15th Conference on the Computation of Electromagnetic Fields

June 26-30, 2005
Shenyang, China

RECORD OF THE 15TH COMPUMAG CONFERENCE
ON THE COMPUTATION OF ELECTROMAGNETIC FIELDS
VOLUME 3/4: Wednesday, June 29
Contents

Oral Session OE:
Wave Propagation
June 29 Wednesday 8:00-10:10

Chairman
Prof. Jonathan P. Webb, Canada
Prof. Hajime Igarashi, Japan

IE-1 Scattering from Dielectric and Metallic Bodies Using a High-order, Nyström, multi-level Fast Multipole Algorithm
V. Rawat, J. P. Webb
McGill University
Canada

OE-1 Analysis of Electromagnetic Scattering from Objects Coated with Arbitrarily Magnetized Lossy Ferrite Materials
Pai Wang, Lezhu Zhou, Mingyao Xia
Peking University
China

OE-2 Transient Near-Field Effect of the Electrostatic Discharge
Zhiyong Yuan, Jinliang He, Bo Zhang, Rong Zeng, Weiyan Chen, Shuiming Chen
Tsinghua University
China

OE-3 Advanced Parallel Codes for Electromagnetic Modeling of Accelerating Cavities
L. Ge, N. Folwell, L. Lee, Z. Li, C. Ng, G. Schussman, R. Uplenchwar, L. Xiao, K. Ko
Stanford Linear Accelerator Center
USA

OE-4 A Time Domain 3D Full-Maxwell Solver Based On The Cell Method
P. Alotto, A. De Cian
Università di Genova
Italy

OE-5 An Explicit Weighted Essentially Non-Oscillatory Time-Domain Algorithm for 3-D EMC Applications with Arbitrary Media Interfaces
Nikolaos V. Kantartzis, Theodoros D. Tsiboukis, Epameinondas E. Kriezis
Aristotle University of Thessaloniki
Greece

Poster Session PE1:
Optimization IV
June 29 Wednesday 10:30-12:10

Chairman
Prof. K. Hollaus, Austria

PE1-1 A New Respond Surface Model for Reducing the Excessive Computations of Inverse Problems Using Improved Compactly Supported Radial Basis Function
S. L. HO, Shiyou Yang, Guangzheng Ni, E.K.W. CHENG, H.C. Wong
The Hong Kong Polytechnic University
Hong Kong

PE1-2 EEG Problem Solution with the Aid of 3D Boundary Element Method
Stefan F. Filipowicz
Warsaw University of Technology
Poland

PE1-3 Space-Mapping Applied to Linear Actuator Design
D. Echeverría, D. Lahaye, L. Encica, E. A. Lomonova, P. W. Hemker, A. J. A. Vandenput
Centre for Mathematics and Computer Science (CWI)
Netherlands
PE1-4 Non-Magnetic Building's Space Magnetic Field Calculation
Chengbao Guo, Daming Liu, Changhan Xiao, Xiaofeng Zhang
Naval University of Engineering
China

PE1-5 Application of Particle Swarm Optimization Algorithm in Electric Apparatus Optimization Design
Chunguang Hou, Xueyan Han
Shenyang University of Technology
China

PE1-6 Design Methods of the Modified Spherical Quadrupole Magnet
Ye Bai, Ming Yang, Yunjia Yu, Qiuliang Wang
Institute of Electrical Engineering Chinese Academy of Sciences
China

PE1-7 Pole Shape Design in Permanent Magnet Motors Based on Revised Genetic Algorithm
Lizhi Sun, Jing Shang, Jibin Zou
Harbin Institute of Technology
China

PE1-8 Field and Source 3D Reconstruction from Locally Field Data
Iliana Marinova, Valentin Mateev, Hisashi Endo, Seiji Hayano, Yoshifuru Saito
Technical University of Sofia
Japan

PE1-9 Optimization of a Magnetostatic Inverse Problem
Sébastien Guerin, Gilles Cauffet, Jean-Louis Coulomb
Laboratoire de Magnétisme du Navire, France

