



TECHNICAL UNIVERSITY of SOFIA



Faculty of Electronic Engineering and Technologies



XXXI INTERNATIONAL SCIENTIFIC CONFERENCE

ELECTRONICS ET 2022

IEEE CONFERENCE RECORD # 55967

PROGRAMME

Sponsored by:

TU – SOFIA, project № 221ДН0007-03
Faculty of Electronic Engineering and Technologies, TU – Sofia
IEEE Bulgaria Section
IEEE CAS/SSCS Chapter Sofia
IEEE ED/CPMT/MTT/AP Chapter Sofia

Science Days of Technical University of Sofia
Hotel “Lazur”
September 13 - 15, 2022
Sozopol, Bulgaria

The conference will be held as a hybrid event. Both in HALL 1 and HALL 2 will be possible online and physical presentation. Online presentation will be through Cisco Webex Meetings Desktop App. The links are embedded in the programme, no prior Webex registration is required.

The registration of the participants is possible online and on-site. It is preferred to be online.

Please email elecs@ecad.tu-sofia.bg with any questions or concerns.

THE XXXI INTERNATIONAL SCIENTIFIC CONFERENCE “ELECTRONICS ET 2022” IS ORGANIZED BY TECHNICAL UNIVERSITY OF SOFIA, FACULTY OF ELECTRONIC ENGINEERING AND TECHNOLOGIES, BULGARIA IN CO-OPERATION WITH DELFT UNIVERSITY OF TECHNOLOGY, THE NETHERLANDS

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Tracks	Track chairs
Biomedical Engineering	Ivo Iliev – Bulgaria Irena Jekova – Bulgaria Vessela Krasteva – Bulgaria
Circuits and Systems	Emil Manolov – Bulgaria Ivaylo Pandiev – Bulgaria Tsvetana Grigorova – Bulgaria
Testing, Quality and Reliability	Anna Stoynova – Bulgaria Anton Georgiev – Bulgaria Ivan Evstatiev – Bulgaria
Education and Learning Technologies	Rossen Radonov – Bulgaria Tanichka Vasileva – Bulgaria Katya Asparuhova - Bulgaria
Embedded Systems	Grisha Spasov – Bulgaria Jeroen Boydens – Belgium Nikolay Kakanakov – Bulgaria
Instrumentation and Measurement	Marin Marinov – Bulgaria Stefan Hensel – Germany Georgi Nikolov – Bulgaria
Microelectronics	George Angelov – Bulgaria Stoyan Nihtianov – The Netherlands Elitsa Gieva – Bulgaria
Nanoelectronics and Technologies in Electronics	Mariya Aleksandrova-Pandieva – Bulgaria Igor Vrublevsky – Belarus Ivaylo Zhivkov – Czech Republic
Power Electronics	Nikolay Hinov – Bulgaria Darius Andriukaitis – Lithuania Dimitar Arnaudov – Bulgaria Nikolay Madzharov – Bulgaria

Tuesday, September 13, 2022	
1:00 p.m. EET	Registration of participants (HALL 1 or WEB Form)
4:00 p.m. EET	Official opening of the Conference (HALL 1) Plenary session 1. George Angelov. Priorities of Microelectronics in Bulgaria. <i>Technical University of Sofia, Bulgaria</i> 2. Stanislav Vitanov. Power Device Technologies: Challenges and Chances. <i>Infineon Technologies, Austria</i>
7:30 p.m. EET	Welcome party

Wednesday, September 14, 2022	
9:00 a.m. EET	Oral Session A (HALL 1)
9:00 a.m. EET	Poster Session B (HALL 2) Circuits and Systems Biomedical Engineering Education and Learning Technologies
4:00 p.m. EET	Social program

Thursday, September 15, 2022	
9:00 a.m. EET	Poster Session C (HALL 1) Instrumentation and Measurement Microelectronics Nanoelectronics and Technologies in Electronics
9:00 a.m. EET	Poster Session D (HALL 2) Embedded Systems Testing, Quality and Reliability Power Electronics
1:00 p.m. EET	Closing of the Conference (HALL 1)

