

Scientific Programme

Monday 9 Oct.

10.00-10.20	Opening address Plenary Session
10.20-11.00	Invited talk 1: "Future Research, Application and Education Perspectives of Complex Systems-on-Chip (SoC)" Manfred Glesner, Jürgen Becker, Thilo Pionteck, <i>Darmstadt University of Technology, Germany</i>
11.00-11.40	Invited talk 2: "Elcoteq and technology providers in today's networking economy" Jorma Vanhanen, <i>Elcoteq Network Corporation, Finland</i>
12.40-14.00	Lunch break
14.00-15.20	1. Electronic Materials and Package Technologies 2. Semiconductor Devices and Simulation Session 1 Chair: Andres Udal, <i>Tallinn Technical University, Estonia</i>
14.00-14.20	Technomics of Design and Manufacturing for Future Si Nanoelectronics A. N. Bubennikov, A. A. Bubennikov, <i>Moscow Institute of Physics and Technology, Russia</i>
14.20-14.40	Improvements in the presentation of frequency dependence of complex permeability for polycrystalline ferrites J. Jankovskis, <i>Riga Technical University, Latvia</i>
14.40-15.00	A Brief Survey of Exciton Concentration Models for Si E. Velmre, A. Udal, <i>Tallinn Technical University, Estonia</i>
15.00-15.20	Comparative Characteristics of Diffusion Welded Al Contacts to 6H- and 4H-SiC substrates O. Korolkov, T. Rang, <i>Tallinn Technical University, Estonia</i>
15.40-16.00	Coffee
16.00-17.40	3. Integrated Electronics and Chip Design Session 1 Chair: Vello Kukk, <i>Tallinn Technical University, Estonia</i>
16.00-16.20	A Low Power Approach for Busses Using Adiabatic Charging B. Voss, M. Glesner, <i>Darmstadt University of Technology, Germany</i>
16.20-16.40	Optimization of adiabatic clock generators J. Kosonen, <i>Helsinki University of Technology, Finland</i> , M. Åberg, J. Marjonen, <i>VTT Microelectronics, Finland</i> , P. Kuivalainen, <i>Helsinki Univ. of Technology, VTT Microelectronics</i>

Monday 9 Oct.

12.40-14.00	Lunch break
14.00-15.20	4. Instrumentation and System Design Session 1 Chair: Mart Min, <i>Tallinn Technical University, Estonia</i>
14.00-14.20	Design of two-rate stochastic multivariable discrete-time control systems I. Astrov, E. Rüstern, <i>Tallinn Technical University, Estonia</i>
14.20-14.40	Robot de Neuro – an Intelligent Mobile Robot for Navigation in Dynamic Environments M. Kruusmaa, O. Bengtsson, A.-J. Baerfeldt, <i>Halmstad University, Sweden</i>
14.40-15.00	Knowledge Fusion for Financial Advisory Systems T. Dobrowiecki, G. Strausz, T. Mészáros, <i>Budapest University of Technology and Economics, Hungary</i>
15.00-15.20	Genetic Algorithms in Transparent Fuzzy Modeling A. Riid, P. Jartsev, E. Rüstern, <i>Tallinn Technical University, Estonia</i>
15.40-16.00	Coffee
16.00-17.20	4. Instrumentation and System Design Session 2 Chair: Tadeusz Dobrowiecki, <i>Budapest University of Technology and Economics, Hungary</i>
16.00-16.20	Using XML in Intelligent Product Manuals T. Mészáros, Z. Barczikay, <i>Budapest University of Technology and Economics, Hungary</i>
16.20-16.40	Predictive Integration of Polynomial Signals O. Vainio, T. Saramäki, <i>Tampere University of Technology, Finland</i>

- 16.40-17.00 **Test signal generation and estimation in a direct digital filter tuning system**
T. Salo, S. Lindfors, K. Halonen, *Helsinki Univ. of Technology, Finland*
- 17.00-17.20 **Low-power Matched Filter for a Oversampling WCDMA Receiver**
L. Koskinen, M. Kosunen, S. Lindfors, K. Halonen, *Helsinki University of Technology, Finland*
- 17.20-17.40 **A 32 x 32 CMOS Photogate Active Pixel Sensor (APS) Matrix**
A. Leppänen, *Technical Research Centre of Finland, Finland*

Tuesday 10 Oct.