PE1-10 Research on Dynamic ANN and Its Application of Optimizing the Electric Apparatus
Yundong Cao, Xiaoming Liu, Dong Liu
Shenyang University of Technology
China

PE1-11 Numerical Optimization and Regularization of a Fast Eddy Current Imaging Method
G. Rubinacci, A. Tamburrino, S. Ventre
Università “Federico II” di Napoli,
Italy

PE1-12 Rapid Optimization of CAE Input Model in Preprocess of Solenoid Actuator Design
Yasukazu Sato
Yokohama National University
Japan

Poster Session PE2:
Electrical Machines and Drives IV
June 29 Wednesday 10:30-12:10

PE2-1 Study of 3D Magnetic Field Property in a Claw Pole/Transverse Flux Motor with Soft Magnetic Composite Core by Finite Element Analysis
You Guang GUO, Jian Guo Zhu
University of Technology, Sydney
Australia

PE2-2 The Synchronous Machine Parameter Identification Combined with Finite Element Method
Xinli Zhang, Liang Meng, Yingli Luo, Xiaofang Liu
North China Electric Power University Beijing
China

PE2-3 Development of Single Phase Flux Reversal Motor for Vacuum Cleaner
Ki-Bong Jang, Tae Heoung Kim, Joonseon Ahn, Ju Lee

Record of the 15th COMPUMAG Conference on the Computation of Electromagnetic Fields, June 2005-ii
PE2-4 Transient Characteristic Analysis of Line Start Permanent Magnet Motors Considering Magnetization Distribution
Chul Kyu Lee, Byung-il Kwon
Hanyang University Korea

PE2-5 Electromagnetic and Mechanical Characterizations of Noise and Vibration in Permanent Magnet Synchronous Machines
Shenbo Yu, Renyuan Tang
Shenyang University of Technology China

PE2-6 Dynamic Characteristics Analysis of Linear Brushless DC motor using Finite Element Method according to Load Condition
Dong A University Korea

PE2-7 Development of a Novel Transverse Flux Machine with High Thrust Force for Direct Drive Applications
Junghwan Chang, Dohyun Kang
Mechatronics Research Group, KERI, Korea

PE2-8 Analytical Optimization for the Reduction of Torque Ripple in Surface Type Brushless AC Motor
Liang Fang, Soon-O Kwon, Sung-I Kim, Jung-Pyo Hong
Changwon National University Korea

PE2-9 Inherent Torque Ripple Minimization by Skewing For Doubly Salient Permanent Magnet Motors
N. K. Sheth, A. R. C. Sekhar Babu, K. R. Rajagopal
Indian Institute of Technology Delhi India

PE2-10 Electromagnetic Force Analysis of an Interior Permanent Magnet Motor with a Skewed Rotor
Yoshihiro Kawase, Tadashi Yamaguchi, Toshiyuki Yano
Gifu University Japan

Poster Session PE3:
Static Fields II
June 29 Wednesday 10:30-12:10

PE3-1 Magnetic Gradient for Surface Devices in Magnetostatic
Sébastien Guerin, Gilles Cauffet, Jean-Louis Coulomb
Laboratoire de Magnétisme du Navire France

PE3-2 Non-linear Magnetostatic Integral Equations Iteratively Solved by Minimizing an Energy-Function
F. Groh, W. Hafla, W.M. Rucker
University of Stuttgart Germany

PE3-3 Application of Natural Element Method to Model Moving Electromagnetic
I. Lounes, J. Yvonnet, F. Chinesta, S. Clénet
LMSP, ENSAM CER Paris France

PE3-4 Magnetic Field Computation of A Permanent Magnet Spherical Stepper Motor Using Integral Equation Method

Chairman
Prof. Xikui Ma, China
Qunjing Wang, Zheng Li, Youyuan Ni, Weidong Jiang  
Hefei University of Technology  

PE3-5  Fast Computation of 3D Magnetic Fields from Distributed Permanent-Magnet and Electro-Magnet Structures Using the Volume Integral Approach  
O. Chubar, P. Elleaume, J. Chavanne  
Synchrotron SOLEIL  

