



TECHNICAL UNIVERSITY - SOFIA
TRADITION OF SUCCESS!



Faculty of Electronic Engineering and Technologies

THE XXIV INTERNATIONAL SCIENTIFIC CONFERENCE

ELECTRONICS

ET 2015

PROGRAMME

**Dedicated to the 70th anniversary of
Technical University of Sofia**

Sponsored by:

TU – SOFIA, project 151ДН0015-03
Faculty of Electronic Engineering and Technologies, TU – Sofia
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Science Days of Technical University of Sofia
Rest House of UniCredit Bulbank
September 15 - 17, 2015
Sozopol

THE XXIV INTERNATIONAL CONFERENCE “ELECTRONICS ET’2015” 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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Maya Petrunova, Technical University of Sofia, Bulgaria

Tuesday, September 15, 2015

2.00 p.m.	Registration of participants
4.00 p.m.	Official opening of the Conference 1. Greer, J. ASCENT: An EU Initiative for Access to Nanoelectronics. <i>Tyndall</i> 2. IEEE ED Distinguished Lecture Deleonibus, S. More Moore and More than Moore working on 3D. <i>CEA – LETI, France</i>
7.30 p.m.	Cocktail-party

Wednesday, September 16, 2015

8.30 a.m.	Preparation of posters for Session A
9.00 a.m.	Session A (Room 1) Embedded Systems Instrumentation and Measurement Testing, Quality and Reliability
1.30 p.m.	Preparation of posters for Session B
2.00 p.m.	Session B (Room 1) Microelectronics
4.00 p.m.	Workshop “ASCENT: <u>Access to European Nanoelectronics Network</u> ”

Thursday, September 17, 2015

8.30 a.m.	Preparation of posters for Session C
9.00 a.m.	Session C (Room 1) Biomedical Engineering Circuits and Systems Quantum, Nuclear and Optoelectronics
1.30 p.m.	Preparation of posters for Session D
2.00 p.m.	Session D (Room 1) Education and Learning Technologies Power Electronics

7.00 p.m.	Closing Ceremony
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Session A

Chairman – Georgy Mihov

- A.1. **Cordemans, P., N. Witte, J. Vankeirsbilck, W. Melis, J. Boydens.** Isolating Real-time from Processor-intensive Processes in Embedded Multi-core Systems. *KU Leuven, Belgium, Vives University college, Belgium - 20 min*
- A.2. **Vankeirsbilck, J., H. Hallez, J. Boydens.** Integration of Soft Errors in Functional Safety: A Conceptual Study. *KU Leuven, Belgium - 20 min*
- A.3. **Kokolanski, Z., F. Reverter, C. Gavrovski, V. Dimcev.** Improving the Resolution in Direct Inductive Sensor-to-Microcontroller Interface. *Ss.Cyril and Methodius University in Skopje, Macedonia, Universitat Politècnica de Catalunya-BarcelonaTech, Spain - 20 min*
- A.4. **Srbinovska, M., Z. Kokolanski, C. Gavrovski, V. Dimcev.** Loss of Load Probability in Wireless Sensor Networks using Solar Cells. *Ss.Cyril and Methodius University in Skopje, Macedonia - 20 min*

Embedded systems

Chairman – Georgy Mihov

- A.P1. **Badarov, D., G. Mihov.** Mains Frequency Deviation Measurement by Using Elements of the Subtraction Procedure Based on Xilinx FPGA. *Technical University of Sofia, Bulgaria - 5 min*
- A.P2. **Petrova, G., G. Spasov, G. Pazhev.** Realization of a Home Automation Network with Two Gateways Based on Open Source Hardware. *Technical University of Sofia, Plovdiv branch, Bulgaria - 5 min*
- A.P3. **Shopov, M.** Practical Implementations of Cloud Computing Technologies for Smart Metering in Electrical Power Systems. *Technical University of Sofia, Plovdiv branch, Bulgaria - 5 min*
- A.P4. **Bogdanov, L., R. Ivanov.** Power Management in Embedded Systems: A Static Power Approach. *Technical University of Sofia, Bulgaria - 5 min*
- A.P5. **Spasova, V., I. Iliev.** Performance Evaluation of AES Symmetric Key Encryption Modes in an Ambient Assisted Living System. *Technical University of Sofia, Bulgaria - 5 min*
- A.P6. **Buliev, I., T. Grigorov, J. Kolev.** Blended Approach in the Embedded Software Design. *Technical University of Varna, Bulgaria, Micon K Ltd, Varna, Bulgaria, - 5 min*

