

2025 25th International Conference on the Computation of Electromagnetic Fields (COMPUMAG 2025)

**Naples, Italy
22-26 June 2025**



**IEEE Catalog Number: CFP25CUM-POD
ISBN: 979-8-3503-9528-0**

**Copyright © 2025 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP25CUM-POD
ISBN (Print-On-Demand):	979-8-3503-9528-0
ISBN (Online):	979-8-3503-9527-3

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

Diagnosis of Wiring Networks using Reflectometry and the Inception-ResNet-v2 Network	1
<i>Abdelhak Goudjil, Mostafa K. Smail, Housseem R.E.H. Boucekara, Abderrahmane Boubezoul</i>	
Finite Element Modeling and Experimental Validation of Induction Heating for Efficient TLP Bonding with Cu-Sn Layers	7
<i>Sounak Nandi, Christian Hofmann, Klaus Vogel, Martin Kroll, Karla Hiller</i>	
Geometry Optimization of HVDC GIL Spacer by Deep Neural Network	13
<i>H. Hensel, M. Clemens</i>	
Study on Surface Charging Effect and Electric Field Distribution of Spacecraft Solar Array in Low Earth Orbit.....	18
<i>Dejie Wei, Jianwen Wu, Liying Zhu</i>	
Predicting Magnetic Susceptibilities of Rare Earth Ions using Machine Learning Algorithms	24
<i>Pranathi Brungi, Nicholas Carlstedt, Petru Andrei</i>	
Finite Element Motor Analysis for Sensorless Neutral-Point Rotor Angle Estimation in the Frequency Domain	30
<i>R. Meisinger, S. Silber, W. Gruber</i>	
Accelerating Neighbor Querying in Fast Multipole Method with Morton Coding	36
<i>Ruoyu Huang, Longfei Shi, Jingzhi Zeng, Junan Lai, Xikui Ma, Tianyu Dong</i>	
Realistic Modeling of Lightning Induced Disturbances in a Buried Shielded Cable Network	41
<i>L. Boussayoud, B. Nekhoul</i>	
Comparison of Two Versions of Surrogate Model Assisted Optimization	47
<i>S. Asahino, H. Sano, K. Tani, T. Yamada</i>	
Performance of Newton-Raphson Method with A-Formulation for Superconductor Applications.....	53
<i>Y. Watanabe, H. Sano, H. Katagiri, K. Tani, T. Yamada</i>	
Modeling and Simulation of Mechanical Energy Harvesting using the Feedback Preisach Model of Hysteresis	59
<i>Carmine S. Clemente, Daniele Davino, Ciro Visone, Amr A. Adly</i>	
Optimal Design of Six-Phase Outer-Rotor Permanent Magnet Synchronous Motor via the Particle Swarm Technique	64
<i>Trinh T. Cong, Aldo Canova, Dinh B. Minh, Bao T. Doan, Vuong D. Quoc</i>	
Series Expansion Model of a Differential Coil Used in Eddy Current Testing of Coated Steel Sheets for Computational Speed Improvement.....	70
<i>Martin Koll, Daniel Wockinger, Christoph Dobler, Gerd Bramerdorfer, Stefan Schuster, Stefan Scheiblhofer, Norbert Gstottenbauer, Johann Reisinger</i>	
Implementation of a Phenomenological Anisotropy Model in Finite Element Code and Comparison with a Measurement-Based Model.....	76
<i>J. Drappier, F. Guyomarch, Y. Le Menach</i>	
Discontinuous Galerkin Discretization of a Volume Integral Eddy Current Problem	82
<i>Anthony Torosyan, Bertrand Bannwarth, Olivier Chadebec, Jean-Michel Guichon, Gerard Meunier, Ronan Perrussel, Jean-Rene Poirier</i>	

Modeling of Diffusion Layer Thickness Variation of Laminate in Case of a Current Supply	88
<i>G. Yousfi, H. Mohellebi, Y. Gabi</i>	
Numerical Simulation and Testing of an Electromagnetic Loader for Railguns	92
<i>Bernhard Reck, Quentin Hassler, Farid Alouahabi, Markus Schneider</i>	
Whisker Sensor Based on Magnetostrictive Material Modeling	98
<i>Thu T. Nguyen, Inaki Caldichoury, Pierre L'Eplattenier</i>	
A Novel Repair Function for Enhancing Parametric Design Optimization of Internal Permanent Magnet Synchronous Motors with Asymmetric Rotor Poles	104
<i>Federico Valpiani, Marco Biasizzo, Alessandro Niccolai, Sonia Leva</i>	
3D Topology Optimization of Vertically Integrated Coupled Inductors in Multi-Phase Buck Converters	111
<i>Nobuto Misono, Yuki Sato, Hirokazu Matsumoto</i>	
Numerical Techniques for Finite Element Modeling of Superconductors.....	117
<i>Varunya Attasena, Thitipong Satiramatekul, Frederic Bouillault</i>	
Optimization of Planar Spiral Coils for Wireless Power Transfer Systems using Generalized Pattern Search Method.....	123
<i>Ihab A. Zergua, Naamane Mohdeb, Nabil Ikhlef, Lyes Aomar, Zoubida Belli, Hicham Allag</i>	
Electromagnetic Transient Analysis of Lightning Strokes in Transmission Tower Including Frequency Dependent Effect	129
<i>C. Lounis, M. Melit, S. Kaouche</i>	

Author Index