

Applied Computational Electromagnetics Society

Publications update

With the conference about upon us, the following pages give an outline of the veritable feast of computational electromagnetics in Niagara Falls. The contents of the most recent couple of issues of the Journal are presented: remember, you can access the papers through the ACES website.

ACES Conference, Niagara Falls March 30 – April 4 2008

This section gives an outline of what to expect in the technical sessions at the ACES conference.

More information can be found at <http://aces.ee.olemiss.edu>

ACES 2008 Short Courses

The FDTD Technique for EM Applications -
[Atef Elsherbeni](#)

Advanced FDTD Methodologies –
[James B. Cole](#)

Transmission-Line Metamaterials and Their Applications -
[George Eleftheriades](#)

Progress in Applied Electromagnetics: Theory and Numerical Implementation –
[Geyi Wen](#)

Advanced Strategies for Solving Problems with FDTD –
[James B. Cole](#)

ACA, Adaptive Cross Approximation -
[John Shaeffer](#)

Printed RF Electronics, RFIDs and Wireless Sensors: State and Challenges -
[Manos Tentzeris](#)

ACES 2008 Invited Plenary Talks

"Smart Antennas and their Impact on Network and Communication Systems Performance" -
[Constantine A. Balanis](#),

"Antennas for Wireless Communications: Recent advances using Dielectric Resonators"
[Yahia Antar](#),

"3D Anisotropic Periodic Media: from Concepts to Printed Antenna Realizations"
[John L. Volakis](#) ,

"Negative-Refractive Metamaterials and their Applications",
[George V. Eleftheriades](#),

"Microwave Antennas for Medical Applications"
[Koichi Ito](#)

"Industrial Trend and Design Challenges in Wireless Handheld Development"
[Nagula Sangary](#),

ACES 2008 Technical Program

PLENARY SESSION

"Smart Antennas and their Impact on Network and Communication Systems Performance"
[Constantine A. Balanis](#)

PLENARY SESSION

"Antennas for Wireless Communications: Recent advances using Dielectric Resonators"
[Yahia Antar](#)

STUDENT PAPER COMPETITION

Session Chairs:

[Mohamed Bakr and Amir Zaghloul](#)

"Modeling of Volumetric Negative-Refractive-Index Media Using Multiconductor Transmission-Line Analysis"

[Scott Rudolph and Anthony Grbic](#)

"Numerical Models of the Volume Response Function of Conductance Catheters: the Effect of Multiple Unused Electrodes"

[John E. Porterfield and John A. Pearce](#)

"Comparison of the Distorted Born Iterative and Multiplicative-Regularized Contrast Source Inversion methods: the 2D TM case"

[Colin Gilmore, Puyan Mojabi, and Joe LoVetri](#)

"Modeling of Vertical Displacement CMOS-MEMS Capacitive Sensors"

[Greg McFeetors and Michal Okoniewski](#)

"Breast Skin Effect on Scattered Electromagnetic Fields"

[Douglas A. Woten, Shruti Pandalraju, and Magda El-Shenawee](#)

"Computation of the Impulse Response and Coding Gain of a Digital Interconnection Bus"

[Hristomir Yordanov, Michel T. Ivrlac, Amine Mezghani, Josef A. Nossek, and Peter Russer](#)

"An hp-Adaptive Discontinuous Galerkin Method in Time Domain Applied to the Simulation of Highly Localized Current Sources"
[Sascha Schnepf, Erion Gjonaj, and Thomas Weiland](#)

"Application of the Radial Point Interpolation Method as Meshless Time-Domain Technique in Electromagnetics"

[T. Kaufmann, C. Fumeaux, and R. Vahldieck](#)

"A Method for Introducing Nonuniform Grids into the FDTD Solution of the Transmission-Line Equations Based on the Renormalization of the Per-Unit-Length Parameters"

[Roberto B. Armenta and Costas D. Sarris](#)

"Improved Forward Backward Method Applied to 2D Scattering Problems"

[Marie Mullen, Conor Brennan, and Turlough Downes](#)

MICROWAVE IMAGING AND INVERSE PROBLEMS

Session Organizer:

[Magda El-Shenawee](#)

Session Chair:

[Magda El-Shenawee](#)

"Modelling 3D mm-Wave Scattering from Human Body Under Gaussian Beam Illumination with a 2.5D VIE Solver"

[Sara Van den Bulcke and A. Franchois](#)

“Photogrammetry-based Surface Reconstruction for Improving Microwave Breast Tumor Detection”

[Aastha Trehan, Reza K. Amineh, Mihail S. Georgiev, and Natalia K. Nikolova](#)

“Microwave Imaging Exploiting AdjointBased Surrogate Models”

[Mohamed H. Bakr, Peipei Zhao, and Natalia K. Nikolova](#)

“Breast Skin Effect on Scattered Electromagnetic Fields”

[Douglas A. Woten, Shruti Pandalraju, and Magda El-Shenawee](#)

“Mathematical Modeling of Breast Lesion Growth”

[Ahmed Hassan and Magda El-Shenawee](#)

“Impact of an Antenna Scan Pattern on Surface Estimation for Radar-Based Breast Cancer Detection”

[Trevor C. Williams, Jeff M. Sill, and Elise C. Fear](#)

“Breast Shape Reconstruction using Microwave Techniques and the Level Set Method”

[Mohammad Reza Hajihashemi and Magda El-Shenawee](#)

“A Swarm-based Multi-Scaling Inverse Strategy for Three-Dimensional Microwave Imaging”

[Andrea Massa, Massimo Donelli, Davide Franceschini, Manuel Benedetti, and Renzo Azaro](#)

“Towards the Synthesis of Plasmonic Nanostructures by Means of Stochastic Optimization”

