2010 14th Biennial IEEE Conference on Electromagnetic Field Computation

(CEFC 2010)

Chicago, Illinois, USA
9-12 May 2010
Technical Program

Opening Session — Monday
Speakers: Professor O. A. Mohammed, CEFC International Steering Committee Chair
Professor A. A. Arkadan, CEFC 2010 General Chairman
Rosemont Ballroom — 8:00-8:15 AM

Plenary Session — Monday
Session Chairs: Professor O. A. Mohammed, Florida International University, USA
Professor A. A. Arkadan, Marquette University, USA
Title: Numerical Computation Can Save Life: FEM Simulations for the Development of Artificial Hearts
Speaker: Professor Kay Hameyer, Institute of Electrical Machines, RWTH Aachen University, Germany
CEFC2010-1880
Rosemont Ballroom — 8:15-9:00 AM

Oral Session 1 — Monday
Bioelectric Field Computation
Session Chairs: Prof. Charles Choi, National Chiao Tung University, Taiwan, ROC
Dr. Zsolt Badics, Rhythmia Medical, Inc., USA
Rosement AB Ballroom — 9:15-10:15 AM

1  Numerical Analysis for Intra-Body Communication
   Charles Choi, National Chiao Tung University, Taiwan
   Shu Hai Sun, National Chiao Tung University, Taiwan
   CEFC2010-1174

2  EEG Inverse Problem Solution Using a Selection Procedure On a High Number of Electrodes with Minimal Influence of Conductivity
   Bertrand Russel Yitembe, Ghent University, Belgium
   Guillaume Crevecoeur, Ghent University, Belgium
   Roger VanKeer, Ghent University, Belgium
   Luc Dupre, Ghent University, Belgium
   CEFC2010-1276

3  Field Model of Electrical Activity of the Brain During the Hand Movement: A Source Identification Problem
   Paolo Di Barba, University of Pavia, Italy
   Fabio Freschi, Politecnico di Torino, Italy
   Maria Evelina Mognaschi, University of Pavia, Italy
   Anna Pichiecchio, I.R.C.C.S. Neurological Institute, Italy
   Maurizio Repetto, Politecnico di Torino, Italy
   Antonio Savini, University of Pavia, Italy
   Angela Vultaggio, I.R.C.C.S. Neurological Institute, Italy
4 Domain Decomposition for Computing Extremely Low Frequency Induced Current in the Human Body
   Riccardo Scorretti, Universite Lyon, France
   Ronan Perrussel, Ecole Centrale de Lyon, France
   Damien Voyer, Ecole Centrale de Lyon, France
   Noel Burais, Universite Lyon, France
   Laurent Nicolas, Ecole Centrale de Lyon, France

Oral Session 2 — Monday
Wave Propagation
Session Chairs: Prof. Atef Elsherbeni, The University of Mississippi, USA
               Prof. Andrew Peterson, Georgia Institute of Technology, USA
Rosemont CD Ballroom — 9:15-10:15 AM

5 Evolutional Design of Small Antennas for Passive UHF-band RFID
   Hidetoshi Makimura, Hokkaido University, Japan
   Yuta Watanabe, Hokkaido University, Japan
   Kota Watanabe, Hokkaido University, Japan
   Hajime Igarashi, Hokkaido University, Japan
   CEFC2010-1378

6 3D Full-Maxwell Simulations of Very Fast Transients in GIS
   Jasmin Smajic, ABB Corporate Research Ltd., Switzerland
   Walter Holaus, ABB Switzerland Ltd., Switzerland
   Jadran Kostovic, ABB Switzerland Ltd., Switzerland
   Uwe Riechert, ABB Switzerland Ltd., Switzerland
   CEFC2010-1581

7 Higher Order Basis Based Integral Equation Solver with Automatic Goal Oriented Optimization
   Daniel Garcia, University Carlos III of Madrid, Spain
   Zhang Yu, Syracuse University, USA
   Zhao Weixin, Syracuse University, USA
   Tapan K. Sarkar, Syracuse University, USA
   Luis-Emilio Garcia-Castillo, University Carlos III of Madrid, Spain
   Magdalena Salazar-Palma, University Carlos III of Madrid, Spain
   CEFC2010-1657

8 The Relay Effect on Wireless Power Transfer Using Witricity
   Fei Zhang, University of Pittsburgh, USA
   Steven Hackworth, University of Pittsburgh, USA
   Weinong Fu, The Hong Kong Polytechnic University, Hong Kong
Coffee Break
Entry Level Foyer — 10:15-10:45 AM

Poster Session 1 — Monday
Coupled Problems 1
Session Chair: Prof. Yoshihiro Kawase, Gifu University, Japan

9 An Extension of PEEC Method for Magnetic Materials Modeling in Frequency Domain
   Ivana Kovacevic, ETH Zurich, Switzerland
   Andreas Muesing, ETH Zurich, Switzerland
   Johann W. Kolar, ETH Zurich, Switzerland
   CEFC2010-1101

10 Thermal Analysis of an Interior Permanent Magnet Synchronous Motor for Electric Scooters
   Jae-Bum Park, Hanyang University, Korea
   Sang-Hwan Ham, Hanyang University, Korea
   Jong-Bin IM, Hanyang University, Korea
   Joong-Woo Lee, Hanyang University, Korea
   Ju Lee, Hanyang University, Korea
   CEFC2010-1125

11 Fully Coupled Finite Element Modeling for Accurate Prediction of Breakdown Voltage in Air at Atmospheric Pressure
   Nam-Kyung Kim, Kyungpook University, Korea
   Se-Hee Lee, Kyungpook University, Korea
   G. E. Georghiou, University of Cyprus, Cyprus
   Sung hwon Lim, Kyungpook University, Korea
   Dong-Hun Kim, Kyungpook University, Korea
   CEFC2010-1148

12 Analysis of the Saturated Electromagnetic Devices Under DC Bias Condition by the Modified Harmonic Balance Finite Element Method
   Xiaojun Zhao, North China Electric Power University, China
   Junwei Lu, Griffith University, Australia
   Lin Li, North China Electric Power University, China
   Zhiguang Cheng, North China Electric Power University, China
   Tiebing Lu, North China Electric Power University, China
   CEFC2010-1231

Using Freezing Procedure of Magnetization and Virtual Air-gap Scheme
Se-Hee Lee, Kyungpook National University, Korea
Hong-Soon Choi, Kyungpook National University, Korea
In-Ho Kim, Kyungpook National University, Korea
Il-Han Park, Sungkyunkwan University, Korea
CEFC2010-1249

Test and Simulation of Exciting Current for Single-phase Transformers Under DC Bias
Bao-dong Bai, Shenyang University of Technology, China
Chong Li, Shenyang University of Technology, China
Qing Yu, Shenyang University of Technology, China
Dexin Xie, Shenyang University of Technology, China
Yanli Zhang, Shenyang University of Technology, China
CEFC2010-1251

Optimal Design Methodology to Improve Eletro-Dynamic Characteristics of Linear Vibrators in Mobile Phones
Jin-Hun Park, Pusan National University, Korea
Kwang-Suk Kim, Pusan National University, Korea
Sang-Moon Hwang, Pusan National University, Korea
CEFC2010-1273

Electrical-thermal Coupled Calculation of a Submersible Motor Used for Deep-sea Electromagnetic Propeller
Jianjun Li, Harbin Institute of Technology, China
Jibin Zou, Harbin Institute of Technology, China
Xintong Jiang, Harbin Institute of Technology, China
Xinghe Fu, Harbin Institute of Technology, China
CEFC2010-1275

A Non-Overlapping Domain Decomposition Method for Fully Coupled Electrical-Thermal Contact Problems
Piergiorgio Alotto, Universita di Padova, Italy
Massimo Guarnieri, Universita di Padova, Italy
Federico Moro, Universita di Padova, Italy
CEFC2010-1363

Coupled Field Synthesis in Magnetic Fluid Hyperthermia
Alessandro Candeo, University of Padova, Italy
Paolo Di Barba, University of Pavia, Italy
Elisabetta Sieni, University of Padova, Italy
F. Dughiero, University of Padova, Italy
CEFC2010-1414
19 Modeling of Rotary Machines Using Finite-Element Method of Transient Magnetic Field Computation
   H. L. Li, The Hong Kong Polytechnic University, Hong Kong
   S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
   W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
   CEFC2010-1548

20 Dynamic Analysis of Axial-Type Magnetic Gear Employing 3-D FEM
   Niguchi Noboru, Osaka University, Japan
   Hirata Katsuhiro, Osaka University, Japan
   Muramatsu Masari, Osaka University, Japan
   Hayakawa Yuichi, Osaka University, Japan
   CEFC2010-1557

Poster Session 2 — Monday
Devices and Applications 1
Session Chair: Dr. Jasmin Smajic, ABB Corporate Research Ltd., Switzerland
United A/B and L.A.X A/B — 10:45 AM-12:15 PM

21 Investigation of Magnetic Coupling of Phases in a Novel Transverse Flux Machine by Consideration of Self- and Mutual- Inductance
   Qian Wang, Harbin Institute of Technology, China
   Jibin Zou, Harbin Institute of Technology, China
   Xinghe Fu, Harbin Institute of Technology, China
   Xintong Jiang, Harbin Institute of Technology, China
   CEFC2010-1035

22 Equivalent Circuit Modeling of Induction Motors Considering Stray Load Loss and Harmonic Torques Using Finite Element Method
   Katsumi Yamazaki, Chiba Institute of Technology, Japan
   Akihiro Suzuki, Chiba Institute of Technology, Japan
   Motomichi Ohto, Yaskawa Electric Corporation, Japan
   Teruyuki Takakura, Yaskawa Electric Corporation, Japan
   Satoshi Nakagawa, Yaskawa Electric Corporation, Japan
   CEFC2010-1047

23 Analysis of Flux-Switching Permanent-Magnet Machine by Nonlinear Magnetic Network Model Considering Saturation
   Gan Zhang, Southeast University, China
   Ming Cheng, Southeast University, China
   Wei Hua, Southeast University, China
   Xikai Sun, Southeast University, China
   CEFC2010-1049

24 Optimal Design of a Double-Stator Permanent Magnet Brushless Machine
   Yubin Wang, Southeast University, China University of Petroleum, China
A Sensorless Position Detection Strategy for Surface Mounted Permanent Magnet Motors at Low Speed Using Transient Finite-Element Analysis

Wang Zhao, The Hong Kong Polytechnic University, Hong Kong
Wei-Nong Fu, The Hong Kong Polytechnic University, Hong Kong
Siu-Lau Ho, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1050

Dynamic Characteristics Analysis of Incremental Sensor Using 3-D Finite Element Method with Mesh Modification Method Based on Laplace Equation

Noriharu Ogiso, MATSUO Industries Inc., Japan
Yuji Sekitomi, MATSUO Industries Inc., Japan
Yuki Yamakawa, MATSUO Industries Inc., Japan
Shigeru Komaba, MATSUO Industries Inc., Japan
Yoshihiro Kawase, Gifu University, Japan
Tadashi Yamaguchi, Gifu University, Japan
CEFC2010-1073

A Novel Single-Axis Flat Electro-Magnetic Actuator Using Shorted Turn for Fast Initial Response

Ki-Il Hwang, Yeungnam University, Korea
Jin-Ho Kim, Yeungnam University, Korea
Je-Hoon Kim, Yeungnam University, Korea
Jung-Hun Lee, Yeungnam University, Korea
CEFC2010-1177

A New Flywheel Energy Storage System (FESS) Using Z-Source Inverter

Liu Kai, Harbin Institute of Technology, China
Zou Jibin, Harbin Institute of Technology, China
Fu Xinghe, Harbin Institute of Technology, China
Jiang Xintong, Harbin Institute of Technology, China
Xu Fei, Harbin Institute of Technology, China
CEFC2010-1184

Electromagnetic Design of Dual Resonant Structures for Improved Sensitivity of Terahertz Label Free Bio-Sensing

Mihai Rotaru, University of Southampton, England
Jan Sykulski, University of Southampton, England
CEFC2010-1426
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tbody>
<tr>
<td>30</td>
<td>Compound Coordinates-Based Analytical Solution for Eddy-Current Problem in Induction Heating System with Distributed Planar Spiral Multi-Coils</td>
<td>Lichan Meng, The Hong Kong Polytechnic University, China</td>
<td>Ka Wai Eric Cheng, The Hong Kong Polytechnic University, China</td>
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<td>CEFC2010-1453</td>
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<td>31</td>
<td>Preliminary Studies of Putative Bioeffects of Experimental Ultra High Voltage Transmission Environment on Mice</td>
<td>D.Y. Geng, Hebei University of Technology, China</td>
<td>X. H. Zhang, College of Hebei Medical University, China</td>
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<td>G. Z. Xu, Hebei University of Technology, China</td>
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<td>W. L. Yan, Hebei University of Technology, China</td>
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<td>F. G. Liu, Hebei University of Technology, China</td>
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<td>CEFC2010-1534</td>
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<td>32</td>
<td>Optimization with Sequential GA and Dynamic Force Analysis of Capacitor-Driven Inductive Coilgun</td>
<td>Ningning Guo, Xi'an Jiaotong University, China</td>
<td>shuhong Wang, Xi'an Jiaotong University, China</td>
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<td>Jie Qiu, Xi'an Jiaotong University, China</td>
<td>Jian Guo Zho, University of Technology, Australia</td>
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<td>Youguang Guo, University of Technology, Australia</td>
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<td>CEFC2010-1589</td>
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<td>33</td>
<td>Design of Grid-Connected to Rotor Type Doubly-Fed Induction Generators for Wind Turbine System</td>
<td>Sang-hoon Kim, Hanyang University, Korea</td>
<td>Yong-min You, Hanyang University, Korea</td>
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<td>Thomas-A. Lipo, University of Wisconsin-Madison, USA</td>
<td>Byung-il Kwon, Hanyang University, Korea</td>
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<td>34</td>
<td>Microwave Characterization Using Ridge Polynomial Neural Networks and Least-Square Support Vector Machines</td>
<td>Hacib Tarik, Univ. Jijel, Algeria</td>
<td>Acikgoz Hulusi, Univ. Paris, France</td>
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<td>Le BihanYann, Univ. Paris, France</td>
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<td>Pichon Lionel, Univ. Paris, France</td>
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**Poster Session 3 — Monday**

*Devices and Applications 2*
35  Analysis and Characterization of Linear Switched Reluctance Motors: Static, Dynamic, Frequency Spectrum and Thermal Analyses
   Lenin Chokkalingam, Anna University, India
   Arumugam Rengasamy, SSN College of Engineering, India
   CEFC2010-1077

36  Analysis of Hysteresis in Resonance-Based Position Estimation of Switched Reluctance Drives
   Kristof Geldhof, Ghent University, Belgium
   Peter Sergeant, University College Ghent, Belgium
   Jan Melkebeek, Ghent University, Belgium
   CEFC2010-1085

37  Influence of Rotor Tooth Shape on Air-Gap Magnetic Field in Homopolar Inductor Alternator
   Xinghe Fu, Harbin Institute of Technology, China
   Jibin Zou, Harbin Institute of Technology, China
   Xintong Jiang, Harbin Institute of Technology, China
   CEFC2010-1091

38  Dynamic Simulation and Experimental Validation of Flux Reversal Linear Synchronous Motor
   Chung Shi-Uk, Korea Electrotechnology Research Institute, Korea
   Kim Kwang-Woon, Korea Electrotechnology Research Institute, Korea
   Kim Ji-Won, Korea Electrotechnology Research Institute, Korea
   Lee Ji-Young, Korea Electrotechnology Research Institute, Korea
   Woo Byung-Chul, Korea Electrotechnology Research Institute, Korea
   CEFC2010-1106

39  Optimal Design of Stator and Rotor of Interior Permanent Magnet Motor with Reduced Torque Ripple for Wide Speed Range Operation
   Jeonghu Kwack, Hanyang University, Korea
   Seungjae Min, Hanyang University, Korea
   Jung-Pyo Hong, Hanyang University, Korea
   CEFC2010-1108

40  A Study on 4-layer Hybrid Winding Layout of the IPMSM and Location of the Permanent Magnets
   Won-Ho Kim, Hanyang University, Korea
   Jae-Nam Bae, Hanyang University, Korea
   Ik-Sang Jang, Hanyang University, Korea
   Ju Lee, Hanyang University, Korea
   CEFC2010-1117
Influence of Contact Resistance on Shielding Efficiency of Shielding Gutters For HV Cables

Selim Koroglu, Yildiz Technical University, Turkey
Peter Sergeant, Ghent University, University College Ghent, Belgium
Ruth Sabariego, ACE, Belgium
Vuon Dang Quoc, ACE, Belgium
Marc De Wulf, ArcelorMittal Global R&D, Belgium
CEFC2010-1200

3D Modeling of Time Reversal Microwave Imaging in Nondestructive Evaluation

Naiguang Lei, Michigan State University, USA
Solimar Reyes-Rodr, Michigan State University, USA
Lalita Udpa, Michigan State University, USA
S. Satish Udpa, Michigan State University, USA
CEFC2010-1201

Near-field Coupling Between EMC Filter Components

Sana Zangui, Laboratoire Ampere, France
Benjamin Vincent, Laboratoire Ampere, France
Kevin Berger, Laboratoire Ampere, France
Ronan Perrussel, Laboratoire Ampere, France
Edith Clavel, Laboratoire G2Elab, France
Christian Vollaire, Laboratoire Ampere, France
O. Chadebec, Laboratoire G2Elab, France
CEFC2010-1329

Proposal of Electromagnetic Inspection Method of Outer Side Defect on Steel Tube With Steel Support Plate Using Optimal Differential Search Coils

Yuji Gotoh, Oita University, Japan
Hitoshi Fujioka, Oita University, Japan
Norio Takahashi, Okayama University, Japan
CEFC2010-1332

Stochastic Modeling of the Pull-In Voltage in a MEMS Beam Structure

Francisc Boloni, Universite Lille, France
Abdelkader Benabou, Universite Lille, France
Abdelmouna Tounzi, Universite Lille, France
CEFC2010-1471

Finite Element Analysis and Corresponding Experiments of Resonant Energy Transmission for Wireless Transmission Devices Using Witricity

Junhua Wang, The Hong Kong Polytechnic University, Hong Kong
S.L. Ho, The Hong Kong Polytechnic University, Hong Kong
W.N. Fu, The Hong Kong Polytechnic University, Hong Kong
Mingui Sun, University of Pittsburg, USA
CEFC2010-1478

47 Modeling of a Crucible Induction Furnace Taking Into Account the Inter-Laminar Losses
Mauricio V. Ferreira da Luz, Universidade Federal de Santa Catalina, Brazil
Amilcar B. Bodini, CNX Tecnologia em Informatica Ltda., Brazil
CEFC2010-1739

48 Analytical Analysis of the Magnetic Field and No-Load Voltage of the Double Dided Axial Flux Permanent Magnet Synchronous Generator
Qudsia Junaid, Hanyang University, Korea
Junaid Ikram, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea
CEFC2010-1818

Poster Session 4 — Monday
Material Modeling 1
Session Chair: Prof. Patrick Dular, University of Liege, Belgium
United A/B and L.A.X A/B — 10:45 AM-12:15 PM

49 Study on Electroforming Ni-Fe-SiC Alloy for Micro Fabrication
Xiaohu Zheng, Huaiyin Institute of Technology, China
Yuanwei Liu, Huaiyin Institute of Technology, China
Feng Gu, Huaiyin Institute of Technology, China
CEFC2010-1076

50 The Short Time Transient Thermal Analysis of IMCCR in Two Special Operating State
Junci Cao, Beijing Jiaotong University, Harbin Institute of Technology, China
Weili Li, Harbin Institute of Technology, China
Xiaochan Zhang, Harbin Institute of Technology, China
Weihong Tang, Harbin Institute of Technology, China
CEFC2010-1170

51 Electromagnetic Performance Analysis of a New Stator Permanent Magnet Doubly Salient Flux Memory Motor Using a Piecewise-linear Hysteresis Model
Xiaoyong Zhu, Jiangsu University, China
Li Quan, Jiangsu University, China
Dajian Chen, Jiangsu University, China
Ming Cheng, Jiangsu University, China
Wei Hua, Jiangsu University, China
Xikai Sun, Jiangsu University, China
CEFC2010-1183

52 A Novel Method of Modeling 2D Magnetic Properties of Electrical Steel Sheet in
Electromagnetic Devices

Xiaoyan Wang, Shenyang University of Technology, China
Dexin Xie, Shenyang University of Technology, China
W.N. Fu, Hong Kong Polytechnic University, China
CEFC2010-1195

E&SS Model Based Simulation of Core Loss and Heat Build-up in Electrical Steel.