PE3-6  Efficient Finite Element Model for Power Transformer Optimization  
National Technical University of Athens  

PE3-7  Comparison of Simple Boundary Element Method and Dual Energy Method for Evaluation of Minimum Inductance in Switched Reluctance Machines  
Ali Deihimi  
Bu-Ali Sina University  

PE3-8  The Optimization of High Frequency Operated Transformers with E-Cores  
A. Stadler, M. Albach, S. Chromy  
Friedrich-Alexander-University  

PE3-9  Identification of Steel Bars in Reinforced Concrete Structures Using Artificial Neural Networks and Electromagnetic Fields  
N. P. de Alcantara Jr.  
Unesp – São Paulo State University  

PE3-10  Synthetic Magnetic Field Computation of a Multi-object System  
Changhan Xiao, Shengdao Liu, Qian Wang  
Naval University of Engineering  

PE3-11  Analysis of Electromagnetic Fields Using a Modified Magnetic Equivalent Circuit Method  
Hooshang Gholizad, Mojtaba Mirsalim, Mehran Mirzayee  
Amirkabir University of Technology  

PE3-12  Comparison of Methods to Simulate the Movement of Electrical Machine in 3D FEM  
Xiaodong Shi, Yvonnick Le Menach, Jean-Pierre Ducreux, Francis Piriou  
L2EP – USTL  

PE3-13  A Multigrid Method for Large Scale FE Analysis with Effective Memory Usage  
Kota Watanabe, Hajime Igarashi  
Hokkaido University  

Poster Session PE4: Devices and Applications III  
June 29 Wednesday 10:30-12:10  

Chairman  
Prof. Katsumi Yamazaki, Japan  
Prof. L. Krähenbühl, Australia  

PE4-1  A 3D Integral Formulation Coupled to a Rigid Non-Axisymmetric Plasma Model  
R. Albanese, G. Rubinacci, F. Villone  
University Mediterranea di Reggio Calabria  

Record of the 15th COMPUMAG Conference on the Computation of Electromagnetic Fields, June 2005-iv
PE4-2 Computation of Two-fluid Flowing Equilibrium of Helicity-injected Spherical Torus Plasma
Takashi Kanki, Masayoshi Nagata, Tadao Uyama
Japan Coast Guard Academy

PE4-3 Fast Multipole Accelerated Finite Element -- Boundary Element Analysis of Shielded Induction Heaters
R. V. Sabariego, P. Sergeant, J. Gyselinck, P. Dular, L. Dupré, J. Melkebeek
University of Liége

PE4-4 Computational Environment for the Fast Calculation of ECT Probe Signal
Yann Le Bihan, Jozsef Pavo, Mohamed Bensetti, Claude Marchand
LGEP

PE4-5 Proposal of Detecting Method of Outer Side Crack by Alternating Flux Leakage Testing using 3D Non-Linear FEM
Yuji Gotoh, Norio Takahashi
Kurume National College of Technology

PE4-6 Calculation of Eddy Current Testing Probe Signal with Global Approximation
József Pávó, Dominique Lesselier
Laboratoire des Signaux et Systèmes (CNRS-SUPÉLEC-UPS)

PE4-7 Prediction of Depth and Thickness of Inner Growing Defects Via a FEM Time Domain Approach
E. Cardelli, A. Faba, M. Tomassini,
University of Perugia

PE4-8 Detection Scheme of Size and Position in Magnetic Inductance Tomography System
Gwan Soo Park, Kang Seo
Pusan National University

PE4-9 Capacitance Extraction of Process Variation Using Homogenization Technique and Sensitivity Analysis
Z. Ren, C. Arindam
Cadence Design Systems Inc.