[Demetrio Macias, Alexandre Vial, Dominique Barchiesi, Gilles Lerondel, Marianne Derouard, and Jerome Hazart](#)

“Hybrid Binary-Real Genetic Algorithms for Microwave Image Reconstruction”

[A. Ashtari, S. Noghianian, A. Sabouni, and G. Thomas](#)

“Comparison of the Distorted Born Iterative and Multiplicative-Regularized Contrast Source Inversion Methods: the 2D TM case”

[Colin Gilmore, Puyan Mojabi, and Joe LoVetri](#)

“Water Content and Tissue Composition Effects on Microwave Tomography Results”

[Abas Sabouni, Sima Noghianian, and Stephen Pistorius](#)

“Data derived generalized SEA applied to MPV TD data”

[Fridon Shubitidze](#)

ANTENNA MODELING AND SMALL ANTENNAS

Session Organizers:

[Qinjiang Rao and Dong Wang](#)

Session Chairs:

[Qinjiang Rao and Dong Wang](#)

“Wideband Printed CPW-fed Binomial Curved Slot Antennas”

[Xian-Ling Liang and Tayeb A. Denidni](#)

“User’s Hand Effects on Built-in L-shaped Folded Monopole Antenna for Mobile Handsets”

[Yongho Kim, Toshiteru Hayashi, Yoshio Koyanagi, and Hisashi Morishita](#)

“Realization of a compact Patch Antenna over an Artificial Magneto-Dielectric Substrate”

[W. Abdouni, A-C Tarot, A. Sharaiha](#)

“A Design Method for Pattern/Polarization Diversity Antenna”

[George Shaker, Gholamreza Rafi, Safieddin Safavi-Naeini, and Nagula Sangary](#)

“A New UWB Microstrip-Fed Planar Elliptical Patch Antenna for Wireless Communications”

[Abdallah A. Alshehri and A. R. Sebak](#)

“Q-factor Investigation of Antennas over Magneto-Dielectric Substrates”

[Sylvain Collardey, Ala Sharaiha, and Kouroch Mahdjoubi](#)

“Investigation of Signal Integrity in On-Chip Antennas”

[K asra Payandehjoo and Ramesh Abhari](#)

“A Multiple Folded Strip Antenna for Handset Devices”

[Qinjiang Rao, Wen Geyi, and Dong Wang](#)

“The Advantages of BICGStab(l) Algorithm in the Design of Implantable Antennas”

[K. B. Grantham and E. Topsakal](#)

BOUNDARY ELEMENT METHOD AND ALLIED TOPICS IN COMPUTATIONAL ELECTROMAGNETICS

Session Organizer:

[Alireza Baghai-Wadji](#)

Session Chair:

[Alireza Baghai-Wadji](#)

“Approximating the Scattering Coefficients for a Non-Rayleigh Obstacle by Boundary Defect Minimization”

[Giovanni F. Crosta](#)

“A Parallel CBFM-MLFMA Implementation for the Analysis of Complex Problems”

[Eliseo García, Carlos Delgado, Iván González, and Felipe Cátedra](#)

“An inherently Well-Conditioned Integral Equation to Solve the Scattering Problems by Partially Coated Objects”

[Florence Millot and Sebastien Pernet](#)

“Improved Forward Backward Method Applied to 2D Scattering Problems”

[Marie Mullen, Conor Brennan, and Turlough Downes](#)

COMPUTATIONAL ELECTROMAGNETICS FOR NONDESTRUCTIVE EVALUATION AND MATERIALS CHARACTERIZATION

Session Organizers:

[Jeremy Knopp and Michael J. Havrilla](#)

Session Chairs:

[Jeremy Knopp and Michael J. Havrilla](#)

“Characteristics of a Current Wire Near a Conductor Surface”

[Farzad Tavakkol Hamedani](#)

“The Joy of Computing with Volume-Integrals”
Harold A. Sabbagh, R. Kim Murphy, and Elias H. Sabbagh

“Fast Multipole Algorithm for the Evaluation of Magnetostatic Fields in 3D Ferromagnetic Samples”

Ben Van de Wiele, Femke Olyslager, and Luc Dupre

“Model based Inversion Technique of GMR signals using Element-Free Galerkin Method”

Xin Liu, Yiming Deng, Zhiwei Zeng, Lalita Udpa, and Jeremy S. Knopp

“Finite Formulation for Modeling Complex Half-Space Problems”

Maryam Heshmatzadeh and Greg E. Bridge

“Numerical Simulation of the 3-D Temperature Distribution”

C Meng, J. T. Tang, J. P. Cheng, Q. Sh Xia, and Y. N. Liu

FINITE-VOLUME AND DISCONTINUOUS GALERKIN TIME-DOMAIN TECHNIQUES

Session Organizers:

Joe LoVetri and Christophe Fumeaux

Session Chairs: J

Joe LoVetri and Christophe Fumeaux

“Introduction of Composite Material and Thin Wire Formalisms in a Discontinuous Galerkin Time Domain Method” - **. Volpert, X. Ferrieres, B. Pecqueux, and G. Cohen T**

“Efficient Time Integration Strategies for High Order Discontinuous Galerkin Time Domain Methods” - **Adrien Catella, Victorita Dolean, Loula Fezoui, and Stephane Lanteri**

“An hp-Adaptive Discontinuous Galerkin Method in Time Domain Applied to the Simulation of Highly Localized Current Sources” - **Sascha Schnepf, Erion Gjonaj, and Thomas Weiland**

“The Complex Frequency-Shifted PML Discontinuous Galerkin Time-Domain Method on Unstructured Meshes” - **Harald Songoro and Zoltan Cendes**

“FVTD Thin-Wire Modelling of a Microwave Tomography System” - **Dmitry Firsov, Cam Kaye, and Joe LoVetri**

