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DEPARTAMENTUL
ELTH
ELECTROTEHNICA

International Symposium on Fundamentals of Electrical Engineering

University POLITEHNICA of Bucharest, Romania, November 5–7, 2020

Dedicated to the 100th anniversary of our Faculty of Electrical Engineering in the University Politehnica of Bucharest and to the 115th years of our Department of Electrical Engineering founded by Professor Nicolae Vasilescu-Karpen



BRIEF PROGRAMME

Thursday, November 5, 2020

- 10⁰⁰ – 11⁰⁰ **Opening Session**
- 11⁰⁰ – 12⁰⁰ **ASTR + IEEE CAS/CS Chapter Round Table**
- 12⁰⁰ – 13⁰⁰ **Oral Sessions: Bioengineering & Sensors and transducers / Materials in Electrical Engineering**
- 13⁰⁰ – 14⁰⁰ **Break**
- 14⁰⁰ - 16⁰⁰ **Oral Sessions: Circuits / Electromagnetic Field**

Friday, November 6, 2020

- 10⁰⁰ – 12⁰⁰ **Oral Sessions: Electrical Machines & Drives / Data processing**
- 12⁰⁰ – 13⁰⁰ **Oral Sessions: Education & Management / Informatics & Applied Mathematics**
- 13⁰⁰ – 14⁰⁰ **Break**
- 14⁰⁰ - 16⁰⁰ **Oral Sessions: Power Engineering / Renewable Energy**
- 16⁰⁰ - 17⁰⁰ **Closing Session and Concluding Remarks**



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PROGRAMME TIMELINE

Thursday, November 5, 2020

10⁰⁰ – 11⁰⁰ OPENING SESSION – welcome address.

11⁰⁰ – 12⁰⁰ ASTR + IEEE CAS/CS Chapter Round Table

12⁰⁰ – 13⁰⁰ Oral Sessions

Bioengineering & Sensors and transducers

Chairs: **Vera Loboda, George-Calin Seritan**

ID	Schedule	Author(s)	Paper Title
633	12 ⁰⁰ - 12 ¹⁵	Felix-Constantin Adochiei, George-Calin Seritan, Bogdan-Adrian Enache, Florin-Ciprian Argatu, Andreea Roxanda Dobre	The influence of the generator signal parameters over the AntiBubbles formation
636	12 ¹⁵ - 12 ³⁰	Ioana-Raluca Adochiei, Vasilica-Violeta Argatu, Daniel Voiculescu, Cristina-Adriana Becheanu, Andreea Dragu	Driven wheelchair design and implementation using EOG signals
641	12 ³⁰ - 12 ⁴⁵	Aurel - Ionuț Chirilă, Ioan - Dragoș Deaconu, Valentin Năvrăpescu, Constantin Ghiță, George - Alexandru Smeu	Internet of Things applications in water pumping stations and distribution networks
679	12 ⁴⁵ - 13 ⁰⁰	V.V. Loboda, R.D. Buslaev	Coaxial type thermoelectric generator Simulation and calculation



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Materials in Electrical Engineering

Chairs: **Doina Elena Gavrila, Florin Ciuprina**

ID	Schedule	Author(s)	Paper Title
606	12 ⁰⁰ - 12 ¹⁵	Mircea-Emilian Ardeleanu, Aurelia Scorenea, Dan-Gabriel Stănescu, Ioana-Gabriela Sîrbu	Experimental analysis of composite materials behaviour at fire
653	12 ¹⁵ - 12 ³⁰	Laura Andrei, Florin Ciuprina	Temperature influence on dielectric response of LDPE-TiO ₂ nanocomposite
669	12 ³⁰ - 12 ⁴⁵	R.M. Aileni, L. Chiriac	Enhancing the conductive properties of the textile surfaces for electrodes or EM shields development by low-pressure RF plasma O ₂
683	12 ⁴⁵ - 13 ⁰⁰	Doina Elena Gavrila, Alina Caramitu, Sorina Mitrea, Victor Stoian, Costel Paun, Mihai Zburlea	Influence of morphology of the composite polymers/iron metal powders on thermal and mechanical characteristics