Instrumentation and Measurement

Chairman –Marin Marinov

- A.P7. **Yakimov, P., N. Tuliev.** Electric Power Transducers with Networking Capabilities. *Technical University of Sofia, Bulgaria* - 5 min
- A.P8. **Yakimov, P., A. Iovev, N. Tuliev.** Smart Transducers Network Development Using PLC as a Gateway. *Technical University of Sofia, Bulgaria* - 5 min
- A.P9. **Nikolov, G., B. Nikolova, E. Gieva.** LabVIEW Based Wireless System for Environmental Monitoring. *Technical University of Sofia, Bulgaria* - 5 min
- A.P10. **Marinov, M., G. Nikolov, B. Ganev.** Wireless Sensor Network-based Illumination Control. *Technical University of Sofia, Bulgaria* - 5 min
- A.P11. **Djermanova, N., M. Marinov, B. Ganev.** Alternating Current-Driven Strain-gage Bridge Amplifier System for Brushless Motors Torque Measurement. *Sofia University, Bulgaria, Technical University of Sofia, Bulgaria* - 5 min
- A.P12. **Djermanova, N., J. Kiss'ovski, V. Vachkov, Y. Todorov, D. Damyanov.** Investigations on Impedance Behaviour of Microwave-Plasma at Atmospheric Pressure. *Sofia University, Bulgaria* - 5 min
- A.P13. **Djamiykov, T., K. Asparuhova, I. Spasov.** Sun Tracking Sensor with Current Loop Output. *Technical University of Sofia, Bulgaria* - 5 min
- A.P14. **Iliev, D., V. Gourev, M. Mitev.** Design of Adaptive Weather Station with Reduced Power consumption. *Technical University of Sofia, Bulgaria, Sofia University, Bulgaria* - 5 min
- A.P15. **Siderov, V., P. Georgiev, I. Zhivkov, G. Dobrikov, R. Yordanov, M. Vala, M. Weiter.** Measurement of Organic Solar Cell Parameters. *Brno University of Technology, Czech Republic, Technical University of Sofia, Bulgaria, Institute of Optical Materials and Technologies "Acad. J. Malinowski" – BAS, Bulgaria* - 5 min

Testing, Quality and Reliability

Chairman –Marin Marinov

- A.P16. **Minkov, D.** Features of Electro-magnetic Methods for Evaluating Sizes of Surface Cracks in Metals. *College of Energy and Electronics, Technical University of Sofia, Bulgaria* - 5 min
- A.P17. **Nikolaeva, D., V. Bozhikova.** Approaches to Increasing the Quality and Reliability in the Field of Design Patterns. *Technical University of Varna, Bulgaria* - 5 min

Session B**Chairman – Marin Hristov**

B.1. Melikyan, V., V. Galstyan. Design of High-efficiency Dual-ratio Step-down Switched Capacitor Converter with Full Digital Feedback Control. *Synopsys Armenia CJSC, Yerevan, Armenia* - 20 min

B.2. Durgaryan, A., A. Balabanyan, V. Melikyan. Fully Integrated Low Power Temperature Measurement Circuit Design in 28nm Process. *Synopsys Armenia CJSC, Yerevan, Armenia* - 20 min

Microelectronics**Chairman – Marin Hristov**

B.P1. Rusev, R., G. Angelov, E. Gieva, B. Atanasov, M. Hristov. Green Fluorescent Protein Hydrogen Bonds Compared to Microelectronic Devices. *Technical University of Sofia, Bulgaria, Institute of Organic Chemistry – BAS, Bulgaria* - 5 min

B.P2. Spasova, M., G. Angelov, D. Nikolov, M. Hristov. Impact of Energy Band Structure on CNTFET Output Characteristics. *Technical University of Sofia, Bulgaria* - 5 min

B.P3. Brusev, T. Investigation of Colpitts VCO Designed on 0.35 μm Technology. *Technical University of Sofia, Bulgaria* - 5 min

