

**INSTITUTE OF CONTROL AND INDUSTRIAL INFORMATICS**

<http://www.urpi.fei.stuba.sk/>

**Director**

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**I. STAFF**

Professors	Prof. Ing. Mikuláš Huba, PhD., Prof. Ing. Ladislav Jurišica, PhD., Prof. Ing. Václav Kalaš, DrSc., Prof. Ing. Štefan Kozák, PhD., Prof. Ing. Ján Murgaš, PhD., Prof. Ing. Vojtech Veselý, DrSc., Prof. Ing. Milan Žalman, PhD.
Associate Professors	Doc. Ing. Igor Hantuch, PhD., Doc. Ing. Peter Hubinský, PhD., Doc. Ing. Alena Kozáková, PhD., Doc. Ing. Zdenka Králová, PhD., Doc. Ing. Eva Miklovičová, PhD., Doc. Ing. Danica Rosinová, PhD., Doc. Ing. Ivan Sekaj, PhD., Doc. Ing. Ján Šturcel, PhD., Doc. Ing. Anton Vitko PhD., Doc. Ing. Katarína Žáková, PhD.
Assistant Professors	Ing. Richard Balogh, Igor Bélai, PhD., Ing. Pavol Bisták, Ing. Michal Blaho, Ing. Jozef Dornér, Ing. Peter Drahoš, PhD., Ing. Mária Dúbravská, Ing. Jozef Dúbravský, Ing. Martin Foltin, PhD., Ing. Mária Hypiusová, PhD., Ing. Štefan Chamraz, PhD., Ing. Slavomír Kajan, PhD., Ing. Ján Kardoš, PhD., Ing. Ladislav Körösi, PhD., Ing. Marián Mrosko, PhD., Ing. Ivan Oravec, PhD., Ing. Jana Paulusová, PhD., Ing. Ľubica Šimová, PhD., Ing. Peter Čapák, PhD., Ing. Miroslav Toman, PhD.
Research Workers	Ing. František Duchoň, PhD., Ing. Peter Fodrek, PhD., Ing. Miroslav Halás, PhD., Ing. Jaroslav Hanzel, PhD., Ing. Marián Klúčik, Ing. Leo Mrafsko, PhD., Ing. Jakub Osuský, PhD., Ing. Danica Sovišová, Ing. Stanislav Števo, PhD., Ing. Jozef Vörös, PhD.
Technical Staff	Peter Detvaj, Ing. Radoslav Dibarbora, Mgr. Alena Foltinová, Pavol Gašparovič, Katarína Horváthová, Katarína Macková (secretary), Jozef Turčánik
PhD. Students	Ing. Andrej Babinec, Ing. Pavol Bahník, Ing. Michal Bachratý, Ing. Martin Dekan, Ing. Pavol Folvarčík, Ing. Peter Guzmický, Ing. Martin Hlinka, Ing. Ľuboš Chovanec, Ing. Zoltán Janík, Ing. Marek Linder, Ing. Lukáš Palkovič, Ing. Marián Tárník, Ing. Michal Tölgessy, Ing. Peter Didek, Ing. Zuzana Dideková, Ing. Martin Ernek, Ing. Ľudovít Farkas, Ing. Martin Gažo, Ing. Ivan Holič, Ing. Juraj Hnáť, Ing. Peter Kurčík, Ing. Michal Leporis, Ing. Quang Nguyen, Ing. Michal Oravec, Ing. Peter Pásztó, Ing. Ivan Pestún, Ing. Lukáš Palkovič, Ing. Tatiana Radičová, Ing. Jozef Rodina, Ing. Michal Sedlák, Ing. Miroslav Suchánek, Ing. Jozef Škultéty, Ing. Alexandra Šlezárová, Ing. Juraj Švančara, Ing. Richard Tesár, Ing. Stanislav Triaška, Ing. Martin Urban, Ing. Jakub Vonkomer, Ing. Vladimír Žilka

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Network Control Systems Laboratory
- Continuous Process Control Laboratory

- Optimization and Optimal Control Laboratory
- Production Systems Modelling Laboratory
- Computational Intelligence Laboratory
- Joint Laboratory of Robotics
- Actuators Laboratory
- Electronics Laboratory
- CAD CS Laboratory
- Automation Means Laboratory
- Sensors Laboratory
- SIEMENS Automation Technology Laboratory
- Smart Servosystems Laboratory
- Servosystems Laboratory
- Industrial Automation Laboratory
- Multimedia Systems Laboratory
- Nonlinear Systems Laboratory
- Robot Control Laboratory
- Mechatronics Laboratory
- Robotics Laboratory
- Special Systems Laboratory
- Real-Time Programming Tools Laboratory
- CAD Systems Laboratory
- Flying Devices Laboratory
- Control System Software Laboratory
- Discrete Event Systems Laboratory
- Laboratory of Embedded Control Systems (T014)
- Laboratory of PLC (T-015)
- Laboratory of Applied Mechatronics (T013)
- Laboratory of Modeling and Simulation for Mechatronic Systems (T04A)

## II.2 Special Measuring Instruments and Computers

- Mechanical Setup Position Control Plant
- Laboratory Models: Inverted Pendulum, Crane, Helicopter Rack, Helicopter Model, Thermal Plant, Thermo-optical Model, Magnetic Levitation Syst., Two - Tank System, Three - Tank System, Two - Tank System with Two Pumps, Shell and Tube Heat Exchanger, Rotary Servo Plant
- Digital Signal Processor Board for Real-Time Control
- Embedded MicroComputer Systems Freescale, Intel
- CALYS 5 Digital Meas. and Calibr. Device for Process Measurement of Temperature
- Multitron PS 10 – Motion Control System
- Intelligent Mobile Robot System
- D Spice DS 1103 Developing System
- Programmable Controllers: MicroLogix, Honeywell, Modicon
- Distributed Control System Yokogawa Centum
- Programmable Controllers: Simatic S7-300, S7-200, UDC Honeywell, Modicon TSX Premium, Mocrologix 1000, Allen Bradley
- Allen Bradley Motor Drives, FLEX IIO Modules, Panel View 900
- Production Line Models with: Crane, Conveyors, Manipulators
- Networked Control System with CAN Bus & Ether CAT
- Transportation Model, Model for Ball Color Separation, Bouncing Ball Model, Tank Level Control Model, Magnetic Levitation Model, Helicopter Model, Railway Transfer Station Model
- Software: Matlab, MODES, WITNESS, LABREG, PROMOTIC, SAP ERP
- HMI Software - WinCC, WinCC Flexible, Protool
- Programming Software Step7 Professional
- DC Servo Drive System

- Software Wonderware InTouch
- RsLogix5000, RsLogix500, SoftLogix
- ControlNet, DeviceNet, EtherNet
- Emulate500, Emulate5000, LogixArchitect, RsLinx
- RsSQL, RsTune, RSView Supervisory Edition
- HW: ControlLogix PLC, CompactLogix, HMI
- Sinamics S 120
- B&R APC 620 + ACOPOS 1016
- SIMOVERT
- LEGO Mindstorm NXT 2.0
- XCode Developer Tool

### **III. TEACHING**

#### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Introduction into Engineering	(1st sem., 2-2h)	K. Žáková
Computer Architecture	(2nd sem., 3-2h)	R. Ravas, Š. Chamraz
Unix/Linux – Real Time Systems	(3rd sem., 2-3h)	I. Sekaj, P. Fodrek
Automatic Control Theory 1	(3rd sem., 2-3h)	M. Huba
Cybernetics 1	(3rd sem., 2-2h)	D. Rosinová
Applied Computational Intelligence	(4th sem., 2-2h)	I. Sekaj
Software for Control Systems 1	(4th sem., 2-2h)	I. Hantuch, L. Šimová
Automatic Control Theory 2	(4th sem., 2-3h)	J. Murgaš
Design of Web Applications	(4th sem., 2-2h)	K. Žáková
Modelling and Simulation	(4th sem., 2-2h)	E. Miklovicová, M. Foltin
Electronics for Control Systems	(4th sem., 2-2h)	J. Šurcel, M. Toman
Instrumentation of Control Systems	(4th sem., 3-2h)	J. Šurcel
Internet and Intranet Applications	(5th sem., 2-2h)	K. Žáková
Actuators	(5th sem., 2-3h)	M. Žalman
Software for Control Systems	(5th sem., 2-3h)	I. Hantuch, L. Körösi
Optimization	(5th sem., 2-2h)	D. Rosinová
Basic of Control Systems	(5th sem., 2-2h)	P. Hubinský
Sensor Systems for Cars	(5th sem., 2-2h)	V. Tvarožek, J. Šurcel
Automation 1	(5th sem., 3-2h)	J. Murgaš
Monolithic microcontrollers	(5th sem., 2-2h)	J. Šurcel, Š. Chamraz, R. Balogh
Cybernetics 2	(5th sem., 2-2h)	J. Murgaš
Industrial Communication Bus	(6th sem., 2-2h)	J. Šurcel, P. Drahoš
Industrial Communication Systems	(6th sem., 3-2h)	M. Žalman, I. Bélai
Robotics	(6th sem., 3-2h)	P. Hubinský

Continuous Processes	(6th sem., 3-2h)	E. Miklovicová
Nonlinear Systems	(6th sem., 2-3h)	M. Huba
Automation 2	(6th sem., 2-2h)	M. Žalman

**III.2 Graduate Study (Ing.)**

CAD for Progr. Control Systems Development 1	(1st sem., 3-2h)	I. Hantuch
Multimedia in Control	(1st sem., 3-2h)	M. Huba, P. Bisták
Optimal Control	(1st sem., 3-2h)	A. Kozáková
Servosystems	(1st sem., 3-2h)	M. Žalman
Theory of Automatic Control 3	(1st sem., 2-3h)	M. Huba
Linear Systems Control	(1st sem., 2-3h)	V. Veselý, M. Hypiusová
Flexible Manufacturing Systems	(1st sem., 3-2h)	L. Jurišica
Modelling and Simulation of Processes	(1st sem., 3-2h)	E. Miklovicová
Artificial Neural Nets	(1st sem., 3-2h)	I. Sekaj, S. Kajan
Internet and Intranet Applications	(1st sem., 2-3h)	K. Žáková
Matlab in Power Systems	(1st sem., 2-3h)	Š. Kozák
Applications of Embedded Systems	(1st sem., 2-2h)	Š. Kozák
Modeling of Mechatronic Systems	(1st sem., 2-3h)	Š. Kozák
Digital Control Methods in Mechatronic Systems	(1st sem., 3-2h)	Š. Kozák
Sensor microsystems	(1st sem., 2-3h)	V. Tvarožek, J. Šturcel, P. Drahoš
Evolutionary Computing	(2nd sem., 2-3h)	I. Sekaj
Databases of Control Systems	(2nd sem., 2-3h)	Z. Králová
Adaptive Control	(2nd sem., 3-2h)	J. Murgaš
Discrete Event Systems	(2nd sem., 3-2h)	A. Vitko
Multivariable System Control	(2nd sem., 3-2h)	V. Veselý
Advanced Control Theory 1	(2nd sem., 3-2h)	V. Veselý
Sensor Systems in CIM	(2nd sem., 3-2h)	J. Šturcel, M. Toman
Control Methods and Algorithms	(2nd sem., 3-2h)	P. Hubinský, J. Kardoš
Multimedia	(2nd sem., 2-3h)	M. Huba, P. Bisták
System Identification	(2nd sem., 2-3h)	E. Miklovicová
Software Development for Office Automation	(3rd sem., 3-2h)	J. Murgaš, M. Kratmüler
Fuzzy and Neural Controllers	(3rd sem., 3-2h)	I. Sekaj
Smart Sensors Systems	(3rd sem., 3-2h)	J. Šturcel
Intelligent Systems	(3rd sem., 3-2h)	I. Sekaj, S. Kajan
CAD for Progr. Control Systems Development 2	(3rd sem., 3-2h)	I. Hantuch
Production Systems Management and Control	(3rd sem., 2-3h)	Z. Králová
Robots Modelling and Control	(3rd sem., 3-2h)	A. Vitko

