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Faculty of Electronic Engineering and Technologies



XXXV INTERNATIONAL SCIENTIFIC CONFERENCE

ELECTRONICS ET 2026

IEEE CONFERENCE RECORD # 72079

PROGRAMME

Sponsored by:

TU – SOFIA, project № 261ДН0024-03

Faculty of Electronic Engineering and Technologies, TU – Sofia

IEEE Bulgaria Section

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Science Days of Technical University of Sofia

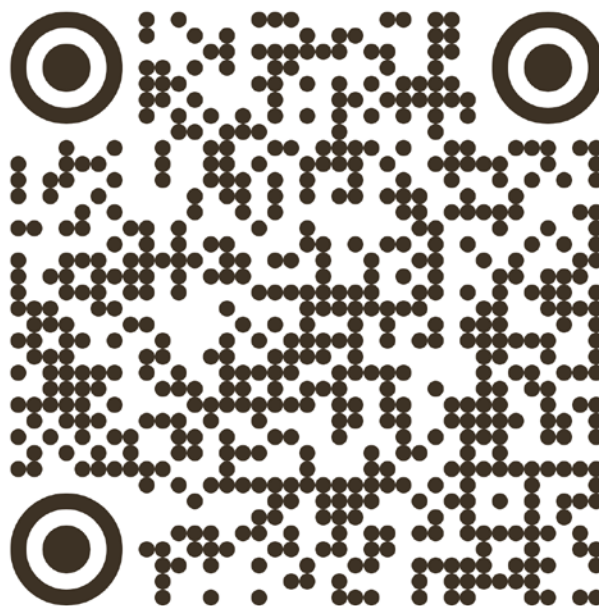
Hotel “Lazur”

September 16 - 18, 2026

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. The links are embedded in the programme.

The registration of the participants is [ONLINE](#) on the embedded link or after scanning the QR code:



<https://tinyurl.com/et2026-registration>

**THE XXXV INTERNATIONAL SCIENTIFIC CONFERENCE “ELECTRONICS ET 2026” IS
ORGANIZED BY TECHNICAL UNIVERSITY OF SOFIA, FACULTY OF ELECTRONIC
ENGINEERING AND TECHNOLOGIES, BULGARIA**

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Tracks	Track chairs
Biomedical Engineering	Ivo Iliev – Bulgaria Irena Jekova – Bulgaria Vessela Krasteva – Bulgaria
Circuits and Systems	Georgy Mihov – Bulgaria Emil Manolov – Bulgaria Ivaylo Pandiev – Bulgaria Galidiya Petrova – Bulgaria
Testing, Quality and Reliability	Anna Stoynova – Bulgaria Anton Georgiev – Bulgaria Ivan Evstatiev – Bulgaria
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Power Electronics	Tsvetana Grigorova – Bulgaria Darius Andriukaitis – Lithuania Dimitar Arnaudov – Bulgaria Nikolay Madzharov – Bulgaria

Wednesday, September 16, 2026	
1:00 p.m. EET	Registration of the participants (ONLINE)
4:00 p.m. EET	Official opening of the Conference (HALL 1) Plenary session 1. Georges Gielen. Who will design tomorrow's analog integrated circuits: humans or AI-based synthesis? <i>KU Leuven, Belgium</i> 2. Juin J. Liou. Evolution and Trends of Nanoelectronics in the Era of AI and Data Transformation. <i>Shandong University of Science and Technology, China</i> 3. Ivan Minev. Materials and Technologies for Soft Bioelectronic Interfaces. <i>TUD Dresden University of Technology, Germany</i>
7:30 p.m. EET	Welcome party

Thursday, September 17, 2026	
9:00 a.m. EET	Oral Session A (HALL 1)
9:00 a.m. EET	Poster Session B (HALL 2) Education, Learning Technologies and Human Resources Development Power Electronics Microelectronics Nanoelectronics and Technologies in Electronics Testing, Quality and Reliability
5:00 p.m. EET	Social Programme
7:30 p.m. EET	Official dinner