“Spherical Domain Truncation for the FVTD Method” - **C. Fumeaux, D. Baumann, K. Sankaran, T. Kaufmann, R. Vahldieck, and E.-P. Li**

OPTIMIZATION TECHNIQUES FOR ELECTROMAGNETIC APPLICATIONS

Session Organizer:

Ozlem Kilic

Session Chairs:

Ozlem Kilic and Randy Haupt

“Optimized Aperiodic Concentric Ring Arrays” - **Randy L. Haupt**

“FEKO Optimization Capabilities: Simplex, Particle Swarm, Genetic Algorithm” - **Marlize Schoeman, Ulrich Jakobus, and Brian Woods**

“Comparison of Nature Based Optimization Methods for Multi-beam Satellite Antennas” - **Ozlem Kilic**

“Nature-Inspired Optimization of Metamaterials” - **Do-Hoon Kwon, Zikri Bayraktar, Jeremy A. Bossard, Douglas H. Werner, and Pingjuan L. Werner**

“Direction Finding Applications in Numerical Electromagnetic Optimization” - **Keith A. Lysiak and Jason Polendo**

“Design of an Ultra-Wideband Antenna Using Taguchi’s Optimization Method” - **Wei-Chung Weng, Fan Yang, and Atef Z. Elsherbeni**

“A Particle Swam Optimization Algorithm with Hybridized Real and Binary Parameters” - **Nanbo Jin and Yahya Rahmat-Samii**

PLENARY SESSION

3D Anisotropic Periodic Media: from Concepts to Printed Antenna Realizations" - **John L. Volakis**

PLENARY SESSION

"Negative-Refractive Metamaterials and their Applications"

George V. Eleftheriades

ELECTROMAGNETIC MODELING USING FEKO – I

Session Organizer:

C. J. Reddy

Session Chairs:

C. J. Reddy and Ulrich Jakobus

“Space Mapping Optimization of Microwave Structures with FEKO”

lawomir Koziel and John W. Bandler

“The Application of FEKO Software to Ground Electronic Warfare Scenarios”

Jason P. Dauby

“Design and Analysis of a Waveguide Modal-Spectrometer”

Wolfgang K. J. Mahler and Thomas F. Eibert

“New FEKO Modeling Capabilities: Waveguide Ports with Dielectrics, Fast MLFMM based Near-Field Calculations, Integrated Network Modeling, and Dielectric GO”

Ulrich Jakobus, Marianne Bingle, Marlize Schoeman, Johann J. van Tonder, and Frank Illenseer

“Comparison of Three Major MOM Codes for a Large Wire-Grid Ship Model”

Keith A. Lysiak

“Low Sidelobe Polarization Tapers for Planar Arrays”

Daniel W. Aten and Randy L. Haupt

“Aircraft Antenna Modeling, Analysis and Testing Ground Plane Effects and Considerations”

David W. Estlick

“Uniform Circular Array Active Element Radiation Patterns, FEKO Predictions Versus Measurements”

Craig Birtcher and Constantine A. Balanis

“Patch Antenna Modeling Issues Using Commercial Software”

William O. Coburn, Steven Weiss, and Canh Ly

“A Study of Large Cylindrical Arrays of UHF Patch Dipole Antenna Elements”

James D. Krieger, Alan J. Fen

“VHF Antenna Modeling for Rocket Application”

César De La Jara

“Simulations of a Shaped Dielectric Lens Antenna by FEKO”

Yosuke Tajima and Yoshihide Yamada

“Numerical Radar Cross Section Simulation and Analysis of Complex Targets in FEKO”

Ryan C. Solomon, Hank Leong and Yahia M. Antar

RECENT DEVELOPMENTS AND APPLICATIONS WITH TIME-DOMAIN MODELING TECHNIQUES

Session Organizers:

Zhizhang Chen and Michel Ney

Session Chairs:

Zhizhang Chen and Michel Ney

“A Method for Introducing Nonuniform Grids into the FDTD Solution of the Transmission-Line Equations Based on the Renormalization of the Per-Unit-Length Parameters” - **Roberto B. Armenta and Costas D. Sarris**

“Development of the Unconditionally Stable Error Reduced LOD FDTD Method” - **Iftikhar Ahmed, Erping Li, and Zhizhang Chen**

“Statistical Model of Induced Ground Voltage Using the TLM Method” - **Leonardo R. A. X. de Menezes, João Batista J. Pereira, and Geovany A. Borges**

“FDTD Full-Maxwell’s Equations Modeling from Near-DC to Light” - **Jamesina J. Simpson**

“The Numerical Thickness of the Wire Medium Slabs in the Spatially Dispersive Finite Difference Time-Domain Simulations” - **Yan Zhao, Pavel Belov, and Yang Hao**

“A Comprehensive Study of SS-TLM Numerical Dispersion – Comparison with ADI-FDTD” - **Sandrick Le Maguer, Jeremy Lanoë, and Michel M. Ney**

“Application of the Radial Point Interpolation Method as Meshless Time-Domain Technique in Electromagnetics” - **T. Kaufmann, C. Fumeaux, and R. Vahl 1**

“Comparison of Measured and Predicted Electromagnetic Propagation in Arrays of Sub-Wavelength Holes in Metal Films” - **N. Cinosi, S.P. Walker, M. J. B**

“Archimedean Spiral Antenna Assessment for GPR: Comparison of Simulated and Measured Results” - **Naomi R. Schwartz and Amir I. Zaghloul**

“Adaptive Mixed-Order FDTD Techniques on a Non-uniform Mesh” - **Profy Fernandes and Zhizhang (David) Chen**

“Stochastic electromagnetic modeling with uncertain dielectric properties using FDTD” - **Man-Fai Wong, Jessica Carette, Abdelhamid Hadjem, and Joe Wiart**