Network Technologies	(3rd sem., 2-3h)	J. Murgaš, M. Foltin
Mobile Robotics Systems	(3rd sem., 3-2h)	L. Jurišica
Mechatronics	(3rd sem., 3-2h)	L. Jurišica
CAD of Control Systems	(3rd sem., 3-2h)	J. Šurcel, P. Drahoš
Control of Complex Systems	(4th sem., 3-2h)	D. Rosinová
Intelligent Servosystems	(4th sem., 3-2h)	M. Žalman
Telematics and Control	(4th sem., 3-2h)	M. Huba, P. Bisták
Control of Technological Processes	(4th sem., 2-2h)	Š. Kozák

**III.3 Undergraduate Study (Bc.) Distance Education Method**

Algorithmisation and Programming	(1st sem.)	I. Sekaj, P. Fodrek
Introduction into Engineering	(1st sem.)	K. Žáková
Computer Architecture	(2nd sem.)	Š. Chamraz
Unix/Linux - Real Time Systems	(5th sem.)	I. Sekaj, P. Fodrek
Automatic Control Theory 1	(5th sem.)	M. Huba, I. Oravec
Automatic Control Theory 2	(6th sem.)	J. Murgaš
Control System Software 1	(6th sem.)	I. Hantuch, L. Šimová
Instrumentation of Control Systems	(6th sem.)	J. Šurcel
Modelling and Simulation	(6th sem.)	E. Miklovicová, M. Foltin
Electronics for Control Systems	(6th sem.)	J. Šurcel, M. Toman
Actuators	(7th sem.)	M. Žalman
Optimization	(7th sem.)	D. Rosinová
Control System Software	(7th sem.)	I. Hantuch, L. Körösi
Industrial Communication Systems	(8th sem.)	M. Žalman, I. Bélai
Robotics	(8th sem.)	P. Hubinský
Continuous Processes	(8th sem.)	E. Miklovicová
Nonlinear Systems	(8th sem.)	M. Huba, P. Bisták

**III.4 Graduate Study (Ing.) Distance Education Method**

CAE of Mechatronics Systems	(1st sem.)	J. Murín, M. Klúčik, V. Goga
Flexible Manufacturing Systems	(1st sem.)	L. Jurišica
Multimedia in Control	(1st sem.)	M. Huba, P. Bisták
Servosystems	(1st sem.)	M. Žalman, I. Bélai
Event Systems	(2nd sem.)	A. Vitko
Sensor Systems in CIM	(2nd sem.)	J. Šurcel, M. Toman
Robots Modelling and Control	(3rd sem.)	A. Vitko
Mechatronics	(3rd sem.)	L. Jurišica
Telematics and Control	(4th sem.)	M. Huba, P. Bisták

## **IV. RESEARCH PROJECTS**

### **IV.1 International projects**

- Reviewing and Reviving Existing VET Curriculum. LLP-LdV-TOI-2008-LT-0022 (M. Huba, K. Žáková)
- Enhancing NO-SK Cooperation in Automatic Control APVV VMSP-P-0004-09 (M. Huba, K. Žáková)
- Autoweldlink. EÚ European Regional Development Fund ITMS 26240220033 (L. Jurišica)
- Ceepus CII-CZ-0404-01-1011 - Cybernetics and Modern Methods of Control (K. Žáková)

### **IV.2 National projects**

- Algebraic Methods in Nonlinear Control Systems: Theory and Applications. VEGA1/0369/10 (M. Halász)
- Intelligent Embedded Systems, VEGA project No 1/0822/08, (Š. Kozák)
- Generalized Modular Industrial Computer, APVV project VMSP-P-0059-09, (Š. Kozák)
- Proposal and Preparation of the New Interdisciplinary Subject Intelligent Buildings (IB). KEGA 3/5179/07 (I. Hantuch)
- Design of a Methodology of Exploitation the 3D-Modelling and Virtual Reality Means in Conditions of Teaching in Specialized Laboratories. KEGA 3/7307/09 (L. Jurišica)
- Building Virtual and Remote Experiments for a Network of Online Laboratories. KEGA 3/7245/09 (M. Huba)
- Advanced Control Methods for Industrial Processes. VEGA 1/0544/09 (V. Veselý)
- Integration and Development of Nonlinear and Robust Control Methods and Their Integration to Control Flying Vehicles. VEGA 1/0656/09 (M. Huba)
- Research and Development of Marginal Power Alternate Traction Drive. APVV -0530-07 (M. Žalman)
- Hybrid Triangulation - Optical System for Working Quality Checking of Tire. APVV VMSP-P-0030-09 (P. Drahos)
- Clutch Inspector. APVV VMSP-P-0155-09 (M. Žalman)
- Optimization of the Mechatronic Systems Control. VEGA 1/0690/09 (L. Jurišica)
- Intelligent Control of Service Robot APVV VMSP – P-0004-09 (L. Jurišica)
- Building Grant for the Centre of Excellence for Smart Technologies, Systems and Services (SMART 1), ASF EÚ MS SR, ITMS 26240120005, (J. Murgaš)
- Building Grant for the Centre of Excellence for Smart Technologies, Systems and Services 2 (SMART 2), ASF EÚ MS SR, ITMS 26240120029, (J. Murgaš)
- Advanced Methods for Network Control Systems. VEGA 1/0592/10 (J. Murgaš)

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- ABB Bratislava, Ltd.
- ATEC Ltd., Bratislava
- AXESS Ltd., Bratislava
- Armed Forces Academy, Liptovský Mikuláš
- Business for Excellence Ltd., Bratislava
- ControlTech Industrial Automation Ltd., Trnava
- DATA LAN Bratislava, Ltd.
- E-Academia Slovaca, n.o., Bratislava
- Eltis Ltd., Banská Bystrica
- Emerson Ltd., Bratislava
- Gratex International Ltd., Bratislava
- HMH Ltd., Bratislava

- Honeywell Ltd., Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Johnson Controls Ltd., Bratislava
- KFB Control Ltd., Bernolákovo
- Legrand Slovakia
- Meret Ltd., Bratislava
- MicroStep Ltd., Bratislava
- Microstep MIS Ltd., Bratislava
- NES Ltd., Nová Dubnica
- PosAm Ltd., Bratislava
- PPA Energo Ltd., Bratislava
- PROXY, Nové Mesto n/Váhom
- PZ Bratislava, Inc.
- Q – EX Trenčín, Inc.
- RELKO, spol. s r.o.
- RMC Nová Dubnica, Ltd.
- S&A Ltd., Banská Bystrica
- SAP Slovakia, Ltd.
- SE Inc., Bratislava
- Schneider Electric Slovakia, Ltd.
- Siemens Ltd., Bratislava
- Slovak Electricity Transmission System Ltd., Bratislava
- Slovakodata, Inc., Bratislava
- Slovnaft Bratislava, Inc.
- SPP – Slovtransgaz Inc., Nitra
- SWH – Siemens Business Service, Bratislava
- Technical University of Košice
- Telegyr Systems (Slovakia) Ltd., Bratislava
- UMB Banská Bystrica
- UNIT Ltd., Bratislava
- University of Agriculture, Nitra
- University of Economics, Bratislava
- University of Žilina
- Volkswagen Slovakia Inc., Bratislava
- Vonsch Brezno, Ltd.
- VUJE Inc., Trnava
- Robotika Sk, Bratislava
- ME inspection, Bratislava
- ZTS VVU Košice
- EVPU Nova Dubnica a.s.,
- Institut of Informatics, SAV, Bratislava
- Regotrans Rittmeyer, s.r.o., Bratislava
- Schneider Electric Slovakia, s.r.o., Bratislava
- Termoreg, s.r.o., Bratislava

## V.2 International Cooperation

- Norwegian University of Science and Technology, Trondheim, Norway
- Institute de Recherche en Communications et Cybernetique, C.N.R.S, Nantes, France
- Department of Mathematical Sciences, Chalmers University of Technology, Gothenburg, Sweden
- Budapest University of Technology and Economics, Budapest, Hungary
- Czech Technical University of Prague, Czech Republic
- Democritos University of Thrace, Xanthi, Greece
- Eindhoven University, The Netherlands

- Faculty of Industrial Organisation and Management, Silesian Technical University, Gliwice, Poland
- Fern Universität - Hagen, Germany
- Heilbronn University, Germany
- Humusoft Ltd., Praha, Czech Republic
- Hungarian Fuzzy Association, Hungary
- HTL Spengergasse, Vienna, Austria
- IIASA Laxenburg, Austria
- InnoC.at, Austria (Austria Association for Innovative Computer Science)
- Institute for Problems of Mechanical Engineering, St.Petersburg, Russia
- Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic, Prague, Czech Republic
- Institute of Cybernetics at Tallinn University of Technology, Tallinn, Estonia
- Key Lab of Mathematics Mechanization, AMSS, Chinese Academy of Sciences, Beijing, China
- MES – DEA, Ltd., Switzerland
- Moscow Power Institute, Moscow, Russia
- Profibus International, Germany
- Schneider Electric, Germany
- Strasbourg University, BETA, Strasbourg, France
- Technical University of Brno, Czech Republic
- Technical University of Liberec, Czech Republic
- Technical University of Ostrava, Czech Republic
- Technical University of Tomas Bata in Zlín, Czech Republic
- Technical University of Ancona, Italy
- Technical University of Graz, Austria
- Technical University of Vienna, Austria
- University of Maribor, Slovenia
- University of Bochum, Germany
- University of Defence, Czech Republic
- University of West Bohemia in Pilsen, Czech Republic
- University of Zagreb, Croatia
- Vytautas Magnus University, Kaunas, Lithuania
- FH Technikum, Vienna, Austria
- Technical University Riga

### V.3 Membership in International Organizations and Societies

- IEEE The Institute of Electrical and Electronics Engineers, Inc. (L. Jurišica, M. Žalman, J. Murgaš, V. Veselý)
- IEE The Institute of Electrical Engineers, Inc. (L. Jurišica, M. Žalman, M. Huba, P. Hubinský)
- IFAC TC Nonlinear Control (M. Huba)
- IFAC, member of the Technical Committee on Adaptive and Learning Systems (J. Murgaš)
- IFAC, member of the Technical Committee on Robust Control (V. Veselý, M. Huba)
- Profibus International (URPI, FEI STU)
- CLAWAR Association, member of the Board of Trustees (A. Vitko)
- IMEKO, member of the Technical Committee on Measurement and Control in Robotic (A. Vitko)
- Slovak Society for Cybernetics and Informatics-SSKI (Š. Kozák, chairman )
- Institute of Informatics Slovak Academy of Sciences (Š. Kozák, member of Scientific Board)
- Faculty of Informatics and Information Technology (Š. Kozák, member of Scientific Board )
- IFAC member of Technical Committees: TC 3.1 Computers for Control (Š. Kozák)
- IFAC member of Technical Committees: TC 3.2 Computational Intelligence in Control (Š. Kozák)
- European Coordination Committee for Artificial Intelligence-ECCAI, member, (Š. Kozák)

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Institute of Control and Industrial Informatics. The names of supervisors are in brackets.