Friday, September 18, 2026	
9:00 a.m. EET	Oral Session C (HALL 1)
9:00 a.m. EET	Poster Session D (HALL 2) Biomedical Engineering Circuits and Systems Embedded Systems Instrumentation and Measurement
12:00 p.m. EET	Closing of the conference (HALL 1)

Session A**Chairman – Georgy Mihov**

- A.1. A. Karlidag Suzer, U. Hacizade.** Performance Investigation of Traditional Machine Learning Algorithms in Sentiment Analysis. *Halic University, Istanbul, Turkiye* - **20 min**
- A.2. G. Mihov, S. Rizanov.** FPGA Implementation of Power-line Interference Suppression in ECG Signals Using Bidirectional Filtration. *Technical University of Sofia, Bulgaria* - **20 min**
- A.3. P. Novák, V. Oujezský.** Early Behavioral Modeling for Cross-Family Malware Detection. *Masaryk University, Brno, Czechia* - **20 min**
- A.4. Z. F. Hasırcı İlğaz, U. Hacizade.** Machine Learning-Based Performance Evaluation of Software Defined Virtual Networks. *Halic University, Istanbul, Turkiye* - **20 min**
- A.5. C. Hajiyevev.** Measurement Conversion-Based LKF with Optimal Measurement Error Covariances for User Positioning via GNSS. *Istanbul Gelisim University, Istanbul, Turkiye* - **20 min**
- A.6. K. Stoilova, T. Stoilov.** Assessment of Forecast Precision in Non-stationary Time Series. *Bulgarian Academy of Sciences, Bulgaria* - **20 min**
- A.7. C. Hajiyevev.** Magnetometer-Only Microsatellite Attitude and Rate Estimation and In-Orbit Magnetometer Calibration. *Istanbul Gelisim University, Istanbul, Turkiye* - **20 min**

Session B**Education, Learning Technologies and Human Resources Development****Chairman – Rossen Radonov**

- B.P1. E. Antonova, D. Minkovska.** The Relationship Between Objective Performance and Subjective Perception of Difficulty: An Analysis of Personalised Tests and Surveys in Programming Education. *Technical University of Sofia, Bulgaria* - **5 min**
- B.P2. D. Nikolaeva, D. Petrova, E. Rakitina-Qureshi, D. Stoyanova.** Hybrid Lexical–Semantic Approach for Static Detection and Conformance Measurement of Singleton Implementations in C# code. *Technical University of Varna, Bulgaria* - **5 min**
- B.P3. A. Borodzhieva.** Reversible Implementations of Magnitude Comparators Using Only Toffoli Gates. *University of Ruse “Angel Kanchev”, Bulgaria* - **5 min**
- B.P4. A. Borodzhieva, Y. Kalmukov, S. Zaharieva.** Applications of FIR Filters for Noise Reduction and Two-Band Digital Audio Crossover. *University of Ruse “Angel Kanchev”, Bulgaria* - **5 min**
- B.P5. S. Pleshkova-Bekyarska, T. Zhelezarova-Velkova.** Development of Algorithms and Model for Remote Voice Control in Smart Homes. *Technical University of Sofia, Bulgaria* - **5 min**