B.P4. Brusev, T., R. Radonov. Layout Design of Switching-mode Amplifier for LTE Applications. *Technical University of Sofia, Bulgaria* - 5 min

B.P5. Barzinska, V. Automotive Industry Trends and Effects over Analog Circuit Design. *Technical University of Sofia, Bulgaria* - 5 min

B.P6. Vakkilov, N., A. Stoynova. Implementation of DOE in the Heat Sink Design for LED Application. *Technical University of Sofia, Bulgaria* - 5 min

B.P7. Spasov, G. Coincidence of the Electron and Ion Beams at Auger Profiling in Microelectronics. *Institute of Optical Materials and Technologies “Acad. J. Malinowski” – BAS, Bulgaria* - 5 min

B.P8. Spasov, G. Electron Probe Microanalyses in Auger Electron Spectroscopy. *Institute of Optical Materials and Technologies “Acad. J. Malinowski” – BAS, Bulgaria* - 5 min

WORKSHOP

ASCENT: Access to European Nanoelectronics Network

Chairman – Valentina Terzieva

W1. Greer, J. ASCENT: An EU Initiative for Access to Nanoelectronics. *Tyndall.*

W2. Cordero, N. Accessing Flexible Nanoelectronics Fabrication at Tyndall. *Tyndall.*

W3. Chiarella, T. IMEC: Advances and Access to FinFET Technology. *IMEC.*

W4. Holden, D. Leti: Advances and Access to Planar FDSOI and Nanowire Structures. *Leti.*

Questions and Answers session

Session C

Biomedical Engineering

Chairman – Ivo Iliev

- C.P1. **Neycheva, T., T. Stoyanov, V. Krasteva, I. Iliev, S. Tabakov, V. Tsibulko, I. Jekova.** High-resolution Signal Acquisition Module Recording 18-Lead ECG for Person Authentication. *Institute of Biophysics and Biomedical Engineering – BAS, Bulgaria, Technical University of Sofia, Bulgaria* - 5 min
- C.P2. **Petrova, G.** Applications of e-Health Standards in Personalized Healthcare Systems. *Technical University of Sofia, Plovdiv branch, Bulgaria* - 5 min
- C.P3. **Krasteva, V., I. Jekova, R. Abächerli.** Analysis of QRS Patterns in 15-Lead ECG for Person Verification. *Institute of Biophysics and Biomedical Engineering – BAS, Bulgaria, SCHILLER AG, Switzerland* - 5 min
- C.P4. **Dobrev, D., T. Neycheva.** Adaptive Incremental Estimation Filter for AC Noise in the Electrocardiogram. *Institute of Biophysics and Biomedical Engineering – BAS, Bulgaria* - 5 min
- C.P5. **Dobrev, D., T. Neycheva.** Software PLL for Power-line Interference Synchronization: Implementation and Results. *Institute of Biophysics and Biomedical Engineering – BAS, Bulgaria* - 5 min
- C.P6. **Stoev, V.** Overview of Photoacoustic Imaging in the Medical Diagnostics Field. *Technical University of Sofia, Bulgaria* - 5 min
- C.P7. **Feradov, F., T. Ganchev.** Ranking of EEG Time-domain Features on the Negative Emotions Recognition Task. *Technical University of Varna, Bulgaria* - 5 min
- C.P8. **Stanchev, O.** Simulation Model of PVDF Piezoelectric Transformer for Medical Applications. *Technical University of Varna, Bulgaria* - 5 min

Circuits and Systems

Chairman – Angel Popov

- C.P9. **Taherkhani, R., A. Heidary, G. Wang, G. C. M. Meijer.** A Low-power CMOS Pull-up Circuit. *Guilan University, Rasht, Iran, Delft University of Technology, the Netherlands, Smartec, Breda, the Netherlands* - 5 min
- C.P10. **Manolov, E.** Graphical Representations for Analog IC Design in Deep and Ultra-Deep Submicron CMOS. *Technical University of Sofia, Bulgaria* - 5 min
- C.P11. **Georgiev, G., E. Manolov.** Comparison between Different Schematic Solutions to Achieve Constant-gm in Fully Differential Operational Amplifiers. *Technical University of Sofia, Bulgaria* - 5 min