13⁰⁰ – 14⁰⁰ BREAK

14⁰⁰ - 16⁰⁰ Oral Sessions

Circuits

Chairs: **Alexander S. Korotkov, Florin Constantinescu**

ID	Schedule	Author(s)	Paper Title
656	14 ⁰⁰ – 14 ¹⁵	Viorel-Ştefan Savinescu, Ioan-Alexandru Nica, Liviu Goraş	A tunable 3rd – order low – pass filter for ECG acquisition using capacitance multiplier
661	14 ¹⁵ – 14 ³⁰	Alexander S. Korotkov	An alternative vision of SC-filter synthesis based on operational simulation method
663	14 ³⁰ – 14 ⁴⁵	Ionuţ Constantin Guran, Lucian Andrei Perişoară, Adriana Florescu,	SPICE model implementation for LiFePO ₄ cell
684	14 ⁴⁵ – 15 ⁰⁰	Bogdan Gabriel Armăşelu, Mădălin Frunzete, Adriana Florescu	DC to DC converter for residential applications
685	15 ⁰⁰ – 15 ¹⁵	Alin Alexandru Şerban, Mădălin Frunzete	Electronic system for monitoring quality of air and atmospheric conditions with autonomous power supply system
688	15 ¹⁵ – 15 ³⁰	Marin, Staicu, Gheorghe, Constantinescu	Generation of state equations for circuits with excess elements
690	15 ³⁰ – 15 ⁴⁵	I. Ursac, F. Constantinescu	Calibration of the frequency reference for 802.11g standard
613	15 ⁴⁵ - 16 ⁰⁰	Serkan Saglam, Salih Bayar	Effect of different threshold levels for binarization method in image classification



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Electromagnetic Field

Chairs: **Ioan F. Hantila, Iosif V. Nemoianu**

ID	Schedule	Author(s)	Paper Title
591	14 ⁰⁰ - 14 ¹⁵	Ahmet Aydođan, Serkan Sađlam, Funda Akleman	Dielectric measurement via partially filled and short-circuited circular waveguides
592	14 ¹⁵ – 14 ³⁰	Mihai E. Marin, Veronica Manescu (Paltanea), Gheorghe Paltanea, Paul C. Andrei, Catalin Grumeza, Ioan F. Hantila	Hysteresis cycle measurements using an innovative laboratory equipment
593	14 ³⁰ – 14 ⁴⁵	Veronica Manescu (Paltanea), Gheorghe Paltanea, Bogdan Varaticeanu, Paul Minciunescu, Mihai Maricar, Lucian Demeter, Maricica Pesteri, Horia Gavril, Iosif V. Nemoianu	Numerical analysis of a brushless servomotor with soft magnetic composite stator core
643	14 ⁴⁵ – 15 ⁰⁰	M.D. Călin, E. Helerea	Aspects regarding testing of electromagnetic contactors sensitivity to voltage dips
650	15 ⁰⁰ – 15 ¹⁵	V. Solcanu, M. Găiceanu, M. Constantinescu, A. Bordianu, Ghe. Samoilescu, A. Sotir	Global modeling of the leakage magnetic field in a volume of interest on a military ship (ship compartment)
659	15 ¹⁵ – 15 ³⁰	V. Solcanu, M. Gaiceanu, M. Constantinescu, A. Bordianu, Ghe. Samoilescu, A. Sotir	Basic electromagnetic compatibility equation for radio communication systems on board military ships
667	15 ³⁰ – 15 ⁴⁵	Evgeniy I. Trenkal, Nickolay D. Malyutin, Vladislav S. Pozdnyakov	Experimental research of space-time modulation in transmission lines with controlled nonlinear elements



