

Conference Agenda

Session Overview

Date: Sunday, 20/Sept/2020

5:00pm -	Registration
7:00pm	Webex session for registration issues: https://tugraz.webex.com/tugraz/onstage/g.php?MTID=eefbf36a10cb59c7ff5d499d6dd2b5bb9
6:00pm -	Welcome Reception
9:00pm	

Date: Monday, 21/Sept/2020

8:00am - 4:00pm	Registration Webex session for registration issues: https://tugraz.webex.com/tugraz/onstage/g.php?MTID=eefbf36a10cb59c7ff5d499d6dd2b5bb9
9:00am - 9:50am	Opening session Location: Lecture Hall
9:50am - 10:10am	Coffee break
10:10am - 12:10pm	O1: Optimization and Inverse Problems Location: Lecture Hall 10:10am - 10:30am IGTE Symposium (on-site presentation) Design optimization of a synchronous reluctance machine using shape and topological derivatives Peter Gangl¹, Stefan Köthe¹, Christiane Mellak¹, Alessio Cesarano¹, Kevin Sturm² 1: TU Graz, Austria; 2: TU Wien, Austria 10:30am - 10:50am IGTE Symposium (online presentation) Enhanced Beamforming Techniques for Cylindrical-Substrate Microstrip Array Antennas Christos P. Exadaktylos¹, Dimitrios I. Karatzidis¹, Theodoros T. Zygidis², Nikolaos V. Kantartzis¹ 1: Aristotle University of Thessaloniki, Greece; 2: University of Western Macedonia 10:50am - 11:10am IGTE Symposium (online presentation) Optimal Design of Ferromagnetic Multilayer Shields Aldo Canova, Fabio Freschi, Luca Giaccone, <u>Maurizio Repetto</u>, Luigi Solimene Politecnico di Torino, Italy 11:10am - 11:30am IGTE Symposium (online presentation) Topology Optimization of Synchronous Reluctance Motors Made of Non-Annealed High-Silicon Iron Arbaaz Khan, Vahid Ghorbanian, David Lowther McGill University 11:30am - 11:50am IGTE Symposium (on-site presentation) Topology-optimization of an actuator in motion Philipp Seebacher¹, Manfred Kaltenbacher², Fabian Wein³, Henry Lehmann⁴, Volker Jörgl⁴ 1: TU-Wien, Austria; 2: TU-Graz, Austria; 3: Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 4: Knorr-Bremse 11:50am - 12:10pm IGTE Symposium (on-site presentation) Some application examples of minimization based formulations of inverse problems and their regularization Barbara Kaltenbacher¹, Kha Van Huynh¹, Stefan Gombots², Manfred Kaltenbacher³ 1: Alpen-Adria-Universität Klagenfurt, Austria; 2: TU Wien; 3: TU Graz
12:10pm - 1:20pm	Lunch
1:20pm - 1:40pm	Opening session MS Location: Lecture Hall
1:40pm - 3:20pm	O2-1: Minisymposium Location: Lecture Hall Quasistatic Electromagnetic Field Problems Including Capacitive, Inductive and Resistive Effects: Applications and Models 1:40pm - 2:00pm Minisymposium (online presentation)

Lumped Parameter and Circuit Models of Electromechanical Switching Device Electromagnets

Yevgen I. Bajda¹, Markus Clemens², Michael G. Pantelyat¹, Olena G. Korol¹

1: Department for Electrical Apparatus, National Technical University "Kharkiv Polytechnic Institute", Ukraine; 2: Chair of Electromagnetic Theory, University of Wuppertal, Germany

2:00pm - 2:20pm

Minisymposium (online presentation)

FEM-Based Impedance Computation for Parasitic Extraction

Jonathan Stysch¹, Andreas Klaedtke¹, Herbert De Gersem²

1: Robert Bosch GmbH; 2: Technical University of Darmstadt

2:20pm - 2:40pm

Minisymposium (online presentation)

Capacitance computation of multi-turn windings via elementary neighbour-conductor models

Carlos Valdivieso^{1,2}, Gerard Meunier³, Brahim Ramdane³, Christophe Guerin², Johan Gyselinck⁴, Ruth V. Sabariego¹

1: KU Leuven, Belgium; 2: Altair Engineering France, France; 3: Universite Grenoble Alpes, France; 4: Universite Libre de Bruxelles, Belgium

2:40pm - 3:00pm

Minisymposium (online presentation)

Finite-Element Modeling of Multi-turn Coils Using a Thin Wire Approximation

Jonathan Velasco¹, Francois Henrotte^{1,2}, Christophe Geuzaine¹

1: Department Electrical Engineering and Computer Science (ACE), Institut Montefiore, Universite de Liege, Belgium; 2: Université catholique de Louvain, EPL-iMMC-MEMA, Louvain, Belgium