- 9.00-9.40 **Invited talk 3:
"Some challenges in implementing future wireless terminals"**
Petteri Alinikula, *Nokia, Finland*
- 10.00-10.40 **5. Test, Diagnostics and Fault Tolerance Session 1**
Chair: Raimund Ubar, *Tallinn Technical Univ., Estonia*
- 10.00-10.20 **Fault Oriented Test Pattern Generation for Sequential Circuits Using Genetic Algorithms**
E. Ivask, J. Raik, R. Ubar, *Tallinn Technical University, Estonia*
- 10.20-10.40 **Greedy Alternative for the Static Compaction of Sequential Circuit Test Sequences**
J. Raik, *Tallinn Technical University, Estonia*
- 10.40-11.00 **Coffee**
- 11.00-12.00 **5. Test, Diagnostics and Fault Tolerance Session 2**
Chair: Elena Gramatova, *Inst. of Informatics, Slovak Republic*
- 11.00-11.20 **Finite State Machine Synthesis for Low Power Using Input-Disabling Precomputation Architectures**
A. Sudnitsõn, *Tallinn Technical University, Estonia*
- 11.20-11.40 **FSM Decomposition Using Shift Registers**
M. Kruus, H. Lensen, *Tallinn Technical University, Estonia*
- 11.40-12.00 **Hierarchical Fault Simulation for Finite State Machines**
M. Brik, J. Raik, R. Ubar, *Tallinn Technical University, Estonia*
- 12.40-14.00 **Lunch break**

- 16.40-17.00 **A Modified Frequency Error Estimator for the Block Adaptive Fourier Analyzer**
A. Ronk, *Tallinn Technical University, Estonia*
- 17.00-17.20 **FPGA-Based Rapid Prototyping: An Overview**
H. Krupnova, G. Saucier, *Institut National Polytechnique de Grenoble, France*

Tuesday 10 Oct.

- 10.00-10.40 **6. Telecommunication and Optical Transmission Session 1**
Chair: Aimur Raja, *Tallinn Technical University, Estonia*
- 10.00-10.20 **Network Bandwidth Allocation Optimization for the Transmission of MPEG-4 Data Streams**
U. Mayer, M. Glesner, *Darmstadt University of Technology, Germany*
- 10.20-10.40 **Applying of the NMT-450 technology for approach of the public switching telephone usage**
J. Minkevičienė, *AB "Lietuvos Telekomas", Lithuania*
- 10.40-11.00 **Coffee**
- 11.00-12.00 **6. Telecommunication and Optical Transmission Session 2**
Chair: Avo Ots, *Tallinn Technical University, Estonia*
- 11.00-11.20 **A spectrum-based technique to analyze a pair of digitized signals**
E. Lossmann, A. Meister, A. Raja, *Tallinn Technical Univ., Estonia*,
V. Tuulik, *Estonian Institute of Experimental and Clinical Medicine, Estonia*
- 11.20-11.40 **Integrated CNN Chaos Source**
T. Huhtanen, V. Porra, *Helsinki University of Technology, Finland*
- 11.40-12.00 **The Evaluation of Radio Frequency Spectrum Utilisation Efficiency in Cellular Mobile Radio Systems**
K. Bogens, *Latvia Telecommunication State Inspection, Latvia*
- 12.00-12.20 **Demodulation and Bit-synchronization Unit for FM-DCSK Chaos Radio**
V. Porra, L. Azzinnari, K. Krol, E. Korpela, M. Talonen, *Helsinki University of Technology, Finland*
- 12.40-14.00 **Lunch break**