#### **Alumni Cybernetics, June 2010**

- [1] Ivaniš, M.: Predictive Control of Thermal Laboratory Plant (E. Miklovičová)
- [2] Javorský, S.: Automatic Registration System (M. Foltin)
- [3] Kohút, M.: Control of Real Experiment in Internet Environment (K. Žáková)
- [4] Kovačič, M.: Design DC Engine with PLC Simatic S7-200 (M. Mrosko)
- [5] Lichý, M.: Stability of Distributed Controls Systems (P. Fodrek)
- [6] Lukáček, P.: Monitor System for Entity Tracking (M. Foltin)
- [7] Macura, V.: Optimization Problems in Control Systems (D. Rosinová)
- [8] Majzel, M.: Information Theory in Telemetry and Data Transmission (O. Čižáková)
- [9] Nemec, M.: Simulation and Control of Model System in a Decentralized Control System PCS 7 (L. Mraflko)
- [10] Olas, M.: Discrete-Time Adaptive Control with Reference Model (J. Murgaš)
- [11] Sedláček, P.: Possibilities of Application of a Computer Software for Making Financial Analysis More Efficient (B. Mišota)
- [12] Tárník, M.: Adaptive Control of Synchronous Motors (J. Murgaš)
- [13] Žáček, F.: Predictive Control of Nonlinear Dynamical Systems with Artificial Neural Network (Š. Kozák)

#### **Alumni Robotics, June 2010**

- [1] Baláz, F.: Actuating Unit for Stepper Motor in Educational (J. Dúbravský)
- [2] Baranček, P.: Measurement System for Speed Servosystems (J. Dúbravský)
- [3] Bartek, T.: Detection of the Target Object by the Visual System, Determination of the Relative Position of the Object (M. Klúčik)
- [4] Bednár, V.: Possibilities of RFID Technologies for Goods Logistics Monitoring (B. Mišota)
- [5] Bezák, B.: Remote Software Installation Through a Web Interface (I. Hantuch)
- [6] Csiba, T.: Controlling of a Train Traffic System and Communication with the Control System of a Loader Machine (L. Körösi)
- [7] Čornanič, I.: Universal System for Specific Searching and Monitoring (P. Fodrek)
- [8] Dekan, M.: Reactive Navigation of Mobile Robot in Environment by Using his Sensors (F. Duchoň)
- [9] Ďuriš, S.: Workstation with Drives Simovert (I. Bélai)
- [10] Ďurkovič, A.: Computer Supply for Course of TAR3 (M. Huba)
- [11] Folvarčík, P.: Extending Client-Server Application for Remote Control of Real Systems in Java (P. Bisták)
- [12] Frtús, M.: Economic Aspects of Server Solutions Based on Opensource (L. Horka)
- [13] Gálffy, G.: Controlling of a Storage Warehouse and Securing of Communication with a Train Transport System (L. Körösi)
- [14] Gula, J.: Real-Time Data Management Framework (M. Foltin)
- [15] Guzmický, P.: Industrial Process Simulator for the Visualization Tool InTouch (J. Kardoš)
- [16] Havran, I.: Analysis of the Control Group Small Hydro Turbines in the Water Žilina (J. Murgaš)
- [17] Heinrich, M.: Possibility of Using CMS for E-Commerce (B. Mišota)
- [18] Hipp, T.: Resolving Optimization Task by Using Equipments of Genetic Algorithm (J. Grman)
- [19] Horňáček, T.: Managing of Automatic Warehouse Using Modicon PLC (L. Körösi)
- [20] Hošták, Z.: SW Modell Smart House (I. Hantuch)
- [21] Hudek, J.: Motion Control of Personal Mobile Robot (P. Hubinský)
- [22] Chovanec, L.: Visualization of Experiments with Prediction Stop Point Methods with Using Shaping Algorithms (P. Hubinský)
- [23] Jacko, L.: Robust Control Design for Thermo-Optical Plant UDAQ28/LT (M. Hypiusová)
- [24] Jankech, P.: Optimizing the Production of a Press Using Simulation (Z. Králová)

- [25] Jediný, T.: Modelling of Electronic Differential Lock EDS (V. Goga)
- [26] Joha, D.: Software Tool for Robust PID Controllers Tuning (M. Huba)
- [27] Kabina, I.: Communication and Information System Mercom for Small and Middle Companies (I. Hantuch)
- [28] Kadlec, R.: Creation of Models of Dynamic Systems in 3D and their Animation (P. Bisták)
- [29] Kaštan, D.: The Determination of Position of the Mobile Robot in the Environment (F. Duchoň)
- [30] Kočmunda, V.: Servo-Drive with Frequency Converter Sinamics G120 (I. Bélai)
- [31] Kopčok, A.: Security of Unix (P. Fodrek)
- [32] Kormoš, I.: Visualization of Algorithms to Eliminate the Residual Vibrations (P. Hubinský)
- [33] Kosorín, M.: Proposal for Control and Visualization of Process Controlled by PLC (L. Mrafko)
- [34] Kostolanský, R.: Position Control of Induction Motors by Frequency Inverter (L. Körösi)
- [35] Kostolný, M.: Remote Control of Technology Proces Model (I. Bélai)
- [36] Kováčik, M.: Design of Robot Control System with Parallel Kinematics Structure (M. Žalman)
- [37] Kráčalík, B.: Time Attendance and Access System (R. Tesár)
- [38] Kuracina, T.: Mobile Robots Suitable for Movement in a Group (M. Klúčik)
- [39] Kušnier, L.: Visualization of the Model of Mobile Robot Using PhysX Technology (P. Hubinský)
- [40] Kuťka, T.: Teaching Instrument for Showing the Characteristics of Neuron Networks (J. Grman)
- [41] Lelkes, Z.: Automation System for Tire Identification (P. Drahoš)
- [42] Linder, M.: Application of Methods of Softcomputing on PLC (I. Sekaj)
- [43] Murcko, M.: Animation and Control of Dynamic Systems Using Adobe Flash (M. Huba)
- [44] Nováčik, M.: Design of Mobile Robot for Interiors (M. Klúčik)
- [45] Novotný, M.: Webserver Solution Based on Opensource with Minimal Costs (L. Horka)
- [46] Országh, M.: Mechatronic Motion System (J. Dúbravský)
- [47] Plesník, T.: The manipulator controlling on the mobile robot (M. Klúčik)
- [48] Pobuda, M.: Control System for Graphic Display (J. Dúbravský)
- [49] Princzel, T.: Control of Mobile Robot with a Camera System (M. Klúčik)
- [50] Prno, M.: Regulation of Virtual Market Systems (L. Andrášik)
- [51] Segiň, J.: A Case Study in SAP Application Development Using Object Oriented Programming (Z. Králová)
- [52] Síleš, O.: Regulation of Temperature in Container Using PLC Simatic S7-200 (M. Mrosko)
- [53] Sládek, L.: Automatic Acquisition and Evaluation of Characteristics in Remote Environment (M. Daříček)
- [54] Sojčák, J.: Design Traction and Geometry Optimization of the Selected Member of the Crank Mechanism (V. Goga)
- [55] Spišiak, J.: Digital Servosystem with DC Motor (J. Dúbravský)
- [56] Šajdík, J.: Control Systems in Intelligent Buildings (IB) Management and Thermal Comfort in Intelligent Buildings (J. Šturcel)
- [57] Šmol, L.: Speed Control of a DC Motor Implementing a PLC (J. Dúbravský)
- [58] Špes, M.: Speed Control System of a SM (R. Tesár)
- [59] Štofaňák, M.: Position Control Servo Drive with SM (M. Suchánek)
- [60] Vrbjar, R.: Projection and Realization of Positional system &#8220;balls jongleur&#8221; (M. Žalman)
- [61] Wolf, P.: Potential Usage of Web Technologies (B. Mišota)

#### **Alumni Robotics, June 2010 (Distance Education Method)**

- [1] Danko, J.: Visualization of the Variable Structure Control in Touch Environment (J. Kardoš)
- [2] Ďurovec, J.: Energetic Management of Mobile Robot (R. Balogh)
- [3] Fekete, V.: Sensor Subsystem of the Mobile Robot for Mapmaking (R. Balogh)
- [4] Gašper, P.: Mobile Robot with Combined Gear (M. Klúčik)
- [5] Gdovin, P.: Controlling Mobile Robot Via Web Interface (J. Hanzel)
- [6] Grman, M.: eLearning &#8211; Virtual Multi-Media Conference Classroom (M. Dúbravská)
- [7] Gronich, T.: Procession and Recognition of Image Information with Use of Computer Vision Methods (J. Dorner)

- [8] Jáno, M.: Internet-Based Task Solving by Scilab (K. Žáková)
- [9] Jasenovec, P.: Modelling and Simulation of SMA Actuator (P. Drahos)
- [10] Kalata, P.: Imagery of Algorithm of Saturated Control with Entering of Poles in Phase Space (P. Bisták)
- [11] Karlík, M.: Position Servosystem with Frequency Converters Simovert Masterdrives (I. Béla)
- [12] Mihálik, S.: Autonomous Control System Movable Robots &#8211; Subsystem Navigation (I. Hantuch)
- [13] Nemčok, J.: Virtual Model of Alternate Positional Servomotor with Drive Sinamics (M. Žalman)
- [14] Plávka, M.: Bus Control Systems in Intelligent and Big Buildings (IBB), Logic Control in IBB (J. Šturcel)
- [15] Riečan, P.: Remote Control of Real System Supported by Matlab (K. Žáková)
- [16] Tkačík, M.: Driving a Mobile Robot with Camera by Microcontroller (M. Klúčik)
- [17] Vajda, R.: Control Movement Structures of Industrial Converter of DCS Series (P. Kurčík)
- [18] Zubák, J.: The Use of OPC in the Software of Control Systems (M. Blaho)

**VI.2 PhD Theses**

- [1] Benický, P.: Classification of Motion in Robotic Applications (L. Juríšica)
- [2] Cigánek, J.: Contribution to the Problem of Robust Control Using Stable Polytope of Reflection Vectors (Š. Kozák)
- [3] Duchoň, F.: Design of Algorithms Mobile Autonomous Robot Navigation (L. Juríšica)
- [4] Chvostek, T.: Embedded Control Systems (Š. Kozák)
- [5] Körösi, L.: A Contribution to Artificial Neural Network Structure Optimization (Š. Kozák)
- [6] Mrafko, L.: Control of AGV Systéme (B. Hrúz)
- [7] Mrosko, M.: Predictive Control (J. Murgaš)
- [8] Paulusová, J.: Intelligent Methods for Modelling of Nonlinear Systems Using Fuzzy-Neuro Techniques (Š. Kozák)
- [9] Petrovič, L.: Sensor Fusion and Validation of Sensors Mobile Robot. (L. Juríšica)
- [10] Števo, S.: Intelligent Buildings, Model Process - Support of Projection (I. Hantuch)
- [11] Osuský, J.: Robust Controller Design in Frequency Domain (V. Veselý)
- [12] Vranka, B.: Online Methods of Eliminating Residual Vibrations (P. Hubinský)

**VII. OTHER ACTIVITIES****Conferences organized by the Institute:**

- International Conference ‘Cybernetics and Informatics’ organized by SSKI, Vyšná Boca, Slovakia, 10 - 13 February 2010
- 12th Conference of Doctoral Students ELITECH' 10 - (A. Kozáková - responsible for organization, editor of Conference Proceedings)
- 9<sup>th</sup> International Conference Control of Power Systems 2010, Tatranske Matliare, 18 – 20 May, 2010 (V. Veselý, J. Murgaš, Z. Králová, E. Miklovičová)
- Istrombot: Competition of Mobile Robots, Bratislava, SK. April 2010 (R. Balogh)
- International Summer School of Robotics, (R. Balogh, P. Hubinský) + Freescale Race Competition, , FEI STU, Bratislava July 2010 (R. Balogh)
- 1<sup>st</sup> International Conference on Robotics in Education, Bratislava, 2010, (R. Balogh, P. Hubinský)

**Other events:**

Conferences Participation, Membership in Committees:

- ELOSYS 2010, Trenčín. SK. October 2010, J. Murgaš, I. Sekaj, M. Foltin – PC members, Profibus exposition)
- Austria, Vienna: Robotchallenge Competition participation (R. Balogh)
- AT&P Journal (L. Juríšica, J. Šturcel, M. Žalman, I. Hantuch, J. Murgaš, V. Veselý – Editorial Board members)

