar Ice Sheets from Correlation Observations
Howard Zebker (*Stanford University, USA*);

9:20 Invisibility Medium Reflectivity for Various Bands of Frequencies
K. S. Sathivel, R. Nakkeeran, G. Vaithyanathan (*Pondicherry Engineering College, India*);

9:40 Soil Moisture Content Extraction Using SAR
Bae-Ian Wu, Joe Pacheco, Tomasz M. Grzegorczyk, Jie Lu, Xudong Chen, Jin Au Kong (*Massachusetts Institute of Technology, USA*); *Yoshihisa Hara* (*Mitsubishi Electric Corporation, Japan*);

10:00 **Coffee Break**

10:20 Analysis of Circle Flight SAR Ocean Images
Eric A. Ericson (*Johns Hopkins University, USA*);

10:40 Evaluation of the Angular Spectrum of Scattered Radiation in Randomly Inhomogeneous Absorptive Layer
George V. Jandieri (*Georgian Technical University, Georgia*); *Vladimir Gavrilenko* (*Nizhny Novgorod State University, Russia*); *Vakhtang G. Jandieri* (*Kyushu University, Japan*);

11:00 Radar Cross Section of a Chaff Cloud: A Stereological Study
Satish Kashyap, A. Louie (*Defence R & D Canada, Canada*);

11:20 Backscattering Reduction Using Fractal Based Metallo-Dielectric Structure
Anupam R. Chandran (*Cochin University of Science and Technology, India*); *Thomaskutty Mathew* (*Mahatma Gandhi University, Regional Centre, India*); *C. K. Aanandan, P. Mohanan, K. Vasudevan* (*Cochin University of Science and Technology, India*);

Session 4P1
New Electrodynamics, Gravito-Electrodynamics, Gravitation, and EHD

Thursday PM, October 16, 2003

Kauai Ballroom

Organized by Hiroshi Kikuchi

Chaired by Hiroshi Kikuchi, Jiro Chiba

13:20 Stratification of the Ionosphere in Period of Earthquake Preparation by Low-Frequency Acoustic Waves
Nathan Blaunstein (*Ben-Gurion University of the Negev, Israel*);

13:40 On the Equivalent Circuit of Weber Bar
J. Chiba, M. Enomoto (*Tohoku Institute of Technology, Japan*); *Y. Nemoto* (*Tohoku University, Japan*);

14:00 On the Electrodynamics of Alfve'n Waves around a Compact Gravitating Object
U. A. Mofiz (*BRAC University, Bangladesh*);

14:20 Electrohydrodynamics in Particular Reference to Tornadic Thunderstorms
Hiroshi Kikuchi (*Institute for Environmental Electromagnetics, Japan*);

14:40 Does the Gravity on Coils of Peculiar Winding Decrease While Electric Currents Flow in the Coils?
Tsunehiro Obata, Akiko Ono (*Gunma National College of Technology, Japan*);

15:00 **Coffee Break**

15:20 Nonlinear Stability of a Gravitating Medium with Cosmological Constant
D. K. Callebaut, Geoffrey K. Karugila (*University of Antwerp, Belgium*); *Hiroshi Kikuchi* (*Institute for Environmental Electromagnetics, Japan*);

15:40 Electrohydrodynamics of Electric DC, AC, Pulsed Power Penetration into the Ground, Water, Biological Matter and Human Body: Theory, Field, Laboratory Experiment and Simulation
Yoji Nagai (*Shonan Institute of Technology, Japan*); *Hiroshi Kikuchi* (*Institute for Environmental Electromagnetics, Japan*);

16:00 Non-Relativistic Electromagnetic Scattering: "Reverse Engineering" Using the Lorentz Force Formulas
Dan Censor (*Ben-Gurion University of the Negev, Israel*);

16:20 Induced Currents on PEC Surface Uniformly Moving at Speed Near C/2 under the Illumination of EM Pulses — Numerical Simulation
Mingtsu Ho (*Wu Feng Institute of Technology, Taiwan*);

Session 4P2
Solid-State Devices and Materials Characterization

Thursday PM, October 16, 2003

Maui Ballroom

Chaired by S. Koshevaya, Biju kumar Sreedharan nair

13:40 Dielectric and Microwave Thermal Analysis of Carbons, Metal Oxides and Mixtures
S. B. Kumar, V. Quelais, E. A. Dawson, G. M. B. Parkes, P. A. Barnes, M. J. N. Sibley (*University of Huddersfield, UK*); *G. Bond* (*University of Central Lancashire, UK*);

14:00 A Study on the Measurement for Complex Permittivities by the Ellipsometry in Millimeter-Wave Band
Koji Tsuzukiyama (*Mitsui Chemicals, Inc., Japan*); *Taiji Sakai, Takaaki Yamazaki, Osamu Hashimoto* (*Aoyama Gakuin University, Japan*);