3:00pm - 3:20pm

Minisymposium (online presentation)

Classification of Approximations to Maxwell's Equations with Generalised Circuit Elements

Idoia Cortes Garcia¹, Sebastian Schöps¹, Christian Strohm², Caren Tischendorf²

1: Institut für Teilchenbeschleunigung und Elektromagnetische Felder, Technische Universität Darmstadt, Germany; 2: Institut für Mathematik, Humboldt Universität zu Berlin, Germany

3:20pm

Coffee break

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3:40pm

3:40pm

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5:20pm

O2-2: Minisymposium

Location: Lecture Hall

Quasistatic Electromagnetic Field Problems Including Capacitive, Inductive and Resistive Effects: Applications and Models

3:40pm - 4:00pm

Minisymposium (online presentation)

PEEC Modelling of L-C-T Components

Piergiorgio Alotto, Riccardo Torchio

Università di Padova, Italy

4:00pm - 4:20pm

Minisymposium (online presentation)

Sensitivity Analysis for Automotive EMC Measurements Using Quasistatic Darwin Model

Arnold Bingler^{1,2}, Sándor Bilicz¹, Márk Csörnyei²

1: Budapest University of Technology and Economics, Hungary; 2: Robert Bosch Kft., Budapest, Hungary

4:20pm - 4:40pm

Minisymposium (online presentation)

Simulation and Optimization of the Electro-Quasistatic-Thermal Stability of Station Class Surge Arresters

Yvonne Späck-Leigsnering, Maren Greta Ruppert, Erion Gjonaj, Herbert De Gersem

Technische Universität Darmstadt, Germany

4:40pm - 5:00pm

Minisymposium (on-site presentation)

Frequency-Stable Full Maxwell in Electro-Quasistatic Gauge

Joerg Ostrowski¹, Ralf Hiptmair²

1: ABB Switzerland Corporate Research; 2: ETH Zurich Department of Mathematics

5:00pm - 5:20pm

Minisymposium (online presentation)

Some Development of Numerical Tools for Darwin Model

Zuqi Tang

L2EP - University of Lille, France

5:20pm

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5:40pm

Closing Session MS

Location: [Lecture Hall](#)

Date: Tuesday, 22/Sept/2020

8:00am - 12:00pm	Registration Webex session for registration issues: https://tugraz.webex.com/tugraz/onstage/g.php?MTID=eefbf36a10cb59c7ff5d499d6dd2b5bb9
8:30am - 10:30am	O3: Coupled Problems / Application and Devices / EMC Location: Lecture Hall Chair: Oszkár Bíró 8:30am - 8:50am IGTE Symposium (online presentation) FE Simulation of Inter-Turn Fault in SRMs Jawad Faiz, Shahin Imanzadeh University of Tehran, Iran, Islamic Republic of 8:50am - 9:10am IGTE Symposium (on-site presentation) Influence of soil model simplifications on the prospective touch voltage of earthing systems Benjamin Jauk, Katrin Friedl, Robert Schürhuber Graz University of Technology, Institute of Electrical Power Systems, Inffeldgasse 18/I, A-8010 Graz 9:10am - 9:30am IGTE Symposium (online presentation) Multiphysics Models of Innovative Actuators of LV and MV Vacuum Circuit Breakers Yevgen I. Bajda¹, Markus Clemens², Michael G. Pantelyat¹, Serhii V. Vyrovets¹ 1: Department for Electrical Apparatus, National Technical University "Kharkiv Polytechnic Institute", Ukraine; 2: Chair of Electromagnetic Theory, University of Wuppertal, Germany 9:30am - 9:50am IGTE Symposium (on-site presentation) Reduced Order Field-Circuit Modeling of Squirrel Cage Induction Machines for Automotive Applications Daniel Biro¹, Franz Diwoy¹, Erich Schmidt² 1: AVL List GmbH, Austria; 2: TU Wien, Austria 9:50am - 10:10am IGTE Symposium (online presentation) Sensorless Metal Object Detection for Wireless Power Transfer Using Machine Learning Yunyi Gong, Yoshitsugu Otomo, Hajime Igarashi Hokkaido University, Japan 10:10am - 10:30am IGTE Symposium (on-site presentation) Electromagnetic Field Simulation of Moving Parts Lars Kielhorn, Thomas Rüberg, Jürgen Zechner TAILSIT GmbH, Austria
10:30am - 10:50am	Coffee break
10:50am - 12:30pm	P1 Location: Poster Room IGTE Symposium (on-site presentation) An Importance Sampling Approach for Inverse Problems using a State Reduction Markus Neumayer¹, Thomas Suppan¹, Thomas Bretterkieber¹, Colin Fox² 1: Graz University of Technology, Austria; 2: University of Otago, New Zealand IGTE Symposium (on-site presentation) Bayesian Inference of Multi-Sensor Impedance Cardiography for Detection of Aortic Dissection Vahid Badeli¹, Sascha Ranftl², Gian Marco Melito³, Alice Reinbacher-Köstinger¹, Wolfgang Von der Linden², Oszkár Bíró¹, Katrin Ellermann³