Session A**Chairman – Stoyan Nihtyanov**

- A.1. J. Peuteman, A. Zabasta, B. Pang, D. Pissoort, S. Stroobant, J. Boydens.** Realizing a Cyber-Physical Systems Oriented Student Training for Ukrainian Students. *KU Leuven, Belgium, Riga Technical University, Latvia - 20 min*
- A.2. Z. Chen, J. Catrysse, R. Deseine, T. Claeys, D. Pissoort.** Case Study of Electromagnetic Interference in Surgery Environment. *Healthcare R&D Barco NV 8500 Kortrijk, KU Leuven, Belgium - 20 min*
- A.3. H. Tirmizi, D. Vanoost, E. El Amam, D. Pissoort.** Applying a Risk-based Approach for Ensuring Network Connection Safety in a Maritime Environment. *RH Marine Netherlands Schiedam, The Netherlands, KU Leuven, Belgium - 20 min*
- A.4. L. Buysse, D. Vanoost, J. Vankeirsbilck, J. Boydens, D. Pissoort.** Safety Case Conversion from Goal Structuring Notation to Structured Assurance Case Metamodel. *KU Leuven, Belgium - 20 min*
- A.5. A. Zaki, S. Nihtyanov.** High Time Resolution, Low-Noise, Power-Efficient, Charge-Sensitive Amplifier in 40 nm Technology. *Delft University of Technology, the Netherlands - 20 min*

Chairman – Darius Andriukaitis

- A.6. T. Yamashita, N. Nakamura, Y. Fujita, A. Kono, H. Urushibata, R. Hanaoka.** Over-discharge Phenomenon Caused by Corona Discharge in Lithium-ion Batteries (LiB) and its Effect on Copper Dissolution from the Negative Current Collector. *Kanazawa Institute of Technology, Japan - 20 min*
- A.7. B. Pang, T. Claeys, K. T'Jonck, H. Hallez, J. Boydens.** Bluetooth Low Energy Reliability and Throughput under Wi-Fi Interference. *KU Leuven, Belgium - 20 min*
- A.8. K. T'Jonck, C. Kancharla, B. Pang, H. Hallez, J. Boydens.** Privacy Preserving Classification via Machine Learning Model Inference on Homomorphic Encrypted Medical Data. *KU Leuven, Belgium - 20 min*
- A.9. M. Ambraziūnas, V. Markevičius, D. Navikas, D. Miklušis, J. Balamutas, D. Andriukaitis.** Application of Accelerometer for Vehicle Parameterization. *Kaunas University of Technology, Lithuania - 20 min*
- A.10. K. Stoilova, T. Stoilov.** Traffic Control Optimization in the Priority Direction. *Bulgarian Academy of Sciences, Bulgaria - 20 min*

Session B**Circuits and Systems****Chairman – Georgy Mihov**

- B.P1. I. Pandiev.** Analysis and Design of Bipolar Programmable-Gain Amplifiers Using Digital Potentiometers. *Technical University of Sofia, Bulgaria - 5 min*
- B.P2. B. Petrov.** FPGA Based Architecture for Test and Release of Custom Datapath in Pure RTL Designs. *Technical University of Sofia, Branch Plovdiv, Bulgaria - 5 min*
- B.P3. D. Badarov, T. Marinov, G. Mihov.** A Methodology for Compensation of Differential Nonlinearity in Digital-to-Analog Converters. *Technical University of Sofia, Bulgaria - 5 min*
- B.P4. P. Stoynov.** Switch Time Activation Function and Stopit Regression – Some Examples. *Technical University of Sofia, Bulgaria - 5 min*
- B.P5. N. Manchev, K. Angelov, B. Karapenev.** Energy Performance Analysis of LoRaWAN End Device with Autonomous Power Supply. *Technical University of Gabrovo, Bulgaria - 5 min*
- B.P6. R. Miletiev, R. Yordanov.** Compact Smart Solid-state Relay with WiFi Connectivity. *Technical University of Sofia, Bulgaria - 5 min*
- B.P7. P. Hristov, O. Boumbarov, K. Vachev.** Personal Identification Based Automatic Face Annotation in Multi-View Systems. *Technical University of Sofia, Bulgaria - 5 min*
- B.P8. B. Pachedjieva, P. Pavlova.** Study of Limiting Factors in the Selection of a Learning Sample of Images for Automatic Tracking of Changes in Weather Conditions. *Technical University of Sofia, Branch Plovdiv, Bulgaria - 5 min*