Shimoji Hiroyasu, Oita University, Japan
Enokizono Masato, Oita University, Japan
CEFC2010-1202

High-Speed Method for Analyzing Shielding Current Density in High-Temperature Superconductor

Atsushi Kamitani, Yamagata University, Japan
Teruou Takayama, Yamagata University, Japan
Soichiro Ikuno, Yamagata University, Japan
CEFC2010-1283

Iron Losses Modeling Under Rotational Magnetic Flux

Jean Viane Leite, Centro Politecnico, Brazil
Abdelkader Benabou, L2EP, France
Mauricio Ferreira da Luz, GRUCAD/EEL/UFSC, Brazil
Nelson Sadowski, GRUCAD/EEL/UFSC, Brazil
CEFC2010-1319


Huiqi Li, North China Electric Power University, China
Qingfeng Li, North China Electric Power University, China
Xiao-bang Xu, Clemson University, USA
Tiebing Lu, North China Electric Power University, China
Li Lin, North China Electric Power University, China
CEFC2010-1438


Yongjian Li, Hebei University of Technology, University of Technology, China
Qingxin Yang, Hebei University of Technology, China
Jianguo Zhu, University of Technology, Australia
Jingfeng Sun, Hebei University of Technology, China
Lei Guo, Hebei University of Technology, China
Cuihuan Li, Hebei University of Technology, China
CEFC2010-1551
58 Finite Element Implementation of a Generalized Chua-type Vector Hysteresis Model and Application to Iron Loss Analysis of Three-phase Transformer

Heesung Yoon, Chungbuk National University, Korea
Inhyun Kim, Chungbuk National University, Korea
Pan Seok Shin, Hongik University, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1834

59 Improvement of Integral-Type Dynamic E&S Modeling

Takeru Sato, Oita University, Japan
Takashi Todaka, Oita University, Japan
Masato Enokizono, Oita University, Japan
CEFC2010-1858

Poster Session 5 — Monday
Numerical Techniques 1
Session Chair: Dr Istvan Bardi, Ansys Inc, USA
United A/B and L.A.X A/B — 10:45 AM-12:15 PM

60 Accelerating the Convergence of Algebraic Multigrid for Quadratic Finite Element Method by Introducing Grid Information and p-Multigrid

Chijie Zhuang, Tsinghua University, China
Rong Zeng, Tsinghua University, China
Bo Zhang, Tsinghua University, China
Shuiming Chen, Tsinghua University, China
Jinliang He, Tsinghua University, China
CEFC2010-1094

61 A Sparse Finite Element Method for Modeling Evanescent Modes in the Stopband of Periodic Structures

Ali Bostani, McGill University, Canada
Jon Webb, McGill University, Canada
CEFC2010-1119

62 Finite Element Analysis of Magnetic Field Problem with Open Boundary Using Infinite Element Technique

Satoshi Tamitani, Waseda University, Japan
Tomoaki Takamatsu, Waseda University, Japan
Asuka Otake, Waseda University, Japan
Shinji Wakao, Waseda University, Japan
Akihisa Kameari, Science Solutions International Laboratory, Inc, Japan
Yasuhiro Takahashi, Kyoto University, Japan
CEFC2010-1152

63 Performance Evaluation of Parallel Fast Multipole Accelerated Boundary Integral Equation Method in Electrostatic Field Analysis
64 Fast Magnetic Field Analysis by Applying Nonconforming Mesh Connection Technique to an Outer Region
   Yoshifumi Okamoto, Utsunomiya University, Japan
   Koji Fujiwara, Doshisha University, Japan
   Yoshiyuki Ishihara, Doshisha University, Japan
   Shuji Sato, Utsunomiya University, Japan
CEFC2010-1248

65 Study on Meshless Method using RPIM for Transient Electromagnetic Field
   Yoshikazu Tanaka, Hiroshima University, Japan
   Eiji Kunisada, Hiroshima University, Japan
CEFC2010-1281

66 A Parallel High Precision Integration Scheme with Spectral Element Method for Transient Electromagnetic Computation
   Yueqin Huang, Duke University, USA
   Jiefu Chen, Duke University, USA
   Jianzhong Zhang, Xiamen University, China
   Qing Liu, Duke University, USA
CEFC2010-1312

67 A Triangular Decomposition Method with controlling parameter for cyclic block tridiagonal Systems in Coupled Fields Analysis
   Jinming Wang, Shenyang University of Technology & Dalian University of Technology, China
   Dexin Xie, Shenyang University of Technology, China
   Yu Tian, Shenyang University of Technology, China
CEFC2010-1355

68 Parallel Programming Applied to the N Scheme for Solving FE Cases Without Assembling an Ax=b System
   Juliana Eyng, Universidade Federal de Santa Catarina, Brazil
   João P. A. Bastos, Universidade Federal de Santa Catarina, Brazil
   Nelson Sadowski, Universidade Federal de Santa Catarina, Brazil
   Marcos Fischborn, Universidade Tecnologica do Parana, Brazil
   M.A.R. Dantas, Universidade Federal de Santa Catarina, Brazil
   Denise Janson Ferreira, Universidade Federal de Santa Catarina, Brazil
An Efficient Parallel Remeshing Method
Cassia Nunes, Universidade Federal de Sao Joao del-Rei, Brazil
Pollyana Mayrink, Universidade Federal de Sao Joao del-Rei, Brazil
Renato Mesquita, Universidade Federal de Minas Gerais, Brazil
David Lowther, McGill University, Canada
CEFC2010-1448

Implementation of Variable Preconditioned GCR with Mixed Precision on GPU using CUDA
Soichiro Ikuno, Tokyo University of Technology, Japan
Norihisa Fujita, Tokyo University of Technology, Japan
Susumu Yamamoto, Tokyo University of Technology, Japan
Susumu Nakata, Ritsumeikan University, Japan
CEFC2010-1455

An Efficient Mesh Reconstruction Method for Optimizing the Shapes of Electromagnetic Devices Using Finite Element Method
Ningning Chen, The Hong Kong Polytechnic University, China
S. L. Ho, The Hong Kong Polytechnic University, China
W. N. Fu, The Hong Kong Polytechnic University, China
CEFC2010-1457

Simultaneous Multi-Frequency Simulation by Recycling Krylov Subspaces in FDFD Formulation
Toshio Murayama, Sony Corporation, Japan
Shin-Ichiro Sugimoto, The University of Tokyo, Japan
Shinobu Yoshimura, The University of Tokyo, Japan
CEFC2010-1723

Convexity-Oriented Method for the Topology Optimization of Ferromagnetic Parts in Electromagnetic Actuators Using the Maxwell Stress Tensor
Thibaut Labbe, Universite Catholique de Louvain, Belgium
Bruno Dehez, Universite Catholique de Louvain, Belgium
CEFC2010-1051

Optimum Design of the Single-Phase Outer Rotor Type Brushless DC Motor for Pump Application Using Response Surface Methodology and Kriging
Do-Kwan Hong, Korea Electrotechnology Research Institute, Korea
Byung-Chul Woo, Korea Electrotechnology Research Institute, Korea
Topology Optimization of Magnetic Actuator Based on a Level-Set and a Phase-Field Approach

Sunghoon Lim, Hanyang University, Korea
Takayuki Yamada, Kyoto University, Korea
Seungjae Min, Hanyang University, Korea
Shinji Nishiwaki, Kyoto University, Korea
CEFC2010-1103

Efficient Design of Microstrip Antennas Using Modified PSO Algorithm

Arezoo Modiri, University of Texas, USA
Kamran Kiasaleh, University of Texas, USA
CEFC2010-1295

Evolutionary Optimization of Permanent Magnet Machine Design for Traction Applications

Minos Beniakar, National Technical University of Athens, Greece
Evangelos Tsampouris, National Technical University of Athens, Greece
Patsios Charalampous, National Technical University of Athens, Greece
Kladas Antonios, National Technical University of Athens, Greece
CEFC2010-1321

An Optimal Material Distribution Design of Brushless DC Motor by Genetic Algorithm Considering a Cluster of Material

Takeo Ishikawa, Gunma University, Japan
Kouki Yonetake, Gunma University, Japan
Nobuyuki Kurita, Gunma University, Japan
CEFC2010-1327

Using Hybrid Constricted Particles Swarm and Simulated Annealing Algorithm for Electric Motor Design

Lhassane Idoumghar, University of haute-Alsace, France
Daniel Fodorean, University of Technology of Belfort-Montbeliard, France
Abdellatif Miraoui, University of Technology of Belfort-Montbeliard, France
CEFC2010-1382

Joint Direction of Arrival and Amplitude Estimation using Particle Swarm Optimization and a Single Snapshot

Borja Errasti-Alcal, National Institute of Aerospace Technology, Spain
David Escot-Bocanegra, National Institute of Aerospace Technology, Spain
David Poyatos-Martinez, National Institute of Aerospace Technology, Spain
Antonio Jurado-Lucena, National Institute of Aerospace Technology
R. Fernandez-Recio, National Institute of Aerospace Technology, Spain
81 Particle Swarm Optimization of Coupled Electromechanical Systems
Nizar Al-Aawar, Hairi Canadian University, Lebanon
Toufic Hijazi, Hairi Canadian University, Lebanon
Abdul-Rahman Arkadan, Hairi Canadian University, Lebanon
CEFC2010-1482

82 Optimization of Frequency Selective Surface by the Genetic Algorithm
Jingyu Han, Beijing University of Technology, China
Qun Wang, Beijing University of Technology, China
Zhanghong Tang, Beijing University of Technology, China
Meiwu Shi, Quartermaster Equipment Research Institute, China
Maohui Li, Quartermaster Equipment Research Institute, China
CEFC2010-1599

83 Using Genetic Algorithms for Device Modeling
Hermano A. Cabral, Federal University of Pernambuco, Brazil
Marcos T. de Melo, Federal University of Pernambuco, Brazil
CEFC2010-1843

Poster Session 7 — Monday
Static and Quasi-static Fields 1
Session Chair: Dr. Dan Ionel, A. O. Smith Corp, USA
United A/B and L.A.X A/B — 10:45 AM-12:15 PM

84 Calculation of Transient Electric Field of Converter Transformer Under Polarity Reversal Voltage
Lin Li, North China Electric Power University, China
Feng Ji, North China Electric Power University, China
Gang Liu, North China Electric Power University, China
Youliang Sun, North China Electric Power University, China
CEFC2010-1045

85 A New Formulation of Anisotropic Equivalent Conductivity in Laminations
Wang Jian, Southeast University, China
Lin Heyun, Southeast University, China
Huang Yunkai, Southeast University, China
Sun Xikai, Southeast University, China
CEFC2010-1084

86 Finite Element Simulation of Hard Magnetoelastic Thin Films
Matthew Barham, Lawrence Livermore National Laboratory, USA
Dan White, Lawrence Livermore National Laboratory, USA
CEFC2010-1089
A Calculation Method for 3-D Ionized Field under HVDC Transmission Lines
Zhaonan Luo, North China Electric Power University, China
Xiang Cui, North China Electric Power University, China
Weidong Zhang, North China Electric Power University, China
Jiayu Lu, China Electric Power Research Institute, China
CEFC2010-1096

Inductance Calculation by Relative Permeance for the IPMSM design
Jaenam Bae, Hanyang University, Korea
Chang-Sung Jin, Hanyang University, Korea
Won-ho Kim, Hanyang University, Korea
Ik-sang Jang, Hanyang University, Korea
Sung-hong Won, Hanyang University, Korea
Ju Lee, Hanyang University, Korea
CEFC2010-1097

Electric Field Computation in Non Conducting Regions Using AV After a $t_0-\Phi$
Surface Impedance Magnetoharmonic Computation
Christophe Gu, Chemin de Malacher, France
Gerard Meunier, Saint-Martin-d, France
Phuong Pham Quang, Chemin de Malacher and Saint-Martin-d, France
CEFC2010-1115

Design and Analysis of a Novel Ironless Trapezoid Winding Array with
Single-Sided and Well Sinusoidal Magnetic Field
Gan Zhou, Southeast University Nanjing, China
Xueliang Huang, Southeast University Nanjing, China
Hao Jiang, Southeast University Nanjing, China
Rui Bo, Southeast University Nanjing, China
CEFC2010-1121

Improvement of Convergence Characteristics for Steady State Analysis of
Motors with Simplified Singularity Decomposition-Explicit Error Correction
Method
Hirokatsu Katagiri, Gifu University, Japan
Yoshihiro Kawase, Gifu University, Japan
Tadashi Yamaguchi, Gifu University, Japan
Takeshi Tsuji, Gifu University, Japan
Yoshiyasu Shibayama, Gifu University, Japan
CEFC2010-1131

The Influence of Additional Loss on Rotor Surface Heat Transfer Coefficient
and Temperature Field of Large Air-Cooled Hydro-Generator
Weili Li, Harbin University of Science and Technology, China
Dongmei Wang, Harbin University of Science and Technology, China
Parallel Hierarchical Block Wavelet Compression for an Optimal Compression Rate of 3-D BEM Problems

Christian Scheiblich, University of Stuttgart, Germany
Remus Banucu, University of Stuttgart, Germany
Veronika Reinauer, University of Stuttgart, Germany
Wolfgang M. Rucker, University of Stuttgart, Germany

CEFC2010-1261

Equivalent Single Conductor Capacitance Extraction for Densely-Packed CNT Bundle Interconnects via an Integral Formulation

Luigi Egiziano, Università degli Studi di Salerno, Italy
Alessandro Giustiniani, Università degli Studi di Salerno, Italy
Vincenzo Tucci, Università degli Studi di Salerno, Italy
Walter Zamboni, Università degli Studi di Salerno, Italy

CEFC2010-1282

Implementation of Generalized Back Projection Algorithm in 3D EIT Model

Hongbin Wang, Hebei University of Technology, China
Guizhi Xu, Hebei University of Technology, China
Shuai Zhang, Hebei University of Technology, China
Duyan Geng, Hebei University of Technology, China
Qingxin Yang, Hebei University of Technology, China
Weili Yan, Hebei University of Technology, China

CEFC2010-1410

Inverse Problem Approach to Characterize and Model Magnetization Changes in a Thin Shell Structure Undergoing Magneto-Mechanical Effects

Antoine Viana, Université de Grenoble, France
Laure-Line Rouve, Université de Grenoble, France
Olivier Chadebec, Université de Grenoble, France
Gilles Cauffet, Université de Grenoble, France
Jean-Louis Coulomb, Université de Grenoble, France

CEFC2010-1492

Distortion of Sensed Electric Field by Conducting Sensor Platforms

Phillip A.M. Sandborn, U.S. Army Research Laboratory, USA
David M. Hull, U.S. Army Research Laboratory, USA
Stephen J. Vinci, U.S. Army Research Laboratory, USA

CEFC2010-1610

Lunch
Red Bar Entry Level Foyer — 12:15-1:15 PM
Poster Session 8 — Monday
Devices and Applications 3
Session Chair: Prof. Chang Eob Kim, Hoseo University, Korea
United A/B and L.A.X A/B — 1:15-2:45 PM

98  Compensation of Inductance Parameters of Interior Permanent Magnet Synchronous Motors Affected by Magnet Size
  Jang Iksang, Hanyang University, Korea
  Kim Wonho, Hanyang University, Korea
  Bae Jaenam, Hanyang University, Korea
  Ju Lee, Hanyang University, Korea
  CEFC2010-1110

99  Design Algorithm Using Torque Separation Method for LSPM Motor
  Won-Ho Kim, Hanyang University, Korea
  Jae-Nam Bae, Hanyang University, Korea
  Ik-Sang Jang, Hanyang University, Korea
  Ju Lee, Hanyang University, Korea
  CEFC2010-1111

100 Calculation and Experimental Analysis of Induction Motor Eccentricity
    Mauricio Rigoni, Universidade Federal de Santa Catarina, Brazil
    Nelson Sadowski, Universidade Federal de Santa Catarina, Brazil
    Nelson Jhoe Batistela, Universidade Federal de Santa Catarina, Brazil
    Joao Pedro Bastos, Universidade Federal de Santa Catarina, Brazil
    Sebastiao Nau, WEG S/A, Brazil
    Arnulf Kost, TU-Berlin, Germany
    CEFC2010-1124

101 The Optimal Design of the Rotor Bar for LSPMSM Considering the Starting Torque and Magnetic Saturation
    Kwangsoo Kim, Hanyang University, Korea
    Seung-Joo Kim, Hanyang University, Korea
    Won-ho Kim, Hanyang University, Korea
    Jong-Bin Im, Hanyang University, Korea
    Suyeon Cho, Hanyang University, Korea
    Lee Ju, Hanyang University, Korea
    CEFC2010-1126

102 Torque Characteristics Analysis of Synchronous Reluctance Motor Based on Winding Function Theory
    Kyung-il Woo, Pukyong National University, Korea
    Sang-hoon Park, Pukyong National University, Korea
    Han-Seok Park, Pukyong National University, Korea
    CEFC2010-1130
<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
<th>Institution(s)</th>
<th>Paper Code</th>
</tr>
</thead>
</table>
| 103         | Power-saving Effect of Permanent Magnet on Oscillating Electromagnetic Linear Actuator | Jung-Hun Lee, Yeungnam University, Korea  
Jin-Ho Kim, Yeungnam University, Korea  
Sang-Hyun Jeong, Korea Institute of Machinery & Materials, Korea  
Bang-Woo Han, Korea Institute of Machinery & Materials, Korea | Yeungnam University, Korea  
Korea Institute of Machinery & Materials, Korea | CEFC2010-1176 |
| 104         | Transformer Joints FE Analysis Using Pseudo-Source Technique         | Themistoklis Kefalas, National Tech. Univ. of Athens, Greece  
George Loizos, National Tech. Univ. of Athens & Schneider Electric, Greece  
Antonios Kladas, National Tech. Univ. of Athens, Greece | National Tech. Univ. of Athens, Greece  
National Tech. Univ. of Athens & Schneider Electric, Greece  
National Tech. Univ. of Athens, Greece | CEFC2010-1215 |
| 105         | Simulation Analysis of Steady State Characteristics of Parallel-Axis Permanent Magnetic Gear | Xing Jingwei, Harbin Institute of Technology, China  
Li Yong, Harbin Institute of Technology, China  
Jiang Xintong, Harbin Institute of Technology, China  
Fu Xinghe, Harbin Institute of Technology, China  
Yin Zhijun, Harbin Electric Machinery Company, China | Harbin Institute of Technology, China  
Harbin Institute of Technology, China  
Harbin Institute of Technology, China  
Harbin Institute of Technology, China  
Harbin Electric Machinery Company, China | CEFC2010-1256 |
| 106         | Design of a Linear Magnetic Refrigeration Structure Running with Rotating Bar-Shaped Magnets | Houssem Rafik El Hana Bouchekara, Umm Al-Qura University, Saudi Arabia  
Mohammed Talal Simsim, Umm Al-Qura University, Saudi Arabia | Umm Al-Qura University, Saudi Arabia  
Umm Al-Qura University, Saudi Arabia | CEFC2010-1347 |
| 107         | Study on Separable Transformer's Efficiency for Contactless Energy Transmission System | Ning Lin, Zhejiang University, China  
Yingying Yao, Zhejiang University, China  
Youtong Fang, Zhejiang University, China  
Shiyou Yang, Zhejiang University, China | Zhejiang University, China  
Zhejiang University, China  
Zhejiang University, China  
Zhejiang University, China | CEFC2010-1412 |
| 108         | Optimal Design of Auxiliary teeth to Minimized Unbalanced Phase by End Effect of PMLSM | Ki-Bong Jang, Changwon National University, Korea  
Jee-Hyun Kim, Changwon National University, Korea  
Ho-Jin An, Changwon National University, Korea  
Gyu-Tak Kim, Changwon National University, Korea | Changwon National University, Korea  
Changwon National University, Korea  
Changwon National University, Korea  
Changwon National University, Korea | CEFC2010-1542 |
| 109         | Optimization and Analysis of Rotor Structure for Maximum Torque Control of | | | |
Spoke-type Interior Permanent Magnet Synchronous Motor

Yul-kyu Son, Hanyang University, Korea
Kyu-yun Hwang, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea

CEFC2010-1819

110 Grid Computing and Surrogate Objective Function Assisted Multi-objective Shape Optimal Design of PMLSM

Minho Song, Chungbuk National University, Korea
Heesung Yoon, Chungbuk National University, Korea
Hong-soon Choi, Kyungbuk National University, Korea
Chang Seop Koh, Chungbuk National University, Korea

CEFC2010-1840

111 Iron Loss and Torque Analysis of FE-based Model for Inverter-Fed Spoke type IPMSM with Optimized Rotor Pole for Sinusoidal Distributed back-EMF

Kyu-yun Hwang, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea

CEFC2010-1841

Poster Session 9 — Monday
Devices and Applications 4

Session Chair: Prof. Giovanni Aiello, University of Catania, Italy

United A/B and L.A.X A/B — 1:15-2:45 PM

112 Magnetic Field Analysis of Matrix-Rotor Induction Motor

Yoshihiro Kawase, Gifu University, Japan
Tadashi Yamaguchi, Gifu University, Japan
Takeshi Tsuji, Gifu University, Japan
Ken Tanaka, Gifu University, Japan
Norimoto Minoshima, Toyota Industries Corporation, Japan
Tatsuya Hattori, Toyota Industries Corporation, Japan

CEFC2010-1133

113 Electromagnetic Losses Calculation of 5kW Class High-Speed Permanent Magnet Synchronous Motor Considering Current Waveform

Kyoung-Jin Ko, Chungnam National University, Korea
Seok-Myeong Jang, Chungnam National University, Korea
Ji-Hoon Park, Chungnam National University, Korea
Sung-Ho Lee, Korea Institute of Industrial Technology, Korea

CEFC2010-1136

114 Electromagnetic Active Linear Absorber(ALA) System of Engine Vibration in Automobile

Jung-Hun Lee, Yeungnam University, Korea
Jin-Ho Kim, Yeungnam University, Korea
115 Coupling Analysis of High Speed PM Generator Used for Distributed Generation System

Zhang Xiaochen, Harbin Institute of Technology, China
Li Weili, Harbin University of Science and Technology, China
Cheng Shukang, Harbin Institute of Technology, China
Kou Baoquan, Harbin Institute of Technology, China
Geng Jiamin, Harbin Dongan Engine Group Co., China
CEFC2010-1175

116 A Novel Electromagnetic Latching Device for Variable Valve Timing in Automotive Engine

Jin-Ho Kim, Yeungnam University, Korea
Joung-Hwan Chang, Dong-A University, Korea
Se-Myung Park, Yeungnam University, Korea
Ki-II Hwang, Yeungnam University, Korea
Jae-Yong Lee, Yeungnam University, Korea
CEFC2010-1179

117 A Novel Axial-flux Electric Machine for In-wheel Gearless Drive in Plug-in Hybrid Electric Vehicles

W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1558

118 A Study on the Improvement of High Power in Interior Permanent Magnet

Dae-Sung Jung, Hanyang University, Korea
Hyung-Woo Lee, Hanyang University, Korea
Ju Lee, Hanyang University, Korea
CEFC2010-1574

119 Design and Dynamic Analysis of Electromagnets for Magnetic Levitation Application Systems

Jang-Young Choi, Chungnam National University, Korea
So-Young Sung, Chungnam National University, Korea
Seok-Myeong Jang, Chungnam National University, Korea
CEFC2010-1628

120 GA-Optimization to Damp the Resonance of Large Power/Ground Planes, Combined with Adaptive Frequency Sampling

Sungtek Kahng, University of Incheon, Korea
Tae-Kyung Chung, Chung-Ang University, Korea
Hyeong-seok Kim, Chung-Ang University, Korea
CEFC2010-1630

Numerical Methods for Eddy Currents Modeling of Planar Transformers
Jérémie Aimé, G2Elab & MICROSPIRE R&D Center, France
Bruno Cogitore, MICROSPIRE R&D Center, France
Gérard Meunier, G2Elab, France
Edith Clavel, G2Elab, France
Yves Maréchal, G2Elab, France
CEFC2010-1648

Comparison of Two Methods for Modeling Thin Regions in Eddy Current Non-Destructive Testing
Alejandro Opsina, UPMC University, France
Houda Zaidi, UPMC University, France
Laurent Santandrea, UPMC University, France
Guillaume Krebs, UPMC University, France
Yann Le Bihan, UPMC University, France
CEFC2010-1653

Study of Insulator Performance under Contaminated Conditions Using a 3D Formulation of Quasi-Static Electric Fields
Mauricio V. Ferreira da Luz, Universidade Federal de Santa Catarina, Brazil
Fernando H. Molina, CELES Distribui, Brazil
Emilio R. Arend, Universidade Federal de Santa Catarina, Brazil
CEFC2010-1661

Reduction Design of Cogging Torque of BLDC Motor for EPS Application
Young-Kyoun Kim, Korea Electronics Tech. Inst. Yatap-Dong, Korea
Se-hyun Rhyu, Korea Electronics Tech. Inst. Yatap-Dong, Korea
In-Soung Jung, Korea Electronics Tech. Inst. Yatap-Dong, Korea
CEFC2010-1820

Magnetic Design of Transformers for 20kW Charging Stations of Electrical Vehicles
Chengxi Liu, The Hong Kong Polytechnic University, China
S.L. Ho, The Hong Kong Polytechnic University, China
W.N. Fu, The Hong Kong Polytechnic University, China
S. Z. Hai, The Hong Kong Polytechnic University, China
CEFC2010-1822

Poster Session 10 — Monday
Devices and Applications 5
Session Chair: Prof. Igor Ticar, University of Maribor, Slovenia
United A/B and L.A.X A/B — 1:15-2:45 PM
Design and Experimental Implementation of Easily Detachable Permanent Magnet Reluctance Wheel for Wall-Climbing Mobile Robot

Jin-Ho Kim, Yeungnam University, Korea
Sang-Shin Park, Yeungnam University, Korea
Se-Myung Park, Yeungnam University, Korea
Je-Hoon Kim, Yeungnam University, Korea
Jae-Yong Lee, Yeungnam University, Korea
CEFC2010-1180

Compensated Phase Method of Current for Reducing Torque Ripple of Multi-Degree of Freedom Surfaced Permanent-magnet Motor

Dong-Woo Kang, Hanyang University, Korea
Sung-Chul Go, Hanyang University, Korea
Sung-Hong Won, Hanyang University, Korea
Hyung-Woo Lee, Hanyang University, Korea
Ju Lee, Hanyang University, Korea
CEFC2010-1182

Analysis of an Axial Flux Permanent Magnet Synchronous Generator with a Double-sided Rotor

Tze-Fun Chan, The Hong Kong Polytechnic University, China
Weimin Wang, The Hong Kong Polytechnic University, China
Loi-Lei Lai, City University London, UK
CEFC2010-1189

A New Modular Flux-Switching Permanent-Magnet Motor Using Fault-Tolerant Teeth

Zhao Wenxiang, Southeast University AND Jiangsu University, China
Cheng Ming, Southeast University, China
K.T. Chau, Southeast University AND University of Hong Kong, China
Ji Jinghua, Jiangsu University, China
Hua Wei, Southeast University, China
Cao Ruiwu, Southeast University, China
CEFC2010-1190