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Friday, November 6, 2020

10⁰⁰ - 12⁰⁰ ORAL SESSIONS

Electrical Machines & Drives

Chairs: **Ovidiu Craiu, Leonard Melcescu**

ID	Schedule	Author(s)	Paper Title
598	10 ⁰⁰ - 10 ¹⁵	Tiberiu Tudorache, Vasile Manoliu	Finite element analysis of inverter-Fed inverse construction synchronous motors
601	10 ¹⁵ - 10 ³⁰	V. Firețeanu, A-I. Constantin	Optimizations of induction motors finite element assisted design through the global response surface method
614	10 ³⁰ - 10 ⁴⁵	D. Iorgulescu, Ghe. Samoilescu, V. Solcanu, M. Bălăceanu, C. Bărbulescu, Adelina Bordianu	Applications of the asynchronous motor in the anchoring installation - simulation and advantages
616	10 ⁴⁵ - 11 ⁰⁰	Michael Barrett	The initial temperature rise in a permanent magnet synchronous generator as a tool in the detection of stator inter-turn short-circuits
640	11 ⁰⁰ - 11 ¹⁵	Razvan Mocanu, Alexandru Onea	Non-linear predictive control of a permanent magnet synchronous machine with parameters uncertainty
644	11 ¹⁵ - 11 ³⁰	Madalin Costin, Corneliu Lazar	Active flux based predictive control of interior permanent magnet synchronous machine
651	11 ³⁰ - 11 ⁴⁵	O. Craiu, T.I. Ichim	FEM – PWM circuit model of a BLDC motor using COMSOL
599	11 ⁴⁵ - 12 ⁰⁰	Alexandra Georgiana Diana Celcan, Leonard Marius Melcescu, Cristina Mihaela Gheorghe, Tiberiu Tudorache	Design procedure of small power transformers for didactic purposes



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Data processing

Chairs: **Radu Rădescu, Ileana Diana Nicolae**

ID	Schedule	Author(s)	Paper Title
617	10 ⁰⁰ - 10 ¹⁵	Ileana-Diana V.D., Petre-Marian T. Nicolae, Anca I. Purcaru (Albița)	On computing RMS indices through wavelet decompositions by using a tree with 7 levels
626	10 ¹⁵ - 10 ³⁰	Radu Rădescu, Vlăduț-Alexandru Alexe	System for identifying, evaluating and reporting computer attacks via Wi-Fi networks
627	10 ³⁰ - 10 ⁴⁵	Radu Rădescu, Oana-Maria Vlad	eToken application for generating the digital signature using the USB interface
646	10 ⁴⁵ - 11 ⁰⁰	A.G. Covaciu, C. Florea, L.A. Szolga	Microscopic images analysis for saliva ferning prediction
654	11 ⁰⁰ - 11 ¹⁵	I. C. Mituletu, C. M. Muscai, L. B. Protea	Angular positioning device with wireless accessibility
682	11 ¹⁵ - 11 ³⁰	I. C. Mituletu, C. M. Muscai, G.R.. Gillich, L. B. Protea	Microcontroller based STFT-vibration analyzer

12⁰⁰ – 13³⁰ Oral Sessions

Education & Management

Chairs: **Cristina Gabriela Sărăcin, Marin Mihai**

ID	Schedule	Author(s)	Paper Title
594	12 ⁰⁰ - 12 ¹⁵	Adriana N. Borodzhieva	Active learning methods using computer-based tools applied in the course “Coding in telecommunication systems”
597	12 ¹⁵ - 12 ³⁰	Cristina Gabriela Sărăcin, Andrei Ioniță	Educational platform for simulating the operation of an automatic car wash machine
611	12 ³⁰ - 12 ⁴⁵	S.V. Paturca, M. Petraru, V. Bostan, C.K. Banica, V.Plesca	Robotics laboratory - Developing a robotic hand prosthesis
655	12 ⁴⁵ - 13 ⁰⁰	Adriana N. Borodzhieva	An approach for designing boolean functions with decoders
666	13 ⁰⁰ - 13 ¹⁵	Adriana N. Borodzhieva	Building interactive multimedia applications for teaching and learning the topic “Resonant circuits”
596	13 ¹⁵ - 13 ³⁰	Cristina Gabriela Sărăcin, Ionuț Cătălin Munteanu	Functional model for study of supercapacitors



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Informatics & Applied Mathematics

