# XXI International Symposium on Theoretical Electrical Engineering ISTET'2022

Szczecin, Poland
June 28th – 30th, 2022

***Program***

| Tuesday 28.06.2022 | | |
|---|---|---|
| 08:30 | 08:50 | Opening ceremony |
| 08:50 | 10:20 | Plenary Session 1 |
| 10:20 | 10:30 | Break |
| 10:30 | 12:10 | Session 1: Electrical machines and devices 1 |
| 12:10 | 12:20 | Break |
| 12:20 | 13:20 | Session 2: Power systems |
| 13:20 | 14:30 | Break |
| 14:30 | 15:30 | Session 3: Bioelectromagnetic applications |
| **Wednesday 29.06.2022** | | |
| 08:30 | 10:10 | Session 4: Electrical machines and devices 2 |
| 10:10 | 10:20 | Break |
| 10:20 | 11:00 | Plenary Session 2 |
| 11:00 | 11:10 | Break |
| 11:10 | 12:30 | Session 5: Metamaterials |
| 12:50 | 14:30 | Break |
| 12:50 | 13:50 | Meeting of the International Steering Committee |
| 14:30 | 15:30 | Session 6: Fundamentals |
| **Thursday 30.06.2022** | | |
| 08:30 | 09:50 | Session 7: Electromagnetic nondestructive evaluation |
| 09:50 | 10:00 | Closing ceremony |

PLENARY SESSION 1 (Tuesday 28.06.2022, 8:50 – 10:20)

| | Time | Authors | Title |
|---|---|---|---|
| Invited lecture | 8:50 – 9:40 | Antonello Tamburrino | Real-Time Tomography in Soft-Field Electromagnetic Imaging |
| Invited lecture | 9:40 – 10:20 | Ryszard Sikora | Can Science Exist Without Open Discussion? |

SESSION 1: Electrical machines and devices 1 (Tuesday 28.06.2022, 10:30 – 12:10)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | 10:30 – 10:50 | Wafia Mousli, Zoubida Belli, Hichem Allag | Hybrid Model for Dynamic Study of Permanent Magnet Synchronous Machines |
| 2 | 10:50 – 11:10 | Zoubida Belli, Rabi Deraa, Wafia Mousli | Finite Elements and Analytical Models to Account Induced AC current in Cylindrical Winding of Electrical Machines |
| 3 | 11:10 – 11:30 | Fabian Müller, Paul Baumanns, Kay Hameyer | A Hybrid Enrichment Strategy for the Efficient Construction of Reduced Order Models by the Proper Generalized Decomposition |
| 4 | 11:30 – 11:50 | Seiji Ishikawa, Takashi Todaka | Load characteristic analysis of a harmonic magnetic reducer by using the time-stepping FEM |
| 5 | 11:50 – 12:10 | Bin Chen, Xin Tao, Nina Wan, Bo Tang | Optimization Design of Large Capacity High-Frequency Air-Core Transformer for Isolated DC-DC Converter |

SESSION 2: Power systems (Tuesday 28.06.2022, 12:20 – 13:20)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | 12:20 – 12:40 | Moises Ferber | Unscented Transform for Robustness Analysis of Wind Energy Systems |
| 2 | 12:40 – 13:00 | Natalia Radwan-Pragłowska, Tomasz Węgiel, Szymon Ptak, Dominik Mamcarz, Bartosz Rozegnał, Paweł Albrechtowicz | Short-circuits energy in installations supplied from the synchronous backup generators |
| 3 | 13:00 – 13:20 | Ledjon Behluli, Rinor Berisha, Georgi Tsvetanov Tsenov | Simulink Model of an Automated Prioritized Voltage Distribution Control System Powered by a Single-Phase SPWM Inverter |

SESSION 3: Bioelectromagnetic applications (Tuesday 28.06.2022, 14:30 – 15:30)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | 14:30 – 14:50 | Mary Grace Cassar, Cristiana Sebu, Michael Pidcock, Shubham Chandak, Brian Andrews | Optimizing the design of electrodes for FES applications |
| 2 | 14:50 – 15:10 | Pierre Berthou, François Bellière, Tatiana Da Silva, Lionel Pichon | Design of a Wireless Micro-Implant for Continuous Blood Glucose Monitoring |
| 3 | 15:10 – 15:30 | Adriana Savin, Dagmar Faktorova, Peter Fabo, Rozina Steigmann, Nicoleta Iftimie | Assessment of biological tissue using microwave testing |