14.00-15.40	5. Test, Diagnostics and Fault Tolerance Session 3 Chair: Jan Hlavicka, <i>Czech Technical University, Czech Republic</i> , Gordon Russell, <i>University of Newcastle upon Tyne, UK</i>
14.00-14.20	Analysis of the Application of Modified Berger Codes to Self-Checking VLSI Circuits G. Russell, A. H. Maamar, <i>University of Newcastle upon Tyne, UK</i>
14.20-14.40	M-Sequence Testing of Embedded Switch Capacitor Filters G. Russell, M. Robson, <i>University of Newcastle upon Tyne, UK</i>
14.40-15.00	Dependability Model of a Distributed Authentication System V. Vais, St. Racek, <i>University of West Bohemia, Czech Republic</i> , J. Hlavicka, <i>Czech Technical University, Czech Republic</i>
15.00-15.20	An Automated Verification Process Based on Scan Techniques G. Alves, <i>ISEP, Portugal</i> , M. S. Lubaszewski, M. R. Krug, <i>UFRGS, Brazil</i> , J. M. M. Ferreira, <i>FEUP, Portugal</i>
15.20-15.40	A symbolic closed form approach for the fault diagnosis of analog linear circuits G. Fedi, S. Manetti, M. C. Piccirilli, <i>University of Florence, Italy</i>
15.40-16.00	Coffee
16.00-17.40	3. Integrated Electronics and Chip Design Session 2 Chair: Eiko Kangsep, <i>Tallinn Technical University, Estonia</i>
16.00-16.20	Continued microelectronics training for the future O. Olesen, <i>Technical University of Denmark, Denmark</i> , I. R. Nielsen, <i>Technoconsult, Denmark</i>
16.20-16.40	An efficient metrics for timing-driven hardware-/software co-synthesis within the DICE design environment T. Hollstein, M. Glesner, <i>Darmstadt Univ. of Technology, Germany</i>
16.40-17.00	An analytical approach to low-power gated-clock finite-state machine solutions A. Liiver, K. Tammemäe, M. Kruus, <i>Tallinn Technical Univ., Estonia</i>
17.00-17.20	RF Power Amplifier Control Curve Approximation M. Koort, <i>Analog Design Ltd., Estonia</i>
17.20-17.40	Low Power SC Structures with Low Threshold MOS Switches V. Männama, R. Sabolotny, <i>Tallinn Technical University, Estonia</i>

14.00-15.40	4. Instrumentation and System Design Session 3 Chair: Toomas Parve, <i>Tallinn Technical University, Estonia</i>
14.00-14.20	A novel fiber-optical angular and linear displacement sensors and the latter as refractometer J. Verkelis, R. Jankevičius, <i>Semiconductor Physics Institute, Lithuania</i> , R. Šarmaitis, <i>Institute of Chemistry, Lithuania</i>
14.20-14.40	Low-Cost High Performance Vector Network Analyser T. Sys, P. Lambrecht, J. Vandewege, <i>Gent University, Belgium</i>
14.40-15.00	Phase-Frequency Detector Modeling for the PLL Applications V. Männama, T. Paavle, <i>Tallinn Technical University, Estonia</i>
15.00-15.20	Portable Measurement Setup for Multi-conductor Transmission Lines T. Sys, B. De Zwaef, A. Everaert, J. Vandewege, <i>Gent Univ. Belgium</i> , S. Temmerman, <i>SEBA service nv, Belgium</i> , P. Boets, L. Van Biesen, <i>Free University of Brussels, Belgium</i>
15.20-15.40	The Class of Test Signals for Dynamic Testing of AD Converters R. Land, <i>Tallinn Technical University, Estonia</i>
15.40-16.00	Coffee
16.00-17.40	10. Education and Training Chair: Toomas Rang, <i>Tallinn Technical University, Estonia</i>
16.00-16.20	Education in Digital and Microprocessor Technology for Students of Applied Informatics H. Krawczyk, J. Sienkiewicz, S. Szejko, <i>Higher Education College, Poland</i>
16.20-16.40	Virtual Laboratory for Research in Dependable Microelectronics K.-H. Diener, G. Elst, <i>FhG EAS IIS, Germany</i> , E. Gramatova, <i>Institute of Informatics, Slovak Republic</i> , W. Kuzmicz, <i>Warsaw University of Technology, Poland</i> , Z. Peng, <i>Linköping University, Sweden</i> , R. Ubar, <i>Tallinn Technical University, Estonia</i>
16.40-17.00	Combining Learning, Training and Research in Laboratory Course for Design and Test R. Ubar, E. Orasson, J. Raik, <i>Tallinn Technical University, Estonia</i> , H.-D. Wuttke, <i>Ilmenau Technical University, Germany</i>
17.00-17.20	Mechatronics in initial vocational training A. Rosin, T. Lehtla, J. Laugis, <i>Tallinn Technical University, Estonia</i>
17.20-17.40	Numerical Calculations of Electrotechnics L. Liivik, R. Jansikene, <i>Tallinn Technical University, Estonia</i>