- B.P6. I. Iliev, P. Stanoev, P. Petkov.** A Flexible Statistical Radar Image Model for Evaluating Target Detection Algorithms in Complex Environments. *Technical University of Sofia, Bulgaria, Bulgaria* - 5 min
- B.P7. A. Borodzhieva.** Hybrid Simulation and Implementation of a Reversible One-Bit Full Adder Based on TSG Gates Using Logisim and MS Excel. *University of Ruse "Angel Kanchev", Bulgaria* - 5 min
- B.P8. S. Pleshkova-Bekyarska, T. Zhelezarova-Velkova.** Review and Analysis of Networks Architectures Suitable for Voice Commands Transmission to IoT-Based Smart Home Remote Voice Control Systems. *Technical University of Sofia, Bulgaria* - 5 min
- B.P9. S. Asenov, A. Chekichev, E. Damyanova, K. Asparuhova.** Power Quality Measurements in Engineering Education: An Experimental Laboratory Framework for Smart Grid and Renewable Energy Training. *University of Plovdiv "Paisii Hilendarski", Technical University of Sofia, Bulgaria* - 5 min
- B.P10. S. Sadkov, A. Chekichev.** Development of an Educational Laboratory Stand for Investigation and Control of Stepper Motor Drives in Engineering Education. *University of Plovdiv "Paisii Hilendarski", Bulgaria* - 5 min
- B.P11. S. Zaharieva, M. Stoyanov, A. Borodzhieva, A. Manukova.** Prototype of a Biometric Vehicle Immobilizer. *University of Ruse "Angel Kanchev", Bulgaria* - 5 min
- B.P12. S. Sadkov, A. Chekichev.** Development of an Educational Laboratory Stand for Comparative Investigation of Incremental and Absolute Encoders in Engineering Education. *University of Plovdiv "Paisii Hilendarski", Bulgaria* - 5 min
- B.P13. A. Bashev, V. Rupetsov, S. Asenov.** STEM Classroom Experience and Academic Readiness of First-Year Engineering Students: A Pilot Survey Study. *University of Plovdiv "Paisii Hilendarski", Bulgaria* - 5 min
- B.P14. M. Simeonova-Ingilizova.** Engineering and Pedagogical Training in the Context of Education 5.0 – From Digital Competence to Human-Centered Professional Education. *Technical University of Sofia, Bulgaria* - 5 min
- B.P15. Z. Arnaudova, T. Djamiykov, K. Dimitrova, T. Pashova, A. Sevov.** Evidence-Based Design of a Master's Course in Earth Observation for Agriculture: The EDUAGRI Approach. *Agricultural University Plovdiv, Bulgarian Academy of Sciences, Bulgaria* - 5 min
- B.P16. D. Stankovski.** The Cost of AI when the Bill Comes Due: Inside the AI Industry's Spending Hangover. *University of Telecommunication and Post, Sofia, Bulgaria* - 5 min
- B.P17. V. Dicheva.** Artificial Intelligence and Entrepreneurship in Bulgaria: Opportunities and Risks for Small and Medium Enterprises. *Technical University of Varna, Bulgaria* - 5 min
- B.P18. R. Dimitrova.** In-vehicle Data as Evidence in Court Proceedings. *Technical University of Sofia, Bulgaria* - 5 min
- B.P19. V. Dicheva.** Role of Regional Entrepreneurial Ecosystems - Challenges and Opportunities. *Technical University of Varna, Bulgaria* - 5 min

Power Electronics

Chairman – Tsvetana Grigorova

- B.P20. G. Bodurov.** Investigation of Energy Exchange and Torque Ripple in a Speed-Controlled Switched Reluctance Motor Drive with Unipolar PWM Modulation. *Technical University of Sofia, Plovdiv Branch, Bulgaria - 5 min*
- B.P21. D. Petkov, P. Prodanov.** Regression Analysis, DOE and ANOVA of a Frequency Inverter Operating in Open Loop Speed Control Mode During Testing of a Conical Induction Motor. *Technical University of Gabrovo, Bulgaria - 5 min*
- B.P22. G. Bodurov, T. Grigorova, D. Yankov.** Complementary PWM with Current-Dependent Turn-Off for a Three-Phase 12/8 Switched Reluctance Motor in Motoring Mode. *Technical University of Sofia, Plovdiv Branch, Bulgaria - 5 min*
- B.P23. A. Vuchev.** A Comparative Study of Phase-Shift Controlled Series Resonant DC-DC Converters. *Technical University of Sofia, Plovdiv Branch, Bulgaria - 5 min*
- B.P24. A. Kinov, D. Arnaudov, V. Dimitrov, K. Kishkin, D. Serafimov.** Development of Hardware in the Loop Platform for Fuel Cell System. *Technical University of Sofia, Bulgaria - 5 min*
- B.P25. E. Nikolaev, D. Nikolaeva, H. Hristov.** Energy Efficiency Improving Methodology Applied to Ship Retrofit. *Technical University of Varna, Bulgaria - 5 min*
- B.P26. P. Stanchev, N. Hinov.** Modal Impedance-Based Resonance Identification in a Buck DC-DC Converter. *Technical University of Sofia, Bulgaria - 5 min*
- B.P27. P. Stanchev, N. Hinov.** Fractional-Order Power-Split Supervisory Control of Bidirectional DC-DC Interfaces for Battery-Supercapacitor Electric Vehicles. *Technical University of Sofia, Bulgaria - 5 min*
- B.P28. M. Dobrolitsky, T. Grigorova, N. Hinov.** Commutation Duty Loss Analysis of the Reverse ZETA Operation Mode in a Bidirectional SoftSwitching SEPIC/ZETA Converter. *Technical University of Sofia, Bulgaria - 5 min*
- B.P29. G. Balev, V. Dimitrov, D. Arnaudov.** Comparing Transformers for Current-fed Full Bridge Converter. *Technical University of Sofia, Bulgaria - 5 min*