“Coalescing Tetrahedral TLM cells into Higher Order Elements for Improved Efficiency” - **P. Sewell, T. M. Benson, C. Christopoulos, D. W. P. Thomas, A. Vukovic, and J. G. Wykes**

INVERSE SCATTERING IN MEDICINE AND BIOLOGY - STATE OF THE ART, RECENT ADVANCES AND FUTURE TRENDS

Session Organizers:

Andrea Massa, Paul Meaney, and Renzo Azaro

Session Chairs:

Andrea Massa, Paul Meaney, and Renzo Azaro

“Microwave Imaging for Bone Fracture Risk Assessment” - **Paul M. Meaney, Tian Zhou, Margaret W. Fanning, Shireen A. Geimer, and Keith D. Pau**

“3D Quantitative Microwave Imaging with a Regularized Gauss-Newton Method for Breast Cancer Detection” - **J’urgen De Zaeytjtd and Ann Franchois**

“Wavefront Reconstruction Using a Dispersive Propagation Model”

Daniel Flores-Tapia, Gabriel Thomas, and Stephen Pistorius

“A Multi-Resolution Three-dimensional Approach based on SVM for Breast Cancer Detection”

F. Viani, M. Donelli, P. Rocca, R. Azaro, and A. Massa

“Computational Model of Ductal Carcinoma In-Situ”

Seth Shumate and Magda El-Shenawee

ADVANCED TRANSMISSION LINES MODELING, MACROMODELING AND SIGNAL INTEGRITY

Session Organizer:

Sami Barmada

Session Chairs:

Sami Barmada and Robert Flake

“Signal Transmission Immune to Dispersion in Lossy Metal Transmission”

Robert H. Flake

“Computation of the Impulse Response and Coding Gain of a Digital Interconnection Bus”

Hristomir Yordanov, Michel T. Ivrlac, Amine Mezghani, Josef A. Nossek, and Peter Russer

“Crosstalk Analysis of Micromachined Rectangular Coaxial Lines”

Yuya Saito and Dejan S. Filipović

“Electromagnetic PCB Pattern Modeling Techniques for the Efficient RF Hardware Simulation for Mobile Phones”

Yongsup Kim, Kwangmo Yang, and Austin S. Kim

“Parameters Update Integration in EM Analysis of ATL and PTL in the FDM”

S. Cooney Ekpo, Armstrong Sunday, and Eddiong-Obong Ekpo

“Modeling of UIC cables in railway systems for their use as PLC channels”

S. Barmada, A. Gaggelli, P. Masini, A. Musolino, R. Rizzo, and M. Tucci

ELECTROMAGNETIC MODELING WITH QUICKWAVE / CONCERTO

Session Organizer:

Malgorzata Celuch

Session Chair:

Malgorzata Celuch and Luca Roselli

“Wideband Self-adjoint Jacobian Computation with Time-domain Field Solutions”

Yunpeng Song and Natalia K. Nikolova

“Neural Network Technique Simultaneously Optimizing Antenna Return Loss and Radiation Pattern”

Ethan K. Murphy and Vadim V. Yakovlev

“Utilizing Hybrid Dielectric-Metal and Mesh Refinement Techniques When Modeling a MMIC in Concerto Quickwave”

David M. Perry

“Comparison of Two Approaches to Modeling of Microwave Heating with Load Rotation”

Pawel Kopyt

“Modeling-Based Synthesis of a Microwave Heating Process Producing Homogeneous Temperature Field” - **Brian G. Cordes, E. Eugene Eves, and Vadim V. Yakovlev**

“Full-wave Modelling of Large Axisymmetric Antennas” - **Michael P. Hook**

MODELING TECHNIQUES FOR PERIODIC STRUCTURES AND METAMATERIAL APPLICATIONS - I

Session Organizer:

Costas D. Sarris

Session Chairs:

Costas D. Sarris and Alexander B. Yakovlev

“Analysis of Periodic Strips of Gold using FDTD” - **Rodney Gomez, Katherine Lugo, Nader Farahat, and Raj Mittra**

“Review of Complex Looped FDTD and its new applications” - **Bartlomiej W. Salski, Malgorzata Celuch, and Wojciech K. Gwarek**

“FDTD Simulations of Nano-structured Plasmonic Metamaterials” - **L. J. Prokopenko, A. S. Lebedev, M. P. Fedoruk, and A. V. Kildishev**

“Dielectric Resonator Antenna Design using Dispersion Engineered Materials” - **Salih Yarga, Kubilay Sertel, and John L. Volakis**

“Accurate and Rapid Analysis of High Impedance Surfaces: Plane-Wave and Surface-Wave Analytical Models” - **Alexander B. Yakovlev, Constantin R. Simovski, Sergei A. Tretyakov, and George W. Hanson**

ADVANCED OPTIMIZATION METHODOLOGIES FOR ENGINEERING DESIGN

Session Organizers:

Slawek Koziel and John W. Bandler

Session Chairs:

Slawek Koziel and John W. Bandler

“Coarse Models for Microwave Design Optimization with Space Mapping” - **Slawomir Koziel and John W. Bandler**

“Analytical Neuro-Space Mapping Technique for Nonlinear Device Modeling and Its Application in Large Signal Microwave Circuit Design” - **Lei Zhang and Qi-Jun Zhang**

“FEST3D: A Software Tool for the Analysis, Synthesis and Design of Waveguide Filters for Satellite Applications” - **Santiago Cogollos, Vicente E. Boria, Jordi Gil, Carlos Vicente, and Benito Gimeno**

“A New Class of Dual-Band Power Divider” - **Mehdi Nosrati and Tayeb Fraji**

“A Numerical Procedure for EMI Filters Design in Realistic Applicative Scenarios” - **Renzo Azaro, Luca Ioriatti, Mauro Martinelli, and Andrea Massa**