Effect of Step Skewed Rotor Type IPMSM on Noise and Vibration

Jae-Woo Jung, Hanyang University, Korea
Do-Jin Kim, Hanyang University, Korea
Sang-Ho Lee, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
Dong-Hoon Lee, S&T Daewoo Co., Korea
CEFC2010-1193

Design Studies on a Permanent Magnet Synchronous Machine with Star- and Delta-connected Stator Winding
Erich Schmidt, Vienna University of Technology, Austria
Marko Susic, Vienna University of Technology, Austria
Andreas Eilenberger, Vienna University of Technology, Austria
CEFC2010-1198

Permanent Magnet Generator 3D Transient Temperature Field Analysis Based on Magnetic-Thermal Element Coupling Algorithm
Bo Zhao, Harbin Institute of Technology, China
Jibin Zou, Harbin Institute of Technology, China
Xinghe Fu, Harbin Institute of Technology, China
Xintong Jiang, Harbin Institute of Technology, China
CEFC2010-1205

Optimal Design of Multi-Shield for Improvement of Insulation Performance of High Voltage Vacuum Interrupter
Hyun-Woo Joo, LS Industrial Systems, Co., Ltd., Korea
Jaeseop Ryu, LS Industrial Systems, Co., Ltd., Korea
Sungjun Tak, LS Industrial Systems, Co., Ltd., Korea
Jong-Hyuk Lee, LS Industrial Systems, Co., Ltd., Korea
Seokween Park, LS Industrial Systems, Co., Ltd., Korea
Jhong-Ho Lee, LS Industrial Systems, Co., Ltd., Korea
CEFC2010-1206

Calculation of Cogging Torque for Stator Interior Permanent Magnet Machine
Jianzhong Zhang, Southeast University, China
Ming Cheng, Southeast University, China
Wei Hua, Southeast University, China
CEFC2010-1213

Optimum Design Criteria of Miniature Type Linear Servo Motor of Precise Pick & Place Module for Cogging Force Reduction Using Response Surface Methodology & Finite Element Method
Jung Ho Lee, Hanbat National University, Korea
Tae Hoon Lee, Hanbat National University, Korea
Ah ram Jeon, Hanbat National University, Korea
CEFC2010-1238

Circuit Models for Predicting Core Losses in the Stator and Rotor of a Caged Induction Machine with Sinusoidal Supplies
Omar Laldin, University of Toronto, Canada
Emad Dlala, Aalto University, Finland
Antero Arkkio, Aalto University, Finland
CEFC2010-1404

Modeling a Rogowski Coil in an EMC Chamber Taking Into Account the Displacement Current
Passively Stabilized Magnetic Bearings
Antonino Musolino, University of Pisa, Italy
Rocco Rizzo, University of Pisa, Italy
CEFC2010-1664

Optimal Design of Distributed Winding Axial Flux Permanent Magnet Synchronous Generator for Wind Turbine Systems
Yong-Min You, Hanyang University, Korea
Kyu-yun Hwang, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea
CEFC2010-1821

One-dimensional Field Computation for Leakage Impedance of Induction Wok System with Radical Windings
Ka Wai Eric Cheng, The Hong Kong Polytechnic University, China
L.C. Meng, The Hong Kong Polytechnic University, China
K.W. Chan, The Hong Kong Polytechnic University, China
S.L. Ho, The Hong Kong Polytechnic University, China
CEFC2010-1878

Poster Session 11 — Monday
Software Methodology 1
Session Chair: Prof. Nelson Sadowski, Universidade Fefereal de Santa Catarina, Brasil
United A/B and L.A.X A/B — 1:15-2:45 PM

EMSoft - Software for Graduate and Undergraduate Educational Electromagnetics
Houssem R.E.H. Bouchekara, Umm Al-Qura University, Saudi Arabia
Mohammed Talal Simsim, Umm Al-Qura University, Saudi Arabia
CEFC2010-1348

A Framework for Meshless Methods using Generic Programming
Naisses Zoia Lima, Federal University of Minas Gerais, Brazil
Renato Cardoso Mesquita, Federal University of Minas Gerais, Brazil
Marcos L. A. Junior, Federal University of Minas Gerais, Brazil
CEFC2010-1435
Magnetic Equivalent Circuit Coupled to Finite Element Analysis for Flux Focusing PM Machine Modeling

Nedjar Boumedyen, CNRS UniverSud, France
Hlioui Sami, CNRS UniverSud, France
Vido Lionel, University Cergy Pontoise, France
M. Gabsi, CNRS UniverSud, France
Y. Amara, GREAH, France
A. Miraoui, UTBM, France
CEFC2010-1615

Proposal of a Language for Describing Differentiable Sizing Models for Electromagnetic Devices Design

Petre Enciu, INPG/UJF/CNRS,ENSE, France
F. Wurtz, INPG/UJF/CNRS,ENSE, France
Laurent Gerbaud, INPG/UJF/CNRS,ENSE, France
CEFC2010-1707

Semi-three-dimensional Visualization of Electromagnetic Field Analysis Results with Volumetric Display

Tomoaki Inaba, Hokkaido University, Japan
So Noguchi, Hokkaido University, Japan
Hajime Igarashi, Hokkaido University, Japan
CEFC2010-1845

Poster Session 12 — Monday
Static and Quasi-static Fields 2
Session Chair: Dr. Kazuhiro Muramatsu, Saga University, Japan
United A/B and L.A.X A/B — 1:15-2:45 PM

A Novel Fault-Tolerant Multi-Tooth Flux-Switching Motor with Hybrid Excitation for Electro-mechanical Actuator

Yu Wang, Nanjing University of Aeronautics and Astronautics, China
Zhi-quan Deng, Nanjing University of Aeronautics and Astronautics, China
Xiao-lin Wang, Nanjing University of Aeronautics and Astronautics, China
CEFC2010-1141

Analysis of a Short-Stroke DC Linear Motor for Nanopositioning

Liyi Li, Harbin Institute of Technology, China
Donghua Pan, Harbin Institute of Technology, China
Baoquan Kou, Harbin Institute of Technology, China
CEFC2010-1167

Numerical Analysis of Axial-Radial Flux Type Fully Superconducting Synchronous Motor

Weili Li, Harbin University of Science and Technology, China
Chengyu Song, Harbin University of Science and Technology, China
Junci Cao, Harbin University of Science and Technology, China
Liyi Li, Harbin University Technology, China
CEFC2010-1188

New Technique of Magnetoacoustic Tomography with Magnetic Induction
Yang Zhang, Chinese Academy of Sciences, China
Guoqiang Liu, Chinese Academy of Sciences, China
Wenjing He, Chinese Academy of Sciences, China
Hui Xia, Chinese Academy of Sciences, China
Yanhong Li, Chinese Academy of Sciences, China
Shiyou Yang, Zhejiang University, China
CEFC2010-1207

Inductance Parameter Simulation Analysis and Measurement of Permanent Magnet Synchronous Motors
Jiang Xin-tong, Heilongjiang Bayi Agricultural University & Harbin Institute of Technology, China
LI Wei-kai, Heilongjiang Bayi Agricultural University, China
LI Yong, Harbin Institute of Technology, China
Zhu Hongwei, Harbin Institute of Technology, China
CEFC2010-1209

Object-Oriented Development and Runtime Investigation of 3-D electrostatic FEM problems in Pure Java
Veronika Reinauer, University of Stuttgart, Germany
Tassilo Wendland, University of Stuttgart, Germany
Christian Scheiblich, University of Stuttgart, Germany
Remus Banucu, University of Stuttgart, Germany
Wolfgang M.Rucker, University of Stuttgart, Germany
CEFC2010-1284

Layer Recurrent Neural Network Solution for an Electromagnetic Interference Problem
Dan Doru Micu, Technical University of Cluj Napoca, Romania
Levente Czumbil, Technical University of Cluj Napoca, Romania
Andrei Ceclan, Technical University of Cluj Napoca, Romania
Anca Mutu, Technical University of Cluj Napoca, Romania
Denisa Stet, Technical University of Cluj Napoca, Romania
CEFC2010-1320

Nonlinear Eddy Current Analysis by Boundary Integral Equation of One Component Utilizing Impedance Boundary Condition
Kasuhsa Ishibashi, ABB Switzerland Ltd, Japan
Zoran Andjelic, ABB Switzerland Ltd, Japan
David Pusch, ABB Switzerland Ltd, Japan
154 Numerical Analysis of Transitional Behavior of Ferrofluid Employing MPS Method and FEM
  Yoshikawa Gaku, Osaka University, Japan
  Hirata Katuhiro, Osaka University, Japan
  Miyasaka Fumikazu, Osaka University, Japan
  Yu Okaue, Osaka University, Japan
  CEFC2010-1373

155 Three Dimensional Transient Modeling of a Halbach Rotor Moving above a Conductive Guideway using Fictitious Magnetic Charge
  Subhra Paul, University of North Carolina, USA
  Dheeraj Bobba, University of North Carolina, USA
  Jonathan Bird, University of North Carolina, USA
  CEFC2010-1440

156 Analysis of Corona Onset Electric Field Considering the Effect of Space Charges
  Tiebing Lu, North China Electric Power University, China
  Gaolin Xiong, North China Electric Power University, China
  Hong Rao, China Southern Power Grid Co., Ltd, China
  Qi Wang, China Southern Power Grid Co., Ltd, China
  CEFC2010-1590

157 Analysis of Radial Electromagnetic Force under Different Poles/Slots Matched in Large Torque PMSMs
  Xintong Jiang, Harbin Institute of Technology, China
  Yong Li, Harbin Institute of Technology, China
  Xinghe Fu, Harbin Institute of Technology, China
  Chenxiao Jiu, Harbin Institute of Technology, China
  Yongping Lu, Harbin Institute of Technology, China
  CEFC2010-1644

158 Hydrodynamic Modeling for Discharge Analysis in Dielectric Liquids with Finite Element Method under Lightning Impulse
  HoYoung Lee, Kyungpook National University, Korea
  YoungSun Kim, Sungkyunkwan University, Korea
  HongKyu Kim, Korea Electrotechnology Research Institute, Korea
  GeunYoung Jeong, Kyungpook National University, Korea
  HeungGeun Kim, Kyungpook National University, Korea
  SeHee Lee, Kyungpook National University, Korea
  CEFC2010-1750

159 Successful 3D Simulation of Branching Streamer in Air Bridging the Gap Between Main Electrodes Using Charge Simulation Method
  Matjaz Gaber, University of Maribor, Slovenia
Poster session 13 — Monday
Wave Propagation 1
Session Chair: Dr. Lionel Pichon, Laboratoire de Genie Electrique de Paris, France
United A/B and L.A.X A/B — 1:15-2:45 PM

160 Time Domain Hybrid Finite Elements/ Finite Differences Method For Solving Electromagnetic Compatibility Problems
Mohamed El-Hachemi, BAE-Systems Advanced Technology Centre, UK
CEFC2010-1088

161 Optimal Coefficients of the Special FD Operator for the CNS-FDTD Method
Tadao Ohtani, Mitsubishi Heavy Industries, Ltd., Japan
Yasushi Kanai, Niigata Institute of Technology, Japan
CEFC2010-1159

162 Dyadic Green’s Functions for Two-Layered Electrically Gyrotropic Medium
Abdullah Eroglu, Indiana University-Purdue University Fort Wayne, USA
CEFC2010-1250

163 A Model Order Reduction Method for Efficient Band Structure Calculations of Photonic Crystals
Christian Scheiber, Graz University of Technology, Austria
Alwin Schultschik, Saarland University, Germany
Oszkar Biro, Graz University of Technology, Austria
Romanus Dyczij-Edlinger, Saarland University, Germany
CEFC2010-1280

164 Modeling the Simultaneous Switching Noise in the Power-Ground Planes with Slot
Guoping Zou, North China Electric Power University, China
Erping Li, A*STAR Institute of High Performance Computing, Singapore
Xiang Cui, North China Electric Power University, China
Weidong Zhang, North China Electric Power University, China
Zhaonan Luo, North China Electric Power University, China
CEFC2010-1325
165 Optimization of Meander Line Antenna Considering Coupling Between Non-linear Circuit and Electromagnetic Waves for UHF-band RFID
Yuta Watanabe, Hokkaido University, Japan
Kota Watanabe, Hokkaido University, Japan
Hajime Igarashi, Hokkaido University, Japan
CEFC2010-1349

166 Space-Time Finite Integration Method for Electromagnetic Field Computation
Tetsuji Matsuo, Kyoto University, Japan
CEFC2010-1356

167 Accelerated Spectral Domain Approach For Shielded Microstrip Lines By Approximating Summation With Super Convergent Series
Sidharath Jain, Iowa State University, USA
Jiming Song, Iowa State University, USA
CEFC2010-1364

168 Simulated and Measured Results for a S-Shaped Monopole Patch Antenna on a BiNbO4 Layer
Ranilson Carneiro Filho, Federal University of Rio Grande do Norte, Brazil
José H. Araújo, Federal University of Rio Grande do Norte, Brazil
Ronaldo A. Martins, Federal University of Rio Grande do Norte, Brazil
Adaildo G. d’Assunção, Federal University of Rio Grande do Norte, Brazil
Laércio M. Mendonça, Federal University of Rio Grande do Norte, Brazil
CEFC2010-1381

169 Numerical Analysis of Inverse Scattering in Microwave Imaging
Lin Yang, Zhejiang University, China
Siu Lau Ho, The Hong Kong Polytechnic University, Hong Kong
Shiyou Yang, Zhejiang University, China
CEFC2010-1390

170 Study of the Scattering Mechanisms of a Set of Conospheres
R. Fernandez-Recio, National Institute for Aerospace Technology, Spain
Antonio Jurado-Lucena, National Institute for Aerospace Technology, Spain
Borja Errasti-Alcal, National Institute for Aerospace Technology, Spain
David Escot-Bocanegra, National Institute for Aerospace Technology, Spain
David Poyatos-Martinez, National Institute for Aerospace Technology, Spain
CEFC2010-1462

171 Study on the Time-variated Radiation Model of Converter Valve
Weidong Zhang, North China Electric Power University, China
Jiacui Gu, North China Electric Power University, China
Xiang Cui, North China Electric Power University, China
Jie Zhao, China Southern Power Grid Co., Ltd., China
**Hong Rao**, China Southern Power Grid Co., Ltd., China  
**Xiaolin Li**, China Southern Power Grid Co., Ltd., China  
**Qi Wang**, China Southern Power Grid Co., Ltd., China  
CEFC2010-1467

172 **An Efficient Solution of Finite-Difference Frequency-Domain (FDFD) Equations**  
**Veysel Demir**, Northern Illinois University, USA  
**Erdogan Alkan**, Syracuse University, USA  
**Atef Z. Elsherbeni**, The University of Mississippi, USA  
**Ercument Arvas**, Syracuse University, USA  
CEFC2010-1512

173 **Wide Stop-band Cascaded Frequency Selective Surfaces with Koch Fractal Elements**  
**Robson H. C. Mani**, Federal University of Rio Grande do Norte, Brazil  
**Adaildo G. d'Assunção**, Federal University of Rio Grande do Norte, Brazil  
**Antonio L. P. S. Campos**, Federal University of Rio Grande do Norte, Brazil  
CEFC2010-1700

174 **Evaluation of Radiated Electromagnetic Field Interference Due to Frequency Switching in PWM Motor Drives by 3D Finite Elements**  
**Osama Mohammed**, Florida International University, USA  
**Andrew Rosales**, Florida International University, USA  
**Ali Sarikhani**, Florida International University, USA  
CEFC2010-1888

175 **Extension of the TLM Method to the Electromagnetic Wide Band Analysis of Anisotropic Ferrite-Based Structures**  
**Farhat Arij**, UMR, France  
**Queffelec Patrick**, UMR, France  
**Ney Michel**, UMR, France  
CEFC2010-1398

**Coffee Break**  
Entry Level Foyer — 2:45-3:15 PM

**Oral Session 3 — Monday**  
**Material Modeling**  
**Session Chairs:** **Prof. Ermanno Cardelli**, Perugia University, Italy  
**Prof. Masato Enokizono**, Oita University, Japan  
Rosement AB Ballroom — 3:15-5:15 PM

176 **Electromagnetic Inspection Technique of Thickness of Nickel-Layer on Steel Plate Without Influence of Lift-Off Between Steel and Inspection Probe**  
**Yuji Gotoh**, Oita University, Japan  
**Aya Matsuoka**, Oita University, Japan
Norio Takahashi, Okayama University, Japan
CEFC2010-1028

177 Finite Element Harmonic Modeling of Magnetoelectric Effect for Bilayer Composite
Thu Trang Nguyen, UPMC, France
Xavier Miniger, UPMC, France
Frédéric Bouillault, UPMC, France
Laurent Daniel, UPMC, France
CEFC2010-1377

178 Magnetization Process Simulation of Nd-Fe-B Magnets Taking the Demagnetization Phenomenon Into Account
Yasushi Nakahata, Oita University, Japan
Takashi Todaka, Oita University, Japan
Masato Enokizono, Oita University, Japan
CEFC2010-1429

179 Vector Hysteresis Modeling for Anisotropic Magnetic Materials
Ermanno Cardelli, Perugia University, Italy
Edward Della Torre, George Washington University, Italy
Antonio Faba, Perugia University, Italy
CEFC2010-1578

180 Full Wave Analysis of Annular Ring Microstrip Antenna on Metamaterial
Christianne F.L. Vasconcelos, Universidade Federal do Rio Grande do Norte, Brazil
Maria R.M.L. Albuquerque, Universidade Federal do Rio Grande do Norte, Brazil
Sandro G. Silva, Universidade Federal do Rio Grande do Norte, Brazil
Jose R.S. Oliveira, Centro Federal de Educa, Brazil
Adaildo G. d’Assunção, Universidade Federal do Rio Grande do Norte, Brazil
CEFC2010-1696

181 Activation of Trapped Field Magnets by Flux Pumping
Kent R. Davey, Independent Consultant, USA
Roy Weinstein, University of Houston, USA
Ravi Sawh, University of Houston, USA
CEFC2010-1770

Oral Session 4 — Monday
Optimization and Design I
Session Chairs: Prof. Norio Takahashi, Okayama University, Japan
Dr. David Lowther, McGill University, Canada
Rosement CD Ballroom — 3:15-5:15 PM

182 Generalized Continuum Sensitivity Formula for Shape Optimization of
High-Frequency Devices in Frequency Domain
Nak-Sun Choi, Kyungpook National University, Korea
Gi-Woo Jeung, Kyungpook National University, Korea
Jin-Kyu Byun, Soongsil University, Korea
Heung-Geun Kim, Kyungpook National University, Korea
Dong-Hun Kim, Kyungpook National University, Korea
CEFC2010-1143

A Population Based Incremental Learning Vector Algorithm for Multiobjective Optimal Designs
Siu Lau Ho, The Hong Kong Polytechnic University, Hong Kong
Shiyou Yang, Zhejiang University, China
CEFC2010-1391

Kriging Assisted Determination of the Optimal Geometry and Covering Material for a Bushing Shield
Adnan Glotic, University of Maribor, Slovenia
Joze Pihler, University of Maribor, Slovenia
Peter Kitak, University of Maribor, Slovenia
Igor Ticar, University of Maribor, Slovenia
CEFC2010-1428

The Use of Semantic Networks to Adapt a Design Prototype for Electromagnetic Device Optimization
Jun Ouyang, McGill University, Canada
David Lowther, McGill University, Canada
CEFC2010-1602

A Multiobjective Gaussian Quantum-Inspired Particle Swarm Approach Applied to Electromagnetic Optimization
Luiz Lebensztajn, Escola Polit, Brazil
Leandro Coelho, Escola Polit, Brazil
CEFC2010-1712

A Robust Global Optimization Algorithm of Electromagnetic Devices Utilizing Gradient Index and Surrogate Objective Function
Minh-Trien Pham, Chungbuk National University, Korea
Minho Song, Chungbuk National University, Korea
Dong-Hoon Kim, Chungbuk National University, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1868

Oral Session 5 — Tuesday
Coupled Problems
Session Chairs: Prof. Doug Lavers, University of Toronto, Canada
Demagnetizing Field in Micromagnetic Simulation under Periodic Boundary Condition

Tetsuji Matsuo, Kyoto University, Japan
Yuya Yamazaki, Kyoto University, Japan
CEFC2010-1194

Hybrid Technique for Dynamic Modelling of the Performance of Linear Generators with Skewed Mounted Permanent Magnets

Nikolaos Kimoulakis, National Technical University of Athens, Greece
Antonios Kladas, National Technical University of Athens, Greece
CEFC2010-1469

Computation of Local Electromagnetic Force

Tuomas Kovanen, Tampere University of Technology, Finland
Timo Tarhasaari, Tampere University of Technology, Finland
Lauri Kettunen, Tampere University of Technology, Finland
CEFC2010-1485

Semi-Analytical Magnetic-Structural Coupling with Contact Analysis for MEMS/NEMS

Phuong Pham Quang, Grenoble Electrical Engineering Laboratory, France
Benoit Delinchant, Grenoble Electrical Engineering Laboratory, France
Jean-Louis Coulomb, Grenoble Electrical Engineering Laboratory, France
Bertrand Du Peloux, Grenoble Electrical Engineering Laboratory, France
CEFC2010-1499

Development of Numerical Simulation Method for Magnetic Separation of Magnetic Particles

So Noguchi, Hokkaido University, Japan
SeokBeom Kim, Hokkaido University, Japan
CEFC2010-1552

An Advanced Solidification Stage Electromagnetic Stirring System for Continuously Casting Steel Billets

Doug Lavers, University of Toronto, Canada
Len Beitelman, University of Toronto, Canada
Chris Curran, University of Toronto, Canada
CEFC2010-1798
194 Optimization of IPM Motors with Machaon Rotor Flux Barriers
   Piergiorgio Alotto, University of Padova, Italy
   Nicola Bianchi, University of Padova, Italy
   Massimo Barcaro, University of Padova, Italy
   Massimo Guarnieri, University of Padova, Italy
   CEFC2010-1525

195 Design of Open-Type Magnetically Shielded Room Combined with Square Cylinders Made of Magnetic and Conductive Materials for MRI
   Keita Yamazaki, Takenaka Corp., Japan
   Yu Haraguchi, Saga Univ., Japan
   Kazuhiro Muramatsu, Saga Univ., Japan
   Akira Haga, Tohoku-Gakuin Univ., Japan
   Hitomi Sasaki, Iwate Univ., Japan
   Koichiro Kobayashi, Iwate Univ., Japan
   Shigetaka Hirota, Takenaka Corp., Japan
   Kiyotaka Kamata, Kagoshima National College of Tech., Japan
   CEFC2010-1102

196 Design of Novel Coaxial High Pass Filter for RF Applications
   Abdullah Eroglu, Indiana University AND Purdue University, USA
   Richard Goulding, Oak Ridge National Laboratory, USA
   Phil Ryan, Oak Ridge National Laboratory, USA
   John Caughman, Oak Ridge National Laboratory, USA
   David Rasmussen, Oak Ridge National Laboratory, USA
   CEFC2010-1351

197 Robust Optimum Design of PIFA for RFID Mobile Dongle Applications
   Kim Koon-Tae, Chung-Ang Univ., Seoul, Korea
   Ko Jae-Hyeong, Chung-Ang Univ., Seoul, Korea
   Choi Kyung, Kangwon Univ, Korea
   Kim Hyeong-Seok, Chung-Ang Univ., Seoul, Korea
   CEFC2010-1595

198 Flexible Measures in Magnetic Active Shielding
   Alessandro Formisano, Seconda Universit, Italy
   Maria Carmina Lupoli, Seconda Universit, Italy
   Raffaele Martone, Seconda Universit, Italy
   CEFC2010-1641

199 Numerical Analysis of Brushes Commutation in Helical Launchers
   Antonino Musolino, University of Pisa, Italy
   Rocco Rizzo, University of Pisa, Italy
Coffee Break
Entry Level Foyer — 10:00-10:30 AM