PE4-10 Design of MEMS Switches by Electro-Mechanical Models
C. Buccella, M. Feliziani G. Manzi
University of L’Aquila

PE4-11 Optimal Design of Resistive Reading Probe for Electric data Storage System with a Bit of 50nm Size
Jae-Hak Choi, Yong-Su Kim, Sung-Gu Lee, Ju Lee
Hanyang University

PE4-12 FDTD Modeling of Nano-Scale Frequency Selective Surface for Thermophotovoltaic Energy Conversion
Rui Qiang, Richard L. Chen, Shuming Wang, Ji Chen, Keping Han, Ariel Ruiz, Paul Ruchhoeft, Mark Morgan
University of Houston

PE4-13 Calculation of Torque in a Permanent Magnet Spherical Stepper Motor Using Maxwell Stress Tensor Method
PE4-14
Analysis and Research on Factors Affecting Electro-Dynamic Repulsion Force in Air Circuit Breaker with the Method of 3-D Finite Element
Yingyi Liu, Degui Chen, Xingwen Li, Bo Zhang
Xi'an Jiaotong University

PE4-15
Calculation and Analysis of Permanent Magnetic Actuator for a 35kV Vacuum Circuit Breaker
Y. Li, J.Y. Xu, X. Lin, S.L. Ho
Shenyang University of Technology

Poster Session PE5:
Numerical Techniques V
June 29 Wednesday 10:30-12:10

PE5-1
A Geometrically Defined Discrete Hodge Operator on Simplicial Cells
Bernhard Auchmann, Stefan Kurz
CERN-AT-MEL

PE5-2
Advantages of Meshless Methods in Shape Optimization
V. Cutrupi, A. Formisano, R. Martone
Seconda Università di Napoli

PE5-3
Mid-point Numerical Technique for the Integration of Landau-Lifshitz-Gilbert Equation
M. d'Aquino, C. Serpico, G. Miano, I.D. Mayergoyz, G. Bertotti
University of Napoli "Federico II"

PE5-4
A Boundary Meshless Method for Transient Eddy Current Analysis
Yong Zhang, K.R. Shao, J.D. Lavers
Huazhong University of Science and Technology

PE5-5
A Finite Element Domain Decomposition Method Using Algebraic Multigrid for Large-scale Equipment Electromagnetic Compatibility Analysis
Yuanqing Liu
Tsinghua University

PE5-6
Efficient Algorithms and Data Structures for Element-free Galerkin Method
Guilherme F. Parreira, Alexandre R. Fonseca, Adriano C. Lisboa, Elson J. Silva, Renato C. Mesquita
Universidade Federal de Minas Gerais

PE5-7
N-expansion Method Based on Domain Decomposition for Computational Electromagnetics
Dezhi Chen
Huazhong University of Science and Technology

PE5-8
Concept of Virtual Air-gap and Its Application for Force Calculation
Hong Soon Choi, Il Han Park, Se Hee Lee
Sungkyunkwan University
<table>
<thead>
<tr>
<th>Poster Session PF1: Coupled Problems III</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 29 Wednesday 13:30-15:10</td>
</tr>
</tbody>
</table>

| PF1-1 | FE-Based Nonlinear Physical Model of Iron-Core Transformers for Dynamic Simulations |
| III-138 | O. A. Mohammed, Z. Liu, S. Liu, N. Y. Abed |
| Florida International University |
| USA |

| PF1-2 | A New 3D Scalar Finite Element Method to Compute $T_0$ |
| III-140 | V. P. Bui, G. Meunier, Y. Le Floch, J.L. Coulomb |
| LEG |
| France |

| PF1-3 | Finite Element Analysis of Flux-Reversal Machine Considering BEMF Current of a Switch-off Phase and v-i Characteristic of a Transistor and a Freewheeling Diode |
| III-142 | Tae Heoung Kim, Jae-Nam Bae, Ju Lee |
| Hanyang University |
| Korea |

| PF1-4 | Coupling Between Circuits and A-X Discrete Geometric Formulation |
| III-144 | P. Dular, R. Specogna, F. Trevisan |
| University of Liege |
| Belgium |

| PF1-5 | Study on the Interaction of Arc and Gas Flow for High Voltage Circuit Breaker |
| III-146 | Xiaoming Liu, Yundong Cao, Erzhi Wang |
| Shenyang University of Technology |
| China |