14:20 Effect of Composition, Temperature and Frequency on Initial Permeability (μ_i) of Li-Ni-Cd Mixed Ferrites
R. G. Kharabe (*G. I. Bagewadi College, India*); *R. B. Pujar* (*S. S. Arts College & T. P. Science Institute, India*); *B. K. Chougle* (*Shivaji University, India*);

14:40 Magnetic Properties and Microstructure of Li-Ni-Cd Mixed Ferrites
R. G. Kharabe (*G. I. Bagewadi College, India*); *R. B. Pujar* (*S. S. Arts College and T. P. Science Institute, India*); *B. K. Chougle* (*Shivaji University, India*);

15:00 **Coffee Break**

15:20 Modeling Susceptibility and Percolation in Magnetic Composites: Micromagnetics and Effective Medium Theory
Alexa Harter, Gregory Mohler, Rick Moore (*Georgia Institute of Technology, USA*);

15:40 Comparison of Volume and P-I-N Modulators in Millimeter and Sub Millimeter Ranges, and a Working Criterion for P-I-N Modulators
S. Koshevaya (*Autonomous University of State Morelos (UAEM), Mexico*); *V. Grimalsky* (*National Institute for Astrophysics, Optics, and Electronics (INAOE), Mexico*); *J. Sánchez-Mondragón* (*Autonomous University of State Morelos (UAEM), Mexico*); *I. Moroz* (*Kiev University, Ukraine*); *M. Tecpoyotl-Torres, J. Escobedo-Alatorre* (*Autonomous University of State Morelos (UAEM), Mexico*);

16:00 Design of BPF with Heterojunction LTCC Materials
Kwang-Yong Kim, Sang-No Lee, Jong-Gwan Yook (*Yonsei University, Korea*); *Jun-Chul Kim, Jong-Chul Park* (*Korea Electronics Technology Institute, Korea*);

Session 4P3a
Lasers, Optics, and Optical Imaging – Part I

Thursday PM, October 16, 2003

Kahuku

Chaired by Harrison E. Rowe

13:00 Second-Order Statistics of Multi-layer Dielectric Mirrors
Harrison E. Rowe (*Stevens Institute of Technology, USA*);

13:20 Quasi-Stationary Optical Solitons with Parabolic Law Nonlinearity
Anjan Biswas (*Tennessee State University, USA*);

13:40 Wide-band Full-Waveplate-Like Optical Fiber Device Fabrication, Measurement and Application
Hung-chia Huang (*Shanghai University, China*);

14:00 Multiple Quantum-Wells for Blue, Green, and Yellowish-Green Light Emissions
A. Sasaki, S. Shibakawa, Y. Kataoka (*Osaka Electro-Communication University, Japan*); *Y. Narukawa, T. Mukai* (*Nichia Corporation, Japan*);

14:20 Resonant Optical Transmission through Thin Metallic Films with and without Holes
Nicolas Bonod, Stephan Enoch (*Institute Fresnel - CNRS, France*); *Lifeng Li* (*Tsinghua University, China*); *Evgueni Popov, Michel Neviere* (*Institute Fresnel - CNRS, France*);

14:40 Enhanced Transmission through Periodic Array of Sub-Wavelength Holes on Top of a Dielectric Slab
Vitaliy Lomakin, Nan-Wei Chen, Eric Michielssen (*University of Illinois at Urbana-Champaign, USA*);

Session 4P3b
Lasers, Optics, and Optical Imaging – Part II

Thursday PM, October 16, 2003

Kahuku

Chaired by Bae-Ian Wu, Tomasz M. Grzegorczyk

15:20 Singular Optics with Partially Coherent Light
Sergey A. Ponomarenko (*University of Rochester, USA*); *G. V. Bogatyryova* (*National Academy of Science, Ukraine*); *C. V. Fel'de, P. V. Polyanskii* (*Chernovsti National University, Ukraine*); *M. S. Soskin* (*National Academy of Sciences, Ukraine*); *E. Wolf* (*University of Rochester, USA*);

15:40 Reflection-Type Time-Resolved Optical Tomographic Imaging
Huijuan Zhao (*National Institute of Advanced Industrial Science and Technology, Japan*); *Feng Gao* (*New Energy and Industrial Technology Development Organization, Japan*); *Yukari Tanikawa, Yukio Yamada* (*National Institute of Advanced Industrial Science and Technology, Japan*);

16:00 Dependence of the Photocurrent Profile in A-Si:H Tandem Structures on the Illumination Conditions
Alessandro Fantoni, Manuela Vieira (*Instituto Superior de Engenharia de Lisboa, Portugal*);