1: Institute of Fundamentals and Theory in Electrical Engineering, Inffeldgasse 18, A-8010 Graz, Austria; 2: Institute of Theoretical Physics - Computational Physics, Petersgasse 16, A-8010 Graz, Austria; 3: Institute of Mechanics, Kopernikusgasse 24 / IV, A-8010 Graz, Austria

IGTE Symposium (on-site presentation)

Comparison of 2 to 6 layered soil models using evolutionary methods for parameters' determination

Marko Jesenik, Anton Hamler, Mislav Trbušić, Mladen Trlep

University of Maribor, Slovenia

IGTE Symposium (on-site presentation)

Empirical Damping of Non-Linear Spring-Mass Systems

Gergely Koczka, Gerald Leber

Siemens Energy Austria

IGTE Symposium (on-site presentation)

Moving Non-Conforming Nitsche-Type Interfaces for the Eddy Current Problem

Klaus Roppert, Manfred Kaltenbacher

TU Graz, Austria

IGTE Symposium (on-site presentation)

Nonasymptotic Homogenization for the Eddy Current Problem in 3D

Markus Schöbinger, Karl Hollaus

TU Wien, Austria

IGTE Symposium (on-site presentation)

Measurement and Modeling of Effective Cable Parameters of Unshielded Conductors

Susanne Bauer¹, Karl Hollaus³, Michael Leumüller^{3,4}, Christian Türk²

1: TU Graz, Austria; 2: TU Graz, Austria; 3: SAL, EMCC Lab, Graz Austria; 4: TU Wien

IGTE Symposium (on-site presentation)

Steady state solution of NFC model with nonlinear load using PEEC

Samuel Kvasnicka¹, Paul Baumgartner¹, Thomas Bauernfeind¹, Riccardo Torchio²

1: Institute of Fundamentals and Theory in Electrical Engineering, TU Graz, Inffeldgasse 18, A-8010 Graz; 2: Dipartimento di Ingegneria Industriale, Università degli Studi di Padova, Via Gradenigo 6/a, 35131 Padova

IGTE Symposium (online presentation)

Optimization of particle trajectories inside an ion-thruster

Andras Reichardt, Arpad Makara

Budapest University of Technology and Economics, Hungary

IGTE Symposium (on-site presentation)

A Mixed Multiscale FEM for the Eddy-Current Problem with T, Φ - Φ and Vector-Hysteresis

Valentin Hanser, Markus Schöbinger, Karl Hollaus

TU Wien, Austria

12:30pm

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1:50pm

Lunch

1:50pm

-

3:30pm

P2

Location: [Poster Room](#)

IGTE Symposium (online presentation)

Application of Model Order Reduction with Cauer Ladder Networks to Industrial Inductor

Niels Koester¹, Oliver Koenig², Alexander Thaler¹, Oszkár Bíró³

1: Virtual Vehicle Research GmbH, Austria; 2: AVL List GmbH, Austria; 3: Institute for Fundamentals and Theory in Electrical Engineering, Graz, Austria

IGTE Symposium (on-site presentation)

Surrogate modelling based optimization of NFC antenna

Eniz Mušeljić, Thomas Bauernfeind, Paul Baumgartner

IGTE Symposium (online presentation)

Towards Real-Time Magnetic Dosimetry Simulations for Inductive Charging Systems

Norman Haußmann¹, Martin Zang¹, Markus Clemens¹, Benedikt Schmuelling³, Matthias Bolten²

1: University of Wuppertal, Chair of Electromagnetic Theory, Germany; 2: University of Wuppertal, Chair of Scientific Computing and High Performance Computing, Germany; 3: University of Wuppertal, Chair of Electric Mobility and Energy Storage Systems, Germany

IGTE Symposium (online presentation)

A Deflation method for Nonlinear Finite Element Analysis of Electromagnetic Devices

Kota Watanabe, Yutaro Echigo

Muroran Institute of Technology, Japan

IGTE Symposium (online presentation)

Topology Optimization of Magnetic Cores for WPT Using Geometry Projection Method

Yoshitsugu Otomo^{1,2}, Hajime Igarashi¹

1: Hokkaido University, Japan; 2: Research Fellow of Japan Society for the Promotion of Science, Japan

IGTE Symposium (online presentation)

