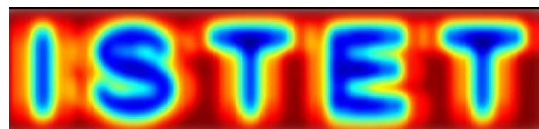




TECHNICAL UNIVERSITY – SOFIA

Department Theoretical Electrical Engineering

**XX INTERNATIONAL SYMPOSIUM ON
THEORETICAL ELECTRICAL
ENGINEERING (ISTET-2019)**



in the framework of
**THE DAYS OF SCIENCE OF THE TECHNICAL
UNIVERSITY OF SOFIA, 2019**

The main sponsor of the Summer School is:

RESEARCH & DEVELOPMENT SECTOR, TECHNICAL UNIVERSITY – SOFIA



Sofia, Bulgaria
July 21-24, 2019

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PROGRAMME

SUNDAY, July 21, 2019

17:30 – 19:30 **Registration**

19:30 – 20:30 **Get together**

Place: Technical University of Sofia, block 12, main lobby

MONDAY, July 22, 2019

08:00 – 09:00 **Registration**

09:00 – 09:15 **Opening**

Conference Hall

Chair Committee: **Valeri Mladenov, Wolfgang Mathis, Hannes Toepfer, Jens Anders**

09:15 - 10:45 **Plenary Lectures**

Conference Hall

Chair: **Valeri Mladenov, TU – Sofia, Bulgaria**

Prof. Dr.-Ing. Wolfgang Mathis, Leibniz Universität Hannover, Germany
100 Years Multivibrator – History, Circuits and Mathematical Analysis

Prof. Dr. Jens Anders, University of Stuttgart, Germany

Integrated quantum sensors as a new challenging problem in theoretical electrical engineering

10:45 – 11:15 **Coffee break**

11:15 - 12:15 **Session 1 - Electromagnetic Fields I**
Conference Hall
Chair: **Hannes Toepfer, TU-Ilmenau, Germany**

O1.1 Nebojsa Raicevic, Slavoljub Aleksic, Iona Iatcheva and Marinko Barukcic,
„Enhanced Method for Pulse Skin Effect Calculation of Cylindrical Conductors”

O1.2 Larisa Tretiakova and Halina Tokar, „Modeling the effect of the
electromagnetic field of the industrial frequency on workers”

O1.3 Ryszard Sikora, Bogdan Grzywacz and Tomasz Chady, „Have fractional
derivatives invalidated the scientific truths of electrical engineering?”

12:15 – 13:30 **Lunch Break**

13:30 - 14:50 **Session 2 - Electromagnetic Fields II**
Conference Hall
Chair: **Jens Anders, University of Stuttgart, Germany**

**O2.1 Marcus Stiemer, Sebastian Böhmelt, Nils Kielian, Michael Hagel, Marvin
Henkel and Markus Clemens,** „Electro-Quasistatic Field Simulations of Biological
Cells Using Balanced Domain Decomposition Methods”

**O2.2 Paul Clérico, Xavier Mininger, Laurent Prévond, Thierry Baudin and
Anne-Laure Helbert,** „Study of Low Frequency Magnetic Shielding of a Thin
Al/Steel/Al Composite in Various Applications”

**O2.3 Hartmut Brauer, Jan Marc Otterbach, Marek Ziolkowski and Hannes
Töpfer,** „Friction Stir Weld Inspection Using Motion-Induced Eddy Current Testing”

O2.4 Markus Schöbinger, Joachim Schöberl and Karl Hollaus, „A Hierarchical
Error Estimator for the MSFEM for the Eddy Current Problem in 3D”

14:50 - 15:20 **Coffee break**

15:20 - 16:40 **Session 3 - Electromagnetic Fields III**
Conference Hall
Chair: **Iona Iatcheva, TU-Sofia, Bulgaria**

O3.1 Ralf T. Jacobs and Arnulf Kost, „Scattering by Cracks in a Conducting Surface”

O3.2 Atanas Chervenkov and Todorka Chervenкова, „Using the four-dimensional potentials for determination of the electromagnetic field in moving media”

O3.3 Ilona Iatcheva and Ilonka Saykova, „Investigation of Heat Effects in Electric Field Treatment of Cellular Materials”

O3.4 Theodosios Karamanos, Stamatios Amanatiadis, Theodoros Zygiridis and Nikolaos Kantartzis, „Quadrupolarizability Extraction for Planar Metamaterial Scatterers via Far-Field Response”

16:40 – 17:00 **Coffee break**

17:00 - 18:30 **Poster Session 1**
Technical University of Sofia, block 12, main lobby
Chair: Snejana Terzieva, TU-Sofia, Bulgaria

P1.1 Karl Hollaus, „An Approach to Consider Step-Lap-Joints in the Multiscale Finite Element Method”