16:20 Optically Addressed Write-Read Semiconductor Sensor
Manuela Vieira (*Instituto Superior de Engenharia de Lisboa, Portugal*);

16:40 Building a Novel Radar Control System with an Optical Signal Processor
Dipnarayan Guha (*Agilent Technologies, India*);

17:00 The Photogrammetry and its in the Application of the Optoelectronic Guiding and Landing System of Helicopter
Dayong Zhu, Li Yi, Jing Zhang, Zhiqiang Liu (*University of Electronic Science and Department of Opto-Electronics Technology, China*);

Session 4P4
Numerical Methods in Electromagnetics

Thursday PM, October 16, 2003

Honolulu

Chaired by Ji Chen, Mikhail Shashkov

13:40 A Novel Numerical Technique for the Analysis and Design of MEMS Structures with Non-Uniform Membrane Motions
Michiko Kuroda, Noriyuki Miura, Rumi Takahashi (*Tokyo University of Technology, Japan*); *Manos M. Tentzeris* (*Georgia Institute of Technology, USA*);

14:00 Divergence Free Remap Algorithms on General Grids in Two Dimensions
Pavel Bochev (*Sandia National Laboratories, USA*); *Mikhail Shashkov* (*Los Alamos National Laboratory, USA*);

14:20 On the Hybrid FE/FDTD Algorithm for Numerical Solution of Maxwell's Equations in 2D
Neelakantam V. Venkatarayalu, Yeow Beng Gan (*National University of Singapore, Singapore*);

14:40 A Parameter Optimized ADI-FDTD Method
Ji Chen, Muhu Wang (*University of Houston, USA*);

15:00 **Coffee Break**

15:20 Analysis of Three-Dimensional Electromagnetic Problems Using a Combined Finite-Element and Method-of-Lines Approach
Sheng-Feng Yeh, Hao-Hui Chen (*Huafan University, Taiwan, R.O.C.*);

15:40 Grid Truncation in FDTD Formulations via Equivalence Theorem
Sami Barmada, Antonino Musolino, Marco Raugi, Rocco Rizzo (*University of Pisa, Italy*);

16:00 An Improved R-FDTD Algorithm for Modeling EM Problems with Thin Wires and Perfect Conductor
Yonggang Zhou (*Nanjing University of Aeronautics and Astronautics, China*); *Jinping Xu* (*Southeast University, China*); *Changqing Gu* (*Nanjing University of Aeronautics and Astronautics, China*);

16:20 Model of Prediction of Loss of Propagation Using Neural Networks in Urban Environment
R. A. Martins, A. G. d'Assunção, L. M. de Mendonça (*Universidade Federal do Rio Grande do Norte, Brazil*);

Session 4P5
Fields and Waves: Theory and Applications

Thursday PM, October 16, 2003

Waialua

Organized by Refet Ramiz

Chaired by Refet Ramiz, Maria S. Sarto

13:40 Horizontal and Vertical Diaphragm Effects in Rectangular Waveguide Junction Filled with Dispersive Materials
Refet Ramiz (*Yildiz Technical University, GSM System Test and Measurement Lab. (YildizCell), Turkey*);

14:00 Neutralising Radiation Caused by Geopathic and Electromagnetic Radiation for any Biological System
Friedrich J. Bauer (*Bio Protective Systems, Germany*); *Refet Ramiz* (*Yildiz Technical University, GSM System Test and Measurement Lab. (YildizCell), Turkey*);

14:20 Micro- and Nano-Layered Thin Films for EM Shielding at Radio Frequencies
Maria S. Sarto (*Unviersity of Rome, Italy*);

14:40 Identification of a Microwave Transistor Using Neural Performance Data Sheets
Filiz Güneş, Cemal Tepe (*Yildiz Technical University, Turkey*);

15:00 **Coffee Break**

15:20 Optimization of a Microwave Amplifier using "Nelder - Mead Simplex" Algorithm with Randomly Optimized Initial Values
Yavuz Cengiz (*Süleyman Demirel University, Turkey*); *Filiz Güneş* (*Yildiz Technical University, Turkey*);

15:40 Fast Converging Formulation of the Differential Theory for Periodic Array of Cylindrical Rods Made of Anisotropic Materials
Koki Watanabe (*Fukuoka Institute of Technology, Japan*);

16:00 Theory and Measurements of Defocused Impulse Radiating Antennas
J. Scott Tyo, C. Jerald Buchenauer (*University of New Mexico, USA*); *Everett G. Farr, Leland H. Bowen* (*Farr Research, Inc., USA*);

16:20 Wideband Neural Modeling of Wire Antennas: Feed-Forward Networks Versus Recurrent Ones
Zbynek Raida (*Brno University of Technology, Czechia*);