- Selected Topics in Modelling and Control (V. Veselý - Editor, L. Jurišica, Editorial Board member)
- Transactions of the Institute of Measurement and Control (A. Vitko – Associate editor) CLAWAR Conference Nagoya (A. Vitko - Member of International Program Committee)
- Accreditations Board of SAS (L. Jurišica – member)
- Profibus Slovakia Association (P. Drahoš – chairman)
- International Machine Fair Nitra, May 2008 (Profibus exposition)
- Cooperation with Encyclopedic Institute of Slovak Academy of Sciences on the Slovak Encyclopedia (Lexical Group Cybernetics): L. Harsanyi, L. Jurišica, A. Kozáková, D. Rosinová, J. Šturcel, M. Žalman, K. Žáková
- Accreditation Board of the Government of Slovakia. (Working Group - L. Jurišica, J. Murgaš – member)
- Local Centre of Distance Education (M. Huba - head, D. Sovišová - study coordinator, P. Bisták - equipment manager, K. Žáková - international cooperation)
- Computer Viruses Analysis ESET Ltd. Bratislava (P. Hubinský)
- Administration of Shareware Archive of Slovak Antivirus Centre (P. Hubinský)
- Slovak Society of Cybernetics and Informatics (M. Huba – deputy head)
- SSKI (Slovak Society for Cybernetics and Informatics): Chair of Main Committee - Š. Kozák, Vice-chairs: V. Veselý, M. Huba
- Journal of Cybernetics and Informatics: Š. Kozák - Editor in Chief, D. Rosinová - Managing Editor
- Journal of Electrical Engineering: V. Veselý - member of Editorial Board
- Slovak Society for Operations Research: Z. Králová - council member
- MacPlanet: M. Foltin – editor internet journal [www.macplanet.sk](http://www.macplanet.sk)

**Projects:**

- Schneider-Electric Courses, Automation and Control Systems (M. Mrosko)
- Creating the Future – Centrobot International Project Slovakia – Austria, EFRE N-0023 (R. Balogh, P. Hubinský)
- Istrombot (APVV LPP-0301-06) Popularization Project (R. Balogh)

**VIII. PUBLICATIONS****VIII.1 Journals**

- [1] BABINEC, A. - VITKO, A.: Histogram Navigation Algorithms - Developments and Principles. In: Automa. - ISSN 1210-9592. - Vol. 16, No. 5 (2010), p. 26-29. (in Slovak)
- [2] BACHRATÝ, M.: Sound Source Localization Based on TDOA Measurements in Mobile Sensor Networks. In: Metalurgija. Metallurgy. - ISSN 0543-5846. - Vol. 49, No. 2 (2010), p. 124-127. (in English)
- [3] BALOGH, R.: Acrob-an Educational Robotic Platform. In: AT&P Journal Plus. - ISSN 1336-5010. - Iss. 2. Robotics in Education (2010), p. 6-9. (in English) [vnútrofakult. kateg.: C]
- [4] BALOGH, R.: Control System for Hybrid Electric Drive. In: AT&P Journal Plus. - ISSN 1336-5010. - Iss. 1: Systems of Automatic Control (2010), p. 80-83. (in English)
- [5] BALOGH, R.: Model of the Ball-Tracing Robot. In: Metalurgija. Metallurgy. - ISSN 0543-5846. - Vol. 49, No. 2 (2010), p. 136-140. (in English)
- [6] BALOGH, R.: Istrombot 2010. In: Robot revue. - Vol. 2, No. 5 (2010), p. 8-9. (in Slovak)
- [7] BALOGH, R.: Conference Robotics in Education. In: AT&P Journal. - ISSN 1335-2237. - Vol. 17, No. 11 (2010), p. 45. (in Slovak)

- [8] BALOGH, R.: Robots Contest at the FEI STU. In: Spektrum. - ISSN 1336-2593. - Vol. 16, No. 9 (2010), p. 20. (in Slovak)
- [9] BALOGH, R.: Slovak and Austrian Students Created Robots. In: Dobrá škola. - Vol. 1, No. 5 (2010), p. 20. (in Slovak)
- [10] BALOGH, R.: Golden Medal for the Students of STU. In: Spektrum. - ISSN 1336-2593. - Vol. 16, No. 8 (2010), p. 1-2. (in Slovak)
- [11] BENICKÝ, P. - JURIŠICA, L.: Real Time Motion Data Preprocessing. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 4 (2010), p. 247-251. (in English)
- [12] BLAHO, M. - FOLTIN, M. - FODREK, P. - POLIAČIK, M.: Preparing Advanced Matlab Users. In: WSEAS Transactions on Advances in Engineering Education. - ISSN 1790-1979. - Vol. 7, Iss. 7 (2010), p. 234-243. (in English)
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- [15] BUCZ, Š. - HARSÁNYI, L. - VESELÝ, V.: PID Controller Training. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 26-30. (in Slovak)
- [16] CHAMRAZ, Š. - BALOGH, R.: Controller Design for the Static System with Electric Actuated Valve. In: AT&P Journal Plus. - ISSN 1336-5010. - Iss. 1: Systems of Automatic Control (2010), p. 53-57. (in English)
- [17] CHAMRAZ, Š.: Design of the Position Controller Using the Generalized Method of the Required Dynamics. In: Journal of Cybernetics and Informatics. - ISSN 1336-4774. - Vol. 11 (2010), [http://www.sski.sk/casopis/show\\_article.php?id\\_art=80&id\\_cat=12](http://www.sski.sk/casopis/show_article.php?id_art=80&id_cat=12). (in English)
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### VIII.3 Parts of Books

- [1] HÄUPTLE, P. - GRUHLER, G. - HUBINSKÝ, P.: Modelling of Mechatronic System. In: Forschungsbericht der Hochschule Heilbronn. - Heilbronn: Hochschule Heilbronn, 2010. - p. 29-32. (in German)
- [2] JUHÁS, G. - KAZLOV, I. - JUHÁSOVÁ, A.: Instance Deadlock: A Mystery behind Frozen Programs. In: Lecture Notes in Computer Science. - ISSN 0302-9743. - Vol. 6128 Applications and Theory of Petri Nets (2010), p. 1-17. (in English)
- [3] KAJAN, S. - SEKAJ, I.: Control of Kinematic Systems Using Neural Model. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 63-66. (in English)
- [4] KAJAN, S. - SEKAJ, I.: Parameter Tuning of Steam Pressure Controller Using Genetic Algorithm and Neural Model. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 119-123. (in English)
- [5] KL'ÚČIK, M. - JURIŠICA, L.: Visual Systems and Line Detection. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 135-143. (in English)
- [6] MURÁR, R. - JURIŠICA, L.: Mobile Robot Operating System and Robot Internal State. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 129-134. (in English)
- [7] PAULUSOVÁ, J. - KOZÁK, Š. - DÚBRAVSKÁ, M.: Hybrid Fuzzy Predictive Controller. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 93-97. (in English)
- [8] ŠTEFANKA, J. - HUBINSKÝ, P.: Application of Genetic Programming in Gantry Crane Control. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 113-118. (in English)
- [9] VESELÝ, V. - BARS, R.: Output Feedback Model Predictive Control Design: LMI Approach. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 52-57. (in English)
- [10] VESELÝ, V. - ROSINOVÁ, D.: Robust Model Predictive Control Design. In: Model Predictive Control. - Rijeka: Sciendo, 2010. - ISBN 978-953-307-102-2. - p. 1-24. (in English)
- [11] VITKO, A. - JURIŠICA, L. - BABINEC, A.: Generation of Smooth Motion of Reactively Navigated Mobile Robot. In: Selected Topics in Modelling and Control. Vol. 6. - Bratislava: STU, 2010. - ISBN 978-80-227-3318-2. - p. 124-128. (in English)
- [12] VÖRÖS, J.: Compound Operator Decomposition and its Application to Hammerstein and Wiener Systems. In: Lecture Notes in Control and Information Sciences. - ISSN 0170-8643. - Vol. 404: Block-Oriented Nonlinear System Identification (2010), p. 35-51. (in English)

### VIII.4 Book

- [1] HUBINSKÝ, P.: Control of Mechatronic Systems with Low Damping. - Bratislava: STU, 2010. - 97 p. - ISBN 978-80-227-3310-6. (in Slovak)

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**DEPARTMENT OF APPLIED INFORMATICS AND INFORMATION TECHNOLOGY**

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<http://www.fei.stuba.sk/>

**Head of Department**

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**I. STAFF**

Professor	Prof. RNDr. Otokar Grošek, PhD.
Associate Professors	Doc. RNDr. Jaroslav Fogel, PhD., Doc. RNDr. Gabriel Juhás, PhD., Doc. RNDr. Karol Nemoga, PhD., Doc. Dr. Ing. Miloš Oravec,
Assistant Professors	Ing. Štefan Balogh, Ing. Alexander Hambalík, PhD., RNDr. Igor Kossaczky, CSc., RNDr. Eva Kostrecová, PhD., Mgr. Marek Sýs, PhD., Mgr. Zuzana Ševčíková, Ing. Milan Vojvoda, PhD. (Deputy Head of Dept.) Ing. Pavol Zajac, PhD.
Research Workers	Ing. Fedor Lehocki
Technical Staff	Zuzana Šabíková (secretary) Brigita Timková
PhD. Students	Ing. Lukáš Adamko, Ing. Michal Braško, Ing. Matej Feder, Ing. Ondrej Gallo, Ing. Jaroslav Hamráček, Ing. Matúš Jókay, Ing. Igor Kazlov, Ing. Stanislav Marček, Ing. Ján Mazanec, Mgr. Michal Mikuš, Ing. Vladislav Novák, Ing. Ľuboš Omelina, Ing. Filip Pilka, Ing. Štefan Počarovský, Ing. Marek Repka, Ing. Martin Riesz, Ing. Milan Zelina

**II. EQUIPMENT**

**II. 1 Teaching and Research Laboratories**

- Laboratory of Security Technologies
- DIEDC - Database Information Education and Demonstration Center
- Laboratory of System Programming
- Laboratory of Medical Informatics
- Laboratory of Operating Systems and Communication Protocols

**II. 2 Special Measuring Instruments and Computers**

- HP Proliant ML 150
- 2x CPU INTEL XEON 2,8 GHz
- RAM 12 GB
- HDD 35 GB
- MSDN Academic Alliance (MSDN AA) = Microsoft Developers Network Academic Alliance

**III. TEACHING**

**III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Algorithms and Programming	(1st sem., 3-2 h)	P. Zajac
Algorithms and Programming	(1st sem., 3-2 h)	M. Sýs
Algorithms and Programming	(1st sem., 3-2 h)	I. Kossaczký
Analysis and Complexity of Algorithms	(5th sem., 3-1 h)	M. Vojvoda
Classical Ciphers	(4th sem., 2-2 h)	O. Grošek
Database Systems	(3rd sem., 3-2 h)	M. Vojvoda
Operating Systems	(3rd sem., 3-2 h)	J. Fogel
Programming Techniques	(2nd sem., 3-2 h)	I. Kossaczký
Designing of Database Systems	(2nd sem., 3-1 h)	G. Juhás
Information Security	(5th sem., 2-2 h)	E. Kostrecová
Computer Crimes	(6th sem., 2-2 h)	E. Kostrecová
Modelling in Software Engineering	(5th sem., 2-2 h)	J. Hanák
Introduction to Cryptography	(5th sem., 2-2 h)	O. Grošek
Fast Algorithms	(6th sem., 2-2 h)	K. Nemoga
Communication Protocols	(6th sem., 4-1 h)	A. Hambalík
Introduction to Computer Science	(3rd sem., 3-2 h)	O. Grošek
Communication Networks 1	(2nd sem., 3-1 h)	M. Oravec
Software Application Development 1	(3rd sem., 2-2 h)	G. Juhás
Software Architecture	(5th sem., 2-2 h)	G. Juhás
Management of IT Projects	(6th sem., 2-2 h)	F. Lehocki
Workflow Management Systems	(6th sem., 2-2 h)	F. Lehocki