Biomedical Engineering**Chairman – Ivo Iliev**

- B.P9. R. Ilieva, Y. Yonkov, A. Tonchev.** Building Independent Models of YouTube Content Networks as a Tool for Monitoring Health Misinformation. *Technical University of Sofia, Bulgaria, Fuzzlab Ltd., London, Nislo Research, Cambridge, United Kingdom - 5 min*
- B.P10. B. Ganev, I. Iliev, I. Jekova, V. Krasteva.** LabVIEW ECG and Noise Simulator for Advanced Synthesis of Machine Learning Databases. *Technical University of Sofia, Bulgarian Academy of Sciences, Bulgaria - 5 min*
- B.P11. D. Badarov, I. Iliev, S. Tabakov.** Development of GSM modem for transfer of ECG signals in remote patient monitoring. *Technical University of Sofia, Bulgaria - 5 min*
- B.P12. I. Iliev, S. Tabakov, D. Badarov, I. Chuchulski, N. Tomchev.** A vital parameters monitoring system using capacitive electrodes. *Technical University of Sofia, Bulgaria - 5 min*

- B.P13. I. Iliev, S. Tabakov, N. Tomchev.** An Adjustable Amplifier for Capacitive ECG Registration. *Technical University of Sofia, Bulgaria - 5 min*
- B.P14. G. Mihov, D. Badarov.** Improved Adaptive Approach for Suppression of 1st and 3th Harmonic of Mains Interference in ECG Signals. *Technical University of Sofia, Bulgaria - 5 min*
- B.P15. T. Neycheva, D. Dobrev.** Design of Fractional Filters for Power-line Interference Suppression in ECG Signals. *Bulgarian Academy of Sciences, Bulgaria - 5 min*
- B.P16. D. Dobrev, T. Neycheva.** Open-loop Software Automatic Gain Control: Common-mode Power-line Interference Stabilization During ECG Recording. *Bulgarian Academy of Sciences, Bulgaria - 5 min*

Education and Learning Technologies

Chairman – Rossen Radonov

- B.P17. B. Ujkani, D. Minkovska, L. Stoyanova.** Application of Logistic Regression Technique for Predicting Student Dropout. *Technical University of Sofia, Bulgaria - 5 min*
- B.P18. A. Perçuku, D. Minkovska.** The eXtended Reality Technology in Power System Trainings. *University for Business and Technology, Pristina, Kosovo, Technical University of Sofia, Bulgaria - 5 min*
- B.P19. D. Vrachkov, K. Asparuhova, I. Hristov, D. Milchev.** Research of the Latest Development Trends for Model-based Design Automotive Mechatronics Education. *Technical University of Sofia, Bulgaria - 5 min*
- B.P20. A. Borodzhieva.** Modern Teaching Methods Used for Representing the Topic “Implementations of Carry-Skip Adders”. *University of Ruse “Angel Kanchev”, Bulgaria - 5 min*
- B.P21. A. Borodzhieva.** Collaborative Learning for Teaching the Topic “Design of Differentiators and Integrators in MATLAB” in Digital Signal Processing Course. *University of Ruse “Angel Kanchev”, Bulgaria - 5 min*
- B.P22. P. Minev, V. Kukenska, I. Varbov, M. Dinev.** Systems for Remote Access to FPGA Development Boards: Review. *Technical University of Gabrovo, Bulgaria - 5 min*
- B.P23. V. Hristov, H. Stoyanov, D. Slavov.** Development of Software for Research of Static Mechanical Characteristics in Condenser Mode of Asynchronous Motor. *Technical University of Sofia, Bulgaria - 5 min*
- B.P24. T. Stoilov, K. Stoilova.** Inventory Approach for Managing Income-Expenditure Deficit. *Bulgarian Academy of Sciences, Bulgaria - 5 min*
- B.P25. R. Dimitrova.** Criminal Liability Associated with Artificial Intelligence Entities under the Bulgarian Criminal Law. *Technical University of Sofia, Bulgaria - 5 min*