Chairs: **Gabriela Ciuprina, Anton Duca**

ID	Schedule	Author(s)	Paper Title
595	12 ⁰⁰ - 12 ¹⁵	Laith S. Ismail, Cătălin Petrescu, Ciprian Lupu, Duc Lich Luu	Design of optimal PID controller for magnetic levitation system using linear quadratic regulator approach
605	12 ¹⁵ - 12 ³⁰	Cristina Mamoc, Anton Duca, Gabriela Ciuprina, Aurel-Sorin Lup	Multi-objective QPSO algorithms to solve an electromagnetic benchmark problem
660	12 ³⁰ - 12 ⁴⁵	Laurentiu-Cristian Duca, Anton Duca	Achieving hard real-time networking on PREEMPT_RT Linux with RTnet
668	12 ⁴⁵ - 13 ⁰⁰	Lavinia Ferariu, Camelia Petrescu	Multimodal optimization using GA in specific electromagnetic field problems

13⁰⁰ – 14⁰⁰ BREAK

14⁰⁰ - 16⁰⁰ Oral Sessions

Power Engineering

Chairs: **Emil Cazacu, Radu Porumb**

ID	Schedule	Author(s)	Paper Title
600	14 ⁰⁰ - 14 ¹⁵	Cornel - Cristian Andrei, Gabriel Tudor, Mădălina Arhip-Călin, Grațian Fierăscu, Cătălin Urcan	Raspberry Pi, an alternative low-cost PLC
604	14 ¹⁵ – 14 ³⁰	Mădălina Arhip-Călin, Cristian-Cornel Andrei, Gabriel Tudor, Alexandru Zamfirescu, Grațian Fierăscu, George Seritan	Robust electricity consumption forecast based on load curves analysis
632	14 ³⁰ – 14 ⁴⁵	I. C. Damian, M. Eremia, A. Ianțoc	A novel multiterminal high voltage dc network in the Black Sea region
637	14 ⁴⁵ – 15 ⁰⁰	Valentina Alexandra Rohaț, Ileana Băran, Radu-Florin Porumb, Silvia-Carmen Vasile	Study on the acquisition, analysis and statistical processing of data in a transformation substation
662	15 ⁰⁰ – 15 ¹⁵	Dan Butnicu	A derating sensitive polymer capacitor's failure rate within dc-dc discrete eGaN-FET based PoL converters workbench study
689	15 ¹⁵ – 15 ³⁰	Gheorghe, Constantinescu, Marin	Time domain and frequency domain models for analysis of nonlinear power networks of home appliances



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Renewable Energy

Chairs: **Lucian Toma, Elisabeta Spunei**

ID	Schedule	Author(s)	Paper Title
590	14 ⁰⁰ - 14 ¹⁵	Cristian Paul Chioncel, Anamaria-Cătălina Nițu, Nicoleta Gillich, Gelu Ovidiu Tirian	Time frame reduction for maximum power point operation of wind turbines
607	14 ¹⁵ – 14 ³⁰	V. Stoica, D. Marin, A-I. Constantin	Analysis of solutions concerning hydro plants, optimal for the energy efficient conversion in Black Sea environmental conditions
610	14 ³⁰ – 14 ⁴⁵	Bogdan Constantin Neagu, Gheorghe Grigoraș	A data-mining-based methodology to identify the behavioural characteristics of prosumers within active distribution networks
612	14 ⁴⁵ – 15 ⁰⁰	Constantin Ghinea, Lucian Toma, Sidea Dorian Octavian, Mircea Eremia	Probabilistic load flow analysis using Monte Carlo method for a distribution electric network
645	15 ⁰⁰ – 15 ¹⁵	D. Marin, V. Stoica, A-I. Constantin, C. Păun	Analysis of solutions concerning hydro plants, optimal for the energy efficient conversion in danube environmental conditions
648	15 ¹⁵ – 15 ³⁰	Chioncel Cristian Paul, Erdodi Geza-Mihai, Marian Dordescu	Energy loses at wind turbines operating in variable wind speed conditions
658	15 ³⁰ – 15 ⁴⁵	Elisabeta Spunei, Ion Piroi, Ștefan-Gheorghe Mătășaru, Florina Piroi	Low-power photovoltaic installation behaviour analysis
665	15 ⁴⁵ - 16 ⁰⁰	Viorel Ionescu	Development of a two-phase PEM fuel cell model for the electrical performance prediction of PEMFC Systems with Nafion 117 membrane

16⁰⁰ - 17⁰⁰ Closing Session and Concluding Remarks