Session 4P7a
Biomedical Applications of Microwave Tomography and Spectroscopy

Thursday PM, October 16, 2003

Kohala/Kona

Organized by Serguei Y. Semenov

Chaired by Serguei Y. Semenov, Jean C. Bolomey

13:00 Applications of the Multiplicative Regularized Contrast Source Inversion Method for Biomedical Microwave Tomography
Aria Abubakar (*Schlumberger-Doll Research, USA*); *Peter M. Van den Berg* (*Delft University of Technology, The Netherlands*); *Serguei Y. Semenov* (*Carolinas Medical Center, USA*);

13:20 Noise Tolerance in the Image Reconstruction Algorithm for Microwave Tomography: A Comparison Between Two Algorithms
Andreas Danielsson, Mikael Persson (*Chalmers University of Technology, Sweden*);

13:40 Feasibility Study of Microwave Tomography for Imaging of Intact Mammals
Serguei Y. Semenov, Alexander E. Bulyshev, Vitaliy G. Posukh, Thomas Williams (*Carolinas Medical Center, USA*); *Yuri E. Sizov* (*Troitsk Institute of Innovative and Thermonuclear Research, Russia*); *Alexander E. Souvorov* (*National Center of Biological Information, USA*); *Pavel N. Repin* (*RRC Kurchatov's Institute, Russia*); *Boris A. Voinov* (*Scientific Research Institute of Experimental Physics, Russia*);

14:00 Microwave Imaging Techniques for Rapid Mobile Phone Dosimetric Assessment
Jean C. Bolomey (*Paris XI University, France*); *A. Joisel, O. Merckel, V. Monebhurrun* (*CNRS-Supélec, France*);

14:20 Microwave Tomography for Detection of Tissue Malignancies: Lung, Liver and Kidney Sites
Serguei Y. Semenov, Alexander E. Bulyshev, Vitaliy G. Posukh, Thomas Williams (*Carolinas Medical Center, USA*); *Yuri E. Sizov* (*Troitsk Institute of Innovative and Thermonuclear Research, Russia*); *Alexander E. Souvorov* (*National Center of Biological Information, USA*); *Pavel N. Repin* (*RRC Kurchatov's Institute, Russia*); *Boris A. Voinov* (*Scientific Research Institute of Experimental Physics, Russia*);

14:40 Three-Dimensional Microwave Tomography: Imaging in Cross-Polarized Fields
Alexander E. Bulyshev, Alexander E. Souvorov, Serguei Y. Semenov, Vitaliy G. Posukh, Yuri E. Sizov (*Carolinas Medical Center, USA*);

Session 4P8a
Electromagnetic Interaction on Rough Surfaces and by Particles: Phenomena and Applications

Thursday PM, October 16, 2003

Oahu

Organized by S. Mainguy

Chaired by S. Mainguy, Gerard Berginc

13:20 New Feature of Scattering from a Dielectric Film on a Reflecting Metal Part II
Zu-Han Gu (*Surface Optics Corporation, USA*);

13:40 Diffused Light Measurements Applied to Laser-Induced Damage to Optical Components
Michel Josse, Roger Courchinoux (*CEA / CESTA, France*);

14:00 Numerical Simulations of Electromagnetic Field Distribution in the Vicinity of Defects in Optical Components
Agnés Pujols, Muriel Sesques (*Centre d'Etudes Scientifiques et Techniques d'Aquitaine, France*); *Michel Mandallena* (*CEA / CESTA, France*);

14:20 Scattering by Randomly Rough Surfaces: Comparisons between Kirchhoff Approximation, Small-Perturbation Method, Small-Slope Approximation and Rayleigh-Fourier Method
Gérard Berginc (*Thalès Optronique, France*); *S. Mainguy* (*CEA / CESTA, France*);

14:40 Scattering by Randomly Rough Surfaces: Numerical Simulations and Experimental Validation
S. Mainguy, B. Pouligny (*CEA / CESTA, France*);

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.

Name: _____ Position: _____

Affiliation: _____ Email: _____

_____ Phone: _____

Address: _____ Fax: _____

_____ URL: _____

_____ Date: _____

A. For the next PIERS to be held 28–31, March, 2004 in Pisa, Italy

( ) 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 to be held on 28–31 August, 2004 in Nanjing, China

( ) 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.