Poster Session 14 — Tuesday
Coupled Problems 2
Session Chair: Prof. Steve McFee, McGill University, Canada
United A/B and L.A.X A/B — 10:30 AM-12:00 PM

200 Optimization of Sound Pressure Lever and Total Harmonic Distortion Performance of Microspeakers
   KwangIk Jang, Pusan National University, Korea
   JinHun Park, Pusan National University, Korea
   ChangMin Lee, Pusan National University, Korea
   SangMoon Hwang, Pusan National University, Korea
   CEFC2010-1274

201 System Simulation of a PMSM Servo Drive using the Field-Circuit Coupling
   Thomas Herold, Institute of Electrical Machines, Germany
   Enno Lange, Institute of Electrical Machines, Germany
   Kay Hameyer, Institute of Electrical Machines, Germany
   CEFC2010-1357

202 Numerical Simulation and Experimental Validation of a Coupled Mechanical-Thermal-Electrical Contact Model
   Massimo Guarnieri, Università di Padova, Italy
   Carmelo Majorana, Università di Padova, Italy
   Gianluca Mazzucco, Università di Padova, Italy
   Federico Moro, Università di Padova, Italy
   CEFC2010-1376

203 Time Domain Finite Element Analysis of Transient Transmission Lines With and Without Branches
   Chaoqun Jiao, Beijing Jiaotong University, China
   Lei Gao, Beijing Jiaotong University, China
   Siu-lau Ho, The Hong Kong Polytechnic University, China
   Weinong Fu, Beijing Jiaotong University, China
   CEFC2010-1420

204 Design and Analysis of Resonant Coupling Wireless Power Transmission System
   Zhuo Yan, Hebei University of Technology, China
   Haiyan Chen, Hebei University of Technology, China
   Qingxin Yang, Hebei University of Technology, China
   Chao Zhang, Hebei University of Technology, China
Guizhi Xu, Hebei University of Technology, China
Lei Guo, Hebei University of Technology, China
CEFC2010-1449

FEM Thermal Analysis of Magnetic Fluid Heating Power
Milos Bekovic, University of Maribor, Slovenia
Anton Hamler, University of Maribor, Slovenia
CEFC2010-1476

Numerical Modeling of Magnetic Properties of Ferromagnetic Shape Memory Materials Depending on Temperature and Stress
Takashi Todaka, Oita University, Japan
Masato Enokizono, Oita University, Japan
CEFC2010-1555

Dynamic Analysis of 3-DOF Actuator Employing 3-D Finite Element Method
Mingyu Tong, Osaka University, Japan
Katsuhiro Hirata, Osaka University, Japan
Syuhei Maeda, Osaka University, Japan
CEFC2010-1624

Dynamic Analysis Method of Repulsion Forces on Current-Carrying Contact using 3-D FEM
Tomohiro Ota, Panasonic Electric Works Analysis Center Co., Japan
Satoshi Suzuki, Panasonic Electric Works Co., Japan
Katsuhiro Hirata, Osaka University, Japan
CEFC2010-1625

Modeling and Analyzing of Electrowetting Using Electromagnetic Body Force Density and Surface Tension
Tan Il Sung, Sungkyunkwan University, Korea
Hong Soon Choi, Kyungpook National University, Korea
Young Sun Kim, Sungkyunkwan University, Korea
Il Han Park, Sungkyunkwan University, Korea
CEFC2010-1663

Shape Calculation of Ferrofluid Droplet with Three Effects of Magnetic Field, Gravitational Field and Surface Tension Using FEA Coupled with LSM
Young Sun Kim, Sungkyunkwan University, Korea
Se Hee Lee, Kyungpook National University, Korea
Il Han Park, Sungkyunkwan University, Korea
CEFC2010-1727

Optimal Design of Energy Transmission System for Implantable Device Base on WiTricity
Qingxin Yang, Tianjin Polytechnic University, China
**Poster Session 15 — Tuesday**

Devices and Applications  
**Session Chair: Dr. Tze-Fun Chan, The Hong Kong Polytechnic University, Hong Kong**

United A/B and L.A.X A/B — 10:30 AM-12:00 PM

212  **Frequency Dependent Coupled Field-Circuit Modeling of Armored Power Cables using Finite Elements**

**Guizhi Xu**, Hebei University of Technology, China  
**Jianqiang Jin**, Hebei University of Technology, China  
**Duyan Geng**, Hebei University of Technology, China  
**Weinong Fu**, Hong Kong Polytechnic University, China  
**Weili Yan**, Hebei University of Technology, China  
CEFC2010-1799

213  **Design and Basic Characteristics of Permanent Magnet Hybrid Type Axial Magnetic Bearings**

**Nagy Abed**, Mansoura University, Egypt  
**Osama Mohammed**, Florida International University, USA  
CEFC2010-1890

214  **Linear Position Detection Method Using Magnetic Sensors for Transverse Flux Linear Motor**

**Junghwan Chang**, Dong-A University, Korea  
**Jiwon Kim**, Electric motor research center, KERI, Korea  
**Jiyoung Lee**, Electric motor research center, KERI, Korea  
**Dohyun Kang**, Electric motor research center, KERI, Korea  
**Kwangwoon Kim**, University Of Science & Technology, UST, Korea  
CEFC2010-1224

215  **Comparison of Flux-Regulation Capability of a Hybrid-Excited Flux-Switching Machine with Different Magnet Materials**

**Wei Hua**, Southeast University, China  
**Gan Zhang**, Southeast University, China  
**Ming Cheng**, Southeast University, China  
**Xikai Sun**, Southeast University, China  
CEFC2010-1230

216  **Analysis Method for Loss Evaluation Considering the Half-Turn Effect in**
Three-Phase Autotransformers
Chang-Wook Kim, HYUNDAI Heavy Industries Co., Korea
Dong-Hyun Kim, HYUNDAI Heavy Industries Co., Korea
Myung-Jun Choi, HYUNDAI Heavy Industries Co., Korea
Byung-San Baek, HYUNDAI Heavy Industries Co., Korea
Sang-Bong Park, HYUNDAI Heavy Industries Co., Korea
CEFC2010-1233

Efficiency Evaluation of PMASynRM vs. SynRM Using Coupling FEM & Preisach Modeling
Jung Ho Lee, Hanbat National University, Korea
Il Kyo Lee, Hanbat National University, Korea
Byeong Du Lee, Hanbat National University, Korea
CEFC2010-1244

Design of Low Cost Line-Start Permanent Magnet Motor with Optimized Rotor Shape
Song Jeong-Tae, Dong-A University, Korea
Li Jian, Dong-A University, Korea
Cho Yun-Hyun, Dong-A University, Korea
CEFC2010-1254

Influence of Axial Length Ratio of Stator Segment on Performance of Tubular Transverse Flux Linear Machine
Zou Ji-bin, Harbin Institute of Technology, China
Zhao Mei, Harbin Institute of Technology, China
Jiang Xintong, Harbin Institute of Technology, China
Fu Xinghe, Harbin Institute of Technology, China
Sadarangani Chandur, KTH, Teknikringen, Sweden
CEFC2010-1257

Detent Force Reduction of Permanent Magnet Linear Synchronous Motor by Imposing Auxiliary Poles Technique
Yu-wu Zhu, Dong-A University, Korea
Yun-hyun Cho, Dong-A University, Korea
CEFC2010-1266

Efficiency Optimization of an Axial Flux Permanent-Magnet Synchronous Generator with Concentrated Pole Windings
Hendrik Vansompel, Ghent University, Belgium
Peter Sergeant, Ghent University, Belgium
Luc Dupre, Ghent University, Belgium
CEFC2010-1272

Fault Analysis of IPM type BLDC Motor Using Nonlinear Modeling of Stator Inter Turn Faults
Kyung-Tae Kim, University of Ulsan, Korea
Jin Hur, University of Ulsan, Korea
Byeong-Woo Kim, University of Ulsan, Korea
Young-Kook Lee, Hyundai Motor Company, Korea
CEFC2010-1335

Partial Least Square Regression for Quantitative Evaluation of Small Anomalies in Non-Destructive Testing
Yann LeBihan, Laboratoire de Génie, France
Claude Marchand, Laboratoire de Génie, France
Jozsef Pavo, Laboratoire de Génie, Hungary
Guillaume Krebs, Laboratoire de Génie, France
CEFC2010-1571

Magnetic Field and Rotordynamic Analysis of 30 krpm 220 kW Rated High Speed Motor for Blower Supported Magnetic Bearing
Do-Kwan Hong, Electrique de Paris, Korea
Ki-Chang Lee, Electrique de Paris, Korea
Byung-Chul Woo, Electrique de Paris, Korea
Yeon-Ho Jeong, Electrique de Paris, Korea
Dae-Hyun Koo, Korea Electrotechnology Research Institute, Korea
Chan-Woo Ahn, Dong-A University, Korea
CEFC2010-1732

Glass Net Design of Mold Transformer to Reduce Electric Field Based on Surface Response Method and FEM
Chang Eob Kim, Hoseo University, Korea
Mun HoJeon, Hoseo University, Korea
Pan Seok Shin, Hongik University, Korea
CEFC2010-1738

Multi-objective Optimal Design of 2 Phase In-Wheel PMSM for Mobile Robot
Dong-ju Shin, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea
CEFC2010-1823

Poster Session 16 — Tuesday
Devices and Applications 7
Session Chair: Prof. Joao Pedro Bastos, Universidade Federal de Santa Catarina, Brasil
United A/B and L.A.X A/B — 10:30 AM-12:00 PM
227 Structure Selection of Permanent Magnet Linear Synchronous Motor for Ropeless Elevator System
Yu-wu Zhu, Dong-A University, Korea
Yun-hyun Cho, Dong-A University, Korea
CEFC2010-1267

228 Modeling and Analysis of Fractional Slot Axial Flux Permanent-Magnet Machine Considering Overhang Effect
Jian Li, Dong-A University, Korea
Byungkuk Kim, Dong-A University, Korea
Yunhyun Cho, Dong-A University, Korea
CEFC2010-1285

229 Direct and Inverse Analytical Models of a Switched Reluctance Motor
Larisa Strete, Technical University of Cluj-Napoca, Romania
Iqbal Husain, University of Akron, USA
O Cornea, Technical University of Timisoara, Romania
Ioan-Adrian Viorel, Technical University of Cluj-Napoca, USA
CEFC2010-1286

230 Torque and Loss Calculation of Rotating Machines Considering Laminated Cores Using Post 1-D Analysis
Katsumi Yamazaki, Chiba Institute of Technology, Japan
Noraiaki Fukushima, Chiba Institute of Technology, Japan
CEFC2010-1297

231 The Optimal Shape Design of Claw-Pole for PM Stepping Motor Considering Magnetic Saturation and Leakage Flux
Cho Su Yeon, Hanyang University, Korea
Bae Jae Nam, Hanyang University, Korea
Kim Kwang Soo, Hanyang University, Korea
Ham Sang Hwan, Hanyang University, Korea
Lee Ju, Hanyang University, Korea
CEFC2010-1307

232 Thermal Analysis of Dual Mechanical Port Machine for Wind Power Application with Co-simulation Method
Xikai Sun, Southeast University, China
Ming Cheng, Southeast University, China
Wei Hua, Southeast University, China
Longya Xu, The Ohio State University, China
CEFC2010-1309

233 Modeling of a Dual-Channel Switched Reluctance Generator Including the Effects of Mutual Coupling
Wen Ding, Xi’an Jiaotong University, China
Deliang Liang, Xi’an Jiaotong University, China
Jianyong Lou, Xi’an Jiaotong University, China
CEFC2010-1310

Influence of the Electrical Steel Grade on the Performance of the Direct-Drive Permanent Magnet Machine for Wind Energy Generation
Damian Kowal, Ghent University, Belgium
Luc Dupré, Ghent University, Belgium
Peter Sergeant, Ghent University, Belgium
Lode Vandenbossche, ArcelorMittal Global R&D Gent, Belgium
Marc DeWulf, ArcelorMittal Global R&D Gent, Belgium
CEFC2010-1315

Torque Characteristic Analysis of IPM Type BLDC Motor Considering Pole/Slot Combination Under Stator-Turn Fault Condition
Hee-Woon Kim, University of Ulsan, Korea
Jin-Gyu Youn, University of Ulsan, Korea
Jin Hur, University of Ulsan, Korea
Byeong-Woo Kim, University of Ulsan, Korea
CEFC2010-1334

Design and Analysis of Specific High-Speed Solid Rotor Induction Motor with Copper End Rings
Yoseph Gessese, Darmstadt University of Technology, Germany
Andreas Binder, Darmstadt University of Technology, Germany
CEFC2010-1336

The Novel Method for Vibration Reduction of IPM Type BLDC Motor
Jin-Wook Reu, University of Ulsan, Korea
Jin Hur, University of Ulsan, Korea
Byeong-Woo Kim, University of Ulsan, Korea
Gyu-Hong Kang, Korea Marine Equipment Research Institute, Korea
CEFC2010-1395

Design of Flux Barriers in a Rotor of an Interior PM Synchronous Motor for Reducing Harmonics Losses
Jang Jin-seok, Kunsan National University, Korea
Kim Ho-hyun, Kunsan National University, Korea
Song Jeong-hyun, Kunsan National University, Korea
Lee Yul-jae, Sinok Tech Co., Korea
Kim Byung-taek, Kunsan National University, Korea
CEFC2010-1425

A Research on Method to Discriminate the Fitness of Phase Coil Arrangement in the Permanent
Kim DongSok, Pusan National University, Korea
Cho SungYeol, Pusan National University, Korea
Park GwanSoo, Pusan National University, Korea
Choi HongSoon, Kyungpook National University, Korea
CEFC2010-1812

The Design and Modeling of Brushless Dual Rotors Machine
Chengxi Liu, The Hong Kong Polytechnic University, Hong Kong
S. L.Ho, The Hong Kong Polytechnic University, Hong Kong
W. N.Fu, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1859

Poster Session 17 — Tuesday
Numerical Techniques 2
Session Chair: Prof. Maurizio Repetto, Politecnico di Torino, Italy
United A/B and L.A.X A/B — 10:30 AM-12:00 PM

Spectral Stochastic Simulation of a Ferromagnetic Cylinder Rotating at High Speed
Eveline Rosseel, Katholieke Universiteit Leuven, Belgium
Herbert DeGersem, Katholieke Universiteit Leuven, Belgium
Stefan Vandewalle, Katholieke Universiteit Leuven, Belgium
CEFC2010-1105

Numerical Analysis of Electromagnetic Levitation of Molten Metal Employing MPS Method and FEM
Gaku Yoshikawa, Osaka University, Japan
Katuhiro Hirata, Osaka University, Japan
Fumikazu Miyasaka, Osaka University, Japan
CEFC2010-1142

Development of Two-Dimensional Meshless Approaches without Using Integration Cells
Ayumu Saitoh, University of Hyogo, Japan
Nobuyuki Matsui, University of Hyogo, Japan
Taku Itoh, University of Hyogo, Japan
Atsushi Kamitani, University of Hyogo
CEFC2010-1413

Powerful Heuristics Make Computational Homology Viable
Matti Pellikka, Tampere University of Technology, Finland
Saku Suuriniemi, Tampere University of Technology, Finland
Lauri Kettunen, Tampere University of Technology, Finland
CEFC2010-1416

Heat Transfer Model of the Human Eye Using Web-Spline Technique
Fulya C. Kunter, Bogazici University, Turkey
Selim Seker, Bogazici University, Turkey
CEFC2010-1417

A Meshless Local Boundary Integral Equation Method for Three Dimensional Scalar Problems
Williams Nicomedes, Federal University of Minas Gerais, Brazil
Renato Mesquita, Federal University of Minas Gerais, Brazil
Fernando Moreira, Federal University of Minas Gerais, Brazil
CEFC2010-1439

Preconditioner for Mortar Method Applied to the FEM
Abdelatif Tinzefte, Universit, France
Mathieu Aubertin, Universit, France
Thomas Henneron, Universit, France
Fran Piriou, Universit, France
CEFC2010-1460

Parallel Algorithm for Meshfree Radial Point Interpolation Method on Graphics Hardware
Susumu Nakata, Ritsumeikan University, Japan
Yu Takeda, Ritsumeikan University, Japan
Norihisa Fujita, Tokyo University of Technology, Japan
Soichiro Ikuno, Tokyo University of Technology, Japan
CEFC2010-1465

Development of Three-Dimensional Extended Boundary-Node Method for Potential Problem
Taku Itoh, Seikei University, Japan
Ayumu Saitoh, Seikei University, Japan
Atsushi Kamitani, Seikei University, Japan
CEFC2010-1497

Overlapping Finite Elements Used to Connect Non-Conforming Meshes in 3D With a Vector Potential Formulation
Guillaume Krebs, CNRS UMR 8507, Supelec, France
Thomas Henneron, Universit, France
Yann LeBihan, ParisTech Arts et M, France
CEFC2010-1508

3D Parallel Conjugate Gradient Solver Optimized for GPUs
Rogerio F. Carvalho, Pontifical Catholic University of Minas Gerais, Brazil
Carlos A.P.S. Martins, Pontifical Catholic University of Minas Gerais, Brazil
Rose M.S. Batalha, Pontifical Catholic University of Minas Gerais, Brazil
Ana F.P. Camargos, Federal Institute of Minas Gerais, Brazil
CEFC2010-1617
252 Multigrid Method with Adaptive IDR-based Jacobi Smoother
Kota Watanabe, Hokkaido University, Japan
Seiji Fujino, Kyushu University, Japan
Hajime Igarashi, Hokkaido University, Japan
CEFC2010-1689

253 One-Ampere Conductor Method for Tubular Linear Induction Motor for Size Reduction of Primary Iron Core
Byeong-Hwa Lee, Hanyang University, Korea
Soon-O Kwon, Hanyang University, Korea
Jeong-Jong Lee, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1692

Poster Session 18 — Tuesday
Optimization and Design 2
Session Chair: Mr. Behzad Forghani, Infolytica, Canada

United A/B and L.A.X A/B — 10:30 AM-12:00 PM

Thibaut Labbe, Université Catholique de Louvain, Belgium
Bruno Dehez, Université Catholique de Louvain, Belgium
CEFC2010-1052

255 Accurate Prediction of Unknown Corrosion Currents Distributed on the Hull of a Naval Ship Utilizing Material Sensitivity Analysis
Hyun-Ju Chung, Agency for Defense Development, Korea
Chang-Seob Yang, Agency for Defense Development, Korea
Jae-Jin Jeon, Agency for Defense Development, Korea
Gi-Woo Jeung, Kyungpook National Univ, Korea
Dong-Hun Kim, Kyungpook National Univ, Korea
CEFC2010-1145

256 Optimal Design of Meander-Line Antennas for Radio Frequency Identification
A. C. Lisboa, ENACOM - Handcrafted Technologies, Brazil
X. L. Travassos, SENAI - Integrated Center of Manufacture and Technology, Brazil
M. M. B. Lima, SENAI - Integrated Center of Manufacture and Technology, Brazil
D. A. G. Vieira, ENACOM - Handcrafted Technologies, Brazil
CEFC2010-1359

257 A Inverse Scattering Technique for Objects Buried in Planar Layered Based on an Estimation of Distribution Algorithm
Xiaoming Chen, Huazhong University of Science and Technology, China
K.R Shao, Huazhong University of Science and Technology, China
Youguang Guo, University of Technology, Australia
Jianguo Zhu, University of Technology, Australia
J.D. Lavers, University of Toronto, Canada
CEFC2010-1386

Robust Optimization using a Methodology based on Cross Entropy Methods
SiuLau Ho, The Hong Kong Polytechnic University, Hong Kong
Shiyou Yang, Zhejiang University, Hong Kong
Yingying Yao, Zhejiang University, Hong Kong
CEFC2010-1389

Particle Swarm Optimization of the Stator of a High Speed PM Synchronous Machine
Anouar Belahcen, Aalto University, Finland
Floran Martin, Polytech’Nantes, France
Mohammed-El-Hadi Zaim, Polytech’Nantes, France
Emad Dlala, Aalto University, Finland
Zlatko Kolondzovski, Aalto University, Finland
CEFC2010-1470

Design Optimization of Axial-Flux Permanent Magnet Generator
Nizar Al-Aawar, Hariri Canadian University, Lebanon
Toufic Hijazi, Hariri Canadian University, Lebanon
Abdul-Rahman Arkadan, Hariri Canadian University, Lebanon, USA
CEFC2010-1483

Optimization of Rotor of Actual IPM Motor using ON/OFF Method
Norio Takahashi, Okayama University, Japan
Takaya Yamada, Okayama University, Japan
Daisuke Miyagi, Okayama University, Japan
CEFC2010-1567

Simulation and Optimization of Structure Parameters in 550kV Disconnectors Based on Response Surface Method
Ruilei Gong, Xi’An Jiaotong University, China
Shuhong Wang, Xi’An Jiaotong University, China
Xianjue Luo, Xi’An Jiaotong University, China
Jie Qiu, Xi’An Jiaotong University, China
Jian Guo Zhu, University of Technology, Australia
Youguang Guo, University of Technology, Australia
CEFC2010-1586

Forecast and Analysis of Electromagnetic Interference in Substation
Huijuan Zhang, Hebei University of Technology, China
Yanting Wang, Hebei University of Technology, China
Shitao Wang, Hebei University of Technology, China
**Meng Wu**, Hebei University of Technology, China  
**Weili Yan**, Hebei University of Technology, China  
CEFC2010-1588

**Robust Design of Dual Band/Polarization Patch Antenna Using Sensitivity Analysis and Taguchi’s Method**  
**Ko Jae-Hyeong**, Chung-Ang Univ, Korea  
**Park Jun-Seok**, Kookmin University, Korea  
**Kim Hyeong-Seok**, Chung-Ang Univ, Korea  
CEFC2010-1597

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**Poster Session 19 — Tuesday**  
**Static and Quasi-static Fields 3**  
**Session Chair: Dr. Ruth V. Sabariego, University of Liège, Belgium**  
United A/B and L.A.X A/B — 10:30 AM-12:00 PM

**265**  
**Convergence Acceleration in Transient Analysis of Rotating Machines Using Time-Periodic Explicit Error Correction Method**  
**Yasuhito Takahashi**, Doshisha University, Japan  
**Hiroyuki Kaimori**, Science Solutions International Laboratory, Japan  
**Akihisa Kameari**, Science Solutions International Laboratory, Japan  
**Tadashi Tokumasu**, Toshiba Corporation Power Systems Company, Japan  
**Masafumi Fujita**, Toshiba Corporation Power Systems Company, Japan  
**Shinji Wakao**, Waseda University, Japan  
CEFC2010-1265

**266**  
**Numerical Method of Solving Singularity Problems on Potential Computation in Spheroidal Systems**  
**Omonowo Momoh**, Prairie View A&M University, USA  
**Matthew Sadiku**, Prairie View A&M University, USA  
**Cajetan Akujuobi**, Prairie View A&M University, USA  
CEFC2010-1289

**267**  
**Modeling of Large Air Gap Transformers Using Magnetic Equivalent Circuit for Designing of High Power Application**  
**Jean-Romain Sibu**, G2ELAB, ALSTROM BP4, France  
**Jean-Paul Ferriex**, G2ELAB, France  
**Gérard Meunier**, G2ELAB, France  
**Robert Periot**, ALSTROM BP4, France  
CEFC2010-1316

**268**  
**Generic Magnetostatic BEM Formulation Using One Unknown Double Layer Charge**  
**Kazuhisa Ishibashi**, ABB Switzerland Ltd., Japan  
**Zoran Andjelic**, ABB Switzerland Ltd., Japan  
**David Pusch**, ABB Switzerland Ltd., Japan
Field-Circuit Coupling With Element-Free Galerkin Method
Eduardo Coppoli, Centro Federal de Educa, Brazil
Renato Mesquita, Universidade Federal de Minas Gerais, Brazil
Renato Silva, Laborat, Brazil
CEFC2010-1324