### III.2 Graduate Study (Ing.)

Object-Oriented Programming	(1st sem., 3-2 h)	V. Novák
Ciphers in Communication Networks	(1st sem., 3-2 h)	K. Nemoga
Modelling and Simulations of Event Systems	(1st sem., 3-2 h)	G. Juhás
Practice of Security of Information Systems	(1st +3rd sem., 3-2 h)	M. Zanechal
Formal Methods	(1st sem., 3-2 h)	J. Fogel
Cryptanalysis	(3rd sem., 3-2 h)	M. Vojvoda, M. Sýs, P. Zajac
Analysis and Synthesis of Event Systems	(2nd sem., 3-2 h)	G. Juhás
Biometrics	(2nd sem., 3-2 h)	M. Oravec
System Programming	(2nd, 4th sem., 3-2h)	J. Fogel
Design of Ciphers	(3rd sem., 3-2 h)	P. Zajac
Machine Learirng and Neural Networks	(1st sem., 3-2h)	M. Oravec
Workflow Management Systems, Processes and Web Services	(2nd sem., 3-2 h)	F. Lehocki

### **III.3 Undergraduate and Graduate Study for Foreign Students (in English Language)**

Algorithms and Programming	(1st sem., 12 h consul.)	M. Sýs
Programming Techniques	(2nd sem., 12 h consul.)	M. Sýs
Databases Systems	(3rd sem., 12 h consul.)	Š. Balogh
Computer Architecture	(2nd sem., 12 h consul.)	M. Jókay
Business Management	(2nd sem., 12 h consul.)	F. Lehocki
Classical Ciphers	(4th sem., 12 h consul.)	O. Grošek

### **III.4 Distance Study**

Algorithms and Programming	(1st sem., 6x2 h consul.)	A. Hambalík
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## **IV. RESEARCH PROJECTS**

- ERASMUS Educational Project, Bilateral Agreement, University of La Laguna, Spain (O. Grošek)
- Technology Transfer in the Area of Workflow Process Analysis, Grant APVV-0618-07 (G. Juhás)
- Synthesis of Petri Nets From Nonsequential Scenarios, VEGA 1/0872/08 (G. Juhás)
- Development of Norwegian – Slovak Cooperation in Cryptology, NIL Fund Supporting Cooperation in the Field of Education NIL-I-004, 07.07.2008 – 30.09.2010 (O. Grošek)
- Solution of Current Problems in Cryptology, VEGA 1/0244/09 (O. Grošek)
- Modernization of Education Process in Basic and Grammar Schools., ITMS: 26110130083, 26140130013 and ITMS: 26110130084, 26140130084, certified lector in the project, (A. Hambalík)
- Proposal of Methods of Analysis and Classification for Biometric Recognition of Human Faces and Traffic in Communication Networks, VEGA 1/0214/10 (M. Oravec)
- Cryptographic Algorithms and Primitives with Increased Resistance Against Side Channel Attacks, Project SK-FR-0011-09 (O. Grošek)
- Centre of Excellence of SMART Technologies, Systems and Services ITMS: 26240120005 (G. Juhás)
- Centre of Excellence of SMART Technologies, Systems and Services II ITMS: 26240120029 (G. Juhás)

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- Mathematical Institute, Slovak Academy of Sciences, Bratislava
- National Security Authority, Bratislava
- Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava
- Association of the Infovek Project, Ministry of Education of the Slovak Republic – Project of Informatization of Regional School – PIRŠ
- Slovak Research and Development Agency, Bratislava
- Faculty of Chemical and Food Technology, STU, Bratislava
- Technical University, Zvolen
- J. Selye University, Komárno
- Bratislava Metodical and Pedagogical Centre

- Trenčín Metodical and Pedagogical Centre
- Virtual Academy of Bratislava Self-Governing Region
- University of Constantin the Philosopher, Nitra
- Department of Engineering Pedagogy and Psychology, MtF STU Bratislava
- Ministry of Finance of the SR
- Institute of Measuremet, Slovak Academy of Sciences, Bratislava
- Slovak Standards Institute
- Ministry of Health of the SR, Strategic Targets of Health
- Security Authority of the Ministry of Defence of the SR
- Institute of Forensic Science of Police Corps, Bratislava
- ÚIPŠ Bratislava
- Elfa, Ltd. Košice
- Datalan, Ltd. Bratislava
- Centre of Distance Education (SDV ICV CUP REK), Bratislava
- Centire, Ltd. Bratislava

## V.2 International Cooperation

- Institute of Informatics, Academy of Sciences of the Czech Republic, Prague, CzR
- University of LA LAGUNA, Department of Statistics, Operations Research and Computing, Tenerife, Spain
- Department of Information Systems Security, Concordia University College of Alberta, Canada
- Faculty of Informatics MU Brno, CzR
- Department of Mathematics, Faculty of Electrical Engineering, ČVUT Prague, CzR
- Lehrstuhl fuer Angewandte Informatik, Katholische Universitaet Eichstaett-Ingolstadt, Germany
- Fachgruppe Simulation und Modellierung, Institut fuer Systems Engineering, Universitaett Hannover, Germany
- Florida Atlantic University, Boca Raton, Florida, USA
- Department of Mathematics, University of Washington, Tacoma, Washington, USA
- Institute for Experimental Mathematics, University of Essen, Germany
- Department of Mathematics and Science, Indiana State University, USA
- Eszterházy Károly College, Eger, Hungary
- DELTA Elektronik Limited, Budapest, Hungary
- Fundatia Sapientia–Universitatea Sapientia, Facultatile din Miercurea Ciuc, Roumania
- AINTEK A.E, Greece
- Virginia Tech, Blacksburg, Virginia, USA
- McMaster University, Hamilton, Canada
- University of Waterloo, Canada
- University of Toronto, Canada
- Universität Augsburg, Germany
- Institut for Informatikk, Universitetet i Bergen, Norway
- Department of Computer Engineering and Mathematics, Universitat Rovira i Virgili, Spain
- Laboratoire Hubert Curien, Université Jean Monnet, Saint-Etienne, France
- Technische Universiteit Eindhoven, Eindhoven, The Netherlands
- University of Southampton, UK

## V.3 Membership in International Organizations and Societies

- AMS – American Mathematical Society (O. Grošek)
- SIAM – Society for Industrial and Applied Mathematics (O. Grošek)
- IEEE Computer Society (J. Fogel)
- IACR (K. Nemoga)
- IET, IEEE (M. Oravec)
- The European Association for the Transfer of Technologies, Innovation and Industrial Information (F. Lehocki)

- IEEE EBMS (F. Lehocki)

#### **Membership in Editorial Boards of International Journals**

- Tatra Mountains Mathematical Publications, publisher: Mathematical Institut of SAS, O. Grošek
- Tatra Mountains Mathematical Publications, publisher: Mathematical Institut of SAS, K. Nemoga – managing editor
- Zentralblath Math, publisher: De Gruyter, K. Nemoga - managing editor of the Slovak Unit
- Journal of Mathematical Cryptology, O. Grošek
- Central European Journal of Computer Science (CEJCS), publisher: Versita, co-published with Springer Verlag, M. Oravec - editor
- Transactions on Petri Nets and Other Models of Concurrency (publisher: Springer Verlag), G. Juhás

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Applied Informatics and Information Technology. The names of supervisors are in brackets.

- [1] Laššák, J.: Security Communication in Client/Server Applications (K. Nemoga)
- [2] Kühnel, M.: Random Number Generator Based on Elliptic Curve (K. Nemoga)
- [3] Vagánek, P.: Alternative Representations of Elliptic Curves in Cryptography (P. Zajac)
- [4] Török, T.: LLL Algorithm in Cryptography (M. Sýs)
- [5] Repka, M.: Generic Attacks on Feistel Schemes (O. Grošek)
- [6] Petříčko, D.: Encryption in Botnets (P. Košinár, O. Grošek)
- [7] Oravec, I.: Network Information System Security Assessment Methodology (V. Janský, O. Grošek)
- [8] Šrenkel, V.: Timing Side Channel Attacks (M. Vojvoda)
- [9] Schwarcz, M.: Analysis of Algorithms for Fingerprints Classification (K. Nemoga)
- [10] Rybánska, D.: Side Channel Attacks Based on Error Messages (M. Vojvoda)
- [11] Prídavok, M.: Side Channel Attacks with Fault Induction (M. Vojvoda)
- [12] Najeeb, N.: Cryptographic Algorithms in Arabic Countries in Recent and Distant History (K. Nemoga)
- [13] Moravčík, T.: Steganography in JPG Image File (M. Jókay)
- [14] Michalica, M.: Verification of Communication Protocols (J. Fogel)
- [15] Lehocký, L.: Modern Computer Infiltrations and Possibilities of Protection against them (F. Schindler, O. Grošek)
- [16] Král, T.: Honeypot/Honeynet in Forensics Analysis (L. Páleník, O. Grošek)
- [17] Kosorinsky, M.: Preparation of Base for NFS (P. Zajac)
- [18] Bartko, J.: Ways to Protect Software against Debugging (Š. Balogh)
- [19] Brinzik, J.: Quantification of SOA Proposition (F. Lehocki)
- [20] Bajesi, O.: Generating eForms Based on Web Service (G. Juhás)
- [21] Čižmár, M.: Creating of Multimedia Learning System for Children Patients (F. Lehocki)
- [22] Hačkulič, D.: Design and Implementation on Intelligent Systems in Modern Buildings (F. Lehocki)
- [23] Hamráček, J.: Integrated Information System of Public Administration-Infrastructure (G. Juhás)
- [24] Chatrnúch, M.: Software Support of Modelling of Concurrency in Petri Nets (G. Juhás)
- [25] Kazlov, I.: Dynamic Soundness of Workflow Processes (G. Juhás)
- [26] Koščáková, B.: E-Prescribing (F. Lehocki)
- [27] Kubačka, S.: Client-Server Architecture of EHR Systems (F. Lehocki)
- [28] Mach, M.: Telemedicine Applications for Monitoring Patient Blood Pressure (F. Lehocki)
- [29] Nadanyi, P.: Architecture and Design of HER (F. Lehocki)

- [30] Perašín, M.: Medical Diagnostic System (F. Lehocki)
- [31] Slovák, M.: Real-Time Automata Systems Modelling ( J. Fogel)
- [32] Široký, A.: Workflow Systems to Support Business Processes (F. Lehocki)
- [33] Škoda, A.: Electronic Prescribing System Implementation (F. Lehocki)
- [34] Šutka, M.: Modern Techniques for Programming with Databases MS SQL in NET Framework (F. Schindler, O. Grošek))
- [35] Terpák, P.: Knowledge Discovery (G. Juhás)
- [36] Vaczula, M.: Modelling of Clinical Processes (F. Lehocki)
- [37] Vanák, J.: Social Server for Synchronization of Data from Mobile Device (F. Lehocki)
- [38] Vojta, M.: Analysis of Dependences in Petri Nets Transitions (Z. Ševčíková)
- [39] Zibura, Š: E-learning for Patients with Long-Term Diseases (F. Lehocki)

## **VI.2 PhD Theses**

none

## **VII. OTHER ACTIVITIES**

- Seminar Crypto (O. Grošek)
- Reviewer of ZentralblattMath (K. Nemoga, O. Grošek)

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] ADAMKO, L. - SÝS, M.: Statistical Testing of Random Number Generators HMAC DRBG and HASH DRBG. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 5-10. (in Slovak)
- [2] BALOGH, Š.: Methods for Detection of Viruses and Malicious Code. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 11-16. (in Slovak)
- [3] BAN, J. - FÉDER, M. - ORAVEC, M.: Biometric Methods for Recognition of Human Face Images. In: Posterus.sk. - ISSN 1338-0087. - March (2010), <http://www.posterus.sk/?p=5334>. (in Slovak)
- [4] BRAŠKO, M.: Deterministic Random Number Generators defined by NIST SP 800-90. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 17-20. (in Slovak)
- [5] GROŠEK, O. - SÝS, M.: Isotopy of Latin Squares in Cryptography. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 27-35. (in English)
- [6] JÓKAY, M. - MORAVČÍK, T.: Image-Based JPEG Steganography. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 65-74. (in English)
- [7] JÓKAY, M. - MORAVČÍK, T.: Image-Based JPEG Steganography. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 36-40. (in Slovak)