Tuesday 10 Oct. Posters

10.00-12.40	3. Integrated Electronics and Chip Design
P-018 4	A 2-V 2-GHz LC-VCO with Large Tuning Range and Low Phase Noise K. Stadius, R. Ahola, V. Porra, <i>Helsinki Univ. of Technology, Finland</i>
P-022 4	The Realization of Artificial Neural Networks in a FPGA J. Dohnal, T. Mainzer, <i>University of West Bohemia, Czech Republic</i>
P-030 4	Impedance Characteristics of SAW Transducers S. Rupkus, M. Adomaitis, <i>Kaunas University of Technology, Lithuania</i>
P-031 4	Researches of intermetallic layers during wave soldering O. Zimarinas, <i>Kaunas University of Technology, Lithuania</i> , L. Soloveytkikas, <i>Joint Stock Company "Rangas", Lithuania</i>
P-037 4	CMOS SP chip for resistor type semiconductor gas sensors A. Kasemaa, T. Rang, <i>Tallinn Technical University, Estonia</i>
P-044 4	A Low-Power Approach to CORDIC Engine Implementation P. Perälä, O. Vainio, <i>Tampere University of Technology, Finland</i> , K. Vihavainen, <i>Nokia Mobile Phones, Finland</i>
P-065 4	A Variable Gate-Pulse-Width Charge Pumping Technique for MOSFET's Characterization H. Bourdoucen, <i>Sultan Qaboos University, Oman U.A.E.</i> , S. Harous, <i>University of Sharjah, United Arab Emirates</i> , F. Rahmoune, <i>University of Boumerdes, Algeria</i>

12.40-14.00 Lunch break

14.00-15.40	6. Telecommunication and Optical Transmission
P-020 4	The use of the WDM technique in optical transport and access networks J. Slovák, M. Vaculik, <i>University of Žilina, Slovak Republic</i>
P-026 4	V-I control of VCOs for multiple band wireless communications E. D. Manolov, <i>Technical University of Sofia, Bulgaria</i> , N. Tchamov, <i>Tampere University of Technology, Finland</i>
P-063 4	DSP-based Voice Signal Compressing System P. Misans, <i>Riga Technical University, Latvia</i> , N. Veselis, J. Lavendelis, G. Linis, <i>University of Latvia, Latvia</i>

Tuesday 10 Oct. Posters

P-068 4	Signal distortions caused by multipath propagation in DAB transmission A. Meister, E. Lossmann, P. Martverk, <i>Tallinn Technical Univ., Estonia</i>
P-083 4	CATV – video and multimedia system R. Volner, <i>University of Žilina, Slovak Republic</i>

15.40-16.00 Coffee

16.00-17.40	4. Instrumentation and System Design
P-003 4	Practical Experience with Linearity Improvement in Dithered ADC J. Holub, J. Vedral, <i>Czech Technical University, Czech Republic</i>
P-010 4	Investigation of the Properties of the Helical Delay System using Microwave Office 2000 Package V. Daškevičius, J. Skudutis, <i>Vilnius Gediminas Technical University, Lithuania</i>
P-016 4	Design of two-rate decentralized linear quadratic regulators for continuous-time stochastic multivariable control systems I. Astrov, J. Em, E. Rüstern, <i>Tallinn Technical University, Estonia</i>
P-017 4	Design of three-rate continuous-time subcontrollers for the multidimensional stochastic state-space model of an experimental aircraft I. Astrov, A. Pedai, E. Rüstern, <i>Tallinn Technical University, Estonia</i>
P-023 4	Stability monitoring of radiometric standard lamp using solar blind phototube U. Veismann, <i>Tartu Observatory, Estonia</i> , T. Kübarsepp, <i>Helsinki University of Technology, Finland</i>
P-028 4	Estimation of Integrated Security Systems M. Žilys, A. Valinevičius, <i>Kaunas University of Technology, Lithuania</i>
P-035 4	Fault Prediction in Power Network T. Kangilaski, <i>Tallinn Technical University, Estonia</i>
P-057 4	Boundary Scan 1149.4 for MCM test E. Olfati, B. Magnhagen, <i>School of Engineering Jönköping University, Sweden</i>
P-064 4	The MATLAB and SIMULINK-based Software Environment for Development of Mobile Electronic Nose P. Misans, <i>Riga Technical University, Latvia</i> , J. Kleperis, J. Zubkans, V. Eglitis, A. Lusiš, <i>University of Latvia, Latvia</i>

Wednesday 11 Oct.