Session CInstrumentation and MeasurementChairman – Marin Marinov

- C.P1. C. T. Nguyen, R. Khlynov, A. Gorbachev, V. Ryzhova, S. Yaryshev, I. Konyakhin, T. Djamiykov.** Determining the Focal Length of a Video Camera Using a Calibration Pattern. *ITMO University, Saint-Petersburg, Russia, Technical University of Sofia, Bulgaria - 5 min*
- C.P2. W. Linan, L. Jiahang, V. Ryzhova, S. Yaryshev, T. Djamiykov.** Development of a Network Camera with a Built-in Mask and QR Code Recognition Function. *CDGM GLASS CO LTD, Chengdu, Sichuan, China, ITMO University, Saint-Petersburg, Russia, Technical University of Sofia, Bulgaria - 5 min*
- C.P3. M. Nenchev, M. Deneva.** Interference Wedged Structure for Remote and Purely Optical Intensity Control of a Powerful Laser Beam with a Low-Intensity Light. *Technical University of Sofia, Branch Plovdiv, Bulgaria - 5 min*
- C.P4. M. Deneva, M. Nenchev.** Utilization of Pure Glass Composite Interference Wedged Structures as Highly Efficient Light Beam Splitters. *Technical University of Sofia, Branch Plovdiv, Bulgaria - 5 min*
- C.P5. M. Marinov, D. Dimitrov, B. Ganev, G. Todorov, I. Ivanov.** Experimental Set-up for Sensors Selection and Early Fault Detection in Innovative Modular Li-Ion Battery Systems Related to HELIOS H2020 Project. *Technical University of Sofia, Bulgaria - 5 min*
- C.P6. G. Nikolov, B. Ganev.** Fuzzy Control of Relocatable Lighting System. *Technical University of Sofia, Bulgaria - 5 min*
- C.P7. V. Mateev, G. Ivanov, I. Marinova.** Modeling of Microfluidic Cell with Electrodes for Impedance Measurements. *Technical University of Sofia, Bulgaria - 5 min*
- C.P8. V. Mateev, I. Marinova.** Sensing Pad for Pressure Distribution Mapping. *Technical University of Sofia, Bulgaria - 5 min*
- C.P9. S. Zaharieva, I. Georgiev, I. Stoev, A. Manukova.** Model for Determination of Relative Humidity at Every Point in Cross-Section in Residential Premises. *University of Ruse "Angel Kanchev", Bulgaria - 5 min*
- C.P10. L. Miteva, K. Yovchev, D. Chikurtev.** Software and Hardware Infrastructure for Research and Development of Intelligent Control for Robotic Manipulators. *Sofia University "St. Kl. Ohridski", Bulgarian Academy of Sciences, Bulgaria - 5 min*
- C.P11. D. Tokmakov, S. Asenov.** Autonomous Smart Wireless LoRaWAN Vehicle Parking Sensor. *Plovdiv University "Paisii Hilendarski", Bulgaria - 5 min*
- C.P12. N. Vavrilov, T. Lovchaliev.** Design, Fabrication and Measurements of Microstrip Patch Antenna at 2.66 GHz. *Plovdiv University "Paisii Hilendarski", Bulgaria - 5 min*
- C.P13. S. Sotirov, N. Kafadarova, T. Lovchaliev.** Embedded System for Radiation Pattern Measurements of Antennas. *Plovdiv University "Paisii Hilendarski", Bulgaria - 5 min*

C.P14. G. Mladenov, I. Damyanov, D. Saliev, E. Ionchev. Design of Measurement System for Vehicle Emissions in Real Road Conditions. *Technical University of Sofia, Higher School of Transport "T. Kableskov", Bulgaria - 5 min*

C.P15.S. Rizanov, P. Yakimov, A. Stoyanova, B. Bonev. The Role of Thermography in Cattle Smart Farming: A Review. *Technical University of Sofia, Bulgaria - 5 min*

Microelectronics

Chairman – George Angelov

C.P16.S. Lozanova, M. Ralchev, A. Ivanov, C. Roumenin. Three-contact In-plane Sensitive Hall Devices. *Bulgarian Academy of Sciences, Bulgaria - 5 min*

C.P17.G. Angelov, D. Nikolov, R. Rusev, R. Rusev. Application of B-Scan for Identification of Delamination in Integrated Circuits. *Technical University of Sofia, Bulgaria - 5 min*

C.P18.R. Rusev, I. Ruskova, B. Tzaneva, M. Aleksandrova, A. Tzonev. Piezo Effect of Collagen Layer with Rochelle Salt Nanocrystals. *Technical University of Sofia, Sofia University "St. Kl. Ohridski", Bulgaria - 5 min*

C.P19.E. Gieva, I. Ruskova. Investigation of Acoustic Barrier Sound Absorption with Different Radius. *Technical University of Sofia, Bulgaria - 5 min*

C.P20.D. Kolev, R. Stoyanova, V. Todorova. Determining the Suitability of Measurement Circuits for Piezoelectric Vibrational Harvesters. *Technical University of Gabrovo, Bulgaria - 5 min*

Nanoelectronics and Technologies in Electronics

Chairman – Ivaylo Zhivkov

C.P21.I. Dionisiev, N. Minev, V. Videva, V. Strijkova, H. Dikov, P. Rafailov, D. Dimitrov, V. Marinova. Optical Properties of WSe₂ Thin Flakes. *Bulgarian Academy of Sciences, Sofia University "St. Kl. Ohridski", Bulgaria - 5 min*