SESSION 4: Electrical machines and devices 2 (Wednesday 29.06.2022, 8:30 – 10:10)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | 8:30 – 8:50 | Kamil Cierzniewski, Marcin Wardach, Rafał Pstrokoński, Mikołaj Wiszniewski, Paweł Prajzendanc, Ryszard Pałka | Study on the influence of stator skew on the performance of hybrid-excited Permanent Magnet Assisted Synchronous Reluctance Machine |
| 2 | 8:50 – 9:10 | Michał Cichowicz, Wojciech Pilecki, Marcin Wardach, Paweł Prajzendanc, Kamil Cierzniewski, Ryszard Pałka | Low-speed permanent magnet generator for use in a compact wind turbine |
| 3 | 9:10 – 9:30 | Weronika Olek, Rafał Pstrokoński, Mikołaj Wiszniewski, Marcin Wardach, Dariusz Grzesiak | Design of an electric motor with passive cooling system applied to a remotely operated vehicle |
| 4 | 9:30 – 9:50 | Bin Chen, Binsheng Xi, Nina Wan, Shuaibing Wang, Bo Tang | Analysis of Vibration and Loss Characteristics of Medium Frequency Transformer Core with Amorphous/Nanocrystalline Strips with Different Shapes |
| 5 | 9:50 – 10:10 | Bin Chen, Hongxia Cao, Nina Wan | Optimization Design of Insulation Structure of Multi-winding High-frequency Transformer Based on Non-dominated Sorting Genetic Algorithm |

PLENARY SESSION 2 (Wednesday 29.06.2022, 10:20 – 11:00)

| | Time | Authors | Title |
|---|---|---|---|
| Invited lecture | 10:20 – 11:00 | Ping Wang | Development and application of fusion technology of rail detection and monitoring in rail transit |

SESSION 5: Metamaterials (Wednesday 29.06.2022, 11:10 – 12:30)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | 11:10 – 11:30 | Melanie Schiemer, Thomas Reum, Hannes Toepfer | An Efficient Modeling Approach of Planar Metamaterials in High Frequency Regime |
| 2 | 11:30 – 11:50 | Dimitris Karatzidis, Theodoros Zygiridis, Nikolaos Kantartzis | Enhanced WPT Structures via EC-SRR-Based Metasurfaces |
| 3 | 11:50 – 12:10 | Valeri Mladenov | Application of Metal Oxide Memristor Models in Logic Gates |
| 4 | 12:10 – 12:30 | Przemyslaw Lopato, Michal Herbko, Paulina Gora, Ulrich Mescheder, Andras Kovacs, Alexander Filbert | Numerical Analysis of the Influence of Fabrication Process Uncertainty on Terahertz Metasurface Quality |

SESSION 6: Fundamentals (Wednesday 29.06.2022, 14:30 – 15:30)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | 14:30 – 14:50 | Theodoros Zygiridis, Stamatios Amanatiadis, Nikolaos Kantartzis | Accurate FDTD Schemes for Dispersive Media with Modified Material Parameters |
| 2 | 14:50 – 15:10 | Hadi Lotfi, Jens Anders | On the Effect of Knee and the Breakdown Voltages on the Output Power and Efficiency of Class-A HBT Power Amplifier |
| 3 | 15:10 – 15:30 | Harry Weber, Wolfgang Mathis | DC Operating Points of Nonlinear Circuits and Generalized Carleman Linearization |

SESSION 7: Electromagnetic nondestructive evaluation (Thursday 30.06.2022, 8:30 – 9:50)

| | Time | Authors | Title |
|---|---|---|---|
| 1 | **8:30 – 8:50** | Barbara Szymanik, Sam Ang Keo | Numerical modelling of active thermography with microwave excitation for composite materials evaluation |
| 2 | **8:50 – 9:10** | Jacek M. Grochowalski, Tomasz Chady | Pulsed Multifrequency Excitation and Spectrogram Eddy Current Testing (PMFES-ECT) |
| 3 | **9:10 – 9:30** | Ryszard Łukaszuk, Tomasz Chady | Nondestructive inspection of stress-loaded steel elements using the magnetic recording method (MRM) |
| 4 | **9:30 – 9:50** | Paweł Karol Frankowski, Tomasz Chady | Magnetic Force Induced Vibration Evaluation (M5) – the NDT method designed for the evaluation of reinforced concrete structures |
| | 9:50 – 10:00 | **CLOSING CEREMONY** | |