9.00-9.40 Invited talk 4:

10.00-10.40 **7. Biomedical Electronics**
Chair: Kalju Meigas, *Tallinn Technical University, Estonia*

10.00-10.20 **CNN based brain electrical activity monitoring system**
M. Laiho, A. Paasio, K. Halonen, *Helsinki University of Technology, Finland*

10.20-10.40 **Magnetopneumography**
A. Típek, P. Ripka, P. Kašpar, P. Navrátil, *Czech Technical University, Czech Republic*,
Dr. Švábová, *Public Health Center Prague, Czech Republic*

10.40-11.00 Coffee

11.00-12.20 **1. Electronic Materials and Package Technologies**
2. Semiconductor Devices and Simulation
Session 2
Chair: Enn Velmre, *Tallinn Technical University, Estonia*

11.00-11.20 **Feedback amplifier analysis and configurations**
B. Wilson, *University of Manchester (UMIST), UK*,
E. M. Cherry, *Monash University, Australia*

11.20-11.40 **Increasing the Speed of Delay Simulation in Digital Circuits**
R. Ubar, A. Jutman, *Tallinn Technical University, Estonia*

11.40-12.00 **Simulation of Digital Systems with High-Level Decision Diagrams**
A. Morawiec, *TIMA Laboratory 46, France*,
J. Raik, R. Ubar, *Tallinn Technical University, Estonia*

12.00-12.20 **Performance Improvement of Memory Cells Based on Reverse Base Current Effect**
A. N. Bubennikov, A. Zykov, *Moscow Institute of Physics and Technology, Russia*

12.40-14.00 Lunch break

Wednesday 11 Oct.

10.00-10.40 **8. Power Electronics**
Session 1
Chair: Jüri Joller, *Tallinn Technical University, Estonia*

10.00-10.20 **Pulse Width Modulation for Three-Phase Three-Level Converters**
H. Grotstollen, *University of Paderborn, Germany*

10.20-10.40 **High power factor single- and three-phase diode rectifiers using parallel re-rectification of the ripple power**
V. Sarv, T. Sakkos, *Tallinn Technical University, Estonia*

10.40-11.00 Coffee

11.00-12.00 **8. Power Electronics**
Session 2
Chair: Horst Grotstollen, *University of Paderborn, Germany*

11.00-11.20 **Tram traction drives and comparison of their control methods**
J. Joller, M. Lehtla, T. Lehtla, J. Laugis, *Tallinn Technical University, Estonia*

11.20-11.40 **Commutation Processes in the Diode Bridge of Resonant Converter with Alternating Parallel and Series Resonance**
K. Janson, J. Järvi, T. Vinnal, *Tallinn Technical University, Estonia*

11.40-12.00 **Power factor adjustment by means of direct frequency converters**
I. Galkin, L. Ribickis, *Riga Technical University, Latvia*

12.40-14.00 Lunch break

Wednesday 11 Oct. Posters

10.00-12.40	5. Test, Diagnostics and Fault Tolerance
P-009 4	Neural networks for fault diagnosis of analog nonlinear circuits G. Fedi, S. Manetti, M. C. Piccirilli, <i>University of Florence, Italy</i>
P-025 4	Frequency dependence of fault recognition in ultrasonics inspection of thin walled welded joints P. Houfek, <i>Czech Technical University, Czech Republic</i>
P-038 4	Analog linear circuits diagnosis using fault dictionary approach V. Lantsov, S. Mosin, M. Morozov, <i>Vladimir State University, Russia</i>
P-041 4	Linear Methods for Diagnosis in Nonlinear Systems A. Zhirabok, S. Usoltsev, <i>Far Eastern State Technical Univ., Russia</i>
P-060 4	Factors limiting the accuracy of sampling hysteresisgraph A. Platil, P. Ripka, J. Roztočil, P. Kašpar, <i>Czech Technical University, Czech Republic</i>
P-061 4	Testing and comparing of the high-resolution converters ADS1211 and AD7714 A. German, P. Ripka, <i>Czech Technical University, Czech Republic</i>
P-087 4	Mapping of VHDL Structures for Generic EDA Database Format IRSYD E. Ivask, P. Ellervee, <i>Tallinn Technical University, Estonia</i>
P-095 4	Preliminary approach to the timing measurements for reverse recovery applied to the SiC Schottky diode model M. Pikkov, <i>Tallinn Technical University, Estonia</i>
P-097 4	Advanced method for ADC testing generators verification J. Roztočil, J. Brossmann, V. Haasz, <i>Czech Technical University, Czech Republic</i>
12.40-14.00	Lunch break
14.00-15.40	1. Electronic Materials and Package Technologies
P-055 4	Separation of the Intrinsic Defects in a Semiconductor by Laser Radiation A. Medvids, <i>Riga Technical University, Latvia</i> , L. Fedorenko, <i>Institute of Semiconductor Physics, Ukraine</i>