- [8] KOSTRECOVÁ, E.: Need for Personal Data Protection from Legal Aspect In: *Policajná teória a prax.* - ISSN 1335-1370. - Police Theory and Practice (2010), p. 50-58. (in Slovak)
- [9] MIKUŠ, M. - ZAJAC, P.: NIL-I-004 Project Supports the International Cooperation. In: *Spektrum.* - ISSN 1336-2593. - Roč.17, č.4 (2010), s. 10-11 (in Slovak)
- [10] RADDUM, H. - SÝS, M.: The Zodiac Killer Ciphers. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 75-91. (in English)
- [11] RIESZ, M. - JUHÁS, G.: Synthesis of Petri Nets in PetriFlow. In: *Petri Net Newsletter.* - ISSN 0931-1084. - Vol. 76 (2010), p. 3-10. (in English)
- [12] SCHILLING, T. - ZAJAC, P.: Phase Transition in a System of Random Sparse Boolean Equations. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 93-105. (in English)
- [13] SEMAEV, I. - MIKUŠ, M.: Methods to Solve Algebraic Equations in Cryptanalysis. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 107-136. (in English)
- [14] SLAMINKOVÁ, I. - VOJVODA, M.: Cryptanalysis of a Hash Function Based on Isotopy of Quasigroups. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 137-149. (in English)
- [15] SLAMINKOVÁ, I. - VOJVODA, M.: Cryptanalysis of a Hash Function Based on Isotopy of Quasigroups. In: *Posterus.sk.* - ISSN 1338-0087. - September (2010), <http://www.posterus.sk/?p=8466>. (in Slovak)
- [16] ZAJAC, P.: On the Use of the Lattice Sieve in the 3D NFS. In: Tatra Mountains Mathematical Publications. - ISSN 1210-3195. - Vol. 45: NILCRYPT '10 (2010), p. 161-171. (in English)
- [17] ZELINA, M. - ORAVEC, M.: Estimation and Reduction of Bins in Traffic Classification. In: *EE časopis pre elektrotechniku a energetiku.* - ISSN 1335-2547. - Vol. 16, Special Issue. (2010), p. 53-57. (in English)

### VIII.2 Conference Proceedings

- [1] BRAŠKO, M.: Random Number Generators Approved by NIST. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [2] GALLO, O. - NEČAS, T. - LEHOCKI, F.: A Tool for the Synthesis of Asynchronous Speed Independent Circuits. In: Application of Region Theory (ART): 1st Workshop. Braga, Portugal, 21.-22.6.2010. - Springer Verlag, 2010. - ISBN 978-972-8692-54-4. - p. 61-65. (in English)
- [3] GUBÁŠ, M. - ADAMKO, L.: DNA Code Overview Study. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [4] HAMBALÍK, A.: Checking the Originality of Digital Pictures. In: Trends in Education: Olomouc, Czech Republic, 24.6.2010. - Olomouc: Votobia, 2010. - ISBN 978-80-87244-09-0. - Part 2, p. 360-363. (in Slovak)
- [5] JÓKAY, M.: Remarks on the GRID Computation of the Characteristics of Boolean Matrices. In: GCCP 2010 Proceedings: 6th International Workshop on Grid Computing for Complex Problems, Bratislava, Slovakia, 8.-10.11.2010. - p. 57-63. (in English)

- [6] MIKOLÁŠEK, M. - RACKO, J. - HARMATHA, L. - GALLO, O. - REŽNÁK, J.: A New Model of Trap Assisted Band-to-Band Tunnelling. In: ASDAM 2010. 8th International Conference on Advanced Semiconductor Devices and Microsystems: Smolenice Castle, Slovak Republic. 25.-27.10.2010. - Piscataway: IEEE, 2010. - ISBN 978-1-4244-8572-7. (in English)
- [7] OMELINA, I. - ORAVEC, M.: IRIS Recognition Based on Gabor Filters. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [8] PAVLOVIČOVÁ, J. - ORAVEC, M. - OSADSKÝ, M.: An Application of Gabor Filters for Texture Classification. In: Proceedings ELMAR-2010: 52nd International Symposium ELMAR-2010. Zadar, Croatia, 15.-17.9.2010. - Zadar: Croatian Society Electronics in Marine, 2010. - ISBN 978-953-7044-11-4. - p. 23-25. (in English)
- [9] PONDELÍK, M. - BALOGH, Š.: Capture of Encryption Keys by Analyzing Memory. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [10] RIESZ, M. - SEČKÁR, M. - JUHÁS, G.: PetriFlow: A Petri Net Based Framework for Modelling and Control of Workflow Processes. In: Application of Region Theory (ART): 1st Workshop. Braga, Portugal, 21.-22.6.2010. - Springer Verlag, 2010. - ISBN 978-972-8692-54-4. - p. 45-59. (in English)
- [11] SELICKÝ, P. - ZAJAC, P.: Computation of the ANF of Sparse Boolean Functions. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [12] SESTRIENKA, M. - ORAVEC, M. - PAVLOVIČOVÁ, J.: Simulation of Physical Layer and Medium Access Control Sublayer in IEEE 802.11x Networks. In: Proceedings ELMAR-2010: 52nd International Symposium ELMAR-2010. Zadar, Croatia, 15.-17.9.2010. - Zadar: Croatian Society Electronics in Marine, 2010. - ISBN 978-953-7044-11-4. - p. 261-264. (in English)
- [13] SIGETI, P. - ORAVEC, M.: Simulation of Video Transmission over IEEE 802.11g LAN. In: Proceedings Redžúr 2010: 4th International Workshop on Speech and Signal Processing. Bratislava, Slovak Republic, 14.5.2010. - Bratislava: Nakladatel'stvo STU, 2010. - ISBN 978-80-227-3296-3. - p. 26-31. (in English)
- [14] SLAMINKOVÁ, I. - VOJVODA, M.): Cryptanalysis of Hash Function Based on Quasigroups. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [15] ZAJAC, P.: Algebraic Cryptanalysis in Practice. In: 10th Central European Conference on Cryptography: Beldewo, Poland, 10.12.6.2010. - Warsaw: International Mathematical Center, 2010. - on-line. (in English)
- [16] ZELINA, M. - ORAVEC, M.: Feature Selection for Application Recognition in Communication Networks. In: International Masaryk Conference for PhD. Students and Young Researchers: Hradec Králové, Czech Republic, 6.-10.12.2010. - Hradec Králové: Magnanimitas, 2010. - ISBN 978-80-86703-41-1. - p. 708-715. (in English)
- [17] ZELINA, M. - ORAVEC, M.: Representation of Traffic in Communication Networks. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)

**VIII.3 Parts of Books**

- [1] JUHÁS, G. - KAZLOV, I. - JUHÁSOVÁ, A.: Instance Deadlock: A Mystery behind Frozen Programs. In: Lecture Notes in Computer Science. - ISSN 0302-9743. - Vol. 6128 Applications and Theory of Petri Nets (2010), p. 1-17. (in English)
- [2] KOSTRECOVÁ, E.: Business Intelligence and Information Security. In: Selected Parts of New Economics. - Praha: Wolters Kluwer, 2010. - ISBN 978-80-7357-569-4. - p. 106-140. (in Czech)
- [3] ORAVEC, M. - MAZANEC, J. - PAVLOVIČOVÁ, J. - EIBEN, P. - LEHOCKI, F.: Face Recognition in Ideal and Noisy Conditions Using Support Vector Machines, PCA and LDA. In: Face Recognition. - Vukovar: In-Tech, 2010. - ISBN 978-953-307-060-5. - p. 125-150. (in English)

## **DEPARTMENT OF ELECTRICAL MACHINES AND DEVICES**

**<http://www.kesp.elf.stuba.sk/>**

### **Head of Department**

**Doc. Ing. Ľudovít Hüttner, PhD.**  
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## **I. STAFF**

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Associate Professors	Doc. Ing. Ľudovít Hüttner, PhD., Doc. Ing. Ferdinand Valent, PhD.
Assistant Professors	Ing. Ladislav Borba, PhD., Ing. Michal Duč-Ančík, PhD., Ing. Ľudovít Jurčáčko
Technical Staff	Jana Jusková (secretary), Jozef Hubač
PhD. Students	Ing. Vladimír Kujan, Ing. Dárius Tavaly, Ing. Vladimír Halička, Ing. Miloš Glasa, Ing. Milan Uhrík, Ing. Igor Kertész

## **II. EQUIPMENT**

### **II.1 Teaching and Research Laboratories**

- Laboratory for Testing and Measurement of Electric Machines
- Laboratory of Special Electric Machines
- Laboratory of Short Circuit Tests (with a high current generator source 35 kA, 2 MVA, 440 V)
- Laboratory of Short Circuit Tests (with a capacitor source)
- Laboratory of Controlled Drives and Servosystems
- Laboratory of Power Electronics
- Common laboratories Schneider – FEI STU –FIIT STU

### **II.2 Special Measuring Instruments and Computers**

- Lucas-Nülle didactic equipment for subjects Power Electronics and Controlled Drives
- SIMOVERT, SIMOREG and VONSCH power converters
- Laboratory stands with digital signal processors TMS 320 C 50
- Computers room Schneider – FEI STU –FIIT STU

## **III. TEACHING**

### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Electric Machines	(5th sem., 3-2h)	Ľ. Klug
Electric Apparatus and Distribution Stations	(6th sem., 3-2h)	F. Valent, F. Janíček
Automotive electrotechnics	(5th sem., 2-2h)	Ľ. Hüttner, M. Duč-Ančík, A. Smola, J. Lelák

**III.2 Graduate Study (Ing.)**

Electric Drives and Power Electronics	(1st sem., 2-2h)	L. Borba
Selected Chapters from Electric Apparatus	(1st sem., 2-2h)	F. Valent
Special Electric Machines	(2nd sem., 3-2h)	E. Klug
CAD of Electric Power Equipment	(3rd sem., 2-2h)	E. Klug, L. Hüttner
Electronic Energy Converters	(2nd sem., 2-2h)	L. Borba
Electric Traction Systems	(3rd sem., 2-2h)	L. Borba
Utilisation of Electrical Energy	(3rd sem., 2-2h)	L. Hüttner, A. Smola
Electric Heating Devices	(3rd sem., 2-2h)	L. Hüttner

**III.3 Undergraduate Study (Bc. Distance Education Method)**

Electric Machines	(3rd year)	L. Hüttner
Electric Apparatus and Distribution Stations	(6th sem., 3-2h)	L. Hüttner, F. Janíček

**III.4 Graduate Study (Ing. Distance Education Method)**

Electric Drives and Power Electronics	(1st year)	L. Borba
Utilisation of Electrical Energy	(2nd year)	L. Hüttner, A. Smola

**IV. RESEARCH PROJECTS**

- Optimization of Windings for Disc-Type Motors for Electric Vehicles. Contract No.7022, STU Bratislava, SR; 19.10.2010

**V. COOPERATION****V.1 Cooperation in Slovakia**

- ELOSYS Trenčín
- KIWA Ltd. Nitra
- Siemens Ltd. Bratislava
- TU Košice
- ŽU Žilina
- LEGRAND Slovakia
- MOELLER Slovakia
- OEZ Slovakia
- SCHNEIDER-ELECTRIC, Ltd.
- BSH Drives and Pumps, Michalovce
- PHOENIX CONTACT, Košice
- CHIRANA Medical, Stará Turá
- SCHRACK Technik

**V.2 International Cooperation**

- DEHN+SOHNE, Neumarkt, Germany
- OEZ Letohrad, CzR
- HESS TRADING, Sudoměřice, CzR
- M. SCHNEIDER, Vienna, Austria
- PHOENIX CONTACT, Brno, CzR

- ČVUT Praha, CzR
- VUT Brno, CzR
- VŠB Ostrava, CzR
- ZČU Plzeň, CzR

### **V.3 Membership in Slovak Organizations and Societies**

- Vice-chairman of Common Departmental Committee of Scientific Department 26- 32- 9 Electromechanical Energy Conversion in Slovak Republic (L. Hüttner)
- Member of Common Departmental Committee of Scientific Department 26-32-9 Electromechanical Energy Conversion in Slovak Republic (F. Valent)
- Members of Common Departmental Committee of Scientific Department 5.2.11 Electromechanical Energy Conversion at STU FEI (L. Klug, L. Hüttner, F. Valent)
- Member of Common Departmental Committee of Scientific Department 5.2.11 Electromechanical Energy Conversion at University of Žilina (L. Hüttner)

### **V.4 Membership in International Organizations and Societies**

- IEE (L. Hüttner, F. Valent)
- Member of Editorial Board of the Journal ‘Electrical Machines Building and Electrical Equipment’, Odessa National Polytechnic University, Ukraine (L. Hüttner)

### **V.5 Contracts**

none

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Electric Machines and Devices. The names of supervisors are in brackets.