- C.P12. **Kostadinov, S., I. Uzunov, D. Gaydazhiev, E. Manolov.** Design Considerations for Current Mode Amplifier in Deep Sub-micron CMOS Technology. *Smartcom Bulgaria AD, Bulgaria, Technical University of Sofia, Bulgaria - 5 min*
- C.P13. **Tanev, A., I. Uzunov, S. Ouzounov, M. Hristov.** Computer Investigation of CMOS Operational Transconductance Amplifier (OTA) with Improved Linearity Implemented on AMS 0.35 μm Process. *Technical University of Sofia, Bulgaria, Smartcom Bulgaria AD, Bulgaria, Philips Research Europe, Eindhoven, the Netherlands - 5 min*
- C.P14. **Gaydazhiev, D.** Acoustic Dispersion Analysis of the Resonant Modes in FBAR. *Smartcom Bulgaria AD, Bulgaria - 5 min*
- C.P15. **Rusev, R.** Transient Analysis of Electronic Circuit Derived from the Active Site β -lactamase Hydrogen Bonding Network. *Technical University of Sofia, Bulgaria - 5 min*

Quantum, Nuclear and Optoelectronics

Chairman – Tamara Pencheva

- C.P16. **Mitev, G., S. Sarieva-Jordanova, M. Mitev.** Enhanced Read-Out System for RADFET Dosimeters Research. *Institute for Nuclear Research and Nuclear Energy – BAS, Technical University of Sofia, Bulgaria - 5 min*
- C.P17. **Gyoch, B.** Light Extraction Improvement of LED Packages. *University of Ruse, Bulgaria - 5 min*
- C.P18. **Mashkov, P., B. Gyoch, K. Asparuhova, H. Beloev, R. Kandilarov.** LED Lamp for Application in Horticulture. *University of Ruse, Bulgaria, Technical University of Sofia, Bulgaria - 5 min*
- C.P19. **Mashkov, P., B. Gyoch, T. Pencheva, H. Beloev, R. Kandilarov.** Energy Effective LED Module for Poultry Lighting. *University of Ruse, Bulgaria - 5 min*
- C.P20. **Lazarov, T.** Dependencies between Basic Timing Parameters in Image Processing System. *Technical University of Sofia, Bulgaria - 5 min*
- C.P21. **Deneva, M.** New Two-wavelength, Transversally Laser- pumped Laser with Improved Spatial Structure. *Technical University of Sofia, Plovdiv branch, Bulgaria - 5 min*

Session D

Education and Learning Technologies

Chairman – Tania Vasileva

- D.P1. **Vasileva, T., V Tchoumatchenko, M. Manoeva.** Cloud Computing in Collaborative Learning in Electronics. *Technical University of Sofia, Bulgaria* - 5 min
- D.P2. **Stefanova, S., R. Gercheva.** Application of Triological Design Principles to Practical Education in Networking Technologies. *Technical University of Sofia, Bulgaria, Smartcom Bulgaria AD, Bulgaria* - 5 min
- D.P3. **Tchoumatchenko, V.** Analyzing Collaborative Artefacts in Project Based Courses. *Technical University of Sofia, Bulgaria* - 5 min
- D.P4. **Tchoumatchenko, V.** Web Based Tool for State Machines Design. *Technical University of Sofia, Bulgaria* - 5 min
- D.P5. **Petkov, R.** Comparing Validation of Self-acquired Learning in the ICT Company Sector and in VET Schools/centers in Bulgaria. *Technical University of Sofia, Bulgaria* - 5 min
- D.P6. **Shehova, D.** Software Environments Applicable in Teaching Analog and Mixed Signals Circuits Design. *Technical College by Plovdiv University “Paisiy Hilendarski”, Smolyan, Bulgaria* - 5 min
- D.P7. **Chekichev, A., D. Shehova, V. Raydovska, Zl. Hunev.** Computer Modeling of Transmitter of a Digital Communication System. *Technical College by Plovdiv University “Paisiy Hilendarski”, Smolyan, Bulgaria* - 5 min
- D.P8. **Lyubomirov, S., M. Nedeva, M. Bundeva, I. Uzunov.** Software Management of 3D Printer. *Technical College by Plovdiv University “Paisiy Hilendarski”, Smolyan, Bulgaria* - 5 min
- D.P9. **Lyubomirov, S., V. Raydovska, A. Chekichev, M. Nedeva.** Software Platform for Security Alarm System. *Technical College by Plovdiv University “Paisiy Hilendarski”, Smolyan, Bulgaria* - 5 min
- D.P10. **Maradzhiev, I., Ts. Grigorova, S. Ivanov.** Teaching Stepper Motors and Brushed DC Motors Using the Medium Voltage Digital Motor Control Platform, Part I - Stepper Motors Control. *Technical University of Sofia, Plovdiv branch, Bulgaria* - 5 min
- D.P11. **Grigorova, T.** Teaching Stepper Motors and Brushed DC Motors Using the Medium Voltage Digital Motor Control Platform, Part II - Brushed DC Motors Control. *Technical University of Sofia, Plovdiv branch, Bulgaria* - 5 min
- D.P12. **Hranov, T., N. Hinov.** Using Logisim Digital Circuit Simulator for Examining Power Electronics Digital Control Systems. *Technical University of Sofia, Bulgaria* - 5 min