Wednesday 11 Oct. Posters

14.00-15.40	2. Semiconductor Devices and Simulation
P-054 4	The avalanche and secondary breakdown of silicon diodes T. Puritis, <i>Riga Technical University, Latvia</i>
P-077 4	Analysis of peak current for current crowding effect in 4H- and 6H-SiC Schottky structures R. Kurel, T. Rang, <i>Tallinn Technical University, Estonia</i>
P-098 4	LPE structures for power GaAs rectifiers V. Voitovich, <i>AS Clifton, Estonia</i>
14.00-15.40	7. Biomedical Electronic
P-002 4	Susceptance Measurement as a Method for Monitoring the Population of Brewer's Yeast Y. Wang, <i>Shandong College of Light Industry, P. R. of China</i> , K. S. Christensen, <i>Technical University of Denmark, Denmark</i> , H. Hoffmeister, <i>Carlsberg Technological Development, Denmark</i>
P-070 4	The neural network classification algorithms with applications to averaged EEG data A. Raja, E. Lossmann, A. Meister, <i>Tallinn Technical University, Estonia</i> , V. Tuulik, <i>Estonian Institute of Experimental and Clinical Medicine, Estonia</i>
14.00-15.40	8. Power Electronics
P-073 4	Verification of Correctness of Nonlinear Equations in CFD J. O. Meilus, S. Gelzinis, <i>Kaunas University of Technology, Lithuania</i>
P-080 4	Negative Resistance Structures: Optimization of Power Balance R. Taniloo, <i>Tallinn Technical University, Estonia</i>
P-093 4	Analysis of drawbacks and reconstruction problems of the R2-type train J. Laugis, D. Vinnikov, V. Boiko, <i>Tallinn Technical University, Estonia</i>
P-100 4	Effect of the Motor Line Reactor on Bearing Currents in Drives Fed from VSI with PWM A. Kempiski, R. Smolenski, R. Strzelecki, <i>Technical University Zielona Góra, Poland</i> , M. Klytta, <i>University of Applied Sciences Giessen-Friedberg, Germany</i>

One-day action on October 11, 2000 at 10.00, 11.00, and 14.00:

"Design and Test of Electronic Circuits and Systems" in parallel with Baltic Electronics Conference will take place at Tallinn Technical University.

The Forum is sponsored by European JEP VILAB under COPERNICUS program. It is intended to bring together academic expertise and experience of industry in the field of Design and Test of Electronic Circuits and Systems to present their results and discuss new trends and needs in Europe and in Estonia, particularly.

Presentations on the following topics will be carried out:

- new technologies and design tools in electronics,
- overviews about SMEs in different European countries,
- international cooperation in joint European projects,
- presentations from Estonian companies and SMEs.

A panel will be organized on the problems and possibilities of cooperation between universities and industry.

Informal proceedings of presentations will be issued for participants of the User Forum.

The deadline for registration and for submitting contributions (texts, copies of transparencies) is **September 15**.

For registration please send the following data to raiub@pld.ttu.ee:

1. Name of the participant:
2. Institution:
3. Address (e-mail, phone):
4. Arrival:
5. Departure:
6. Are you registered for BEC: YES/NO
7. Are you intending to make a presentation: TITLE/NO
8. Hotel needed (for those who are not registered for BEC): YES/NO

NB! If you have not registered for BEC and need a hotel, please register at raiub@pld.ttu.ee as soon as possible.