Deep-Learning-based Surrogate Model for Fast Multi-material Topology Optimization of IPM Motor

Hayaho Sato, Jo Asanuma, Hajime Igarashi

Hokkaido University, Japan

IGTE Symposium (online presentation)

Magnetic Field Simulations Using Explicit Time Integration With Higher Order Schemes

Bernhard Kähne¹, Markus Clemens¹, Sebastian Schöps²

1: University of Wuppertal, Germany; 2: Technische Universität Darmstadt, Germany

IGTE Symposium (online presentation)

Correlating Structural Complexity and Acoustic Noise Performance of Electric Motors

Issah Ibrahim, Hossain Mohammadi, Vahid Ghorbanian, David Lowther

McGill University, Canada

IGTE Symposium (online presentation)

Computational Electromagnetics in Education, Part II: A Technique for Calculation and Design of Induction Cooker Inductors

Michael G. Pantelyat, Yevgen I. Bajda

Department for Electrical Apparatus, National Technical University "Kharkiv Polytechnic Institute", Ukraine

IGTE Symposium (online presentation)

Surrogate-based Multi-Objective Optimization of Interior Permanent Magnet Motor used in Electrical Vehicle with Multiple Driving Cycle

Amirhossein Eerfani Nik, Jawad Faiz

University of Tehran, Iran, Islamic Republic of

3:30pm

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4:00pm

Coffee break

7:00pm

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10:00pm

Conference Dinner (Gösser Bräu Graz)

Date: Wednesday, 23/Sept/2020

8:00am - 12:00pm	Registration Webex session for registration issues: https://tugraz.webex.com/tugraz/onstage/g.php?MTID=eefbf36a10cb59c7ff5d499d6dd2b5bb9
8:50am - 10:10am	O4-1: Numerical Techniques Location: Lecture Hall 8:50am - 9:10am IGTE Symposium (on-site presentation) Domain Decomposition and Upscaling Technique for Metascreens Michael Leumüller^{1,2}, Karl Hollaus², Joachim Schöberl¹ 1: Technische Universität Wien; 2: Silicon Austria Labs GmbH
	9:10am - 9:30am IGTE Symposium (on-site presentation) Maximum Entropy Snapshot Sampling Reduction of a Diode Chain Model Marcus W.F.M. Bannenberg^{1,3}, Fotios Kasolis², Michael Günther¹, Markus Clemens² 1: IMACM, Chair of Applied Mathematics, University of Wuppertal, Gaußstraße 20, 42119, Germany; 2: IMACM, Chair of Electromagnetic Theory, University of Wuppertal, Rainer-Gruenter-Straße 21, 42119, Germany; 3: STMicroelectronics, Strada Primosole 50, 95121, Italy
	9:30am - 9:50am IGTE Symposium (online presentation) Model Order Reduction of Nonlinear Eddy-current Field Using Parameterized CLN Miwa Tobita, Hamed Eskandari, Tetsuji Matsuo Kyoto University, Japan
	9:50am - 10:10am IGTE Symposium (online presentation) Computation of rotational hysteresis losses by vector Preisach models based on rotational operators Michael Nierla¹, Manfred Kaltenbacher², Stefan Johann Rupitsch¹ 1: FAU Erlangen Nuremberg, Germany; 2: Technical University Graz, Austria
10:10am - 10:30am	Coffee break
10:30am - 11:50am	O4-2: Numerical Techniques Location: Lecture Hall 10:30am - 10:50am IGTE Symposium (online presentation) Wave Propagation in the Bicomplex 3D-FEM Thomas Reum, Hannes Toepfer Technische Universität Ilmenau, Germany
	10:50am - 11:10am IGTE Symposium (on-site presentation) Fast and numerically stable Mie solution of EM near field and absorption for stratified spheres Olivér Csernyava¹, Bálint Péter Horváth¹, Zsolt Badics^{1,2}, Sándor Bilicz¹ 1: Budapest University of Technology and Economics, Egy J. u. 18, H-1111 Budapest, Hungary; 2: Tensor Research, LLC, Andover, MA 01810 USA
	11:10am - 11:30am IGTE Symposium (online presentation) On the Modeling and Simulation of AC fields in High-Temperature Superconductors Wouter Rens Tonnon, Jasmin Smajic ETH Zürich, Switzerland
	11:30am - 11:50am IGTE Symposium (online presentation) Finite-Difference Wave-Propagation Models for Dispersive Media: Impact of Space-Time Discretization

Theodoros T. Zygidis¹, Nikolaos V. Kantartzis²

1: University of Western Macedonia, Greece; 2: Aristotle University of Thessaloniki, Greece

11:50am

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12:20pm

Closing session

12:20pm

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2:30pm

Lunch