C.P22.N. Minev, I. Dionisiev, K. Buchkov, H. Dikov, V. Videva, V. Strijkova, P. Rafailov, D. Dimitrov, V. Marinova. 2D PtTe₂ Layers Synthesized by Thermally Assisted Conversion Method. *Bulgarian Academy of Sciences, Sofia University "St. Kl. Ohridski", Bulgaria - 5 min*

C.P23.I. Vrublevsky, N. Lushpa, A. Tuchkovsky, M. Aleksandrova, M. Bunevich. Applying Aniline for P-doping of PEDOT:PSS Films to Improve Their Conductivity and Efficiency of Perovskite Solar Cells. *Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus, Technical University of Sofia, Bulgaria - 5 min*

C.P24.M. Aleksandrova, R. Tomov, I. Vrublevsky. Study of Lead-Free Perovskite Solar Cells at Elevated Temperatures and UV Irradiation. *Technical University of Sofia, Bulgaria, Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus - 5 min*

C.P25.M. Aleksandrova, G.Kolev, H. Pathan, S. Jadkar. G.Dobrikov. Fabrication and Study of Infrared Detectors with Lead-Free Perovskite Films at Different Electrode Designs. *Technical University of Sofia, Bulgaria, Savitribai Phule Pune University, Pune, India - 5 min*

C.P26.M. Georgieva, V. Milusheva. Electroless and Electrochemical Copper Deposition to Form a Conductive Layer on Anodized Aluminum Substrate. *Technical University of Sofia, Bulgarian Academy of Sciences, Bulgaria - 5 min*

C.P27.M. Georgieva. Electrochemical Study on Electroless Cu-Ni-P Alloy. *Technical University of Sofia, Bulgarian Academy of Sciences, Bulgaria - 5 min*

HALL 2,	Thursday,	September 15, 2022	9:00 a.m. EET
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Session D

Testing, Quality and Reliability

Chairman – Anna Stoyanova

D.P1. N. Kafadarova, S. Stoyanova-Petrova, S. Sotirov, D. Stoyanova, N. Vakilov. A Review of State of Health Battery Diagnostics Methods: Current Status and Future Challenges. *Plovdiv University "Paisii Hilendarski", Bulgaria - 5 min*

D.P2. N. Vakilov, N. Kafadarova. A Review of Supercapacitors State of Health Estimation Methods. *Plovdiv University "Paisii Hilendarski", Bulgaria - 5 min*

D.P3. V. Tsenev. Development of Lines for Production of Electromechanical Products by Evaluating their Efficiency through Statistics and in the Conditions of Lean Manufacturing. *Technical University of Sofia, Bulgaria - 5 min*

D.P4. V. Tsenev, N. Peshev, V. Videkov. Stabilizing the Strength of Solders in LGA Electronic Assembly by Different Design of Pads and Using of Statistical Evaluation Methods. *Technical University of Sofia, Bulgaria - 5 min*

D.P5. B. Kostov, V. Hristov. Implementation of Robot Get-Position-Quick Function to MELFA Robots. *Technical University of Sofia, Bulgaria - 5 min*

D.P6. P. Prodanov, M. Floreva, D. Dankov. Research of Low-power Stepper Motor Drivers. *Technical University of Gabrovo, VEAS Bulgaria Ltd, Bulgaria - 5 min*

D.P7. P. Prodanov, D. Dankov. Reliability of Low-power Stepper Motor Drivers. *Technical University of Gabrovo, Bulgaria - 5 min*

D.P8. V. Stefanova-Stoyanova, I. Stankov, P. Danov. Technology for Multiplication and Analysis of Results Using Classes of Digital Twins in the Process of Designing Business Process Management Systems. *Technical University of Sofia, Bulgaria - 5 min*

D.P9. G. Popov, A. Popova. Application of System Diversity for Increasing Security and Reliability of Distributed Systems. *Technical University of Sofia, Bulgaria - 5 min*

Embedded Systems

Chairman – Grisha Spasov

D.P10. S. Lishev, P. Pavlova, G. Spasov, G. Petrova. Mobile low-cost air pollution data logger. *Technical University of Sofia, Branch Plovdiv, Bulgaria - 5 min*