“Accuracy Improvement of Magnetic Tracking Systems Using ANNs and Space Mapping Modeling” - **Mohamed H. Bakr, Kai Wang, and M. Jamal Deen**

“A Space Mapping Methodology for Defect Characterization”

R. K. Amineh, S. Koziel, N. K. Nikolova, J. W. Bandler, and J. P. Reilly

ADVANCES IN TRANSMISSION-LINE MATRIX (TLM) ANALYSIS METHODS

Session Organizer:

Philip Sewell

Session Chair:

Philip Sewell

“Estimation of the Probability Density Function in Electromagnetic Propagation Problems with the Unscented Transform and TLM”

Leonardo R.A.X. de Menezes, Edson A. Jr, Marcelo N. de Sousa, and Geovany A. Borges

“Modelling Nonlinear Photonics Crystal Waveguides Using the Transmission Line Modelling Method”

Ana Vukovic, Phillip Sewell, and Carl Styan Trevor M. Benson

“Analysis of Wire Antennas and Arrays Using TLM”

A. A. Saleeb, C. Christopoulos, J. D. Paul, and D. W. P. Thomas

PLENARY SESSION

“Microwave Antennas for Medical Applications”
Koichi Ito

PLENARY SESSION

"Industrial trend and design challenges in wireless handheld development"

[Nagula Sangary](#)

POSTER SESSION

Session Chair:

[Atef Elsherbeni](#)

"An Elliptic Coplanar Waveguide Low Pass Filter"

[Amjad A. Omar, Khelifa Hettak, and Nihad Dib](#)

"Alternative Efficient Scheme for the Computation of Aggregate Block Toeplitz Matrix Vector Multiply in TD-AIM"

[Tiong-Huat Ng, Tse-Tong Chia, and Ban-Leong Ooi](#)

"Electromagnetic Scattering by a Protruding Cavity Embedded in an Impedance Plane"

[Aihua W. Wood](#)

"Microwave Detection using Real Measurement Data"

[Douglas A. Woten, Obadiah Kegege, Reza Hajjhashimi, Ahmed Hassan, and Magda El-Shenawee](#)

"Quasi-Endfire Antenna Array for Beam Steering Applications"

[G. R. DeJean](#)

"Design and Optimization of Reconfigurable Parasitic Antennas by Means of PSO-based Techniques"

[R. Azaro, M. Donelli, M. Benedetti, P. Rocca, L. Ioriatti, M. Martinelli, and A. Massa](#)

"An Accurate Analysis of Collinear End Launcher Waveguide Adapter Excited by Loop Coupling"

[Dong-Hyun Kim, Jeong-Woo Jwa, and Doo-Yeong Yang](#)

"An inherently Well-Conditioned Integral Equation to Solve the Scattering Problems by Partially Coated Objects" - [Florence Millot and Sebastien Pernet](#)

ELECTROMAGNETIC MODELING BY WIPL-D SOFTWARE

Session Organizer:

[Branko Kolundzija](#)

Session Chairs:

[Branko Kolundzija and Saad Tabet](#)

"Design of a Compact Wideband Log-Periodic-Dipole-Array Antenna Using WIPL-D Software"

- [Bassem H. Henin, Atef Z. Elsherbeni, Darko Kajfez, Ahmed A. Kishk, and Fan Yang](#)

"Diakoptic Surface Integral-Equation Formulation Applied to 3-D Scattering Problems"

- [Dragan I. Olcan, Ivica M. Stevanovic, Branko M. Kolundzija, Juan R. Mosig, and Antonije R. Djordjevic](#)

"The Design of a Spherical Wire Frame Radar Target Using Mathematica for Structure and WIPL for Radar Cross Section" - [Paul A. Bernhardt](#)

"Simulation of Frequency Agile RF MEMS Antennas Using WIPL-D" - [Carla Medeiros,](#)

[Jorge R. Costa¹, Carlos A. Fernandes, and Branko Kolundzija](#)

"Design School of Reception Antennas on Digital Terrestrial Television for High School Students by Using WIPL-D" - [Mitsuo Taguchi](#)

"Effective Antenna Design by Electromagnetic and Circuit Co-simulation in WIPL-D Microwave" - [Drazen S. Sumic, Milan M. Kostic, Marija M. Paramentic, and Dragan I. Olcan](#)

"Antenna Design Using the Integral Equations/Method of Moments Based WIPL-D Pro 6.4" - [Mark S. Reese, Victor Kononov, Constantine A. Balanis, and Craig R. Birtcher](#)

"Gain Enhancement of Antennas with Broadside Radiation Dielectric Discs" - [Ahmed A. Kishk and Laila Hady](#)

"Suppression of Radome Induced Grating Lobes" - [Saad N. Tabet, John S. Asvestas, and Oliver E. Allen](#)

GRADUATE AND UNDERGRADUATE STUDENT PROJECTS IN MICROWAVES AND ANTENNAS

Session Organizers: [J](#)

[ayanti Venkataraman and Ercument Arvas](#)

Session Chairs:

[Jayanti Venkataraman and Ercument Arvas](#)

"Project Based Courses in Microwave Circuits and Antennas" - [Jayanti Venkataraman and Ercument Arvas](#)

"Ka-Band Wilkinson Power Divider with Integrated Thin Film Resistor" - [Stefan P. Bukowski, Franz Orban, Moamer Hasanovic, and Jayanti Venkataraman](#)

"Reconfigurable Dual Frequency Microstrip Patch Antenna Using RF MEMS Switches" - [Jessica A. DeSignor and Jayanti Venkataraman](#)

"A 2-Watt Class-F Power Amplifier at 1.965 GHz"

[Arijit De, Vijay Kodwani, and Ercument Arvas](#)