Microelectronics

Chairman – Ivaylo Zhivkov

- B.P30. I. Toteva, G. Angelov, D. Nikolov, I. Ruskova.** Design and Physical Implementation of an ESD-protected CMOS Low-noise Amplifier in 0.18 μm Technology. *Technical University of Sofia, Bulgaria - 5 min*
- B.P31. E. Bakardzhiev.** A Framework for Real-Condition Evaluation of Thermal Interface Materials in Microelectronics. *University of Plovdiv "Paisii Hilendarski", Bulgaria - 5 min*

Nanoelectronics and Technologies in Electronics

Chairman – Ivaylo Zhivkov

- B.P32. R. Rusev, V. Tsenev, N. Georgiev, J. Rusev.** Characterization of Solder Joints by Intermetallic Compound Formation under Different Combined Footprint and Reflow Soldering Conditions. *Technical University of Sofia, Research and Development and Innovation Consortium, Sofia, Bulgaria* - 5 min

Testing, Quality and Reliability

Chairman – Anna Stoyanova

- B.P33. A. Ganev, L. Taneva, K. Ruskova.** Investigation of Dynamic MPPT Error under Rapid Solar Radiation Fluctuations in Partial Shading Conditions. *South-West University “Neofit Rilski”, Blagoevgrad, Technical University of Sofia, Bulgaria* - 5 min
- B.P34. L. Tsoulanas, L. Taneva, K. Ruskova.** Statistical Process Variability Modeling in CMOS Circuit Design. *South-West University “Neofit Rilski”, Blagoevgrad, Technical University of Sofia, Bulgaria* - 5 min
- B.P35. S. Linkov, M. Nenova, K. Nikolova, R. Doynov.** A Multi-Layered Defense Strategy Against DDoS Attacks in Simulated Network Environments. *Technical University of Sofia, Bulgaria* - 5 min
- B.P36. S. Linkov, M. Nenova, R. Doynov, T. Marinov.** Controlled Evaluation of HID/USB and Ethernet Drop-Device Attacks in Endpoint and SDN Environments. *Technical University of Sofia, Bulgaria* - 5 min

[HALL 1](#),

Friday,

September 18, 2026

9:00 a.m. EET

Session C

Chairman – Stoyan Nihtianov

- C.1. T. Stoilov, K. Stoilova.** Simultaneous Operation of Assembly Machines in Powder Metallurgy. *Bulgarian Academy of Sciences, Bulgaria* - 20 min
- C.2. F. Seçkiner, E. Yıldırım.** Performance Comparisons of Rotor Surface Notch Structures on the D-axis of IPM Motors. *Volta Motor Industry and Trade Inc., Duzce, Türkiye, Duzce University, Duzce, Türkiye* - 20 min
- C.3. P. Apostolov, D. Kybartas.** Antenna Array of Two Luneburg Lenses. *Union of Electronics, Electrical Engineering and Telecommunications, Sofia, Bulgaria, Kaunas University of Technology, Kaunas, Lithuania* - 20 min
- C.4. G. Yıldırım, E. Yıldırım.** Comparative Evaluation of Hydropower and Solar Energy Systems Using CRITIC-Weighted TOPSIS and MULTIMOORA: A Case Study from Türkiye. *Duzce University, Duzce, Türkiye* - 20 min