P1.2 Lars Seeber, Sylvia Braeunig, Frank Feldhoff and Hannes Toepfer, „Comparison of Circuit-Oriented Memristor Modeling and Experimental Characterization”

P1.3 Stoyan Kirilov and Ivan Zaykov, „Analysis of Memristor-Based Differentiating Circuit”

P1.4 Stamatios Amanatiadis, Georgios Apostolidis, Chrysanthi Bekiari and Nikolaos Kantartzis, „Transcranial Ultrasonic Propagation and Enhanced Brain Imaging Exploiting Focus due to the Skull”

P1.5 Martina Petkovic, Ivan Gavranov, Biljana Nikolić, Dragan Knežević and Slavoljub Aleksić, „Forest Fire Risk Reduction Using Fire Detection and Alarm Systems”

P1.6 Alexander Zemliak, Jorge Espinosa and Tatiana Markina, „Analysis of Different Optimization Strategies”

P1.7 Himanshukumar Patel and Vipul Shah, „Fractional Fuzzy PI λ D μ Controller for Nonlinear Interacting Level Process”

P1.8 Seiji Ishikawa and Takashi Todaka, „Steady-state and Transient-operation properties of a Magnetic Reducer analyzed with FEM considering Time-stepping Motion Equations”

20:00 **Banquet** – the exact place will be announced later

TUESDAY, July 23, 2019

08:00 – 09:00 **Registration**

09:00 - 9:45 **Plenary Lectures**

Conference Hall

Chair: Wolfgang Mathis, Leibniz Universität Hannover, Germany

Prof. Dr. Hannes Toepfer, Technische Universität Ilmenau, Germany
Design and Development of Superconductive Digital and Mixed-Signal Circuits

09:45 – 10:15 **Coffee break**

10:15 - 11:55 **Session 4 – Circuit and System Theory**

Conference Hall

Chair: Jens Anders, University of Stuttgart, Germany

O4.1 Stoyan Kirilov and Valeri Mladenov, „PSpice Library Models for HfO₂ memristors”

O4.2 Christos Salis, Nikolaos Kantartzis and Theodoros Zygiridis, „An Adaptive Sparse Polynomial-Chaos Technique Based on Anisotropic Indices”

O4.3 Theodoros Zygiridis, Stamatios Amanatiadis, Theodosios Karamanos and Nikolaos Kantartzis, „Stochastic Investigation of Graphene Structures with Efficient Polynomial Models”

O4.4 Stamatios Amanatiadis, Theodoros Zygidis and Nikolaos Kantartzis, „Design of Efficient Graphene Plasmonic Coupling Circuits for THz Applications”

O4.5 Simona Filipova-Petrakieva and Yordan Shopov, „Processes in protecting the electrical devices from overvoltages in a DC-power supply network”

11:55 – 13:00 **Lunch Break**

13:00 - 14:30 **Poster Session 2**

Technical University of Sofia, block 12, main lobby

Chair: **Snejana Terzieva, TU-Sofia, Bulgaria**

P2.1 Ivan Hadzhiev, Dian Malamov, Iosko Balabozov and Ivan Yatchev, „Influence of the Middle Pole Shape on the Force Characteristic of an Actuator with T-shaped Armature”

P2.2 Galina Cherneva and Elena Dimkina, „AN APPLICATION OF THE MANAGEMENT OF CHAOTIC PROCESSES IN THE ELECTRONIC COMMUNICATIONS”

P2.3 Dian Malamov, Ivan Hadzhiev, Vasilina Zlatanova, Snezhana Terzieva and Aleksandar Georgiev, „Analysis of the Parallel Operation of a Wind Power Plant with SCIG and an Electric Power System”

P2.4 Georgi Tsenov, „EEG surface electrode signal processing for detection and approximation of attention in content”

P2.5 Ivan Trushev, Zhivko Georgiev, Todor Todorov and Ivan Uzunov, „Analytical solution of the Duffing equation”

P2.6 Ivan Trushev and Zhivko Georgiev, „Analysis of electrical circuits supplied by sequence of impulses”

P2.7 Basri Kul and Gençali çiçek, „High Efficiency DC-AC Inverter Design with Low THD for Solar Energy”

P2.8 Mouloud Challal, „Design and Fabrication of Ultra-Wideband Bandpass Filter with Single Band-Rejection Characteristics”

P2.9 Bartosz Chaber, Wiktor Łodyga and Robert Szmurło, „On calibration methods of 3D electric field scanner for PCB measurements”

P2.10 Valery Lunin, Andrew Zhdanov and Anton Stoliarov, „Eddy current signal analysis for evaluation of conductive deposit layer on steam generator tubes”

14:30

CLOSING CEREMONY

Conference Hall

Chair: **Valeri Mladenov - TU – Sofia, Bulgaria**