"An X-Band Array of Quasi-Yagi Microstrip Antennas"

[Hsu-Chih Min, Serhend Arvas, William Penn, and Ercument Arvas](#)

RFID SIMULATIONS: ISSUES AND CONCERNS

Session Organizer:

[C. J. Reddy](#)

Session Chair:

[C. J. Reddy and Atef Elsherbeni](#)

"A Novel Approach to the Design of Three Dimensional RFID Antennas"

[C. Kruesi and M. M. Tentzeris](#)

"Impedance Matching for RFID Tag Antennas"

[Chye-Hwa Loo, Khaled Elmahgoub, Fan Yang, Atef Elsherbeni, Darko Kajfez, Ahmed Kishk, Tamer Elsherbeni, Leena Ukkonen, Lauri Sydänheimo, Markku Kivikoski, Sari Merilampi, and Pekka Ruuska](#)

“Role of Computational Electromagnetics for UHF RFID Systems for Supply Chain Management”

Johan Huysaman, Rensheng Sun, and C. J. Reddy

“Modeling and Design of Novel Structures for Multiband RFID Readers and Automotive RFID Tags”

Anya Traille, Li Yang, and Manos M. Tentzeris

ADVANCEMENTS IN FINITE-ELEMENT ANALYSES

Session Chairs: Leo Kempel and Osama Mohammed

“Finite Element High Frequency Circuit Coupled Model of Electric Machines for Simulating Electromagnetic Interference in Motor Drives”

O. A. Mohammed, S. Ganu, Z. Liu, S. Liu and N. Abed

“Calculation of Dual Leaky-Wave Antenna Performance using Quad-core Processors and OpenMP” - **Leo Kempel**

“A High-Order Nodal Finite Element Formulation for Microwave Engineering”

Ruben Otin

“Application of Field-Circuit Coupled Finite Element Analyses for the Operational Behaviour of a Plunger Core Reactor”

Erich Schmidt and Peter Hamberger

ANTENNA SYSTEMS FOR FUTURE WIRELESS COMMUNICATIONS

Session Organizers:

Shirook Ali and Farzaneh Kohandani

Session Chairs:

Shirook Ali and Farzaneh Kohandani

“Effects of Scatterers on Multi-Antenna System”

Houssam Kanj, Shirook Ali, and Paul Lusina

“Statistical Analysis of Multi-Antenna Channel Capacity in the Urban Microcell Scenario”

Paul Lusina, Farzaneh Kohandani, Shirook Ali, and Houssam Kanj

“Capacity of an Antenna System in the Transmission Mode with Near-field Effects”

Shirook M. Ali, Simon Qu, and Farzaneh Kohandani

“Multi-Antenna System Using Butler Matrix for Switched Beams”

Tayeb A. Denidni and Adnane M. Habib

“Capacity Limits for a 60GHz MIMO Propagation Channel: A Ray-Tracing Simulation Study”

J. Ahmadi-Shokouh, S. H. Jamali, and S. Safavi-Naeini

“Design and Modeling of Liquid-Ionic Antennas for Wearable Biomonitoring and Underwater Communications”

Anya Traille and Manos M. Tentzeris

GUIDED WAVES IN NON-STANDARD MEDIA

Session Organizers:

Jay K. Lee and Ercument Arvas

Session Chairs:

Jay K. Lee and Ercument Arvas

“Refraction in Optical Metamaterials”

Alexander V. Kildishev and Douglas H. Werner

“Comparison between Measurements and Numerical Computation for the System Level Characterization of the Radiated Emissions of Unknown Sources inside Cavities”

J.M. Gómez, F. Saez de Adana, M.F. Cátedra, J. Berkowitsch, and F. Gutiérrez

“An MoM Solution for Dielectric Rods of Arbitrary Cross Section”

Serhend Arvas and Joseph R. Mautz

“Reducing Power Coupling Loss between Laser Diodes and Planar Optical Waveguides by Using Tapers”

Halid Mustacoglu and Qi Wang Song

“Electromagnetic Transmission through an Aperture in a Conducting Plane between Air and a Chiral Medium”

S. Taha Imeci, J. R. Mautz, F. Altunkilic, and E. Arvas

“Scattering from an Inhomogeneous Dispersive Chiroferrite Body of Arbitrary Shape”

Chong Mei, Moamer Hasanovic, Joseph R. Mautz, Ercument Arvas, and Jay K. Lee

“Wave Propagation on a Circular Chiral Rod”

Joseph R. Mautz and Serhend Arvas

“Method of Moments Solution of Closed Chirowaveguides”

Kasim Ayyildiz, Joseph R. Mautz, and Ercument Arvas

MODELING, DESIGN AND OPTIMIZATION OF COMPLEX ELECTROMAGNETIC SYSTEMS

Session Organizers:

Manos Tentzeris and Daniela Staiculescu

Session Chairs:

Manos Tentzeris and Daniela Staiculescu

“K/Ka Band OMT for Domestic Satellite Dual-Band Internet Systems –Designed Using WASP-NET” - **Matt Pike and Fritz Arndt**

“Sub-block Decomposition Matrix Solver”

Paul Skinner

“Numerical Models of the Volume Response Function of Conductance Catheters: the Effect of Multiple Unused Electrodes”

John E. Porterfield and John A. Pearce

“Field Strength Estimation in Indoor Propagation by the Sabine Method”

Christopher W. Trueman, Sérgio S. Muhlen, Don Davis, and Bernard Segal

“Waveguide Mode Computation through Smoothed Particle Electromagnetics”

Klaus Krohne, Gi-Ho Park, and Li Er Ping

“A Novel High Miniaturized Branch-Line Coupler”

Mehdi Nosrati, Ali Shakarami, and Ali Nouri
“Numerical Investigation of Flow and Temperature Field of a Magneto Hydrodynamic Pump”