Ships Magnetic Anomaly Computation with Integral Equation and Fast Multipole Method
Jean-Michel Guichon, Universit, France
Olivier Chadebec, Universit, France
Patrice Labie, Universit, France
Jean-Louis Coulomb, Universit, France
Trung-Son Nguyen, Universit, France
CEFC2010-1384

Measurement and Calculation of Iron Loss and Flux inside Silicon Steel Lamination Under DC Biasing
Zhigang Zhao, Hebei University of Technology, China
Fugui Liu, Hebei University of Technology, China
Zhiguang Cheng, R & D Center, Baoding Tianwei Group Co., LTD, China
Lanrong Liu, R & D Center, Baoding Tianwei Group Co., LTD, China
Weili Yan, Hebei University of Technology, China
CEFC2010-1403

Deflation Techniques for Computational Electromagnetism, Part II: Numerical Applications
Hajime Igarashi, Hokkaido University, Japan
Kota Watanabe, Hokkaido University, Japan
CEFC2010-1459

Eddy Current Induced by Villari-Effect in Magnetostrictive Energy Harvesting Devices
Daniele Davino, Università degli Studi del Sannio, Italy
Alessandro Giustiniani, Università degli Studi di Salerno, Italy
Ciro Visone, Università degli Studi del Sannio, Italy
Walter Zamboni, Università degli Studi di Salerno, Italy
CEFC2010-1475

A 2D Analytic Based Model of a Rotor Moving Over a Conductive Guideway
Nirmal Paudel, University of North Carolina, USA
Jonathan Bird, University of North Carolina, USA
CEFC2010-1524

A Direct Circuit Parameter Extraction Method of Eddy-Current Magnetic Field
276 2D/3D Hybrid Computation of Ion Flow Field around House near HVDC Bipolar Transmission Lines
Bo Zhang, Tsinghua University, China
Wei Li, Tsinghua University, China
Jinliang He, Tsinghua University, China
Rong Zeng, Tsinghua University, China
CEFC2010-1592

277 A Non-Standard Axisymmetric FE-BE Method
Giovanni Aiello, Universit, Italy
Salvatore Alfonzetti, Universit, Italy
Nunzio Salerno, Universit, Italy
CEFC2010-1735

278 Numerical Simulation of a Self-Decoupling Magneto-Rheological Damper on Electromagnetic-Thermal Coupling
Chengbin Du, Hohai University, China
Guojun Yu, Hohai University, China
Faxue Wan, Hohai University, China
CEFC2010-1836

Lunch
Red Bar Entry Level Foyer — 12:00-1:00 PM

Poster Session 20 — Tuesday
Devices and Applications 8
Session Chair: Prof. Hyeong-Seok Kim, Chung-Ang University, Korea
United A/B and L.A.X A/B — 1:00-2:30 PM

279 Characteristics Analysis of an IPM Motor Driven by Voltage Source Using 3-D Finite Element Method with Prismatic Elements
Hirokatsu Katagiri, Gifu University, Japan
Yoshihiro Kawase, Gifu University, Japan
Tadashi Yamaguchi, Gifu University, Japan
Yoshiyasu Shibayama, Gifu University, Japan
Kazuya Kishida, Toyo Denki Seizo K.K., Japan
Keiichi Morinaga, Toyo Denki Seizo K.K., Japan
CEFC2010-1352

280 Comparative Study of Linear Double Salient Permanent Magnet Motors
Ruiwu Cao, Southeast University, China
281 Experimental Works and Power Loss Calculations of Low-Speed Permanent Magnet Wind Turbine Generator
   Jang-Young Choi, Chungnam National University, Korea
   Kyoung-Jin Ko, Chungnam National University, Korea
   Seok-Myeong Jang, Chungnam National University, Korea
   CEFC2010-1354

282 Automated Virtual Prototyping of Permanent Magnet Synchronous Machines for HEV's
   Martin Hafner, RWTH Aachen University, Germany
   Thomas Finken, RWTH Aachen University, Germany
   Matthias Felden, RWTH Aachen University, Germany
   Kay Hameyer, RWTH Aachen University, Germany
   CEFC2010-1374

283 Dynamic Analysis of Circuit Breaker with Oil Dashpot Using Multi-Mesh Modification Method
   Suzuki Satoshi, Gifu University, Japan
   Kawase Yoshihiro, Gifu University, Japan
   Yamaguchi Tadashi, Gifu University, Japan
   Kakami Shuhei, Gifu University, Japan
   Toyama Shuhei, Gifu University, Japan
   Hirata Katsuhiro, Osaka University, Japan
   Ota Tomohiro, 3Panasonic Electric Works, Ltd., Japan
   CEFC2010-1387

284 Irreversible Demagnetization Analysis of IPM type BLDC Motor Considering the Circulating Current by Stator Turn fault
   Hyung-Gyu Kim, University of Ulsan, Korea
   Jin Hur, University of Ulsan, Korea
   Byeong-Woo Kim, University of Ulsan, Korea
   Gyu-Hong Kang, Korea Marine Equipment Research Institute, Korea
   CEFC2010-1394

   Matthias Felden, RWTH Aachen University, Germany
   Martin Hafner, RWTH Aachen University, Germany
   Kay Hameyer, RWTH Aachen University, Germany
   CEFC2010-1401
Design Methodology of a Single-phase Line Start PM Motor Using Conditions for Magnetic Balance and Copper Loss Minimization

Soo-whang Baek, Hanyang University, Korea
Myoung-hyun Choi, Kunsan National University, Korea
Byung-il Kwon, Hanyang University, Korea
Byung-taek Kim, Kunsan National University, Korea
CEFC2010-1422

Optimization of a Squirrel Cage Rotor of a Written Pole Motor For Improvement of Magnetization Characteristics

Seong-cheol Park, Kunsan National University, Korea
Jeong-hyun Song, Kunsan National University, Korea
Byung-taek Kim, Kunsan National University, Korea
CEFC2010-1423

Levitation Force and Thrust Analysis of Hybrid-Excited Linear Synchronous Motor for Magnetically Levitated Vehicles

Han-Wook Cho, Korea Institute of Machinery and Materials, Korea
Chang-Hyun Kim, Korea Institute of Machinery and Materials, Korea
Jong-Min Lee, Korea Institute of Machinery and Materials, Korea
Hyung-Suk Han, Korea Institute of Machinery and Materials, Korea
Bong-Sup Kim, Korea Institute of Machinery and Materials, Korea
Dong-Sung Kim, Korea Institute of Machinery and Materials, Korea
CEFC2010-1430

3D Field Effects in Tubular Permanent Magnet Actuators with quasi-Halbach Magnetization

Koen J. Meessen, Eindhoven University of Technology, The Netherlands
Bart L. J. Gysen, Eindhoven University of Technology, The Netherlands
Johannes J.H. Paulides, Eindhoven University of Technology, The Netherlands
Elena A. Lomonova, Eindhoven University of Technology, The Netherlands
CEFC2010-1506

Position Detection of a Dual-structure Permanent Magnet Machine at Low Speed and Standstill Using Transient Finite Element Analysis

Shuangxia Niu, The Hong Kong Polytechnic University, Hong Kong
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
W.N. Fu, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1538

Hysteresis Effects on the Detent Torque in Permanent Magnet Motors

Y. B. Li, Johnson Electric, Inc, Hong Kong
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1549
Characteristics Analysis in a Pole Changing Memory Motor Using Coupled
Jung Hoo Lee, Hanbat National University, Korea
Seung Chul Lee, Hanbat National University, Korea
Tae Hoon Lee, Hanbat National University, Korea
CEFC2010-1240

Thermal Analysis of Direct Drive Transverse Flux Rotary Machine with Two
Types of Stators
Ji-Young Lee, Korea Electrotechnology Research Institute, Korea
Do-Kwan Hong, Korea Electrotechnology Research Institute, Korea
Byung-Chul Woo, Korea Electrotechnology Research Institute, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1464

Coil Optimization Design of Permanent Magnet Vibration-to-Electrical Power
Generator
Zhihua Wang, Hebei University of Technology, China
Bowen Wang, Hebei University of Technology, China
Li Wang, Hebei University of Technology, China
Jia Deng, Hebei University of Technology, China
Weili Yan, Hebei University of Technology, China
Lei Guo, Hebei University of Technology, China
CEFC2010-1473

Hybrid Modeling Method for the Analysis of a Linear Flux Switching Machine
Davy Krop, Eindhoven University of Technology, The Netherlands
Laurentiu Encica, Eindhoven University of Technology, The Netherlands
Elena Lomonova, Eindhoven University of Technology, The Netherlands
CEFC2010-1507

Design and Optimization of a Device with Contactless Actuation for 4-Axis
Machining
Remus Banucu, University of Stuttgart, Germany
Jan Albert, University of Stuttgart, Germany
Christian Scheiblich, University of Stuttgart, Germany
Veronika Reinauer, University of Stuttgart, Germany
Wolfgang Rucker, University of Stuttgart, Germany
CEFC2010-1514

Study of Interturn Short Circuit in Rotor Windings of a Synchronous Generator
Using FEM
Bruno Iamamura, EDF R&D, France  
Yvonnick Le Menach, L2EP-LAMEL, France  
A. Tounzi, L2EP-LAMEL, France  
Nelson Sadowski, GRUCAD, Brazil  
Eilin Guillot, EDF R&D, France  
CEFC2010-1517

298 Nondestructive Inspection Using Rotating Field Eddy Current (RoFEC) Probes  
Junjun Xin, Michigan State University, USA  
Naiguang Lei, Michigan State University, USA  
Lalita Udpa, Michigan State University, USA  
Satish Udpa, Michigan State University, USA  
CEFC2010-1030

299 Short-Circuit Current Reduction of PM Motors by Magnet Segmentation Technique  
Babak Vaseghi, Nancy University, France  
Noureddine Takorabet, Nancy University, France  
Farid Meibody-Tabar, Nancy University, France  
CEFC2010-1527

300 Loss Analysis of the IPMSM for HEV  
Won-Ho Kim, Hanyang University, Korea  
Jae-Nam Bae, Hanyang University, Korea  
Ik-Sang Jang, Hanyang University, Korea  
Ju Lee, Hanyang University, Korea  
CEFC2010-1532

301 Design and Field Analysis of a Magnetic Gear Integrated Tubular Linear Permanent Magnet Machine  
S.L. Ho, The Hong Kong Polytechnic University, Hong Kong  
Shuangxia Niu, The Hong Kong Polytechnic University, Hong Kong  
W.N. Fu, The Hong Kong Polytechnic University, Hong Kong  
CEFC2010-1536

302 Optimal Design of FRLSM to Increase Thrust and Reduce the Detent Force  
Ki-Bong Jang, Changwon National University, Korea  
Se-Ho Pyo, Changwon National University, Korea  
Ho-Jin An, Changwon National University, Korea  
Gyu-Tak Kim, Changwon National University, Korea  
CEFC2010-1543

W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
Electric Field in Overhead Transmission Line for PLC Signal
Francisco Sabino Jr., Hydro Electrical Company of S, Brazil
Ulysses Vitor, Federal University of Pernambuco, Brazil
Marcos DeMelo, Federal University of Pernambuco, Brazil
CEFC2010-1784

Poster Session 22 — Tuesday
Material Modeling 2
Session Chair: Dr. Aly Flores Filho, Federal University of Rio Grande do Sul, Brasil
United A/B and L.A.X A/B — 1:00-2:30 PM

305 Statistical Modeling of an Anisotropic Lamination Stack
Adil Jarrah, L2EP/Arts et M, France
S. Clenet, 1L2EP/Arts et M, France
Abdelkader Benabou, 2L2EP/Universit, France
Rindrarivelo Ramarotafika, 1L2EP/Arts et M, France
CEFC2010-1495

306 Magnetic Dynamic Process of Magnetic Layers Around Grain Boundary for Sensitized Alloy 600
Katsuhiko Yamaguchi, Fukushima University, Japan
Suzuki Kenji, Fukushima University, Japan
Nittono Osamu, Fukushima University, Japan
Tetsuya Uchimoto, Tohoku Univ, Japan
Toshiyuki Takagi, Tohoku Univ, Japan
CEFC2010-1572

Jung Dae-Sung, Hanyang University, Korea
Lee Hyung-Woo, Hanyang University, Korea
Lee Ju, Hanyang University, Korea
CEFC2010-1575

308 Magnetic Field Analysis of Polar Anisotropic Ferrite Bonded Magnet to Outer Rotor Type Brushless DC Motor Considering Magnetizing Process
Su-Jin Lee, Hanyang University, Korea
Jeong-Jong Lee, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
Byoung-Young Song, GMB Korea Corp, Korea
Jong-Won Park, GMB Korea Corp, Korea
CEFC2010-1579
Modeling of Soft Magnetic Composite Material Using a Non Linear Homogenization Method

Mohamed Belkadi, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique, France
Didier Trichet, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique, France
Brahim Ramdane, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique, France
Javad Fouladgar, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique, France
CEFC2010-1585

Dynamic Finite Element Hysteresis Model for Iron Loss Calculation Under PWM Excitation

Charalampos Patsios, National Technical University of Athens, Greece
Evangelos Tsampouris, National Technical University of Athens, Greece
Minos Beniakar, National Technical University of Athens, Greece
Antonios Kladas, National Technical University of Athens, Greece
CEFC2010-1594

Differential Evolution Approaches Applied to the Jiles-Atherton Vector Hysteresis Parameters Estimation

Leandro Coelho, Federal University of Paran, Brazil
Viviana Mariani, Federal University of Paran, Brazil
Jean Leite, Federal University of Paran, Brazil
CEFC2010-1613

Hysteresis Modeling Using Multi-Preisach Model in Electromagnetic Computation

Jeong-Jong Lee, Hanyang University, Korea
Seung-Hee Chai, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1646

Finite Element Calculation in Transformer Cores Considering Anisotropic Magnetic Property Under Distorted Rotational Magnetic Flux Condition

Yanli Zhang, Shenyang University of Technology, China
Xiaona Li, Shenyang University of Technology, China
Dexin Xie, Shenyang University of Technology, China
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1658

Electromagnetic and Thermal Modeling of Composite Materials Using Multilayer Shell Elements

Brahim Ramdane, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique (IREENA), France
Didier Trichet, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique (IREENA), France
Mohamed Belkadi, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique (IREENA), France
Tayeb Saidi, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique (IREENA), France
Javad Fouladgar, Institut de Recherche en Electrotechnique et Electronique de Nantes Atlantique (IREENA), France

CEFC2010-1671

Research on Inductance Model of Giant Magnetostrictive Actuator
Li Liyi, Harbin Institute of Technology, China
Zhang Chengming, Harbin Institute of Technology, China
Yan Baiping, Harbin Institute of Technology, China
Cao Jiwei, Harbin Institute of Technology, China

CEFC2010-1683

Poster Session 23 — Tuesday
Optimization and Design 3
Session Chair: Dr. Zhiguang Cheng, Baoding Tianwei Group Co., Ltd, China
United A/B and L.A.X A/B — 1:00-2:30 PM

316 Sequential Design of Experiments Techniques for the Optimization Design of Electromagnetic Devices
Gang Lei, Huazhong University of Science and Technology, China
K. R. Shao, Huazhong University of Science and Technology, China
Guangyuan Yang, Huazhong University of Science and Technology, China
Youguang Guo, University of Technology, Australia
Jianguo Zhu, University of Technology, Australia
J. D. Lavers, University of Toronto, Canada

CEFC2010-1427

317 Gaussian Artificial Bee Colony Algorithm Approach Applied to Loney
Leandro dos Santos Coelho, Pontifical Catholic University of Paran, Brazil
Piergiorgio Alotto, Universit, Italy

CEFC2010-1502

318 Multiobjective Design Optimization of Electric Machine by Using Genetic Algorithm with Aggressive Species Diversity
Yusuke Tsurumi, Waseda University, Japan
Shinji Wakao, Waseda University, Japan

CEFC2010-1553

319 Multiobjective Optimization for Determination of the Electrothermal Parameters in Switchgear Cell Housing
Peter Kitak, University of Maribor, Slovenia
Adnan Glotic, University of Maribor, Slovenia
Igor Ticar, University of Maribor, Slovenia
Joze Pihler, University of Maribor, Slovenia
CEFC2010-1560

320  3D Stochastic Spectral Finite Element Method in Static Electromagnetism Using Vector Potential Formulation
Karim Beddek, L2EP/USTL, France
Yvonnick Lemenach, L2EP/USTL, France
Stephane Clenet, L2EP/Arts et M, France
Olivier Moreau, EDF R&D, France
CEFC2010-1593

321  A Creative Design System for Electromagnetic Device Optimization
Jun Ouyang, McGill University, Canada
David Lowther, McGill University, Canada
CEFC2010-1603

322  Topological Sensitivity Analysis for Steady State Eddy Current Problems with an application to Nondestructive Testing
Min Li, McGill University, Canada
David Lowther, McGill University, Canada
CEFC2010-1605

323  Vector Potential Current Method for Design Sensitivity Analysis of Static Electromagnetic-Structure Coupled Problem
Tae HeeLee, Hanyang University, Korea
Minuk Lee, Hanyang University, Korea
CEFC2010-1634

324  Calculation and Analysis of Electromagnetic in an Induction Motor Based on Continuous Quantum Ant Colony Optimization
Weili Li, Harbin University of Science and Technology, China
Qiaoyu Yin, Harbin University of Science and Technology, China
Xiaochen Zhang, Harbin University of Science and Technology, China
CEFC2010-1649

325  An Adaptive Optimization Method Using Kriging Model and Latin Hypercube Design and its Application to Optimum Design of PMLSM
Yanli Zhang, Shenyang University of Technology, China
Bing Yan, Shenyang University of Technology, China
Dexin Xie, Shenyang University of Technology, China
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1659

326  Optimum Design of 75 Nm, 300 rpm Rated Transverse Flux Rotary Machine for
<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>327</td>
<td>Magnetic Circuit Design of IPMSM to Improve Maximum Power in the Field Weakening Region</td>
<td>Ho-Kyoung Lim, Jeong-Jong Lee, Soon-O Kwon, Jung-Pyo Hong</td>
<td>Hanyang University, Korea</td>
</tr>
<tr>
<td>328</td>
<td>Loss Calculation and Thermal Analysis of Three Modes of Retaining Sleeve for High-Speed PM Generators</td>
<td>Weili Li, Jing Wang, Xiaochen Zhang, Baoquan Kou</td>
<td>Harbin University of Science and Technology, China</td>
</tr>
<tr>
<td>329</td>
<td>Potential Computation in a Conducting Prolate Spheroidal Shell using Exodus Method</td>
<td>Omonowo Momoh, Matthew Sadiku, Cajetan Akujuobi</td>
<td>Prairie View A&amp;M University, USA</td>
</tr>
<tr>
<td>330</td>
<td>Moving Least-Square Approximation Based Interface Element with Variable Nodes for Modeling Sliding-interface in Electric Machines</td>
<td>S. L. Ho, Ningning Chen, W. N. Fu</td>
<td>The Hong Kong Polytechnic University, China</td>
</tr>
<tr>
<td>331</td>
<td>A Second Order Cell Method for Poisson</td>
<td>Piergiorgio Alotto, Fabio Freschi</td>
<td>Universit, Italy</td>
</tr>
</tbody>
</table>
CEFC2010-1317

332  **Transformation Methods for Static Field Problems with Random Domains**  
  *Duy Hung Mac*, L2EP/Arts et M, France  
  *S. Clenet*, L2EP/Arts et M, France  
  *Jean-Claude Mipo*, VALEO-Syst, France  
  CEFC2010-1326

333  **Efficient Multipoles Modeling for Linear Magnetized Beads Manipulations**  
  *Kauffmann Paul*, Biopuces, CEA, France  
  *Haguet Vincent*, Biopuces, CEA, France  
  *Reyne Gilbert*, Grenoble Electrical Engineering lab, France  
  *Delinchant Benoit*, Grenoble Electrical Engineering lab, France  
  CEFC2010-1442

334  **3D Analytical and Numerical Modeling of Skewed Tubular Magnet Arrays**  
  *Bart Gysen*, Eindhoven University of Technology, The Netherlands  
  *Koen Meessen*, Eindhoven University of Technology, The Netherlands  
  *J. H. Paulides*, Eindhoven University of Technology, The Netherlands  
  *Elena Lomonova*, Eindhoven University of Technology, The Netherlands  
  CEFC2010-1466

335  **Analytical Model for External Induction Variations of a Ferromagnetic Cylinder Undergoing High Mechanical Stresses in a Low Magnetic Field of any Orientation**  
  *Antoine Viana*, Universit, France  
  *Laure-Line Rouve*, Universit, France  
  *Gilles Cauffet*, Universit, France  
  *Jean-Louis Coulomb*, Universit, France  
  CEFC2010-1491

336  **Analysis of Near and Far Stray Magnetic Fields of Dry-Type Transformers: 3D Simulations vs. Measurements**  
  *Jasmin Smajic*, ABB Corporate Research Ltd, Switzerland  
  *Thorsten Steinmetz*, ABB Corporate Research Ltd, Switzerland  
  *Bogdan Cranganu-Cretu*, ABB Corporate Research Ltd, Switzerland  
  *Antonio Nogues*, ABB S.A., Spain  
  *Rafael Murillo*, ABB AG, Spain  
  *Jens Tepper*, ABB AG, Germany  
  CEFC2010-1580

337  **Analysis of Eddy Current Damping for Short-Stroke DC Linear Motor**  
  *Li Liyi*, Harbin Institute of Technology, China  
  *Pan Donghua*, Harbin Institute of Technology, China  
  *Kou Baoquan*, Harbin Institute of Technology, China
Multi-physical Coupling Calculation of 1000MW Supercritical Turbine Generator

Weili Li, Harbin University of Science and Technology, China
Chunwei Guan, Harbin Institute of Technology, China
Feiyang Huo, Beijing Jiao Tong University, China
CEFC2010-1629

Novel Network Model for Dynamic Stray Capacitance Analysis of Planar Inductor with Nanocrystal Magnetic Core in High Frequency

Jianyong Lou, Xi’an Jiaotong University, China
Yitong Chen, Xi’an Jiaotong University, China
Deliang Liang, Xi’an Jiaotong University, China
Lin Gao, Xi’an Jiaotong University, China
Fei Dang, Xi’an Jiaotong University, China
Fangjun Jiao, Xi’an Jiaotong University, China
CEFC2010-1744

Poster Session 25 — Tuesday
Wave Propagation 2
Session Chair: Dr. Olivier Chadebec, G2ELab - Grenoble University, France
United A/B and L.A.X A/B — 1:00-2:30 PM

Fast Three-Dimensional GPR Forward and Inverse Scattering Based onWideband Diagonal Tensor Approximation

Yueqin Huang, Xiamen University, China
Qing-Huo Liu, Duke University, USA
Jianzhong Zhang, Xiamen University, China
CEFC2010-1302

Minimizing Sidelobe Levels and Facilitating Null Placements of Nonlinear Antenna Arrays Using an Improved Particle Swarm Optimization

SiuLau Ho, The Hong Kong Polytechnic University, Hong Kong
Shiyou Yang, Zhejiang University, Hong Kong
Ka Wai Eric Cheng, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1388

Effect of Square Slot in Microstrip Patch Antennas Using Artificial Neural Networks

Wellington C. Araújo, Federal University of Rio Grande do Norte, Brazil
Adaildo G. d’Assunção, Federal University of Rio Grande do Norte, Brazil
Laércio M. Mendonça, Federal University of Rio Grande do Norte, Brazil
CEFC2010-1393

Prediction of Conducted and Radiated Perturbations in Embedded Cable Systems Using a 3D PEEC approach
Multi-Components Mobile Propagation Model of Park Environment  
Selim Seker, Bogazici University, Turkey  
Yusuf Oc, Bogazici University, Turkey  
Fulya Kunter, Bogazici University, Turkey  
CEFC2010-1415