Session D**Biomedical Engineering****Chairman – Ivo Iliev**

- D.P1. S. Yarishev, S. Broladze, V. Ryzhova, T. Djamiykov, M. Marinov.** Developing a Hardware-Software Assistive System Based on Computer Vision for Visually Impaired Users. *ITMO University, St. Petersburg, Russia, Technical University of Sofia, Bulgaria - 5 min*
- D.P2. A. O. M. Anon.** Electrochemotherapy in the Management of Cutaneous Cancers: Biophysical Foundations, Clinical Applications and Technological Perspectives – A Literature Review. *Technical University of Sofia, Bulgaria - 5 min*
- D.P3. B. Iliev, T. Tiankov.** Investigation of the Inhibition of PDMS Polymerization on 3D-Printed Molds. *Bulgarian Academy of Sciences, Bulgaria - 5 min*
- D.P4. E. Nikolova.** Comparative Experimental Evaluation of Textile Electrodes for ECG Recording Before and After Washing. *Technical University of Sofia, Bulgaria - 5 min*
- D.P5. S. Murad, E. Tolstosheeva.** Development of an Arduino-based System for Monitoring Human Concentration/drowsiness Detection through Measurement of LF/HF Heart Rate and Environmental Parameters. *University of Plovdiv “Paisii Hilendarski”, Bulgaria - 5 min*
- D.P6. A. O. M. Anon, S. Kasereka.** Design and Implementation of an Electric Pulse Generator Prototype with Possible Application for Electrochemotherapy. *Technical University of Sofia, Bulgaria - 5 min*

Circuits and Systems**Chairman – Ivaylo Pandiev**

- D.P7. G. Angelov.** Existence of Periodic Solutions of the Hyperbolic System Describing Lossy Three-Conductor Transmission Line that Models PCBs. *Technical University of Sofia, Bulgaria - 5 min*
- D.P8. D. Iliev, M. Nedelchev.** Thermal Effects Mitigation in X-Band microwave RF Amplifier for LEO Satellites Using Predistortion Techniques. *Technical University of Sofia, Bulgaria - 5 min*
- D.P9. S. Pleshkova, M. Todorov.** Fronthaul Simulation Model for Quality Tests of Audio and Video Information Transmission via O-RAN. *Technical University of Sofia, Bulgaria - 5 min*
- D.P10. I. Pandiev.** Remarks on the Design of Small-Signal LC Oscillators Based on the Connection of an Integrated-Circuit Common-Base Amplifiers. *Technical University of Sofia, Bulgaria - 5 min*

Embedded Systems

Chairman – Lubomir Bogdanov

- D.P11. R. Furnadzhiev, M. Babanova, M. Shopov.** Agentic Multimodal LLM Inference at the Edge for Industrial IoT Command and Control. *Technical University of Sofia, Plovdiv Branch, Bulgaria - 5 min*
- D.P12. R. Ilieva, A. Angelov.** Advanced Control over Robot Manipulators via Computer Vision. *Technical University of Sofia, Bulgaria - 5 min*
- D.P13. I. Dochev, M. Dochev, L. Docheva, S. Manev, P. Raykov.** Modular Remote Monitoring and Centralized Irrigation Control System for Smart Agriculture. *Technical University of Sofia, Bulgaria - 5 min*
- D.P14. I. Bojilov, T. Brusev, B. Nikolova, M. Todorov.** Prototype NTP-Based Latency Measurement System for ESP-NOW Networks. *Technical University of Sofia, Bulgaria - 5 min*
- D.P15. L. Bogdanov, N. Iliev.** Methodology and Application Development for Reliability Verification of Irrigation Actuators. *Technical University of Sofia, Nextlab Ltd, Bulgaria - 5 min*
- D.P16. I. Bojilov, T. Brusev, B. Nikolova, M. Todorov.** Performance analysis of DC-DC Converters Powering IoT Wireless Data Transmission System. *Technical University of Sofia, Bulgaria - 5 min*
- D.P17. L. Bogdanov.** Measuring Energy Consumption of an FPGA Hardware Accelerator Module. *Technical University of Sofia, Bulgaria - 5 min*
- D.P18. I. Stankov, V. Stanchev.** Protecting IoT-based Systems through Implementation of European Cybersecurity Policies. *Technical University of Sofia, Bulgaria - 5 min*
- D.P19. N. Mavrodieva, M. Ivanova.** TimeGraph: Design and Implementation of a Graph-Based Timeline Mapping Prototype for Digital Forensics. *Technical University of Sofia, Bulgaria - 5 min*