C. For the next PIERS Call for Papers

( ) I suggest the following technical topic(s)

_____

be changed to

_____

D. 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
( ) 1997 PIERS in Hong Kong	( ) 1997 PIERS in Cambridge	( ) 1998 PIERS in Nantes
( ) 1999 PIERS in Taipei	( ) 2000 PIERS in Cambridge	( ) 2001 PIERS in Osaka
( ) 2002 PIERS in Cambridge	( ) 2003 PIERS in Singapore	( ) 2003 PIERS in Honolulu

E. I have the following comments about PIERS:

PIERS 2004

Progress in Electromagnetics Research Symposium
March 28 – March 31, 2004, Pisa, ITALY

FIRST CALL FOR PAPERS

SYMPOSIUM ORGANIZATION
PIERS Chairman: J.A. Kong, *Massachusetts Institute of Technology, USA*
PIERS 2004 General Chairman: M. Raugi, *University of Pisa, ITALY*
PIERS 2004 General Vice-Chairman: A. Musolino, *University of Pisa, ITALY*
PIERS 2004 Technical Program Committee Chairman: S. Barmada, *University of Pisa, ITALY*
PIERS 2004 International Advisory Committee: *Australia*: M. Bialkowski; *Canada*: Ke Wu; *Finland:* L. Kettunen; *France*: L. Pichon; *Germany*: R.H. Jansen, T. Weiland; *Belgium:* P. Dular; *Japan*: H. Ogura, H. Igarashi; *Korea*: J.W. Ra; *Russia*: S. Yuferev; *Switzerland*: F. Rachidi; *Spain*: R. Giannetti; *Ukraine*: A.I. Nosich; *USA*: A. Cangellaris, T. Hubing, N. Ida; M. Tentzeris,; *Brasil:* J. Bastos, J.R. Cardoso; *Austria:* A. Baghai-Wadji; *U.K.* D. Rodger; *The Netherlands:* I.E. Lager, *Italy*: A. Tellini

PIERS provides an international forum for reporting progress and recent advances in all aspects of electromagnetics. Spectra range from DC to RF, microwave, photonics, and beyond. The aim is to encourage the circulation of ideas among researchers in the different fields of applications. ***Invited speakers from university and industry research centers will discuss on advanced and commercially available techniques, and on the future needs in computational electromagnetics***. Sessions will be dedicated to favour the exchange of knowledge and experiences among low-frequency and high-frequency researchers.
Topics of interest include, but are not restricted to the following areas:

1. Theoretical electromagnetics
2. Time and frequency domain electromagnetics
3. Ultra-wideband, short-pulse electromagnetics
4. Non-linear electromagnetics
5. Interconnects and advances in MMIC
6. Fast iteration and large scale computation
7. Parallel computation
8. Asymptotic methods and high frequency techniques
9. Wavelet techniques and applications
10. Scattering and diffraction
11. Rough surface scattering
12. Inverse scattering problems
13. Wave scattering and imaging in random media
14. Electromagnetic interaction with natural media
15. Composite, complex and fractal media
16. Signal processing in remote sensing
17. SAR interferometry and polarimetric radar sensing
18. Radar for atmosphere and ionosphere
19. Remote sensing of the earth, and atmosphere
20. Electromagnetic precursors of earthquakes
21. Sub-Surface remote sensing, imaging and GPR
22. Antenna theory and measurements
23. Microstrip and printed antennas
24. Waveguide structures and discontinuities
25. Microwave and millimeter wave circuits
26. Neural Network applications and techniques
27. Microwave and optical wave interactions
28. Photonics, nonlinear optics and devices
29. Superconductive electronics
30. EMC (Electromagnetic Compatibility)
31. Medical applications and biological effects
32. Software and CAD for educational electromagnetics
33. Low frequency techniques
34. NDT (NonDestructiveTesting)
35. Electrical machines and drives
36. Left-handed media
37. Optimization and design techniques
38. Material modelling
39. Measurement techniques
40. Others

ONE-PAGE ABSTRACT MUST BE RECEIVED BY *October 20, 2003*

Papers should be posted via Internet, together with **the Paper and Author Information** form directly on the PIERS Pisa web site **http://www.dsea.unipi.it/piers04**. Only Microsoft Word or compatible .doc/.rtf, and .pdf files will be accepted. If in doubt please contact the Technical Program Chairman.
Authors are invited to submit a one-page abstract of no less than 250 words in English. The abstract should explain clearly the content and relevance of the proposed contribution, require no copyright transfer agreement, and contain no acknowledgements. The following information: (1) Topic in which the paper should be placed or the name of the session organizer, (2) Title of the paper, (3) Name of the author(s), (4) Affiliation(s), (5) Complete mailing address, (6) Telephone/fax number, and (7) E-mail address, should be posted in the Form available for paper submission on the PIERS Pisa 2004 web site.

Abstract guidelines:
Abstracts are typed on one single-spaced 8.5 x 11 inch or A4 white paper. Use 12-point Times New Roman or an equivalent Serif font, set all margins to 25mm (1 inch), set paragraph indentation to 3.5mm (0.14 inch). Type title in

bold, centered at the top. Below title, centered name of the author(s) with affiliation and complete post-mailing address and E-mail address. To ensure legibility and uniformity of the Symposium Proceedings please carefully follow the instructions on papers preparation and use the Template files posted on the Conference web site.