M. Ghassemi and A. Shahidian

ELECTROMAGNETIC MODELING USING FEKO - II

Session Organizer: C. J. Reddy

Session Chairs: C. J. Reddy and Dejan Filipovic

“Design and Analysis of a Novel Pent-band Antenna for Handheld Applications”

Shirook Ali, Houssam Kanj, Dong Wang, and Wen Geyi

“Generation of Calibration Tables for Direction Finding Antennas using FEKO”

Anthony Bellion, Cyrille Le Meins, Anne Julien-Vergonjanne, and Thierry Monédière

“Modeling of Dual-Polarized Frequency Independent Antennas”

Dejan S. Filipovic and Tom Cencich

“Geometry Capture and Scattering Calculations of the VFY218”

Praveen Anumolu, Robert Christ, and Ronald Pirich

“Analysis of Patch Antennas Using FEKO”

Julie A. Huffman

“FEKO Simulations of an Antenna mounted on a Rear Window of a Car”

Y.Yamada, N.Michishita, T.Sato, and K.Ogino

“Improving Return Loss of Bi-Conical Antennas”

Mohammed A. Quddus

“Low Profile Magneto-Dielectric Ground Plane for Ultra-Wideband Antennas”

Faruk Erkmen, Chi-Chih Chen, and John L. Volakis

NON-STANDARD FDTD METHODS

SESSION ORGANIZERS:

Yasushi Kanai and James B. Cole

SESSION CHAIRS:

James B. Cole and Yasushi Kanai

“FDTD Method for the Analysis of Electromagnetic Field in Consideration for Doppler Effect”

Hiroshi Iwamatsu, Shuichi Masuko, and Michiko Kuroda

“Reformulation of the Nonstandard Yee Algorithm to Reduce Error on Dielectric Boundaries”

James B. Cole and Saswatee Banerjee

“Optimal Weighting Factor of 2D ID-FDTD Using Least-Mean-Square Method”

Il-Suek Koh

“Accurate Modal Analysis of 3D Dielectric Waveguides Using the Nonstandard FDTD Method”

Kosmas L. Tsakmakidis, Durga P. Aryal, and Ortwin Hess

“Optical Characterization of Iridescent Wings of Morpho Butterfly using the High Accuracy Nonstandard FDTD Algorithm”

Saswatee Banerjee and James B. Cole

“The Extension of the Nonstandard FDTD Method and Its Applications”

Tatsuya Kashiwa, Tadao Ohtani, Kenji Taguchi, and Yasushi Kanai

“Comparison of Shape Functions in Meshfree Smoothed Particle Method and Application to Transient Electromagnetic Analysis”

Gi-Ho Park, Klaus Krohne, and Er Ping Li

MODELING TECHNIQUES FOR PERIODIC STRUCTURES AND METAMATERIAL APPLICATIONS - II

Session Organizer:

Costas D. Sarris

Session Chairs:

Costas D. Sarris and Dejan Filipovic

“IIR Approach for the Efficient Computation of Large-Scale 3D RTLM CRLH Metamaterials”

M. Zedler, P. So, C. Caloz, and P. Russer

“Modeling of Volumetric Negative-Refractive-Index Media Using Multiconductor Transmission-Line Analysis”

Scott Rudolph and Anthony Grbic

“Full Wave Numerical Simulation of a Finite 3D Metamaterial Lens”

Ali Eren Culhaoglu, Michael Zedler, Wolfgang J. R. Hoefer, Andrey Osipov, and Peter Russer

“Study of Metamaterial Miniaturization Using Magnetic Composites”

Daniela Staiculescu, Lara Martin, and Manos Tentzeris

“A Numerical Study of Mutual Coupling Reduction between Two Inverted-F Antennas Using Mushroom Type EBG Structures”

Jun Ito, Naobumi Michishita, and Hisashi Morishita

“Efficient Time-Domain Characterization of Planar Artificial Substrate Geometries”

Dongying Li and Costas D. Sarris

HARDWARE-BASED ACCELERATION OF CEM SOLVERS

Session Organizer:

James Durbano

Session Chair:

James Durbano

“An Accelerated Electromagnetic Scattering Solver Utilizing Shooting and Bouncing Rays on the GPU Platform”

Kyle E. Spagnoli, James P. Durbano, Michael R. Bodnar, and Daniel K. Price

“An Accelerated GPU FDTD Solver Using CUDA”

Daniel K. Price, Aaron L. Paolini, Kyle E. Spagnoli, and James P. Durbano

“Interactive GPU Based FDTD Simulations for Teaching Applications”

Matthew J. Inman and Atef Z. Elsherbeni

**SYSTEM SENSITIVITY ANALYSIS FOR
DESIGN AND INVERSE PROBLEMS IN
ELECTROMAGNETICS**

Session Organizers:

Mohamed H. Bakr and Natalia K. Nikolova

Session Chair:

Mohamed H. Bakr

**“Independent Sensitivity Solver Based on the
Frequency Domain Finite Difference Method”**

**Natalia K. Nikolova, Arshad Hasib, and Xiaying
Zhu**

**“Adjoint Dynamic Neural Network for
Developing Transient Nonlinear Neural Models
and Sensitivity Analysis in High-Speed Circuit
Design”**

Yi Cao and Qi-Jun Zhang

**“Second Order Accurate Adjoint Sensitivities of
Dielectric Discontinuities Using FDTD”**

**Mohamed A. Swillam, Mohamed H. Bakr, Natalia
K. Nikolova, and Xun Li**

**“Parametric Investigation of Hilbert Based
Artificial Magnetic Conductors”**

**Ahmed Hassan, Susan Burkett, and Magda El-
Shenawee**

**NON-TRADITIONAL
ELECTROMAGNETICS SIMULATIONS**

Session Organizer:

Natalia K. Nikolova

Session Chair:

Natalia K. Nikolova and Luca Roselli

**“Numerical Model Study of the Effects of
Dominant Water-Absorptive Directed Energy for
Active Denial Technology”**

John A. Pearce

**“Effect of Magnetic Field on Temperature and
Flow Field of an Electrically Conductive Fluid
inside a Square Enclosure”**

**Mohsen Pirmohammadi, Majid Ghassemi, and
Ghanbar A. Sheikhzadeh**

**“Robust Interference Suppression Using Variable
Step Size LMS Adaptive Beamformer”**

R. M. Shubair and A. M. Al Sharhan

THE APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY
JOURNAL

Vol. 22 No. 3

November 2007

TABLE OF CONTENTS

“Eliminating Interface Reflections in Hybrid Low-Dispersion FDTD Algorithms”
M. F. Hadi and R. K. Dib.....306

“Finite Difference Time Domain Method for the Analysis of Transient Grounding Resistance of Buried Thin Wires”
M. Goni, E. Kaneko, and A. Ametani.....315

“Accelerated GRECO Based on a GPU”
Y. ZhenLong, J. Lin, and L. WeiQing.....321

“An Efficient Preconditioner (LESP) for Hybrid Matrices Arising in RF MEMS Switch Analysis”
Z. Wang, J. L. Volakis, K. Kurabayashi, and K. Saitou.....327

“A Parallelized Monte Carlo Algorithm for the Nonlinear Poisson-Boltzmann Equation in Two Dimensions”
K. Chatterjee and J. Poggie.....333

“Electromagnetic Scattering Computation Using a Hybrid Surface and Volume Integral Equation Formulation”
C. Luo and C. Lu.....340

“Accurate Computational Algorithm for Calculation of Input Impedance of Antennas of Arbitrarily Shaped Conducting Surfaces”
K. F. A. Hussein.....350

“Electric and Magnetic Dual Meshes to Improve Moment Method Formulations”
M. F. Cátedra, O. Gutiérrez, I. González, and F. Saez de Adana363

“Optimum Planar Antenna Design Based on an Integration of IE3D Commercial Code and Optimization Algorithms”
H. Chou, Y. Hou, and W Liao.....373

“Analysis and Design of Quad-Band Four-Section Transmission Line Impedance Transformer”
H. Jwaied, F. Muwanes, and N. Dib.....381

“Analysis of Dielectric Loaded Scalar Horn Radiators” B. Türetken.....	388
“Electromagnetic Scattering Problems Utilizing a Direct, Parallel Solver” W. R. Dearholt and S. P. Castillo.....	395
“Scattering from a Semi-Elliptic Channel in a Ground Plane Loaded by a Lossy or Lossless Dielectric Elliptic Shell” A-K. Mahid.....	414
“Investigation of Wire Grid Modeling in NEC Applied to Determine Resonant Cavity Quality Factors” F. A. Pertl, A. D. Lowery, and J E. Smith.....	420

THE APPLIED COMPUTATIONAL ELECTROMAGNETICS SOCIETY

JOURNAL

SPECIAL ISSUE ON ACES 2007 CONFERENCE

Vol. 23 No. 1

March 2008

TABLE OF CONTENTS

“An Improved Time-Domain Near-Field to Far-Field Transform in Two Dimensions” J. A. Roden, S. L. Johns, and J. Sacchini.....	1
“Efficient Time-domain Sensitivity Analysis using Coarse Grids” Y. Song, N. K. Nikolova, and M. H. Bakr	5
“Practical Implementation of a CPML Absorbing Boundary for GPU Accelerated FDTD Technique” M. J. Inman, A. Z. Elsherbeni, J. G. Maloney, and B. N. Baker	16
“Broad-band Characterization of Wire Interconnects Using a Surface Integral Formulation with a Surface Effective Impedance” A. Maffucci, G. Rubinacci, S. Ventre, F. Villone, and W. Zamboni	23
“High-Frequency Full-Wave Analysis of Interconnects with Inhomogeneous Dielectrics through an Enhanced Transmission Line Model” A. G. Chiariello, A. Maffucci, G. Miano, F. Villone, and W. Zamboni.....	31
“Circuit Models for Interconnects Using 3D Computational Techniques” B. Essakhi, J. Benel, M. Smail , G. Akoun, and L. Pichon	39
“Eddy Current Imaging of Surface Breaking Defects by Using Monotonicity Based Methods” G. Rubinacci, A. Tamburrino and S. Ventre	46
“Design and Analysis of Partitioned Square Loop Antennas” R. Hasse, V. Demir, W. Hunsicker, D. Kajfez, and A. Elsherbeni	53
“Interval-Based Robust Design of a Microwave Power Transistor” P. Lamberti and V. Tucci	62
“7 Tesla MRI with RF Power and Field Homogeneity Comparable to 4 Tesla using Computational Electromagnetics” L. Tang and T. S. Ibrahim.....	70

“On-Wafer Measurement and Modeling of Silicon Carbide MESFET’s” L. Jordan, D. Elsherbeni, E. Hutchcraft, R. K. Gordon, and D. Kajfez.....	76
“Extracting the Electrical Properties of Polymeric Composite Materials through Circuit Simulation and Optimization” L. Bennett, W. E. Hutchcraft, R. K. Gordon, E. Lackey, J. G. Vaughan, and R. Averill	84
“A Review of Statistical Methods for Comparing Two Data Sets” A. Duffy and A. Orlandi	90
“Using MATLAB to Control Commercial Computational Electromagnetics Software” R. L. Haupt.....	98
“Quantifying EMC Measurement Accuracy Using Feature Selective Validation” A. Denton, A. Martin, and A. Duffy.....	104