| PF1-6 | A General Co-Simulation Approach for Coupled Field-Circuit Problems |
| III-148 | P. Zhou, D. Lin, W. N. Fu, B. Ionescu, W. Z. Fang, Z. J. Cendes |
| Ansoft Corporation |
| USA |

| PF1-7 | The Transient Thrust Force Calculations of a Vertically Reciprocate Cylindrical Linear Induction Motor by Coupling the Electromagnetic Field with the Circuit and the Motion |
| III-150 | Yan Hu, Jinhui Zhang, Shan Bai, Xingge Sun |
| Shenyang University of Technology |
| China |
PF1-8  Field-Circuit Coupling using Existing Network Transients Codes  
Instituto Tecnologico de Morelia  
Mexico

PF1-9  Numerical Modeling and Analysis of a Brushless Permanent Magnet DC Motor using Circuit-Field Coupled Time Stepping FEM  
Institute of High Performance Computing  
Singapore

PF1-10  Numerical Field Analysis of Switched Reluctance Motor Coupling to Single Phase Diode Bridge Rectifier and Asymmetric Bridge Converter Circuits  
Hanyang University  
Korea

PF1-11  Integration over Discontinuities in Field-Circuit Coupled Simulations with Switching Elements  
Technische Universitat Darmstadt  
Germany

PF1-12  A Direct Coupled Field-Circuit-Movement Finite Element Method for Modeling EMS-MAGLEV System  
Zhejiang University  
China

PF1-13  Use of FEM at Coupled Electric, Thermal and Thermal Strain Problems  
UNIVERSITY OF MARIBOR  
Slovenia

PF1-14  A New Method to Calculate Equivalent Circuit Parameters of Induction Generator with Dual Windings  
Shanghai Jiaotong University  
China

PF1-15  Combination Approach of FEM and Circuit System in Voltage Drop Analysis  
Tsinghua University  
China

Post Session PF2:  
Optimization V  
June 29 Wednesday 13:30-15:10  
Chairman  
Dr. J. A. Vasconcelos, Brazil  
Prof. Weili Yan, China

PF2-1  Phase Boundary Estimation in Electrical Resistance Tomography with Weighted Multi-layer Neural Networks  
Kyungpook National University  
Korea

PF2-2  Wavelet Neural Network Discrimination of DTC System Stator Flux Based on Chaos-genetic Algorithms  
Shenyang University of Technology  
China
PF2-3 A Simple Tool for Modeling Microstrip Structures using the Finite-Difference Time-Domain Method
CEGELY-ECL
France

PF2-4 A Self-Adaptive Niching Genetic Algorithm for Multimodal Optimization of Electromagnetic Devices
E. Dilettoso, N. Salerno
Università degli Studi di Catania
Italy

PF2-5 Multi-Objective Approaches for Robust Electromagnetic Design
Frederico G. Guimarães, David A. Lowther, Jaime A. Ramírez
Federal University of Minas Gerais
Brazil

PF2-6 Shape Optimal Design of Micro-strip Tapered Line by Finite Difference Design Sensitivity Analysis
Sang-Joon Han, Byung-Sung Kim, Hong-Soon Choi, Il-Han Park
Sungkyunkwan University
Korea

PF2-7 Utilizing Design Sensitivity Analysis for the Global Optimization of Electromagnetic Devices with C1 Piecewise Response Surface Patches
Yingying Yao, Shiyou Yang, Chang Seop Koh
Zhejiang University
China

PF2-8 Combined Numerical and Analytical Method for Geometry Optimization of a PM Motor
C. Schlensok, M. Herranz Gracia, K. Hameyer
RWTH Aachen University
Germany

PF2-9 Optimum Design of BLDC Motor for Cogging Torque Minimization using Genetic Algorithm and Response Surface Method
Chang-Eob Kim, Mun-Ho Jeon
Hoseo University
Korea