ACCEPTANCE NOTIFICATION BY *November 15, 2003*
PRESENTING AUTHOR MUST PRE-REGISTER BY *December 15, 2003*
ADVANCE PROGRAM WILL BE SENT BY *January 30, 2004*

Titles of accepted papers will be published in the PIERS Pisa 2004 website upon completion of review. Acceptance notification and pre-registration material will be mailed to corresponding author of the accepted paper by November 15, 2003.
Publication in the Proceedings is not guaranteed if pre-registration is not completed before December 15, 2003.

Extended Papers
Authors of accepted abstract can (but are not requested to) submit an extended paper (up to 4 A4 pages with the same format described in the Abstract guidelines) before January 15, 2004. These papers will be published in a separate Proceeding Volume.
The extended papers will not be printed if pre-registration is not completed by the presenting author before December 15, 2003.
Extended Papers should be sent via Internet together with the Paper and Author Information form directly on the PIERS Pisa web site **http://www.dsea.unipi.it/piers04.**

Travel, lodging, registration and local information will be mailed with the Advance Program by January 30, 2004.

Registration fee (non-refundable) for participants:

Participant	Before and on December 15, 2003	After December 15, 2003
Regular	400 Euro	450 Euro
Student	250 Euro	300 Euro

The fee includes the Symposium program, the two proceeding volumes, attendance at all technical sessions, workshops, refreshments and lunches.
Each presenting author is limited to presenting no more than three papers per registration and must pre-register before the conference dates.

Technical and General Enquiries should be directed to:

Technical (Abstracts, Extended Papers, Sessions)
PIERS 2004 Secretariat, Dip. Sistemi Elettrici, Via Diotisalvi 2, 56126 Pisa. Fax: +39050565333, Tel 39050565312
email: Piers@dsea.unipi.it

General (Travel, Lodging, Local Informations)
L&B STUDIO, Via R. Fucini, 49, 56127 Pisa.
Phone: +39-050-970166 – Fax +39-050-540709
e-mail chiara@LBstudio.it

Or visit the PIERS Pisa 2004 Home Page **http://www.dsea.unipi.it/piers04**

ABOUT PISA

Famed for its leaning tower, Pisa was once a great Mediterranean power and much of its contemporary charm rests upon its historical legacies. It is a town divided by the river Arno and its distinctive Romanesque architecture, medieval squares and statues all indicate Pisa's past grandeur. Today much of its commercial loyalties is devoted to tourism. Pisa'a food varies from the exotic to the ordinary. You can try tripe, brains, eels, squid, and 'teice-bolied' soup. There are lots of restaurants, cafes and unpretentious trattorias. The nightlife is relaxed with plenty of places to drink and free classical concerts are often available. The most fashionable shopping area centres upon the arcaded Borgo Largo and Borgo Stretto. However, busy streets and twisting alleys also surround the university and the lively, colourful market. Pisa's focal point is the Campo dei Miracoli, where the tower stands alongside the Baptistery and the Duomo. A splendid architectural contrast is provided by Santa Maria della Spina, one of the very few triumphs of Italian gothic. Pisa also has several good museums, with the Museo di San Michele boasting the best of Pisan art from the Middle Ages and Renaissance. The conference dates are typical spring times where Pisa climate is warm with average temperature of 18°C (65°F). Other attractions include easy access and one day excursions to the surrounding Tuscan countryside and coastline as famous Florence and Siena. For trips farther afield Pisa's Galileo Galileo airport is Tuscany's main airport and trains run from Pisa to Venice, Rome and other cities. Local buses are reasonable and long-distance services are available.

PIERS 2004

Progress in Electromagnetics Research Symposium

August 28-31, 2004 **Nanjing, CHINA**

FIRST CALL FOR PAPERS

The Progress In Electromagnetics Research Symposium (PIERS 2004) will be held on August 28-31, 2004 in Nanjing, Jiangsu, CHINA.

SYMPOSIUM ORGANIZATION

PIERS Chairman: J.A. Kong, *Massachusetts Institute of Technology, USA*
PIERS 2004 General Chairman: W.X. Zhang, *Southeast University, CHINA*
PIERS 2004 Technical Program Committee Chairmen: W. Hong, *Southeast University, CHINA*
PIERS 2004 Organizing Committee Chairmen: J.P. Xu, *Southeast University, CHINA*
PIERS 2004 International Advisory Committee: *Australia*: M.E. Bialkowski; *Canada*: Ke Wu; *Finland:* I.V. Lindell; *France*: A. Priou; *Germany*: R.H. Jansen; *Hong Kong (China SAR)*: L. Tsang; *Japan*: H. Ogura; *Korea*: J.W. Ra; *Russia*: S.A. Tretyakov; *Singapore*: L.W. Li; *Spain*: M. Salazar-Palma; *Ukraine*: A.I. Nosich; *USA*: W.C. Chew, T.K. Sarkar,