- D.P11.** N. Kurtev. A Single Sensor Interior Lighting Control System for Constant Illuminance Level on Working Desks. *Technical University of Sofia, Bulgaria - 5 min*
- D.P12.** L. Bogdanov, R. Ivanov. A Cycle-accurate Template Microprocessor Model of a Von Neumann Architecture Based on SystemC. *Technical University of Sofia, Bulgaria - 5 min*
- D.P13.** V. Naycheva, L. Bogdanov, N. Iliev. Embedded System for Detecting Underwater Ultrasound. *Technical University of Sofia, Nextlab Ltd, Bulgaria - 5 min*
- D.P14.** N. Nikolov, V. Shterev. Creating an basic IoT 3D farming model. *Technical University of Sofia, Bulgaria - 5 min*
- D.P15.** Y. Paunski, G. Angelov. Embedded Power Management System for Mobile Service Robots. *Bulgarian Academy of Sciences, Bulgaria - 5 min*
- D.P16.** E. Paunova-Hubenova, E. Trichkova-Kashamova. Algorithm for Traffic Management with Priority for Emergency Vehicles. *Bulgarian Academy of Sciences, Bulgaria - 5 min*
- D.P17.** D. Shehova, A. Chekichev, S. Assenov, K. Asparuhova. Implementation of Harness Testing Device Using Microcontroller. *Plovdiv University "Paisii Hilendarski", Technical University of Sofia, Bulgaria - 5 min*

Power Electronics

Chairman – Dimitar Arnaudov

- D.P18.** S. Asenov, D. Shehova, S. Lyubomirov. Design and Energy Production Research of a 28,8 kW PhotoVoltaic System. *Plovdiv University "Paisii Hilendarski", Bulgaria - 5 min*
- D.P19.** G. Vacheva, P. Stanchev, N. Hinov. Evaluation of Life Span of PV Inverter. *Technical University of Sofia, Bulgaria - 5 min*
- D.P20.** G. Vacheva, P. Stanchev, N. Hinov. Modeling of Autonomous System with PV, Supercapacitor and Micro Hydro Power Plant. *Technical University of Sofia, Bulgaria - 5 min*
- D.P21.** D. Spirov. Maximum Power Point Tracking in Photovoltaic System by Step-down Converter. *University of Food Technologies, Plovdiv, Bulgaria - 5 min*
- D.P22.** T. Grigorova, A. Vuchev, S. Vuchev. Basic Dependencies of a Phase-Shift Controlled LLC DC-DC Converter at Continuous Current Mode. *Technical University of Sofia, Branch Plovdiv, University of Food Technologies, Plovdiv, V4Tech Electronics Ltd., Sofia, Bulgaria - 5 min*
- D.P23.** A. Vuchev, T. Grigorova, S. Vuchev. Output Characteristics for Continuous Current Mode of a Phase-Shift Controlled LLC DC-DC Converter. *University of Food Technologies, Plovdiv, Technical University of Sofia, Branch Plovdiv, V4Tech Electronics Ltd., Sofia, Bulgaria - 5 min*
- D.P24.** T. Hranov, N. Hinov, K. Maslyaniy. Investigation of a Contactless Power Transmission System Based on a Resonant Inverter. *Technical University of Sofia, Bulgaria - 5 min*

- D.P25. K. Kishkin, I. Stefanov, D. Arnaudov.** Virtual Instrument for Capacitance Measurement of Supercapacitor Cells as part of an Energy Storage System. *Technical University of Sofia, Bulgaria - 5 min*
- D.P26. P. Mashkov, H. Beloev, R. Kandilarov, P. Pavlov.** Method to Support Lithium-Ion Batteries' Operation at Low Temperatures. *University of Ruse "Angel Kanchev", Bulgaria - 5 min*
- D.P27. G. Zashev, V. Dimitrov, F. Stojmenov, D. Arnaudov.** Comparison between digital and analog compensation for VRM. *Technical University of Sofia, Bulgaria - 5 min*
- D.P28. D. Dankov, P. Prodanov, P. Marinov.** SPICE Modeling of Off-line Switchers from the TinySwitch Family. *Technical University of Gabrovo, Bulgaria - 5 min*
- D.P29. T. Hranov, N. Hinov, A. Lilova.** Comparative Analysis of Boost DC-DC Converters with Application in Power Electronics Education. *Technical University of Sofia, Bulgaria - 5 min*

Presentation preparation

The authors have to prepare presentations following the template from the conference site. The file "Presentation Template" can be reached by clicking on the "Author's Kit" button on the conference site. The number of slides must correspond to the fixed time of the presentation – 20 minutes for oral and 5 minutes for poster presentation. The presentation have to be uploaded in the system till **September, 9**. Presentations which do not match the template will not be accepted.