PF2-10 A Modified Ant Colony Optimization Algorithm Modeled on Tabu Search Methods
S. L. Ho, Shiyou Yang , Guangzheng Ni , José Márcio Machado , H.C. Wong
The Hong Kong Polytechnic University
Hong Kong

PF2-11 Optimization Design of Electrical Apparatus Based on the Compensated Fuzzy Neural Network
Yundong Cao, Feng Li, Xiaoming Liu
Shenyang University of Technology
China

PF2-12 Application of Hybrid Algorithm of PSO and Chaos in Permanent Magnet Design of High Efficiency Spinning Motor
Changzhi Sun, Yuejun An, Dongyang Chen
Shenyang University of Technology
China

PF2-13 Analysis and Minimization Techniques of Detent Force in a Short Primary Permanent Magnet Linear Synchronous Motor
Peiqiong Yu
Zhejiang University of Technology
China

PF2-14 Geometric Sensitivity Analysis for EM Design
P. Weicker, D. Lowther
McGill University
Canada

Record of the 15th COMPUMAG Conference on the Computation of Electromagnetic Fields, June 2005-ix
PF3-1 Reconstruction of Perfectly Conducting Objects Buried Under a Rough Interface
Ibrahim Akduman
Istanbul Technical University
Turkey

PF3-2 Fast Solution of Combined Field Integral Equation by Sparse Matrix Technique
Mohammad Shahed Akond, N. M. Alam Choudhury
KFUPM
Saudi Arabia.

PF3-3 A Geometric Approach for Wave Propagation in 2--D Photonic Crystals in the Frequency Domain
P. Bettini, S. Boscolo, R. Specogna, F. Trevisan
University di Udine
Italy

PF3-4 One-Dimensional Profile Inversion of a Cylindrical Layer with Inhomogeneous Impedance Boundary: A Newton Iterative Approach
Ali Yapar, Hülya Şahintürk
Istanbul Technical University
Turkey

PF3-5 Scattering Field Computation of the Dispersive Absorber with a FDTD Method
Baodong Bai, Jianbin Zeng
Shenyang University of Technology
China

PF3-6 Development of a Reduced Dispersion-Error Method for the Efficient Treatment of Time-Dependent Electromagnetic Wave Interactions
Konstantinos S. Charitou, Nikolaos V. Kantartzis, Christos S. Antonopoulos
Aristotle University of Thessaloniki
Greece

PF3-7 Ray-Tracing Propagation Model using Image Theory with an Accurate Approximation for Transmissin Rays Through Walls
S. Grubisic, W. P. Carpes Jr., C. B. Lima, P. Kuo-Peng
GRUCAD/EEL/CTC/UFSC
Brazil

PF3-8 Numerical Modeling of an Indoor Wireless Environment for the Performance Evaluation of WLAN Systems
Aristotle University of Thessaloniki
Greece

PF3-9 Effect of Multi-Layer Soil on the Switching Transient in Substations
Tiebing Lu, Lei Qi, Xiang Cui
North China Electric Power University
China

PF3-10 Post Processing for the Vector Finite Element Method: Accurate Computing of Dual Field
Christian Vollaire, F. Musy, R. Perrussel
CEGELY
France

PF3-11 Time-Domain Parametric Method-of-Moment Solution for Thin-Wire Antennas/Scatterers with a High Degree of Curvature
R. L. Li, B. Pan, J. Papapolymerou, J. Laskar, M. M. Tentzeris
<table>
<thead>
<tr>
<th>Poster Session PF4:</th>
<th>Chairman</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electromagnetic Compatibility</td>
<td>Prof. Theodoros Tsiboukis, Greece</td>
<td>Greece</td>
</tr>
<tr>
<td>June 29 Wednesday 13:30-15:10</td>
<td>Dr. Junwei Lu, Australia</td>
<td>Australia</td>
</tr>
</tbody>
</table>