Study of a Jamming System Positioning Using 2D Ray-Tracing Technique Associated with a Multi-Objective Particle Swarm Optimizer  
Guilherme Santos, Universidade Federal de Santa Catarina, Brazil  
W. P. Carpes Jr., Universidade Federal de Santa Catarina, Brazil  
J. P. A. Bastos, Universidade Federal de Santa Catarina, Brazil  
Stevan Grubisic, Universidade Federal de Santa Catarina, Brazil  
CEFC2010-1437

Susceptibility Analysis of a Nonlinear System Using Hybrid Method of Electromagnetic Topology and Harmonic Balance  
Yoon-Mi Park, Seoul National University, Korea  
Min-Hyuk Kim, Seoul National University, Korea  
Changyul Cheon, Seoul National University, Korea  
Hyun-Kyo Jung, Seoul National University, Korea  
Young-Seek Chung, Seoul National University, Korea  
CEFC2010-1444

Analysis of Spurious Modes in Mixed Finite Element Method for Maxwell  
Jiefu Chen, Duke University, USA  
Qing Liu, Duke University, USA  
Mei Chai, Intel Corporation, USA  
Jason Mix, Intel Corporation, USA  
CEFC2010-1446

Detection and Location of Defects in Wiring Networks Using Time Domain Reflectometry and Neural Networks  
Mostafa Kamel Smail, Laboratoire de G, France  
Tarik Hacib, Univ. Jijel, Algeria  
Lionel Pichon, Laboratoire de G, France  
Florent Loete, Laboratoire de G, France  
CEFC2010-1486

Wave Propagation Along a Thin Wire Antenna Placed in a Horizontally Layered Medium
Yingkang Wei, Norwegian University of Science and Technology (NTNU), Norway
Bengt Holter, Sintef IKT, Norway
Ingve Simonsen, Norwegian University of Science and Technology (NTNU), Norway
Karsten Husby, Sintef IKT, Norway
Jacob Kuhnle, Sintef IKT, Norway
Lars Norum, Norwegian University of Science and Technology (NTNU), Norway

CEFC2010-1490

350 PEEC Modeling of a Two-Port TEM Cell for Radio Frequency Applications
Piergiorgio Alotto, Univ. di Padova, Italy
Daniele Desideri, Univ. di Padova, Italy
Fabio Freschi, Politecnico di Torino, Italy
Alvise Maschio, Univ. di Padova, Italy
Maurizio Repetto, Politecnico di Torino, Italy
CEFC2010-1500

351 Improved Equivalent Circuit Modeling for RF Components by The Real-Coefficient Adaptive Frequency Sampling Technique
Hyun Paek, Chung-Ang Univ., Korea
Koon-Tae Kim, Chung-Ang Univ., Korea
Sungtek Kahng, Eng., Univ. of Incheon, Korea
Hyeong-Seok Kim, Chung-Ang Univ., Korea
CEFC2010-1596

352 Analysis of Electromagnetic Radiation from HVAC Test Transmission Line Due to Corona Discharge
Tiebing Lu, North China Electric Power University, China
Yang Zou, North China Electric Power University, China
Hong Rao, China Southern Power Grid Co., Ltd, China
Qi Wang, China Southern Power Grid Co., Ltd, China
CEFC2010-1681

353 Wave Propagation in Layered Anisotropic Medium
Abdullah Eroglu, Indiana University-Purdue University Fort Wayne, USA
CEFC2010-1851

Coffee Break
Entry Level Foyer — 2:30-3:00 PM

Oral Session 7 — Tuesday
Nanomagnetics & Nanophotonics
Session Chairs: Prof. Yasushi Kanai, Niigata Institute of Technology, Japan
Dr. Alexander Kildishev, Birck Nanotechnology Center, USA
Rosement AB Ballroom — 3:30-5:00 PM
Characterization of Nanophotonic Structures Using the Finite Element Method

Istvan Bardi, ANSYS Inc, USA
Leon Vardapetyan, ANSYS Inc, USA
John Manges, ANSYS Inc, USA
CEFC2010-1515

Introduction and Analysis of the MRAM with Pole Type System by Using Micromagnetic Approach for High Gb/Chip

Won Hyuk, Pusan National University, Korea
Cho SungYeol, Pusan National University, Korea
Park GwanSoo, Pusan National University, Korea
CEFC2010-1792

FE Modeling of Plasmonic Nanoantennas with Realistic 3D Roughness and Distortion

Joshua Borneman, Purdue University, USA
Alexander Kildishev, Purdue University, USA
Kuo-Ping Chen, Purdue University, USA
Xingjie Ni, Purdue University, USA
Vladimir Drachev, Purdue University, USA
CEFC2010-1831

Time-Domain Modeling of Metal-Dielectric Nanostructures Characterized by a Set of Single-Pole Dispersion Terms

Ludmila Prokopeva, Institute of Computational Technologies, Russia
Joshua Borneman, Purdue University, Russia
Alexander Kildishev, Purdue University, Russia
CEFC2010-1847

Oral Session 8 — Tuesday
Software Methodology
Session Chairs: Prof. Dexin Xie, Shenyang University of Technology, China
Dr. Kent Davey, Consultant, USA
Rosement CD Ballroom — 3:30-5:00 PM

A Post-processing Integral Formulation for the Computation of Magnetic Field in Conductors

Arnaud Guibert, Universit, France
Jean-Louis Coulomb, Universit, France
Olivier Chadebec, Universit, France
Corinne Rannou, BCRM de Brest, GESMA, France
CEFC2010-1488

Understanding the Efficiency of Parallel Incomplete Cholesky Preconditioners on the Performance of ICCG Solvers for Multi-Core and GPU Systems

Hussein Moghniah, McGill University, Canada
David Lowther, McGill University, Canada
CEFC2010-1704

Power Performance Analysis of 3-D Finite Element Mesh Refinement with Tetrahedra by CUDA/MPI on Multi-core and GPU Architecture
Da Qi Ren, the University of Tokyo & JST, Japan
Dennis Giannacopoulos, McGill University, Canada
Reiji Suda, the University of Tokyo & JST, Japan
CEFC2010-1867

Reverse Engineering Legacy Code for Finite Element Field Computation in Magnetics
T. Arudchelvam, Rensselaer Polytechnic Institute, USA
J. Wijayakulasooriya, Rensselaer Polytechnic Institute, USA
S. Ratnajeevan H. Hoole, Rensselaer Polytechnic Institute, USA
CEFC2010-1891

Oral Session 9 — Wednesday
Devices and Applications II
Session Chairs: Prof. Chang Seop Koh, Chungbuk National University, Korea
Prof. S. Ratnajeevan Hoole, Rensselaer Polytechnic Institute, USA
Rosement AB Ballroom — 8:00-10:00 AM

Finite Element Analysis of a Novel Design of a Three Phase Transverse Flux Machine with an External Rotor
Erich Schmidt, Vienna University of Technology, Austria
CEFC2010-1199

Application of a Non-Linear Numerical Integral Method to Predict Microfluxgate Output
Vuillermet Yannick, DIHS, France
Audoin Marcel, CEA-LETI/DIHS, France
CEFC2010-1262

Trajectory Analysis of Spherical Resonant Actuator Using 3-D FEM
Suzuki Satoshi, Gifu University, Japan
Kawase Yoshihiro, Gifu University, Japan
Yamaguchi Tadashi, Gifu University, Japan
Kakami Shuhei, Gifu University, Japan
Toyama Shuhei, Gifu University, Japan
Hirata Katsuhiro, Osaka University, Japan
Tomohiro Ota, Panasonic Electric Works, Ltd., Japan
CEFC2010-1385

Inductance Identification of PM Motor with Winding Turn Short Circuit Fault
Babak Vaseghi, Nancy University, France
Babak Nahidmobarakeh, Nancy University, France  
Noureddine Takorabet, Nancy University, France  
Farid Meibody-Tabar, Nancy University, France  
CEFC2010-1528

Efficient Modeling of Thin Wires in a Lossy Medium by Finite Elements  
Viviane Cristine Silva, Universidade de S, Brazil  
Lucas Blattner Martinho, Instituto de Pesquisas Tecnol, Brazil  
Jose Roberto Cardoso, Universidade de Sao Paulo, Brazil  
CEFC2010-1693

Magnetic Hand Tracking for Human-Computer Interface  
Yinghong Ma, Xidian University, USA,China  
Zhi-Hong Mao, University of Pittsburgh, USA  
Wenyan Jia, University of Pittsburgh, USA  
Chengliu Li, University of Pittsburgh, USA  
Jiawei Yang, University of Pittsburgh, China  
Mingui Sun, Xidian University, USA  
CEFC2010-1745

Oral Session 10 — Wednesday  
Numerical Techniques
Session Chairs: Prof. Arnolf Kost, TU Berlin, Germany  
Dr. Costin Ifrim, MagFields Engineering, USA
Rosement CD Ballroom — 8:00-10:00 AM

Modeling of the Magnetic Field Around a Ferrite-Cored Generator in a Proximity Detection System  
Jingcheng Li, The National Institute for Occupational Safety and Health, USA  
Jacob Carr, The National Institute for Occupational Safety and Health, USA  
John Bartels, The National Institute for Occupational Safety and Health, USA  
CEFC2010-1005

Parallel Computing of Magnetic Field for Rotating Machines Excited from Voltage Sources on the Earth Simulator  
Tomohito Nakano, Gifu University, Japan  
Yoshihiro Kawase, Gifu University, Japan  
Tadashi Yamaguchi, Gifu University, Japan  
Yoshiyasu Shibayama, Gifu University, Japan  
Masanori Nakamura, TOYO DENKI SEIZO K.K, Japan  
Noriaki Nishikawa, Japan Agency for Marine-Earth Science and Technology, Japan  
Hitoshi Uehara, Japan Agency for Marine-Earth Science and Technology, Japan  
CEFC2010-1064

A Novel Time-Domain Electric Field Integral Equation of Thin Wire Structures in Lossy Half-Space
Hongxia Huang, North China Electric Power University, China  
Lin Li, North China Electric Power University, China  
Zhibin Zhao, North China Electric Power University, China  

CEFC2010-1112

The Analysis of Flow Characteristics of Molten Metal Coupling Electromagnetic with Navier-Stokes Equation  
Chang Eob Kim, Hoseo University, Korea  
Mun Ho Jeon, Hoseo University, Korea  
Pan Seok Shin, Hongik University, Korea  
Qing H. Liu, Duke University, Korea  

CEFC2010-1350

Correction of Thin Shell Finite Element Magnetic Models via a Subproblem Method  
Patrick Dular, University of Liège, Belgium  
Vuong Q. Dang, University of Liège, Belgium  
Ruth V. Sabariego, University of Liège, Belgium  
Laurent Krähenbühl, University of Liège, Belgium  
Christophe Geuzaine, University of Liège, Belgium  

CEFC2010-1609

Enhancing the Performance of Conjugate Gradient Solvers on Graphic Processing Units  
Maryam Mehri-Dehnavi, McGill University, Canada  
David Fern, McGill University, Canada  
Dennis Giannacopoulos, McGill University, Canada  

CEFC2010-1672

Coffee Break  
Entry Level Foyer — 10:00-10:30 AM

Poster Session 26 — Wednesday  
Bioelectric Field Computation 1  
Session Chair: Prof. Weili Yan, Hebei University of Technology, China  
United A/B and L.A.X A/B — 10:30 AM-12:30 PM

Estimation of Magnetoencephalography Focal Sources Using ECoG Signals Characteristics Driven Approach (ESCDA)  
Feng Luan, Seoul National University, Korea  
Chany Lee, Seoul National University, Korea  
Jong-Ho Choi, Seoul National University, Korea  
Hyun-Kyo Jung, Seoul National University, Korea  

CEFC2010-1014

Classification of Mental Task from EEG Signals Using Immune Feature
Weighted Support Vector Machine
Lei Guo, Hebei University of Technology, China
Youxi Wu, Hebei University of Technology, China
Ting Cao, Hebei University of Technology, China
Weili Yan, Hebei University of Technology, China
Xueqin Shen, Hebei University of Technology, China
CEFC2010-1042

3D Reconstruction of Encephalic Tissue in MRI Image Using Immune Sphere-Shaped SVM
Lei Guo, Hebei University of Technology, China
Ying Li, Hebei University of Technology, China
Dongbo Miao, Hebei University of Technology, China
Weili Yan, Hebei University of Technology, China
Xueqin Shen, Hebei University of Technology, China
CEFC2010-1043

Thermal Ablation in Biological Tissue Using Tubular Electrode
Carlos Antunes, University of Coimbra, Sa, Portugal
Tony Almeida, University of Coimbra, Portugal
Nelia Raposeiro, Sa, Portugal
Belarmino Goncalves, Hospital de Santo Andr, Portugal
Paulo Almeida, Hospital de Santo Andr, Portugal
CEFC2010-1056

Effects of the Geometry of a Tubular Electrode on the Temperature Distribution in Biological Tissue
Carlos Antunes, University of Coimbra, Sa, Portugal
Tony Almeida, University of Coimbra, Portugal
Nelia Raposeiro, Sa, Portugal
Belarmino Goncalves, Hospital de Santo Andr, Portugal
Paulo Almeida, Hospital de Santo Andr, Portugal
CEFC2010-1173

FDTD-based Temperature Distribution Computation of Microwave Hyperthermia for Breast Cancer
Baodong Bai, Shenyang University of Technology, China
Xiaoming Yin, Shenyang University of Technology, China
Dexin Xie, Shenyang University of Technology, China
Yanli Zhang, Shenyang University of Technology, China
CEFC2010-1185

Optimal Design of a Focused Hyperthermia Device Using Finite Element Method
S.L. Ho, The Hong Kong Polytechnic University, Hong Kong
Shuangxia Niu, The Hong Kong Polytechnic University, Hong Kong
A Novel Array-type Transcranial Direct Current Stimulation (tDCS) System for Accurate Focusing on Targeted Brain Regions

Ji-Hye Park, Yonsei University, Korea
Do-Won Kim, Yonsei University, Korea
Chang-Hwan Im, Yonsei University, Korea
CEFC2010-1633

Strategies for Brain Sources and Tissues Properties Identification from EEG/MEG and EIT Signals

Ida Caminiti, Seconda Univ. degli Studi di Napoli, Italy
Fabrizio Ferraioli, Ansaldo Energia branch office, Italy
Alessandro Formisano, Seconda Univ. degli Studi di Napoli, Italy
Raffaele Martone, Seconda Univ. degli Studi di Napoli, Italy
CEFC2010-1637

Computation of Eddy Currents in Human Body Due to Pulsed Magnetic Field

Fabio Freschi, Politecnico di Torino, Italy
Alessandra Guerrisi, Politecnico di Torino, Italy
Maurizio Repetto, Politecnico di Torino, Italy
CEFC2010-1749

Three Dimensional Detection and Imaging for Human Lung Based on Node Back-Projection Algorithm with a 64 Electrodes EIT System

Zhang Shuai, Hebei University of Technology, China
Xu Guizhi, Hebei University of Technology, China
Zhang Jianjun, Hebei University of Technology, China
Wang Hongbin, Hebei University of Technology, China
Geng Duyan, Hebei University of Technology, China
Shen Xueqin, Hebei University of Technology, China
CEFC2010-1755

Simulation Study of EIT Inverse Problem Based on Bayesian Method

Ying Li, Hebei University of Technology, China
Huifang Zhao, Hebei University of Technology, China
Renjie He, University of Texas at Houston, USA
Liyun Rao, The Methodist Hospital Research Institute, USA
Xueqin Shen, Hebei University of Technology, China
Weili Yan, Hebei University of Technology, China
Dirar S Khoury, The Methodist Hospital Research Institute, USA
CEFC2010-1801

Modeling Deep Brain Stimulation Using Current Steering Scheme
Generating Virtual Channels in Retinal Prostheses
Charles T. M. Choi, National Chiao Tung University, Taiwan
Yen-Ting Lee, National Chiao Tung University, Taiwan
CEFC2010-1807

Boundary Element Analysis of the Electrostatic Interactions between Organic
Scaffolds and Transmembrane Proteins
Domenico Patrizio Ansalone, Istituto Nazionale di Ricerca Metrologica, Italy
Oriano Bottauscio, Istituto Nazionale di Ricerca Metrologica, Italy
Alessandra Manzin, Istituto Nazionale di Ricerca Metrologica, Italy
CEFC2010-1424

Poster Session 27 — Wednesday
Devices and Applications 10
Session Chair: Prof. Carlos Antunes, University of Coimbra, Portugal
United A/B and L.A.X A/B — 10:30 AM-12:30 PM

Effect of Pole and Slot Combination on Noise and Vibration in Permanent
Magnet Synchronous Motor
Tao Sun, Hanyang University, Korea
Yong-Ho Kim, Hanyang University, Korea
Wan-Jin Cho, Hanyang University, Korea
Liang Fang, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1564

Optimal Design for Tooth and Yoke Width of Motor for Maximum Output
Hae-Joong Kim, Hanyang University, Korea
Soon-O Kwon, Hanyang University, Korea
Do-Jin Kim, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1565

Analytic Expressions for the Lorentz Force and Torque on a Line Current with
Arbitrary Orientation Due to a Cuboidal Permanent Magnet
J.M.M. Rovers, Eindhoven University of Technology, The Netherlands
J.W. Jansen, Eindhoven University of Technology, The Netherlands
E.A. Lomonova, Eindhoven University of Technology, The Netherlands
CEFC2010-1569

On the Effect of Winding Parallel Paths in Synchronous Permanent Magnet
Electric Machine Drives
On the Use of Duality in Electromagnetism for the Modeling of Axial Flux Wheel Motors with 2D Finite Element Method

N. Takorabet, Nancy University, France
X. Long, Nancy University, France
J.P. Martin, Nancy University, France
J.P. Caron, Nancy University, France
CEFC2010-1618

The Dynamic Performance and Temperature Distribution of Turbine Generator Under Loss of Excitation by Using Coupled FE Analysis

Gao Hui, Zhejiang University, China
Yao Yingying, Zhejiang University, China
Fang Youtong, Zhejiang University, China
Yang Shiyou, Zhejiang University, China
CEFC2010-1619


Ping Zheng, Harbin Institute of Technology, China
Chengde Tong, Harbin Institute of Technology, China
Gang Chen, Harbin Institute of Technology, China
Jing Zhao, Harbin Institute of Technology, China
Wei Shi, Harbin Institute of Technology, China
CEFC2010-1626

Experimental Works and Analysis for Influence of Stator Slot Number on Performance of Interior PM Motor

Jang-Young Choi, Chungnam National University, Korea
Kyoung-Jin Ko, Chungnam National University, Korea
Seok-Myeong Jang, Chungnam National University, Korea
CEFC2010-1631

3D Finite Element Analysis of Coupled Inductors for Multilevel Inverter Output

Andrew M Knight, University of Alberta, Canada
John Salmon, University of Alberta, Canada
CEFC2010-1632

Impact Torque Analysis of New Electromagnetic Impact Mechanism Employing 3-D Finite Element Method

Katsuhiro Hirata, Osaka University, Japan
Tomoshi Tanibe, Osaka University, Japan
Tomohiro Ota, Panasonic Electric Works, Ltd., Japan
Optimized Design of a Permanent Magnet Tubular Linear Generator for Wave Energy Conversion
Haitao Yu, Southeast University, China
Bang Yuan, Southeast University, China
Hengshan Yang, Southeast University, China
Minqiang Hu, Southeast University, China
Lei Huang, Southeast University, China
CEFC2010-1636

A Novel Flux-Switching Permanent Magnet Linear Generator for Wave Energy Extraction
Lei Huang, Southeast University, China
Haitao Yu, Southeast University, China
Jing Zhao, Southeast University, China
Minqiang Hu, Southeast University, China
CEFC2010-1642

Coupling 3D Finite Element Method and Electro-Magnetic Field Theory for Optimized Secondary Overhang Design of Linear Induction Motor
Seok-Myeong Jang, Chungnam Nat, Korea
Yu-Seop Park, Chungnam Nat, Korea
Ji-Hoon Park, Chungnam Nat, Korea
Kyoung-Jin Ko, Chungnam Nat, Korea
Jang-Young Choi, Chungnam Nat, Korea
CEFC2010-1685

Investigation of an Axial-Axial Flux Compound-Structure Permanent-Magnet Synchronous Machine Used for HEVs
Jing Zhao, Harbin Institute of Technology, China
Ping Zheng, Harbin Institute of Technology, China
Ranran Liu, Harbin Institute of Technology, China
Qian Wu, Harbin Institute of Technology, China
Chengde Tong, Harbin Institute of Technology, China
CEFC2010-1703

Optimization of 2 Phase In-wheel IPMSM for Wide Speed Range by Using the Kriging Model Based on Latin Hypercube Sampling
Jae-beum Kim, Hanyang University, Korea
Kyu-yun Hwang, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea
CEFC2010-1815

Poster Session 28 — Wednesday
404 Initial Design Using Space Harmonic Analysis Methods in Permanent Magnet Synchronous Machines
  Yong-Ho Kim, Hanyang University Seoul, Korea
  Soon-O Kwon, Hanyang University Seoul, Korea
  Tao Sun, Hanyang University Seoul, Korea
  Jung-Pyo Hong, Hanyang University Seoul, Korea
CEFC2010-1566

405 Magnetic Field Computation of Axial Flux Permanent Magnet Machines with Halbach and Axially Magnetized Rotor Using Quasi-3-D Analysis Modeling
  Jang-Young Choi, Chungnam National University, Korea
  Yu-Seop Park, Chungnam National University, Korea
  Seok-Myeong Jang, Chungnam National University, Korea
CEFC2010-1635

406 A Method to Estimate Hysteresis Torque Using Core Loss
  Jeong-Jong Lee, Hanyang University, Korea
  Baik-Kee Song, Hanyang University, Korea
  Sung-II Kim, Hanyang University, Korea
  Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1645

407 Electromagnetic Performance Evaluation of Synchronous Generator with Outer Permanent Magnet Rotor Considering Wind Power Turbine Characteristics
  Kyoung-Jin Ko, Chungnam National University, Korea
  Seok-Myeong Jang, Chungnam National University, Korea
  Yu-seop Park, Chungnam National University, Korea
  Jang-Young Choi, Chungnam National University, Korea
CEFC2010-1668

408 Thrust analysis and Optimization for the Segmented Armature Type Permanent Magnet Linear Synchronous Motor
  Ma Mingna, Harbin Institute of Technology, China
  Liyi Li, Harbin Institute of Technology, China
  Baoquan Kou, Harbin Institute of Technology, China
  Liqing Li, Harbin Institute of Technology, China
  Qingquan Chen, Harbin Institute of Technology, China
CEFC2010-1669

409 Design of a Brushless Compound-Structure Permanent-Magnet Synchronous Machine for HEV Propulsion System
  Ping Zheng, Harbin Institute of Technology, China
Qian Wu, Harbin Institute of Technology, China
Ranran Liu, Harbin Institute of Technology, China
Jing Zhao, Harbin Institute of Technology, China
Chengde Tong, Harbin Institute of Technology, China
CEFC2010-1675

Parameter Modeling for Interior Permanent Magnet Synchronous Motors for Parametric Design
Soon-O Kwon, Hanyang University, Korea
Liang Fang, Hanyang University, Korea
Hae-Joong Kim, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1684

Dynamic Characteristics Considering Vehicle Load and Jerk Condition of Linear Induction Motor by Using Equivalent Circuit with Electro-Magnetic Field Theory
Seok-Myeong Jang, Chungnam Nat, Korea
Yu-Seop Park, Chungnam Nat, Korea
Kyoung-Jin Ko, Chungnam Nat, Korea
Ji-Hoon Park, Chungnam Nat, Korea
Jung-Ho Lee, Hanbat National Univ., Korea
CEFC2010-1688

Design and Performance Analysis of a Vacuum Permanent Magnet Contactor
Shuhua Fang, Southeast University, China
Heyun Lin, Southeast University, China
Xianbing Wang, Southeast University, China
Ping Jin, Southeast University, China
CEFC2010-1690