Power Electronics

Chairman – Dimitar Arnaudov

- D.P13. **Nedyalkov, I., D. Arnaudov, N. Hinov.** Studying of Converter for Charging and Management of Energy Flows in Photovoltaic System. *Technical University of Sofia, Bulgaria* - 5 min
- D.P14. **Penev, D., N. Hinov, T. Hranov.** Control of Induction Heating Power Converter for Ferromagnetic Materials Melting. *Technical University of Sofia, Bulgaria* - 5 min
- D.P15. **Vuchev, S., G. Kunov, D. Arnaudov.** LabVIEW Virtual Instrument for Modeling and Control of Three-Phase BUCK Rectifier with Sinusoidal PWM. *Technical University of Sofia, Bulgaria* - 5 min
- D.P16. **Bankov, N., A. Vuchev, S. Vuchev.** An Analysis of a Bidirectional Series Resonant DC/DC Converter. *University of Food Technologies, Plovdiv, Bulgaria, Technical University of Sofia, Bulgaria* - 5 min
- D.P17. **Hinov, N., N. Rangelov.** Buck ZVS DC-DC Quasi-Resonant Converter: Design, Modeling, Simulation and Experimentation. *Technical University of Sofia, Bulgaria* - 5 min
- D.P18. **Dimitrov, V., P. Goranov.** Driving System for Electric Vehicles: Modelling and Simulation. *Technical University of Sofia, Bulgaria* - 5 min
- D.P19. **Spirov, D., N. Komitov.** Analysis and Design of the Parallel Quasi Resonant DC Link Converter for Induction Motor Drive Application. *University of Food Technologies, Plovdiv, Bulgaria* - 5 min
- D.P20. **Maradzhiev, I., D. Ognyanova.** Evaluation of the Used PWM Techniques in the Control of Brushless DC Motors. *Technical University of Sofia, Plovdiv branch, Bulgaria* - 5 min

Room 1, Thursday, September 17, 2015, 7:00 p.m.
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Closing Ceremony

MAIN TOPICS:

- **Biomedical Engineering**
- **Circuits and Systems**
- **Instrumentation and Measurement**
- **Embedded Systems**
- **Education and Learning Technologies**
- **Microelectronics**
- **Power Electronics**
- **Quantum, Nuclear and Optoelectronics**
- **Nanoelectronics and Technologies in Electronics**
- **Testing, Quality and Reliability**

Poster presentation

The authors presenting their papers at the Poster sessions will have at their disposal a panel in format A0 (840 X 1188 width x height). In the beginning of each Poster session an introduction is planned. The authors will present their work very briefly in front of the audience: 2-5 slides, within 5 minutes. The questions and discussions will be continued at the Poster panels.

The conference rooms will be equipped with a computer and multimedia projector. For computer presentation we provide MS Office 2010 components (Word, Power Point, Excel), Acrobat Reader. For other software please contact the organizers.

The slides have to be given to the organizers in electronic form before the beginning of the session.