PIERS provides an international forum for reporting progress and recent advances in all aspects of the electromagnetics. Spectra range from statics to RF, microwave, photonics, and beyond. Topics of interest include, but are not restricted to the following areas:

1. Theoretical electromagnetics
2. Time-domain electromagnetics
3. Ultra-wideband, short-pulse electromagnetics
4. Non-linear electromagnetics
5. Computational electromagnetics
6. Fast iteration and large scale computation
7. Parallel computation
8. Asymptotic methods and high frequency techniques
9. Wavelet and Neural network techniques
10. Scattering and diffraction
11. Rough surface scattering
12. Inverse scattering
13. Wave scattering and imaging in random media
14. Electromagnetic interaction with natural media
15. Composite, complex and fractal media
16. Signal processing in remote sensing
17. SAR interferometry and polarimetric radar sensing
18. Radar for atmosphere and ionosphere
19. Remote sensing of the earth, and atmosphere
20. Electromagnetic precursors of earthquakes
21. Propagation at radio communications
22. Antenna theory and measurements
23. Microstrip and printed antennas
24. Waveguide structures and discontinuities
25. Microwave and millimeter wave circuits
26. Advances in MMIC
27. Microwave and optical wave interactions
28. Photonics, nonlinear optics and devices
29. Superconductive electronics
30. Electromagnetic compatibility
31. Medical applications and biological effects
32. Others

ONE-PAGE ABSTRACT MUST BE RECEIVED BY JAN 15, 2004

Authors are invited to submit a one-page abstract of no less than 250 words in English. No full-length paper is required. The abstract should explain clearly the content and relevance of the proposed contribution, require no copyright transfer agreement, and contain no acknowledgements. On another one-page letter explaining the following information: (1) Topic in which the paper should be placed or the name of the session organizer, (2) Title of the paper, (3) Name of the author(s), (4) Affiliation(s), (5) Complete mailing address, (6) Telephone/fax number, and (7) E-mail address of each author. Please indicate the corresponding author and the presenting author.

Abstract and explanation letter for PIERS 2004 should be submitted via e-mail by attachments of two separated files. Authors are urged to use ***.doc** as the file format. Please send all abstracts (do not send via facsimile or post-mail) to the **PIERS 2004 Secretariat** (see overleaf). The abstract deadline is **Jan. 15, 2004.** The acceptance notification will be delivered on **Feb. 28, 2004.**

Abstract guidelines:
Abstracts are typed on one single-spaced 8.5 x 11 inch or A4 white paper. Use 12-point Times New Roman or an equivalent Serif font, set all margins to 25mm (1 inch), set paragraph indentation to 3.5mm (0.14 inch). Type title in bold, centered at the top. Below title, centered name of the author(s) with affiliation and complete post-mailing address and E-mail address.

ACCEPTANCE NOTIFICATION BY FEBRUARY 28, 2004
PRESENTING AUTHOR MUST PRE-REGISTER BY MAY 20, 2004
ADVANCE PROGRAM WILL BE SENT BY JUNE 30, 2004

Titles of accepted papers will be published in the PIERS 2004 website (http://radio.seu.edu.cn/piers2004) upon completion of review. Acceptance notification and pre-registration material will be mailed to corresponding author of the accepted paper by February 28, 2004. Each presenting author is required to pre-register by May 20, 2004.

Travel, lodging, registration and local information will be mailed with the Advance Program by June 10, 2004.

Registration fee (non-refundable) for participants:

Participant	Before and on May 20, 2004	After May 20, 2004
Regular *	US$315	US$360
Student	US$160	US$200

* The fee includes the Symposium program and proceedings, attendance at all technical sessions, refreshments, buffet lunches and the opening reception, but excluding workshop and/or tutorial. Each presenting author is limited to presenting no more than three papers per registration.