Modeling of Coreloss Resistance for d-q Equivalent Circuit Analysis of IPMSM Considering Harmonic Linkage Flux
Byeong-Hwa Lee, Hanyang University, Korea
Soon-O Kwon, Hanyang University, Korea
Jeong-Jong Lee, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1691

Research on Compound-Structure Permanent-Magnet Synchronous Machine Used for Hybrid Electric Vehicles
Jing Zhao, Harbin Institute of Technology, China
Ping Zheng, Harbin Institute of Technology, China
Chengde Tong, Harbin Institute of Technology, China
Qian Wu, Harbin Institute of Technology, China
Ranran Liu, Harbin Institute of Technology, China
Investigation of a Unified Controller of Compound Structure Permanent-Magnet Synchronous Machine for HEV Applications

Chengde Tong, Harbin Institute of Technology, China
Ping Zheng, Harbin Institute of Technology, China
Jing Zhao, Harbin Institute of Technology, China
Qian Wu, Harbin Institute of Technology, China
CEFC2010-1702

Reluctance Network Model for the In-wheel motor of a Series-Hybrid Truck Using Tooth Contour Method

M.F.J. Kremers, Eindhoven University of Technology, The Netherlands
Esin Ilhan, Eindhoven University of Technology, The Netherlands
D.C.J. Krop, Eindhoven University of Technology, The Netherlands
J.J.H. Paulides, Eindhoven University of Technology, The Netherlands
E.A. Lomonova, Eindhoven University of Technology, The Netherlands
CEFC2010-1705

A Back EMF Optimization of Double Layered Large Scale BLDC MOTOR by Using Hybrid Optimization Method

YongBae Kim, Hongik University, Korea
Hyeong Taek Jang, Hongik University, Korea
Hong Soon Choi, Kyungpook National University, Korea
Chang Seop Koh, Chungbuk National University, Korea
Pan Seok Shin, Hongik University, Korea
CEFC2010-1713

Poster Session 29 — Wednesday
Optimization and Design 4
Session Chair: Dr. So Noguchi, Hokkaido University, Japan
United A/B and L.A.X A/B — 10:30 AM-12:30 PM

Improved Differential Evolution Optimization Algorithm for the Design of a Brushless DC Wheel Motor

Leandro dos Santos Coelho, Pontifical Catholic University of Paran, Brazil
Piergiorgio Alotto, Pontifical Catholic University of Paraná, Brazil
Viviana Cocco Mariani, Università di Padova, Italy
CEFC2010-1509

Worst Case Analysis in Robust Design of NMR Magnets

Angelo Ambrisi, Seconda Universit, Italy
Alessandro Formisano, Seconda Universit, Italy
Martone Raffaele, Seconda Università di Napoli, Italy
CEFC2010-1638
Design of a Microwave Applicator for Sterilization Using Multiobjective Optimization and Phase Control Scheme

Diogo B.Oliveira, Federal University of Minas Gerais, Brazil
Jésus J. S. Santos, Federal University of Minas Gerais, Brazil
Elson J. Silva, Federal University of Minas Gerais, Brazil
Oriane M. Neto, Federal University of Minas Gerais, Brazil

CEFC2010-1667

Automatic Differentiation for Sensitivity Calculation in Electromagnetism: Application for Optimization of a Linear Actuator

Petre Enici, INPG/UFJ/CNRS, France
F. Wurtz, INPG/UFJ/CNRS, France
Laurent Gerbaud, INPG/UFJ/CNRS, France

CEFC2010-1706

Optimal Impedance Matching Design for Broadband Archimedean Spiral Antennas

A. C. Lisboa, Universidade Federal de Minas Gerais, ENACOM - Handcrafted technologies, Brazil
D. A. G. Vieira, Universidade Federal de Minas Gerais, ENACOM - Handcrafted technologies, Brazil
R. R. Saldanha, Universidade Federal de Minas Gerais, Brazil

CEFC2010-1760

Intelligent Memetic Algorithm Using GA and Guided MADS for the Optimal Design of Interior PM Synchronous Machine

Dongsu Lee, Dong-A University, Korea
Seungho Lee, Dong-A University, Korea
Jong-Wook Kim, Dong-A University, Korea
Cheol-Gyun Lee, Dong-Eui University, Korea
Sang-Yong Jung, Dong-A University, Korea

CEFC2010-1766

Optimal Design of Direct-Driven Wind Generator using Genetic Algorithm combined with Expert System

Shang-Hoon Kim, Dong-A University, Korea
Sang-Yong Jung, Dong-A University, Korea

CEFC2010-1771

Optimal Shape Design of a Thomson-coil Actuator Utilizing Generalized Topology Modification Based on Equivalent Circuit Method

Wei Li, Chungbuk National University, Korea
Ziyan Ren, Chungbuk National University, Korea
Chang Seop Koh, Chungbuk National University, Korea

CEFC2010-1803
A New Global Optimization Algorithm for Mixed-Integer-Discrete-Continuous Variables based on Particles Swarm Optimization

Ziyan Ren, Chungbuk National University, Korea
Minh-Trien Pham, Chungbuk National University, Korea
Wei Li, Chungbuk National University, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1813

A Modified Tabu Search Method Applied to Inverse Problems

Siguang An, Zhejiang University, China
Shiyou Yang, Zhejiang University, China
S.L Ho, The Hong Kong Polytechnic University, Hong Kong
Tao Li, Zhejiang University, China
CEFC2010-1826

Utilizing Grid Computing Technique for Numerically Efficient Global Optimization of Electromagnetic Devices

Minho Song, Chungbuk National University, Korea
Minh-Trien Pham, Chungbuk National University, Korea
Heesung Yoon, Chungbuk National University, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1839

Hybrid GA-PSO Multi-Objective Design Optimization of Coupled PM Synchronous Motor-Drive Using Physics-Based Modeling Approach

Ali Sarikhani, Florida International University, USA
Osama Mohammed, Florida International University, USA
CEFC2010-1889

Poster Session 30 — Wednesday
Static and Quasi-static Fields 5
Session Chair: Dr. Antonio Faba, University of Perugia, Italy
United A/B and L.A.X A/B — 10:30 AM-12:30 PM

An Approach to Determine the Circulation of Magnetic Field in FEM Computation Code with Vector Potential Formulation

T. Henneron, Université Lille 1, France
F. Piriou, Université Lille 1, France
J-Y Roger, EDF R&D, France
CEFC2010-1493

Magnetic Field Computation Using Compact Support Radial Basis Functions

Rajeev Das, McGill University, Canada
David A. Lowther, McGill University, Canada
CEFC2010-1604
Analyzing and Reducing Error in 2-D Frequency Domain Homogenization of Windings for R, L Parameters FE Computation

Z. De Grève, Faculty of Engineering-Umons, Belgian Fund for Research F.R.S/FNRS, Belgium
O. Deblecker, Faculty of Engineering-Umons, Belgium
J. Lobry, Faculty of Engineering-Umons, Belgium
R.V. Sabariego, Institut Montefiore-Ulg, Belgium
P. Dular, Institut Montefiore-Ulg, Belgian Fund for Research F.R.S/FNRS, Belgium
C. Geuzaine, Institut Montefiore-Ulg, Belgium
CEFC2010-1607

Finite Element Simulation of Electromagnetic Fields of a Self-decoupling Magneto-rheological Damper

Chengbin Du, Hohai University, China
Faxue Wan, Hohai University, China
Guojun Yu, Hohai University, China
CEFC2010-1652

Characteristics Analysis of Tubular Linear Induction Motor Using Axisymmetric Model

Ji-Min Kim, Hanyang University, Korea
Byeong-Hwa Lee, Hanyang University, Korea
Jeong-Jong Lee, Hanyang University, Korea
Jung-Pyo Hong, Hanyang University, Korea
CEFC2010-1666

Capacitance Parameter Extraction of HVDC converter system by the Method of Moments

Jufang Wei, North China Electric Power University, China
Lei Qi, North China Electric Power University, China
Shili Liu, North China Electric Power University, China
Xiang Cui, North China Electric Power University, China
Weidong Zhang, North China Electric Power University, China
CEFC2010-1719

The Effect of Laminated Structure on Coupled Magnetic Field and Mechanical Analyses of Iron Core and Its Homogenization Technique

Yanhui Gao, Saga Univ., Japan
Kazuhiro Muramatsu, Saga Univ., Japan
Muhd Juzail Hatim, Saga Univ., Japan
CEFC2010-1726

Fast Global Quantity Evaluation Based on Dual Magneto-quasistatic Field Formulations

T. Steinmetz, ABB Schweiz AG, Switzerland
B. Cranganu-Cretu, ABB Schweiz AG, Switzerland
A Comparison Between Hybrid Methods for Open-Boundary Problems
G. Aiello, Università di Catania, Italy
S. Alfonzetti, Università di Catania, Italy
S. A. Rizzo, Università di Catania, Italy
N. Salerno, Università di Catania, Italy
CEFC2010-1736

Dissipative Processes in Electrical Engineering: A Multi-Scale Approach
Vincent Mazauric, Schneider Electric, France
Nadia Ma, MINES ParisTech, France
Loïc Rondot, CEDRAT, France
Philippe Wendling, Magsoft Corporation, USA
CEFC2010-1764

Comparison Study of Biot-Savart Law and 3D FEM of Electromagnetic Forces Acting on End Windings
Ki-Chan Kim, Hanbat National University, Korea
Soo-Jin Hwang, Hanbat National University, Korea
CEFC2010-1780

Refinement of Inductor Models via a Subproblem Finite Element Method
Patrick Dular, University of Liège, Belgium
Mauricio V. Ferreira da Luz, University of Liège, Brazil
Patrick Kuo-Peng, UFSC, Brazil
Ruth V. Sabariego, University of Liège, Belgium
Laurent Krähenbühl, Université de Lyon, France
Christophe Geuzaine, University of Liège, Belgium
CEFC2010-1795

Magnetic Fields Study of Various Planar Halbach Permanent Magnet Array
Hao Jiang, Southeast University, China
Gan Zhou, Southeast University, China
Xueliang Huang, Southeast University, China
Shuang Wang, Southeast University, China
Lei Huang, Southeast University, China
CEFC2010-1797

Induced Current and Planar Force in an Induction Planar Actuator
Nolvi Francisco Baggio Filho, Federal University of Rio Grande do Sul, Brazil
Aly Ferreira Flores Filho, Federal University of Rio Grande do Sul, Brazil
CEFC2010-1837
Poster Session 31 — Wednesday
Wave Propagation 3
Session Chair: Dr. Daniel White, Lawrence Livermore National Laboratory, USA
United A/B and L.A.X A/B — 10:30 AM-12:30 PM

444  Radio Propagation Path Loss Prediction of UMTS for an Urban Area
    Sati Yelen, Bogazici University, Turkey
    S. Selim Seker, Bogazici University, Turkey
    Fulya C. Kunter, Bogazici University, Turkey
    CEFC2010-1418

445  A Comparative Study between Witricity and Traditional Inductive Coupling in
    Wireless Energy Transmission
    Junhua Wang, The Hong Kong Polytechnic University, Hong Kong
    S.L. Ho, The Hong Kong Polytechnic University, Hong Kong
    W.N. Fu, The Hong Kong Polytechnic University, Hong Kong
    Mingui Sun, University of Pittsburgh, USA
    CEFC2010-1480

446  Modeling of Switching Transient on Long Nonuniform Transmission Line Using
    Precise Integration Method in Time Domain
    Zhen Li, Tsinghua University, China
    Shunchao Wang, Tsinghua University, China
    Jinliang He, Tsinghua University, China
    CEFC2010-1591

447  Analysis of FSS with Koch Island Patch Elements Using the Wave Concept
    Iterative Procedure
    Alfrêdo Gomes Neto, Federal Institute of Education, Brazil
    Fábio M. Pontes, Federal Institute of Education, Brazil
    Jefferson C. Silva, Federal Institute of Education, Brazil
    Paulo H. da F. Silva, Federal Institute of Education, Brazil
    Adaildo Gomes D’Assunção, Federal University of Rio Grande do Norte, Brazil
    CEFC2010-1650

448  Meshless Local Petrov-Galerkin in Solving Microwave Guide Problems
    Bruno C. Correa, Federal University of Minas Gerais, Brazil
    Elson J. Silva, Federal University of Minas Gerais, Brazil
    Alexandre R. Fonseca, Federal University of Jequitinhonha and Mucuri Valleys, Brazil
    Diogo B. Oliveira, Federal University of Minas Gerais, Brazil
    Renato C. Mesquita, Federal University of Minas Gerais, Brazil
    CEFC2010-1694

449  Edge Elements and the Decomposition Projective Method to Solve Scattering
    Problems of Electrically Large Objects
Lianyou Sun, Southeast University, China
Jon P. Webb, McGill University, Canada
Wei Hong, Southeast University, China
CEFC2010-1698

Analysis of Stop-Band Frequency Selective Surfaces with D
José I. A. Trindade, Federal University of Rio Grande do Norte, Brazil
Paulo H. da F. Silva, Federal University of Rio Grande do Norte, Brazil
Antonio L. P. S. Campos, Federal University of Rio Grande do Norte, Brazil
Adaildo Gomes D’Assunção, Federal University of Rio Grande do Norte, Brazil
CEFC2010-1699

Electromagnetic Coupling through a Dielectric Layer with a Left-hand Circular Polarization
A. Serres, UFCG, Brazil
G. Fontgalland, UFCG, Brazil
J. E. P. de Farias, UFCG, Brazil
H. Baudrand, L.A.P.L.A.C.E-G.R.E, France
CEFC2010-1708

A Generalized Multi-conductor Transmission Line Model and Generalized Method for the Solution of the MTL
Chaoqun Jiao, Beijing Jiaotong University, China
Lei Gao, Beijing Jiaotong University, China
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1716

A Model Reduction Algorithm for Solving Multiple Scattering Problems Using Iterative Methods
A. Vion, University of Li`ege, Belgium
R.V. Sabariego, University of Li`ege, Belgium
C. Geuzaine, University of Li`ege, Belgium
CEFC2010-1741

A Modular Approach to FEM-MOM Hybridization for the Analysis of Finite Arrays of Antennas
Luis E. Garcia-Castilo, Universidad Carlos III, Spain
Belen Andres, Universidad Carlos III, Spain
Ignacio Gomez-Revuelto, Universidad Politecnica de Madrid, Spain
Luis E. Garcia-Munoz, Universidad Carlos III, Spain
Cristophe Craeye, Universite Catholique de Louvain, Belgium
CEFC2010-1774

Numerical Synthesis of Dielectric Embedded Electronically Steerable Multiple Beam Antenna Array
Lei Liu, Zhejiang University, China
Junwei Lu, Griffith University, China
Shiyou Yang, Zhejiang University, China
CEFC2010-1829

456 Sparse Wavelet Approximations to Transient Space-Time
Steve McFee, McGill University, Canada
Adrian Ngoly, McGill University, Canada
CEFC2010-1844

457 Monopole Microstrip Antennas for UWB Systems with Circular Ring Patch and Parasitic Elements
Bruna A. L. da Silva, Federal University of Rio Grande do Norte, Brazil
Adaildo Gomes D’Assunção, Federal University of Rio Grande do Norte, Brazil
CEFC2010-1875

Elder Eldervitch C. de Oliveira, Federal University of Rio Grande do Norte, Brazil
Adaildo Gomes D’Assunção, Federal University of Rio Grande do Norte, Brazil
Cláudio R. M. da Silva, Federal University of Rio Grande do Norte, Brazil
CEFC2010-1876

459 A New Configuration of Planar Monopole Quasi-Fractal Antenna for Wireless Communications
Marcelo Ribeiro da Silva, Federal University of Rio Grande do Norte, Brazil
Clarissa de Lucena Nóbrega, Federal University of Rio Grande do Norte, Brazil
Paulo H. da F. Silva, Federal Institute of Education, Science and Technology of Para, Brazil
Adaildo Gomes D’Assunção, Federal University of Rio Grande do Norte, Brazil
CEFC2010-1877

Lunch
Red Bar Entry Level Foyer — 12:15-1:15 PM

Poster Session 32 — Wednesday
Coupled Problems 3
Session Chair: Prof. Katsuhiro Hirata, Osaka University, Japan
United A/B and L.A.X A/B — 1:00-2:30 PM

460 A Parametric Approach for Multiphysical Modeling of Magnetic Bearings
Antje Deckert, Institute of Aerospace Engineering, Germany
Uwe Keller, Institute of Aerospace Engineering, Germany
Stefanos Fasoulas, Institute of Aerospace Engineering, Germany
CEFC2010-1086
Modeling and Design of a Wireless Power Transfer Cell with Planar Spiral Structures

Xiu Zhang, The Hong Kong Polytechnic University, Hong Kong
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1479

Enhanced Acoustic Emission Detection Induced by Electromagnetic Stimulation with External Magnetic Field

Liang Jin, Hebei University of Technology, China
Qingxin Yang, Hebei University of Technology, China
Suzhen Liu, Hebei University of Technology, China
Li Peng, Hebei University of Technology, China
Liu Fugui, Hebei University of Technology, China
Guo Lei, Hebei University of Technology, China
CEFC2010-1537

A Unified Formulation of Finite-element Methods for 2-D and Axisymmetric Magnetic Fields

W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1547

Eddy Current Analysis of Magnetic Gear Employing 3-D FEM

Niguchi Noboru, Osaka University, Japan
Hirata Katsuhiro, Osaka University, Japan
Muramatsu Masari, Osaka University, Japan
Hayakawa Yuichi, Osaka University, Japan
CEFC2010-1556

Application of Meshless Collocation Method to Solve Eddy Current Magnetic Field Problems Involving Conductor Movement

Guangyuan Yang, Huazhong University of Science and Technology, China
Xiaoming Chen, Huazhong University of Science and Technology, China
K.R. Shao, Huazhong University of Science and Technology, China
Youguang Guo, University of Technology, Australia
Jianguo Zhu, University of Technology, Australia
J.D. Lavers, University of Toronto, Canada
CEFC2010-1563

Geometry Optimization of Power Transformer Cooling System Based on Coupled 3D FEM Thermal-CFD Analysis

Eleftherios Amoiralis, Technical University of Crete, Greece
Marina Tsili, National Technical University of Athens, Greece
Antonios Kladas, National Technical University of Athens, Greece
Athanassios Souflaris, 3Schneider Electric A.E.B.E, Greece
CEFC2010-1570

3-D Finite Element Analysis of Linear Resonance Actuator under PID Control
Katsuhikro Hirata, Osaka University, Japan
Yasuyoshi Asai, Osaka University, Japan
Tomohiro Ota, Panasonic Electric Works, Ltd., Japan
CEFC2010-1623

Eddy Current Analysis in Permanent Magnet of PM Motors Considering Temperature Nonlinearity of Conductivity
Seung Chul Cha, Sungkyunkwan University, Korea
Young Sun Kim, Sungkyunkwan University, Korea
Hong Soon Choi, Kyungpook National University, Korea
Il Han Park, Sungkyunkwan University, Korea
CEFC2010-1695

Multiphysics Modeling of Induction Hardening of Ring Gears for the Aerospace Industry
Alessandro Candeo, University of Padova, Italy
Philippe Bocher, Ecole de Technologie Superieure, Canada
Fabrizio Dughiero, University of Padova, Italy
CEFC2010-1751

Design and Thermal Analysis of Traction Motor for Electric Vehicle Based on Driving Duty Cycle
JinXin Fan, Beijing Institute of Technology, China
ChengNing Zhang, Beijing Institute of Technology, China
ZhiFu Wang, Beijing Institute of Technology, China
Abdul Rehman Tariq, Michigan State University, China
Carlos. E Nino, Michigan State University, China
Elias Strangas, Michigan State University, China
CEFC2010-1804

Poster Session 33 — Wednesday
Devices and Applications 12
Session Chair: Prof. S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
United A/B and L.A.X A/B — 1:00-2:30 PM

Computation of Rotating Force Waves in Induction Machines Using Multi-Slice Models
Bernhard Weiharter, Graz University of Technology, Austria
Oszkar Biro, Graz University of Technology, Austria
Siegfried Rainer, Graz University of Technology, Austria
CEFC2010-1714
472 Electrical, Structural and Rotordynamic Analysis of Ultra High Speed Motor with Shrink Fit Rotor for Air Blower Cooling Fuel Cells

Do-Kwan Hong, Korea Electrotechnology Research Institute, Korea
Byung-Chul Woo, Korea Electrotechnology Research Institute, Korea
Dae-Hyun Koo, Korea Electrotechnology Research Institute, Korea
Chan-Woo Ahn, Dong-A University, Korea

CEFC2010-1724

473 Partial Segment Force on Ferromagnetic Material of High-Field Magnetic System

Young Sun Kim, Sungkyunkwan University, Korea
Hong Soon Choi, Kyungpook National University, Korea
Il Han Park, Sungkyunkwan University, Korea

CEFC2010-1730

474 Transient Analysis by using Current Vector of Three Dimensional Space for Multi-degree of Freedom Permanent-magnet Motor

Kang Dong-Woo, Hanyang University, Korea
Won Sung-Hong, Hanyang University, Korea
Lee Ju, Hanyang University, Korea

CEFC2010-1746

475 Evaluation of Line-Start Interior Permanent Magnet Synchronous Motor Model Parameters Using Finite Elements

Bojan Štumberger, University of Maribor, Slovenia
Tine Marcic, Research and Development Centre for Electrical Machines, Slovenia
Miralem Hadziselimovic, University of Maribor, Slovenia
Mladen Trlep, University of Maribor, Slovenia

CEFC2010-1748

476 Design and FE Analysis of a Double Rotor Synchronous PM Machine

Peter Pisek, Research and Development Centre for Electrical Machines, Slovenia
Bojan Stumberger, Research and Development Centre for Electrical Machines, University of Maribor, Slovenia
Tine Marcic, Research and Development Centre for Electrical Machines, Slovenia
Peter Virtic, University of Maribor, Slovenia

CEFC2010-1752

477 Permanent Magnet Shape Optimization for High Efficiency Traction Motors

Konstantinos Laskaris, National Technical University of Athens, Greece
Antonios Kladas, National Technical University of Athens, Greece

CEFC2010-1758

478 Analysis and Performance Evaluation of Compound Permanent Magnet Generator with Controllable Airgap Flux

Huijun Wang, School of Instrumentation Science and Opto-electronics Engineering,
China

Jinxin Fan, Beijing Institute of Technology, China
CEFC2010-1767

Analysis of the Novel Laminated Structure of Double Excited Three-Degree-of-Freedom Motor
Young-Boong Kim, Hanyang University, Korea
Byung-Il Kwon, Hanyang University, Korea
CEFC2010-1769

Design Methodology using the Newly proposed Synthetic Flux Linkages Considering Cross-Magnetization for Interior PM Synchronous Machine
Youngjun Ahn, Dong-A University, Korea
Sang-Yong Jung, Dong-A University, Korea
CEFC2010-1772

Tolerance Analysis in BLDC Motor Based on the Stochastic Response Surface Methodology
Young-Kyoun Kim, Korea Electronics Technology Institute, Korea
Se-hyun Rhyu, Korea Electronics Technology Institute, Korea
In-Soung Jung, Korea Electronics Technology Institute, Korea
CEFC2010-1775

Performance Analysis of Interior Permanent Magnet Synchronous Motor for Electric Vehicle considering Magnetic Saturation Effect
Ki-Chan Kim, Hanbat National University, Korea
Ki-Yong Sung, Hanbat National University, Korea
CEFC2010-1777

Parametric Analysis of Thomson-coil Actuator Using Adaptive Equivalent Circuit Method
Wei Li, Chungbuk National University, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1786

A Surge Voltage Distribution Analysis of 22.9 kV Power Transformer
Hyeong Taek Jang, Hongik University, Korea
Yong Bae Kim, Hongik University, Korea
Mun Ho Jeon, Hongik University, Korea
Pan Seok Shin, Hongik University, Korea
CEFC2010-1796