- [1] Badinka, M.: Cylindrical Fuses (L. Hüttner)
- [2] Čech, M.: Analysis of Strain in Transformer’s Construction (P. Kmotrik)
- [3] Daňko, P.: Current-Limiting Action of Circuit Protection Devices (F. Valent)
- [4] Hrnčiar, P.: Examination of the Rupturing Capacity of Modular Circuit Breakers (L. Hüttner)
- [5] Kertész, I.: New Trends in Equipment to Protect against Surges in Low-Voltage Distribution (L. Jurčacko)
- [6] Novomeský, O.: Four-Quadrant Frequency Converter (L. Borba)
- [7] Slabý, M.: Synchronous Generator for Small Power Plant (M. Duč-Ancí)

## **VII. OTHER ACTIVITIES**

- the accredited educational activity ‘The Electrical Minimum’ ( L. Klug, L. Hüttner, L. Borba)

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] DUČ-ANCI, M. - NOVOMESKÝ, O.: Frequency Converter for Power Systems. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 189-193. (in Slovak)
- [2] DUČ-ANCI, M. - UHRÍK, M.: Inverter Circuits of Frequency Converters. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 6 (2010), p. 35-37. (in Slovak)

- [3] DUČ-ANCI, M. - UHRÍK, M.: Transient Phenomena in a Synchrotronous Generator. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16. No. 4 (2010), p. 38-40. (in Slovak)
- [4] GLASA, M.: Possibilities for Protection of Buildings Against OverVoltage Effects. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 6 (2010), Suppl. Volt, p. 5-7. (in Slovak)
- [5] HÜTTNER, L. - BADINKA, M.: Testing of Low Voltage Cylindrical Fuse-Link. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 203-207. (in Slovak)
- [6] UHRÍK, M. - DUČ-ANCI, M.: Defectoscopy of Squirrel Cage Windings in Asynchronous Motors. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16. No. 4 (2010), Suppl. Volt, p. 2-4. (in Slovak)
- [7] UHRÍK, M. - ŠÁLY, V.: Impact of Stator Lamination on Disk Generator Losses in Wind Powered Energy Plant Sources. In: Energetika. - ISSN 0375-8842. - Vol. 60 (2010), p. 650-653. (in Slovak)
- [8] UHRÍK, M.: Windings of Disc Type Motors. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 6 (2010), p. 10-11. (in Slovak)

### VIII.2 Conference Proceedings

- [1] DUČ-ANCI, M. - UHRÍK, M.: Simulation Analysis of Selected Transient Phenomena in a Generator. In: Power Engineering 2010. Control of Power Systems: 9th International Scientific Conference CPS. Tatranské Matliare, SR, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-25-0, CD-Rom. (in English)
- [2] DUČ-ANCI, M. - UHRÍK, M.: Simulatory Assessment of Synchronous Generator Stability. In: ISEM 2010. XVIII. International Symposium on Electric Machinery in Prague: Prague, Czech Republic, 8.-9.9.2010. - Prague: ČVUT, 2010. - ISBN 978-80-01-04621-0. - p. 42-48. (in English)
- [3] DUČ-ANCI, M.: Solution of High Current Circuits. In: Technical Computing Bratislava 2010: 18th Annual Conference Proceedings. Bratislava, Slovak Republic, 20.10.2010. - Bratislava: RT Systems, 2010. - ISBN 978-80-970519-0-7. - CD-Rom. (in English)
- [4] GLASA, M.: Protection of Residential Areas and Buildings from the Effect of Atmospheric Overvoltages. In: Power Engineering 2010. Energy, Ecology, Economy: 9th International Scientific Conference. Tatranské Matliare, Slovakia, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-23-6, CD-Rom. (in English)
- [5] GLASA, M.: The Importance of Overvoltage Protection in Low Voltage Distribution. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [6] KASNÁR, F. - BORBA, L.: Additional Conditioning of Pulse Converter of Electric Locomotive. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)

- [7] UHRÍK, M. - DUČ-ANCI, M.: Detection of Damaged Rotor Bars and Their Influence on Performance Characteristics of Induction Motos. In: ISEM 2010. XVIII. International Symposium on Electric Machinery in Prague: Prague, Czech Republic, 8.-9.9.2010. - Prague: ČVUT, 2010. - ISBN 978-80-01-04621-0. - p. 121-126. (in English)
- [8] UHRÍK, M.: Detection of Faulty Rotor Bars in Cage Induction Motors. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [9] UHRÍK, M. - DUČ-ANCI, M.: The Identification of Selected Parameters of Synchronous Machine Using the Simulation. In: Power Engineering 2010. Control of Power Systems: 9th International Scientific Conference CPS. Tatranské Matliare, SR, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-25-0, CD-Rom. (in English)
- [10] UHRÍK, M.: The Possibility of Utilization of Permanent Magnets in the Sources of Wind Power Plants. In: Power Engineering 2010. Energy, Ecology, Economy: 9th International Scientific Conference. Tatranské Matliare, Slovakia, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-23-6, CD-Rom. (in English)

**DEPARTMENT OF ELECTRICAL POWER ENGINEERING**

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**I. STAFF**

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Associate Professors	Doc. Ing. Anton Beláň, PhD., Doc. Ing. Ivan Daruľa, PhD., Doc. Ing. Žaneta Eleschová, PhD., Doc. Ing. Dionýz Gašparovský, PhD., Doc. Ing. Daniela Reváková, PhD., Doc. Ing. Pavol Šandrik, PhD.
Assistant Professors	Ing. Attila Kment, PhD., Ing. František Krasňan, PhD., Ing. Marek Pípa, PhD., Mgr. Miroslava Smitková, PhD.
Research Workers	Ing. Peter Janiga, Ing. Marek Krasňan, Ing. Juraj Kubica, Ing. Martin Smieško,
Technical Staff	Katarína Knežíková, Mgr. Marta Liptáková, Eva Molotová
PhD. Students	Ing. Peter Arnold, Ing. Zlatko Baláš, Ing. Peter Hajduček, Ing. Matej Janík, Ing. Ján Kolárik, Ing. Peter Koval', Ing. Martin Liška, Ing. Isaac Newton, Ing. Anton Rusnák, Ing. Juraj Šedivý, Ing. Igor Šulc, Ing. Igor Tomiš, Mgr. Marián Uhrík

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Laboratory of High Voltage Technology
- Laboratory of Lighting Technology
- Solar Energy Laboratory
- Laboratory of Electrical Installations
- Laboratory of Special Problems of Power Engineering
- Laboratory of Electrical Protections
- Laboratory of Renewable Energy Sources

**II.2 Special Measuring Instruments and Computers**

- Power network analyzer BK 550
- Cascade transformer, 1200 kV, 1500 kVA
- Impulse generator, 2500 kV, 100 kJ
- Installation system Instabus EIB
- Photometric integrator Ø 3 m
- Spectrofotometer
- Luminance meter

**III. TEACHING****III.1 Undergraduate Study (Bc. – Presentation and Distance Education Method)**

Subject, semester, hours per week for lectures and for seminars or exercises, name of the lecturer:

Transmission and Distribution of Electrical Energy (4th sem., 3-2h)	Ž. Eleschová
High Voltage Technology (5th sem., 2-3h)	P. Šandrik
Modelling and Simulation Basis (5th sem., 3-2h)	A. Beláň, V. Kutiš
Automotive Electrotechnics (6th sem., 3-2h)	A. Smola, L. Hüttner
Energy Sources and Conversion (6th sem., 3-2h)	F. Janíček, I. Daruľa
Electrical Apparatus and Substations (6th sem., 3-2h)	F. Janíček, F. Valent
Lighting Technology (6th sem., 3-2h)	A. Smola

**III.2 Graduate Study (Ing. – Presentation and Distance Education Method)**

Steady State in Power System (1st sem., 2-2h)	Ž. Eleschová
Electrical Networks (1st sem., 2-2h)	D. Reváková
Theoretical Photometry and Colorimetry (1st sem., 2-2h)	D. Gašparovský, F. Krashan
Light Sources and Ballasts (1st sem., 2-2h)	A. Smola
Electrical Part of Power Stations (2nd sem., 2-2h)	I. Daruľa
Transient Phenomena in Power System (2nd sem., 2-2h)	D. Reváková
Diagnostics and Expert Systems (2nd sem., 2-2h)	P. Šandrik
Applied Electrical Power Engineering (2nd sem., 2-2h)	A. Beláň
Environmental Ecology (3rd sem., 2-2h)	I. Daruľa, J. Kubica
Luminaires (2nd sem., 2-2h)	D. Gašparovský
Measurement of Light and Colours (2nd sem., 2-2h)	D. Gašparovský, F. Krashan
Power System Control (3rd sem., 2-2h)	A. Beláň
Electrical Energy Utilization (3rd sem., 2-2h)	A. Smola, L. Hüttner
Nonconventional Energy Sources (3rd sem., 2-2h)	I. Daruľa
Protections and Automatics (3rd sem., 2-2h)	F. Janíček
Electrical Lines (3rd sem., 2-2h)	D. Gašparovský
Lighting Systems (3rd sem., 2-2h)	A. Smola, F. Krashan
Modelling and Power System Control (3rd sem., 2-2h)	A. Beláň
Artificial Lighting (4th sem., 2-1h)	A. Smola

**IV. RESEARCH PROJECTS**

- Research and Development of New Precise Current Sensor for High and Very High Voltage Application. APVV-0546-07 (Ž. Eleschová)

- The Risk Assessment of the Blackout in the Slovak Power System under the Conditions of Multinationally Interconnected Power System. APVV-0337-07 (A. Beláň)
- Research of Light Transport Through Tubular Skylights. APVV-0264-07 (A. Smola)
- Power Quality and Reliability of Electricity Supply. VEGA 1/0687/09 (F. Janíček)
- Integration of Renewable Energy Laboratory into Pedagogical Process Using Multimedia Interactive Web Interface. KEGA 3/7248/09 (F. Janíček)
- National Centre for Research and Applications of Renewable Energy Sources. ITMS 26240120016
- Research and Technology Transfer Support of Decentralised Energy Sources at STU Using Available Biomass. ITMS 26240220028
- Research and Technology Transfer Support of Low-Potential Heat for Electric Power Generation at STU. ITMS 26220220023