**PF4-1** An Analysis of Magnetic Shielding Effect of Layered Shields Based on Homogenization

Hiroshi Waki, Hajime Igarashi, Toshihisa Honma

*Hokkaido University*  | Japan

**PF4-2** A Hybrid Method Based on FDTD for Simulation of Far Field from Openings in Shielding Enclosure

Leilei Zhu, Quandi Wang, Jihui Yu

*Chongqing University*  | China

**PF4-3** Transient Plane Wave Coupling to Overhead Line above a Multi-Layer Soil

Lei Qi, Xiang Cui, Tiebing Lu

*North China Electric Power University*  | China

**PF4-4** Numerical Prediction of EMI on the Secondary DC Cable in Cable Tunnel Due to a Direct Lightning Strike in Substation

Lei Qi, Xiang Cui

*North China Electric Power University*  | China

**PF4-5** The Simulation of the Soil Ionization Phenomenon around the Grounding System by the Finite Element Method

Anton Habjanic, Mladen Trlep

*University of Maribor*  | Slovenia

**PF4-6** Transient Analysis of Thin Layers for the Magnetic Field Shielding

O. Bottauscio, A. Manzin

*Istituto Elettrotecnico Nazionale Galileo Ferraris*  | Italy

**PF4-7** Lightning Transient Performances Analysis of Substation Based on Complete Transmission Line Model of Power Network and Grounding Systems

Jinliang He, Peng Kang, Bo Zhang, Rong Zeng

*Tsinghua University*  | China
Numerical Simulation of Radiated EMI in 42V Electrical Automotive Architectures
Guido Ala, Maria Carmela Di Piazza, Fabio Viola, Giovanni Tine, Gianpaolo Vitale
Università degli Studi di Palermo

Implementation of Current Source in the Time Domain Solution of Electric Field Integral Equation: Application in Lightning Return Stroke Modeling
S. Bonyadi-ram, R. Moini, S.H.H. Sadeghi
Amirkabir University of Technology

Shielding Effect of Building Steel Structures Against Impulse Magnetic Fields Excited by Near-field Lightning Strokes
Zhengcai Fu, Bin Wu, Lin Xu, Dong Zhang
Shanghai Jiao tong University

A Simplified Method for Calculating the Transient Magnetic Field Inside the Steel Structures Struck by Lightning
Xiaoqing Zhang
Beijing Jiaotong University

Determination of Grounding System Impedance by FEA with the use of Special Elements
Viviane Cristine Silva, José Roberto Cardoso, Universidade de São Paulo

Motion Transient Analysis of Flat-Type Vibration Motor for Mobile Phone
Sung Hong Won, Ju Lee
Hanyang University

Based Surface-Patch Model Calculation of Transient Radiation Field from Metallic Enclosure of GIS
Guishu Liang, Huijuan Ran, Huaying Dong
North China Electric Power University

Influence of Exciting Wires’ Phase Shift on Field Distribution in a Reverberation Chamber, calculated by TLM
D. WEINZIERL, A. KOST, A. RAIZER
Universidade Federal de Santa Catarina

A Novel Approach for Optimization of ALA Rotor Synchronous Reluctance Motor Drives
A. A Arkadan, A A Hanbali, N. AL-Aawar
Marquette University

Shape Reconstruction of Multiple Cracks from ECT Signals by means of a Stochastic Method
Mihai Rebican, Zhenmao Chen, Noritaka Yusa, Ladislav Janousek, Kenzo Miya
International Institute of Universality
OF-3 Identification of Dominant Modes in the Interface between Two Conducting Fluids
Marek Ziolkowski, Hartmut Brauer, Milko Kuilekov
Technische Universität Ilmenau

OF-4 Approximate Optimization for Maximum Efficiency of High Speed Single Phase Switched Reluctance Motor Using Response Surface Modeling
Jae-Hak Choi, Joonseon Ahn, Seung-Bin Lim, Jae-Bum Park, Ju Lee
Hanyang University

OF-5 Conceptual Evaluation of Inversion Models Used for Layered Structures
Szabolcs Gyimóthy, József Pávó, Hajime Tsuboi
Budapest University of Technology and Economics

Germany
Korea
Hungary