Instrumentation and Measurement

Chairman – Marin Marinov

- D.P20. K. Hristov, B. Ganev, T. Grigorova.** Experimental Characterization and Compensation of Humidity-Induced Error in Commercial NDIR CO₂ Sensors. *Technical University of Sofia, Bulgaria - 5 min*
- D.P21. L. Laskov, I. Damyanov, K. Dimitrov.** Development of a Contactless Engine Compartment Temperature Monitoring System for Vehicles Operating in Service Facilities. *Technical University of Sofia, Bulgaria - 5 min*
- D.P22. M. Spasov.** Machine Learning Methods and Techniques for Improving the Accuracy of Intelligent Sensor Systems: A Review. *Technical University of Sofia, Bulgaria - 5 min*
- D.P23. S. Bogdanov, N. Bogdanova, D. Chikurtev.** Open Micro Weather Station. *Bulgarian Academy of Sciences, Bulgaria - 5 min*
- D.P24. A. Bekyarova-Tokmakova, S. Shotarova, D. Tokmakov, S. Lyubomirov, S. Petrova, B. Nikolov.** Design of a Battery-Powered ESP32 Wireless Measurement System for Industrial and Environmental Temperature Monitoring. *University of Plovdiv “Paisii Hilendarski”, Bulgaria - 5 min*

- D.P25. R. Stoyanov, K. Asparuhova, L. Bogdanov.** Technological Framework for Digital-Twin Implementation in Magnetic Position and Angle Estimation Systems. *Technical University of Sofia, Bulgaria* - 5 min
- D.P26. H. Hristov, K. Dimitrov.** Measurement-oriented Statistical Processing of Paired Measurement Channels in Biomedical Monitoring of Dairy Cows. *Bulgarian Academy of Sciences, Technical University of Sofia, Bulgaria* - 5 min
- D.P27. D. Titov, V. Ryzhova, S. Yarishev, T. Djamiykov, M. Marinov.** Assessment of the Information Content of Vegetation Indices Set for Hyperspectral Data Preprocessing. *ITMO University, St. Petersburg, Russia, Technical University of Sofia, Bulgaria* - 5 min
- D.P28. T. Valkovski.** Method for Measuring Noise from a Petrol Engine of a Vehicle for the Purpose of Standardization and Detection of Technical Failures. *Technical University of Sofia, Bulgaria* - 5 min
- D.P29. I. Damyanov, T. Valkovski.** Monitoring Noise in the Vehicle Cabin from External Sources when Driving on Different Road Surfaces. *Technical University of Sofia, Bulgaria* - 5 min
- D.P30. V. Vassilev, D. Komarski, R. Komarska.** Modular PCB-Based Control Platform for Scalable Stepper-Motor Actuation in Adaptive Mechatronic Surface Systems. *Technical University of Sofia, Bulgaria* - 5 min
- D.P31. S. Shotarova, A. Bekyarova-Tokmakova, S. Lyubomirov, D. Tokmakov, S. Petrova, B. Nikolov.** Hardware Implementation and IoT Architecture of an Interactive Photovoltaic Laboratory with Remote Access. *University of Plovdiv "Paisii Hilendarski", Bulgaria* - 5 min
- D.P32. P. Kravtsov, V. Ryzhova, S. Yarishev, T. Djamiykov, M. Marinov.** Circular Gradient Interference Filter Technology for a Dynamic Filtering System. *ITMO University, St. Petersburg, Russia, Technical University of Sofia, Bulgaria* - 5 min
- D.P33. N. Shevelev, P. Kravtsov, V. Ryzhova, S. Yarishev, T. Djamiykov, M. Marinov.** Hyperspectral Cube Construction from a Sequence of Spectral Frames for Stroboscopic Spectral Imaging Systems. *ITMO University, St. Petersburg, Russia, 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 presentations have to be uploaded with the registration till **September, 14**. Presentations which do not match the template will not be accepted.