Poster Session 34 — Wednesday
Devices and Applications 13
Session Chair: Prof. Dennis Giannacopoulos, McGill University, Canada
486  **Optimum Design Criteria for Maximum Torque Density & Minimum Torque Ripple of Flux Switching Motor using Response Surface Methodology**

*Jungho Lee*, Hanbat National University, Korea  
*Taehoon Lee*, Hanbat National University, Korea  
*Ahram Jeon*, Hanbat National University, Korea  
CEFC2010-1235

487  **Characteristic Analysis & Optimum Design of Permanent Magnet Assisted**

*Jungho Lee*, Hanbat National University, Korea  
*Taewon Yun*, Hanbat National University, Korea  
*Ahram Jeon*, Hanbat National University, Korea  
CEFC2010-1239

488  **Optimal Design of Auxiliary Core to Reduce Detent Force According to End Effect in PMLSM**

*Ki-Bong Jang*, Changwon National University, Korea  
*Ji-Hyun Kim*, Changwon National University, Korea  
*Ho-Jin An*, Changwon National University, Korea  
*Gyu-Tak Kim*, Changwon National University, Korea  
CEFC2010-1541

489  **Effect of Magnetic Anisotropy on Operating Condition of Synchronous Reluctance Motor**

*Daisuke Miyagi*, Okayama University, Japan  
*Naoki Ono*, Okayama University, Japan  
*Norio Takahashi*, Okayama University, Japan  
*Kan Akatsu*, Okayama University, Japan  
CEFC2010-1805

490  **Improvement of Accuracy in Cogging Torque Computation in Fractional-slot Flux Modulating Permanent Magnet Machines**

*Shuangxia Niu*, The Hong Kong Polytechnic University, Hong Kong  
*S.L. Ho*, The Hong Kong Polytechnic University, Hong Kong  
*W.N. Fu*, The Hong Kong Polytechnic University, Hong Kong  
CEFC2010-1817

491  **Optimal Design of Brushless DC Motor by Utilizing Novel Coefficient Modeling for Skewed PM and Overhang Structure**

*Kyu-yun Hwang*, Hanyang University, Korea  
*Se-hyun Rhyu*, Hanyang University, Korea  
*Byung-il Kwon*, Hanyang University, Korea  
CEFC2010-1824

492  **The Design Method to Realize Magnetic Decoupling for a Radial-Radial Flux**
Compound-Structure Permanent-Magnet Synchronous Machine

Ranran Liu, Harbin Institute of Technology, China
Ping Zheng, Harbin Institute of Technology, China
Chengde Tong, Harbin Institute of Technology, China
Jing Zhao, Harbin Institute of Technology, China
Wei Shi, Harbin Institute of Technology, China
CEFC2010-1827

Design and Analysis of Transverse Flux Switched Reluctance Generator for Wind Turbine

Song Ui-seop, Hanyang University, Korea
You Yong-min, Hanyang University, Korea
Byung-il Kwon, Hanyang University, Korea
CEFC2010-1828

3D Finite Element Study of Transient Electromagnetic Forces Acting on the Stator End-Windings of a Large Turbo-generator

Jia Zhang, Zhejiang University, China
Shiyou Yang, Zhejiang University, China
S.L. Ho, The Hong Kong Polytechnic University, Hong Kong
Yingying Yao, Zhejiang University, China
CEFC2010-1832

Core Loss Analysis of Permanent Magnet Synchronous Motor for Electric Vehicle

JinXin Fan, Beijing Institute of Technology, China
ChengNing Zhang, Beijing Institute of Technology, China
HuiJun Wang, Beijing University of Aeronautics & Astronautics, China
CEFC2010-1833

Finite Element Analysis of Iron Loss Estimation of 3MVA Three-Phase Transformer Utilizing Generalized Chua-type Vector Hysteresis Model

Heesung Yoon, Chungbuk National University, Korea
Chang Soon Park, Korea University of Technology and Education, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1838

Function Validations of a Radial-Radial Flux Compound-Structure Permanent-Magnet Synchronous Machine for HEVs

Ranran Liu, Harbin Institute of Technology, China
Ping Zheng, Harbin Institute of Technology, China
Chengde Tong, Harbin Institute of Technology, China
Jing Zhao, Harbin Institute of Technology, China
Qian Wu, Harbin Institute of Technology, China
CEFC2010-1849
Calculation and Investigation of End-Effect for a High-Precision Planar Magnetic Levitation

Hao Jiang, Southeast University, China
Gan Zhou, Southeast University, China
Xueliang Huang, Southeast University, China
Haitao Yu, Southeast University, China
Lei Huang, Southeast University, China
CEFC2010-1863

Design and Comparison between IM and PMSM for Hybrid Electrical Vehicles

Kwangsoo Kim, Hanyang University, Korea
Jaenam Bea, Hanyang University, Korea
San-Hwan Ham, Hanyang University, Korea
Won-Ho Kim, Hanyang University, Korea
Suyeon Cho, Hanyang University, Korea
CEFC2010-1869

Design Procedures of Transverse Flux Linear Motor

Junghwan Chang, Dong-A University, Korea
Jiyoung Lee, Electric motor research center, Korea
Dohyun Kang, Electric motor research center, Korea
Kwangwoon Kim, University Of Science & Technology, Korea
CEFC2010-1885

Poster Session 35 — Wednesday
Material Modeling 3
Session Chair: Prof. Mauricio Ferreira da Luz, Federal University of Santa Catarina – UFSC, Brasil
United A/B and L.A.X A/B — 1:00-2:30 PM

Dynamic Model of an RM Type Ferrite Core to Simulate the Effects of Saturation and Power Losses via 2D Finite Elements in the Time Domain

Rosa Ana Salas, Universidad Carlos III de Madrid, Spain
Jorge Pleite, Universidad Carlos III de Madrid, Spain
CEFC2010-1505

The Analysis of Electromagnetic Waves Transmitting on Fabric Based Frequency Selective Surface

Chuanyou Li, Beijing University of Technology, China
Qun Wang, Beijing University of Technology, China
Zhanghong Tang, Beijing University of Technology, China
Jingyu Han, Beijing University of Technology, China
Meiwu Shi, The Quartermaster Equipment Research Institute of the General Logistics Department of the PLA, China
Maohui Li, The Quartermaster Equipment Research Institute of the General Logistics Department of the PLA, China
CEFC2010-1598

503 Experimental Tests of a Stress-Dependent Controller for Magnetostrictive
Transducers
   Daniele Davino, University of Sannio, Italy
   Alessandro Giustiniani, University of Salerno, Italy
   Ciro Visone, University of Sannio, Italy
CEFC2010-1655

504 Combined Experimental and Modeling Analysis to Study Accommodation
Phenomenon
   Ermanno Cardelli, University of Perugia, Italy
   Antonio Faba, University of Perugia, Italy
   Marco Marracci, University of Pisa, Italy
   Bernardo Tellini, University of Pisa, Italy
CEFC2010-1709

505 Microscopic and Macroscopic Electromagnetic and Thermal Modeling of Carbon
Fiber Reinforced Polymer Composites
   Guillaume Wasselynck, Institut de Recherche en Electrotechnique et Electronique
de Nantes Atlantique (IREENA), France
   Didier Trichet, Institut de Recherche en Electrotechnique et Electronique de Nantes
Atlantique (IREENA), France
   Brahim Ramdane, Institut de Recherche en Electrotechnique et Electronique de Nantes
Atlantique (IREENA), France
   Javad Fouladgar, Institut de Recherche en Electrotechnique et Electronique de Nantes
Atlantique (IREENA), France
CEFC2010-1717

506 Scalable Spatial Harmonic Analysis Solver for Modeling Plasmonic Bi-periodic
Multilayer Nanostructures
   Xingjie Ni, Purdue University, USA
   Zhengtong Liu, Purdue University, USA
   Alexandra Boltasseva, Purdue University, USA
   Alexander Kildishev, Purdue University, USA
CEFC2010-1720

507 The Importance of Including Fiber Oriented Conductivity Data in
Computational Myocardium Defibrillation Analyses
   Steve McFee, McGill University, Canada
   Maryam Golshayan, McGill University, Canada
CEFC2010-1778

508 Analysis and Measurement of the Magnetophoretic Display System by Using
Bistable Magnetic Ball for Extremely Low Power Consumptions

Hyuk Won, Pusan National University, Korea
SungHo Lee, Pusan National University, Korea
GwanSoo Park, Pusan National University, Korea
CEFC2010-1800

509

A Generalized Chua-type Vector Hysteresis Model for Both the Non-Oriented and Grain-oriented Electrical Steel Sheets

Minho Song, Chungbuk National University, Korea
Heesung Yoon, Chungbuk National University, Korea
Pan Seok Shin, Hongik University, Korea
Chang Seop Koh, Chungbuk National University, Korea
CEFC2010-1835

510

Loss Evaluation of an Induction Motor Model Core by Vector Magnetic Characterisitc Analysis

Naoki Kunihiro, Oita University, Japan
Takashi Todaka, Oita University, Japan
Masato Enokizono, Oita University, Japan
CEFC2010-1854

511

Magnetic Characteristic Analysis of SPM Motor By Means of Dynamic E&S Modeling

Takeru Sato, Oita University, Japan
Takashi Todaka, Oita University, Japan
Masato Enokizono, Oita University, Japan
CEFC2010-1856

Poster Session 36 — Wednesday
Nanomagnetics & Nanophotonics 1
Session Chair: Dr. Fabio Freschi, Politecnico di Torino, Italy
United A/B and L.A.X A/B — 1:00-2:30 PM

512

Magnetic Vortex Chirality Switching Driven by a Spin-Polarized Current

Mario Carpentieri, University of Calabria, Italy
Giovanni Finocchio, University of Messina, Italy
Bruno Azzerboni, University of Messina, Italy
Ermanno Cardelli, University of Perugia, Italy
Antonio Faba, University of Perugia, Italy
CEFC2010-1172
Efficiency of the Geometric Integration of Landau-Lifshitz-Gilbert Equation Based on Cayley Transform

Oriano Bottauscio, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy
Alessandra Manzin, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy

CEFC2010-1392

Micromagnetic Simulations of Linewidth and Nonlinear Frequency Shift Coefficient in Spin-Torque Nanoscillators

Mario Carpentieri, University of Calabria, Italy
Ermanno Cardelli, University of Perugia, Italy
Antonio Faba, University of Perugia, Italy
Torres Luis, University of Salamanca, Spain

CEFC2010-1710

Magnetic Hysteresis Modeling in Perpendicular MRAM System for High Gb/Chip

Hyuk Won, Pusan National University, Korea
SeungHo Yun, Pusan National University, Korea
GwanSoo Park, Pusan National University, Korea

CEFC2010-1785

Analyzing the Effect of a Metamaterial Surface on Electric and Magnetic Dipole Emissions Using Green

Xingjie Ni, Purdue University, USA
Alexander Kildishev, Purdue University, USA
Shalaev Vladimir, Purdue University, USA

CEFC2010-1842

Poster Session 37 — Wednesday
Numerical Techniques 3
Session Chair: Prof. Luis E. Garcia-Castillo, Universidad Carlos III de Madrid, Spain

United A/B and L.A.X A/B — 1:00-2:30 PM

A Combination of Algebraic Multigrid Method and Adaptive Mesh Refinement for Large-scale Electromagnetic Field Calculation

Tang Zhanghong, Beijing University of Technology, China
Yuan Jiansheng, Beijing University of Technology, China

CEFC2010-1255

Fast Time-domain Finite Element Analysis of 3D Nonlinear Time-Periodic Eddy Current Problems with $\zeta, \Phi$ Formulation

Biro Oszkar, Graz University of Technology, Austria
Koczka Gergely, Graz University of Technology, Austria
Preis Kurt, Graz University of Technology, Austria

CEFC2010-1360

Shielding Current Analysis in High-Temperature Superconductor: Highly
Accurate Evaluation of Improper Integrals for EFG
Soichiro Ikuno, Tokyo University of Technology, Japan
Teruou Takayama, Yamagata University, Japan
Atsushi Kamitani, Yamagata University, Japan
CEFC2010-1456

New Smoothing Method in the Automatic Hexahedral Mesh Generator for Improving Solver Convergence Property
So Noguchi, Hokkaido University, Japan
Yuichiro Motooka, Hokkaido University, Japan
Hajime Igarashi, Hokkaido University, Japan
CEFC2010-1554

Evaluation and Comparison of Hierarchical Vector Basis Functions for Quadrilateral Cells
Andrew Peterson, Georgia Institute of Technology, USA
Roberto Graglia, Politecnico di Torino, Italy
CEFC2010-1608

Efficient Parallel Implementation of Large-Scale Finite Difference Time Domain Electromagnetic Schemes Using Hash Table and Multicolor Ordering
Toshio Murayama, Sony Corporation, Japan
Kenzo Nishikawa, Sony Corporation, Japan
Shinobu Yoshimura, The University of Tokyo, Japan
CEFC2010-1721

Parallel Implementation of Extended Node Patch Preconditioner for Electromagnetic 3D Full-Wave FEM Problem
Toshio Murayama, Sony Corporation, Japan
Kenzo Nishikawa, Sony Corporation, Japan
Shinobu Yoshimura, The University of Tokyo, Japan
CEFC2010-1722

Superimposed Preconditioner for Full-Wave Electromagnetic Finite Element Problems
Toshio Murayama, Sony Corporation, Japan
Shinobu Yoshimura, The University of Tokyo, Japan
CEFC2010-1725
Coupling of Finite Element Method and Fourier Series Expansion for Open Boundary Problem

Young Sun Kim, Sungkyunkwan University, Korea
Il Han Park, Sungkyunkwan University, Korea
Ki Sik Lee, Dankook University, Korea
Dong Jin Kim, Dankook University, Korea
CEFC2010-1729

Coupling of Point Collocation Meshfree Method and Finite Element Method for Poisson Problem

Chany Lee, Seoul National University, Korea
Jong-Ho Choi, Seoul National University, Korea
Luan Feng, Seoul National University, Korea
Hyun-Kyo Jung, Seoul National University, Korea
Do Wan Kim, Hanyang University, Korea
CEFC2010-1810

Dealing with Floating Conductors in Finite Element Method of Electrostatic Field

W. N. Fu, The Hong Kong Polytechnic University, Hong Kong
S. L. Ho, The Hong Kong Polytechnic University, Hong Kong
CEFC2010-1816

Study on GPU-accelerated Extraction of Interconnects Parasitic Using CUDA and MPI

Xiaoyu Xu, Chinese Academy of Sciences, China
Guoqiang Liu, Chinese Academy of Sciences, China
Hui Qu, Chinese Academy of Sciences, China
Wei Xu, University of Technology Sydney, Australia
Yang Zhang, Chinese Academy of Sciences, China
CEFC2010-1830

Analysis of Real Overvoltage Transient in a TLM-Modeled

L. H. A. de Medeiros, Universidade Federal de Pernambuco, Brazil
M. T. de Melo, Universidade Federal de Pernambuco, Brazil
P. R. de Freitas, Universidade Federal de Pernambuco, Brazil
M. H. L. de Sousa, Universidade Federal de Pernambuco, Brazil
F. N. Fraga, Universidade Federal de Pernambuco, Brazil
CEFC2010-1288

Poster Session 38 — Wednesday
Static and Quasi-Static Fields 6
Session Chair: Prof. Kay Hameyer, RWTH Aachen University, Germany
United A/B and L.A.X A/B — 1:00-2:30 PM

New Force Expression of Dielectrics Conjectured by Electromagnetic Duality

Poster Session 38 — Wednesday
Static and Quasi-Static Fields 6
Session Chair: Prof. Kay Hameyer, RWTH Aachen University, Germany
United A/B and L.A.X A/B — 1:00-2:30 PM

New Force Expression of Dielectrics Conjectured by Electromagnetic Duality
531 On a Return Stroke Lightning Identification Procedure by Inverse Formulation and Regularization
Andrei Ceclan, Technical University of Cluj-Napoca, Romania
Dan Doru Micu, Technical University of Cluj-Napoca, Romania
Levente Czumbil, Technical University of Cluj-Napoca, Romania
CEFC2010-1116

532 Deflation Techniques for Computational Electromagnetism, Part I: Theoretical Considerations
Hajime Igarashi, Hokkaido University, Japan
Kota Watanabe, Hokkaido University, Japan
CEFC2010-1458

533 Application of the Finite Element Method for the Analysis of the Grounding Grid Implying the Finite Line Elements
Anton Habjanic, University of Maribor, Slovenia
Marko Jesenik, University of Maribor, Slovenia
Bojan Štumberger, University of Maribor, Slovenia
Mladen Trlep, University of Maribor, Slovenia
CEFC2010-1463

534 A Proper Generalized Decomposition Approach for Modeling Fuel Cell Polymeric Membranes
Piergiorgio Alotto, Università di Padova, Italy
Massimo Guarnieri, Università di Padova, Italy
Federico Moro, Università di Padova, Italy
Andrea Stella, Università di Padova, Italy
CEFC2010-1477

535 Calculation and Analysis of the Magnetic Field of a Tubular Linear motor
Liyi Li, Harbin Institute of Technology, China
Xuzhen Huang, Harbin Institute of Technology, China
Baoquan Kou, Harbin Institute of Technology, China
CEFC2010-1584
Interaction Between Ring Shaped Permanent Magnets with Symbolic Gradients: Application to Magnetic Bearing System Optimization

Benoit Delinchant, Grenoble Electrical Engineering lab, France
F. Wurtz, Grenoble Electrical Engineering lab, France
Jean-Paul Yonnet, Grenoble Electrical Engineering lab, France
Jean-Louis Coulomb, Grenoble Electrical Engineering lab, France
CEFC2010-1643

Modeling of a Magnetic Shunt and an Aluminum Screen Using the Perturbation Finite Element Method

Mauricio V. Ferreira da Luz, Universidade Federal de Santa Catarina, Brazil
Patrick Dular, ACE, Dept. of Electrical Engineering and Computer Science; University of Li`ege, Belgium
Ruth V. Sabariego, ACE, Dept. of Electrical Engineering and Computer Science, Belgium
Patrick Kuo-Peng, Universidade Federal de Santa Catarina, Brazil
CEFC2010-1651

Combining Surface Impedance Boundary Conditions with Volume Discretisation in Time-Domain Finite-Element Modeling

Johan Gyselinck, BEAMS Department, Universit, Belgium
Patrick Dular, ACE, Dept. of Electrical Engineering and Computer Science; University of Li`ege, Belgium
Christophe Geuzaine, ACE, Dept. of Electrical Engineering and Computer Science, Belgium
Ruth Sabariego, ACE, Dept. of Electrical Engineering and Computer Science, Belgium
CEFC2010-1728

On the Symmetrization of Magnetodynamic Problems in Current-Based T-ϕ Formulations

Loic Rondot, CEDRAT, 15 chemin de Malacher, France
Eric Rodriguez, CEDRAT, 15 chemin de Malacher, France
Christophe Guerin, CEDRAT, 15 chemin de Malacher, France
Vincent Mazauric, Schneider Electric, Strategy & Innovation, France
CEFC2010-1742

Effectiveness of Nonconforming Mesh in Magnetic Field Analysis With Voxel Modelling

Shunya Odawara, Saga University, Japan
Yanhui Gao, Saga University, Japan
Kazuhiro Muramatsu, Saga University, Japan
CEFC2010-1743

Numerical Modeling of Biomolecular Electrostatic Properties by the Element-Free Galerkin Method
Alessandra Manzin, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy  
Domenico Patrizio Ansalone, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy  
Bottauscio Oriano, Istituto Nazionale di Ricerca Metrologica (INRIM), Italy  

A Priori Error Estimation of Magnetic Material Characteristics Using Stochastic Uncertainty Analysis  
Ahmed Abou-Elyazied Abdallh, Department of Electrical Energy, Systems and Automation, Ghent University, Belgium  
Guillaume Crevecoeur, Department of Electrical Energy, Systems and Automation, Ghent University, Belgium  
Luc Dupré, Department of Electrical Energy, Systems and Automation, Ghent University, Belgium

Coffee Break  
Entry Level Foyer — 2:30-3:00 PM

Oral Session 11 — Wednesday  
Optimization and Design II  
Session Chairs: Prof. Piergiorgio Alotto, Università degli Studi di Padova, Italy  
Prof. Raffaele Martone, Seconda Università di Napoli, Italy  
Rosement AB Ballroom — 3:00-4:45 PM

543 Design of Magnet Shape in Interior Permanent Magnet Synchronous Motor by Response Surface Methodology in Consideration of Torque and Vibration  
Takeo Ishikawa, Gunma University, Japan  
Michihisa Yamada, Gunma University, Japan  
Nobuyuki Kurita, Gunma University, Japan

544 Mult-level Robust Surrogate-Based Optimization Applied to Design of Electrical Machines  
Francis Lubajo Bokose, Ghent University, Belgium  
Vandevelde Lieven, Ghent University, Belgium  
Jan Melkebeek, Ghent University, Belgium

545 Fast Solution of Inverse Problems in the RF Domain Using Topological Sensitivity and Hybrid-ON/OFF Method  
Jin-Kyu Byun, Soongsil University, Korea  
Hyang-Beom Lee, Soongsil University, Korea  
Dong-Hun Kim, Kyungpook Nat, Korea
Particle Swarm Optimization of a Multi-Coil Transverse Flux Induction Heating System

Piergiorgio Alotto, University of Padua, Italy
Aristide Spagnolo, University of Padua, Italy
Payá Bernard, EDF R&D Division, France
CEFC2010-1498

Investigation on the Evolution Strategies for Slot Shape Optimization of a Permanent Magnet Synchronous Machine

Yang Zhan, University of Alberta, Canada
Andrew Knight, University of Alberta, Canada
CEFC2010-1788

Oral Session 12 — Wednesday
Static and Quasi Static Fields
Session Chairs: Dr. Jean-Louis Coulomb, Grenoble-INP G2Elab, France
Prof. Hajime Igarashi, Hokkaido University, Japan
Rosement CD Ballroom — 3:00-4:45 PM

Folded IC Preconditioning in Quasi-Static Field Analysis Taking Account of Both Tree-Cotree and $\Phi = 0$ Gauge Conditions

Yasuhide Takahashi, Doshisha University, Japan
Takeshi Mifune, Kyoto University, Japan
Takeshi Iwashita, Kyoto University, Japan
Koji Fujiwara, Doshisha University, Japan
Yoshiyuki Ishihara, Doshisha University, Japan
CEFC2010-1264

A New Vector Potential BEM for Magnetic Fields Bounded by Perfect Conductors

Ioan R. Ciric, The University of Manitoba, Romania
Florea I. Hantila, Politehnica University of Bucharest, Romania
Mihai Maricaru, Politehnica University of Bucharest, Romania
CEFC2010-1337

Effect of Variation of B-H Properties on Loss and Flux Inside Silicon Steel Lamination

Zhiguang Cheng, R & D Center, Baoding Tianwei Group Co., China
Norio Takahashi, Okayama University, Japan
Behzad Forghani, Infolytica, Montreal, Canada, Canada
Y. Du, R & D Center, Baoding Tianwei Group Co., China
Y. Fan, R & D Center, Baoding Tianwei Group Co., China
L. Liu, R & D Center, Baoding Tianwei Group Co., China
Z. Zhao, R & D Center, Baoding Tianwei Group Co., China
CEFC2010-1372

Charge Density - Scalar Potential Formulation for Adaptive Time-Integration of...
Nonlinear Electroquasistatic Problems
Zsolt Badics, Rhythmia Medical, Inc, USA
CEFC2010-1600

FEM-BEM Computation of Electrostatic Fields in the Absence of Dirchlet Boundary Conditions
Giovanni Aiello, Università di Catania, Italy
Salvatore Alfonzetti, Università di Catania, Italy
Giuseppe Borzi, Università di Catania, Italy
Emanuele Dilettoso, Università di Catania, Italy
Nunzio Salerno, Università di Catania, Italy
CEFC2010-1737

Closing Session and Poster Paper Awards
Wednesday — 4:45-5:15 PM