Abstract(s) & Enquires should be directed to:

Technical Program Enquires

Prof. Wei Hong
State Key Lab. of Millimeter Waves
Southeast University
2, Si-Pai-Lou
Nanjing, 210096, China
Tel: (86) 25 3793275
Fax (86) 25 3792096
Email: weihong@seu.edu.cn

Abstract(s) and General Enquiries

PIERS 2004 Secretariat
Southeast University
2, Si-Pai-Lou,
Nanjing, 210096, China
Tel: (86) 25 3793276
Fax: (86) 25 3792096
Email: piers2004@seu.edu.cn

ABOUT NANJING

Nanjing is located at 32 03' north latitude and 118 47' east longitude, to the south of Beijing over 1,100 km and to the west of Shanghai over 300 km. It has a history of over 2,400 years as a city, and had been the capital in China for ten dynasties. Recently, Nanjing is the capital of Jiangsu Province, a center of electronic industrials in China. It is a famous green city covered by trees and surrounded by a longest city-wall in the world with 33.4 km circumference. Many scenic spots and historical relics are distributed inside and outside the city-wall within one-hour bus distance, which attract several million tourists each year. In the late August, the average temperature is about 25°C (77°F), and the relative humidity is around 80%. It is always clear to start a nice season of gold autumn. Transportation is comprehensive, safe and inexpensive in Nanjing. The domestic airlines extend to 45 cities of China including Beijing, Shanghai, Hong Kong and Marco; the international airlines linked Nagoya, Seoul, Kuala Lumpur, and Bangkok, etc. The railway and highway also connect Nanjing with Shanghai and the rest part of mainland of China. Taxis are easily flagged from taxi stands or along the streets. The social visit program at Nanjing and satellite cities are designed for accompanies. Besides, several routines of different Post-Symposium Tour in China will be recommended and arranged.

ROOM	MONDAY AM 8:00	MONDAY PM 13:00	TUESDAY AM 8:00	TUESDAY PM 13:00
KAUAI	Negative Refraction and Related Phenomena in Electromagnetic Metamaterials I	Negative Refraction and Related Phenomena in Electromagnetic Metamaterials II	Applications Using Left-Handed Structures / Meta-Materials for Wireless Comm.	Analysis and Measurements of Left-Handed Structures
MAUI	EBG/PBG Structures – I	EBG/PBG Structures – II	Numerical Modeling of Photonic Crystal Structures	Surface Plasmon Photonics
KAHUKU	Applications of Radar in Subsurface and Subcanopy Characterization	Sub-Surface Imaging by Means of Inverse Scat. Techniques / Subsurface Imaging and GPR	Three-Dimensional Subsurface Electromagnetic Imaging and Inversion	Modeling and Analysis Relating to the Subsurface
HONOLULU	Wavelet / Multiwavelet Applications in Electromagnetics	Integral-Equation Methods	Novel Mathematical Methods in Electromagnetics I	Novel Mathematical Methods in Electromagnetics II
WAIALUA	Modeling and Design of High Power Microwave Applicators	Quantum Effects and Quantum Computing	Antenna Applications	Antenna Theory
NIIHAU	Theory of Guided Waves	EM Wave Theory I / EM Wave Theory II	Surface Plasmon Resonances, Random Lasing, and Near-Field Optics	Generators, Motors, and Power Devices
KOHALA / KONA	Transmission Lines and Filters	Wireless Communication	Microwave, Mm-wave and Sub Mm-wave Devices	Microwave Devices / Propagation for New Gen. of Wireless Networks
OAHU	Rough Surface Scattering / Recent Advances in Reflection and Propagation Problems	Scattering by Wedges	Ocean and Land Remote Sensing	Progress in Inverse Scattering Optimization Strategies

ROOM	WEDNESDAY AM 8:00		WEDNESDAY PM 13:00		THURSDAY AM 8:00		THURSDAY PM 13:00	
KAUAI	Workshop on Left-Handed Metamaterials I		Workshop on Left-Handed Metamaterials II		Novel Left-Handed Structures		New Electrodynamics, Gravito-Electrodynamics, Gravitation, and EHD	
MAUI	Periodic Structures for Space Application		Analysis of Photonic Bandgap Structures		Applications Using Photonic Bandgap Structures		Solid-State Devices and Materials Characterization	
KAHUKU	Microelectronic Packaging		Ultra Short Light Pulse	Scattering of Light	Radar and Ionospheric Propagation		Laser, Optics, and Optical Imaging – Part I	Laser, Optics, and Optical Imaging – Part II
HONOLULU	Comp.and Analytical Wave EM: Photonics	Comp. and Analytical Wave EM: Microw. and Elect.	Advances in Computational EM		Numerical Techniques for Electromagnetics		Numerical Methods in EM	
WAIALUA	Antenna Technology and Arrays		Flat Reflector and Reflectarray Antennas		Antenna Design		Fields and Waves: Theory and Applications	
NIIHAU	POSTER I		POSTER II		POSTER III			
KOHALA / KONA	Wireless Communication Systems: Theory and Applications		Novel Wave Effects on Int. Circuit TL and Interconnects	Electromagnetic Compatibility	Medical Applications		Biomed. Apps. of Microwave Tomography & Spectroscopy	
OAHU	Electromagnetic Waves in Random and Complex Media		Advances in Scattering of EM Waves		SAR and RCS Calculation		EM Interaction on Rough Surfaces and by Particles	