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- Nuclear Power Plants Research Institute (VÚJE a.s.) Trnava
- Slovak Power Company (SE - Enel a.s.) Bratislava
- Hydro Power Plants (SE-VET) Trenčín
- Nuclear Power Plants (SE-EBO) Jaslovské Bohunice
- Nuclear Power Plants (SE-EMO) Mochovce
- Nuclear Decommissioning Company (JAVYS a.s.) Jaslovské Bohunice
- Nuclear Regulatory Authority of the Slovak Republic, Bratislava
- Slovak Electricity Transmission System (SEPS a.s.) Bratislava
- Western Slovak Distribution Company (ZSE a.s.) Bratislava
- Central Slovak Distribution Company (SSE a.s.) Žilina
- Eastern Slovak Distribution Company (VSE a.s.) Košice
- Regulatory Office for Network Industries (ÚRSO) Bratislava
- Faculty of Electrical Engineering and Information Technology TU Košice
- Faculty of Electrical Engineering ŽU Žilina
- Trenčín University of Alexander Dubček, Trenčín
- Siemens s.r.o., Bratislava
- ABB s.r.o., Bratislava
- LiV ELEKTRA a.s., Bratislava
- Philips Slovakia s.r.o., Bratislava
- Osram Slovakia s.r.o., Nové Zámky
- Slovak Telekom a.s., Bratislava
- Slovnaft a.s., Bratislava
- Orgeco s.r.o., Nové Zámky
- AMI s.r.o., Nové Zámky
- SLOS s.r.o., Banská Bystrica
- Bellux s.r.o., Bratislava
- OMS s.r.o., Senica
- Bellatrix s.r.o., Košice
- ŽOS Trnava a.s., Trnava
- Applied Precision s.r.o.
- Slovak Institute of Metrology

### **V.2 International Cooperation**

- TU Ilmenau, Germany
- Osram, GmbH, München, Germany
- ABB Ltd., Brno, CzR
- Czech Technical University in Prague, CzR

- West Bohemian University Pilsen, CzR
- Brno University of Technology, CzR
- VŠB – Technical University of Ostrava, CzR
- GE Lighting, Budapest, Hungary
- Tungsram Schréder, Budapest, Hungary
- Electrical Testing Facility, Prague, CzR
- MEI Moscow, Russia
- Tashkent Institute of Irrigation and Melioration, Faculty of Electrification and Automation, Tashkent, Uzbekistan
- Saint Cyril and Methodius University, Faculty of Electrical Engineering and Information Technologies, Skopje, Macedonia
- Visteon, Nový Jičín, CzR
- Helvar, Frankfurt, BRD
- Tridonic, Dornbirn, Austria
- Thorn Lighting CS, Prague, CzR
- Politechnika Opolska, Opole, Poland
- Silesian University of Technology, Gliwice, Poland
- Tianjin University, Tianjin, China

### V.3 Membership in Slovak Organizations and Societies

- Chairman of Technical Standardization Committee No. 43 (Electrical Power Engineering) at Slovak Institute for Standardization (A. Beláň)
- Members of Technical Standardization Committee No. 43 (Electrical Power Engineering) at Slovak Institute for Standardization (D. Reváková, P. Šandrik)
- Chairman of Technical Standardization Committee No. 108 (Light and Lighting) at Slovak Institute for Standardization (A. Smola)
- Member of Technical Standardization Committee No. 20 (Light Fittings and Light Sources) at Slovak Institute for Standardization (A. Smola)
- Chairman of Technical Standardization Committee No. 84 (Electrical Installations and Protection against Electric Shock) at Slovak Institute for Standardization (D. Gašparovský)
- Member of Slovak Academy of Engineering Sciences (F. Janíček)
- Member of Academic Board of FEI STU in Bratislava (F. Janíček)
- Member of Academic Board of STU in Bratislava (F. Janíček)
- Member of Academic Board of Faculty of Mechatronics Trenčín University (F. Janíček)
- Member of Minister Economy Collegium (F. Janíček)
- Chairman of Council for State Programs of Ministry of Education SR and Ministry of Economy SR (F. Janíček)
- Member of Academic Board of Academy of the Armed Forces of General Milan Rastislav Štefánik in Liptovský Mikuláš (F. Janíček)
- Chairman of Expert Committee for Electrical Engineering, Information Technology, Automation and Control of Science and Technology Assistance Agency (F. Janíček)
- Member of Slovak Nuclear Forum (F. Janíček)
- Board of Trustees Chairman of Konfucius Institute at STU in Bratislava (F. Janíček)
- Chairman of Administer Group of SE-ENEL – STU (F. Janíček)
- Chairman of Slovak Committee of World Energy Council (F. Janíček)
- Chairman of Slovak Society of Lighting Technology (A. Smola)
- Director of Forensic Institute of Electrical and Computer Technology (A. Smola)
- Vicepresident of the Association of Slovak Scientific and Technological Societies (A. Smola)
- Members of the Slovak Society of Lighting Technology (D. Gašparovský, F. Krasňan, M. Pípa)
- Chairman of Departmental Committee of Scientific Department 5.2.30 Electrical Power Engineering (F. Janíček)
- Members of Departmental Committee of Scientific Department 5.2.30 Electrical Power Engineering (A. Beláň, Ž. Eleschová, I. Daruľa, D. Reváková, A. Smola, P. Šandrik)
- Members of Common Departmental Committee of Scientific Department 39-25-9 Nuclear Power Engineering (I. Daruľa)

- Members of Common Departmental Committee of Scientific Department 26-34-9 Electrical Power Engineering (F. Janíček, D. Reváková, A. Smola, P. Šandrik)

#### **V.4 Membership in International Organizations and Societies**

- CIGRE – International Council on Large Electric Systems, Paris (A. Beláň)
- CIRED – International Conference on Electricity Distribution, London (A. Beláň)
- IEEE - Institute of Electrical and Electronics Engineers, New Jersey (A. Beláň)
- Member of World Energy Council, London (F. Janíček)
- Member of Committee on Energy Research and Technology IEA, Paris (F. Janíček)
- IEC TC – International Electric Committee No. 42 – High Voltage Technology (P. Šandrik)
- CIE – International Commission on Illumination, Vienna (D. Gašparovský, A. Smola, F. Krasňan, M. Pípa)
- Honorary member ‘Society friends of public lighting’, CzR (A. Smola)

#### **V.5 Contracts**

- Analysis of Occurrence of Discharge in Auxiliary System in Nuclear Power Plant Mochovce. Contract with SE – Enel, a.s. (A. Beláň et al.)
- Estimation of Installed Power Capacity of Unpredictable Renewable Energy Sources in Distribution Network SSE-D, a.s. Contract with SSE-D, a. s. (A. Beláň et al.)
- Analysis of Wind Park Connection to 110 kV Distribution Net. Contract with PAVKON, spol.s r.o. (A. Beláň, Ž. Eleschová)
- Independent Expertise to Ascertain Necessity of Replacement of Current Automatized Control System Siemens Teleperm XP in Bratislava Incinerator. Contract with Odvoz a likvidácia odpadu, a.s. (F. Janíček)
- Analysis of Currently Unaccounted Possible Costs Emerging from Current Legislation Defining SEPS a.s. as an Transmission System Operator Responsible for Development and Operation of the Power System and its Influence on Total Costs of the Company. Contract with Slovenská elektrizačná prenosová sústava a.s. (F. Janíček)
- Realization of Higher Education Programme ‘Electrical Engineering Basics’ for Workers of Slovenské elektrárne – Enel. Contract with SE – Enel, a.s (F. Janíček)
- Compact Fluorescent Lamps - Luminous Flux Measurement. Contract with Ústredný inšpektorát slovenskej obchodnej inšpekcie (F. Krasňan et al.)
- LED Screen - Luminance Measurement. Contract with LIGHTECH, spol. s r.o. (F. Krasňan)
- Railway Signal Measurement. Contract with Betamont s.r.o. (F. Krasňan et al.)
- Diagnostic measurements of insulation systems of electrical motors and generators. Contract with Slovnaft, a.s. (P. Šandrik et al.)

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Power Engineering. The names of supervisors are in brackets.

- [1] Albert, T.: Design of Electric Installation and Operation of Personal Elevator (A. Smola)
- [2] Balaš, Z.: Control and Administration of Public Lightning Systems (A. Smola)
- [3] Bédi, M.: Illumination of Historical Administrative Building in Nitra (A. Smola)
- [4] Beliansky, M.: Solar Energy Utilization for Electric Power Generation (I. Daruľa)
- [5] Boor, M.: Design of Testing Operation Device for Light Sources (F. Krasňan)
- [6] Hajduček, P.: Design of Small Hydropower Plant (M. Pípa)
- [7] Janík, M.: Emergency Lights (F. Krasňan)
- [8] Koleník, M.: Cogeneration Unit Application in the Laboratory of Renewable Energy Sources (M. Pípa)
- [9] Kováč, Z.: Tubular Light Pipelines Measurement (F. Krasňan)

- [10] Kramár, D.: Combined Heat and Power Generation with Pyrolysis (M. Pípa)
- [11] Krucina, M.: Effective Use of Corridors for High Voltage Power Lines (D. Reváková)
- [12] Leitman, M.: Illuminations of Sportings Places (A. Smola)
- [13] Noskovič, J.: Heat Pump Design for the Laboratory of Renewable Energy Sources (M. Pípa)
- [14] Polacek, I.: Scenic Lights (A. Smola)
- [15] Rampašek, P.: Lightning Control Systems Influence on Energy efficiency (D. Gašparovský)
- [16] Samsely, Ľ.: WAMS – Possible Use of PMU in Slovak Electric Power System  
(Ž. Eleschová)
- [17] Seewald, M.: Measurement and Classification of Discharge Occurrence (A. Kment)
- [18] Sotáková, B.: Lightning Conductor Design According to the New Norm (D. Gašparovský)
- [19] Stratený, P.: New Trends in Light Safety Systems (F. Krashan)
- [20] Svetlošák, V.: Design of Small Hydropower Plant (M. Pípa)
- [21] Šulek, P.: Evaluation of Insulation Systems in Rotating Electric Machines (P. Šandrik)
- [22] Vrchovský, P.: Lightning for Schools (A. Smola)

## VI.2 PhD Theses

- [1] Cabala, M.: Safety and Stability of Interconnected Power Systems Operation in Liberalized Power Markets (D. Reváková)
- [2] Krondiak, M.: Price of Electric Power and its Calculation in Liberalized Power Market in Slovakia (F. Janíček)
- [3] Holjenčík, J.: Quality Standards in Network Industries and its Implementation in Slovak Republic (F. Janíček)
- [4] Michalík, J.: Topology of Power Output and Costs in Electric Power System (F. Janíček)
- [5] Kósa, K.: Wind Power Plants Impact on Electric Power System in Slovakia (D. Reváková)

## VII. OTHER ACTIVITIES

- Members of Editorial Board of the Journal EE - Elektrotechnika a energetika (Journal of Electrical and Power Engineering), Bratislava (F. Janíček, D. Reváková)
- Member of Editorial Board of the Journal of Electrical Engineering, Bratislava (F. Janíček)
- Members of International Editorial Board of Internet Journal Energy Spectrum, Brno (F. Janíček, A. Smola)
- Member of Editorial Board of the Internet Journal 'Ageing of Electroinsulation Systems' (A. Beláň)
- Member of Editorial Board of the Journal TZB Haustechnik (Technical Buildings Installations), Bratislava (A. Smola)
- Member of Editorial Board of the Journal Světlo, Prague, Czech Republic (A. Smola)
- Head of the Institute of Experts at the Faculty of Electrical Engineering and Information Technology, STU Bratislava (A. Smola)
- Member of Editorial Board of the Journal Electrical Engineering in Practice, Ostrava, Czech Republic (A. Beláň)
- Members of International Scientific Committee of the 11th International Scientific Conference Electric Power Engineering 2010, Brno, Czech Republic, May 2010 (A. Beláň, Ž. Eleschová, F. Janíček)
- Members of International Programme Committee of the 9th International Conference 'Energy – Ecology – Economy 2010', Tatranské Matliare, May 2010 (I. Daruľa, Ž. Eleschová, Š. Fecko, F. Janíček, D. Reváková)
- Members of International Programme Committee of the 9th International Conference 'Control of Power Systems 2010', Tatranské Matliare, May 2010 (A. Beláň)
- The Guarantee of the International Scientific Event 'POWER ENGINEERING 2010 ', Tatranské Matliare, May 2010 (F. Janíček)

- Members of Program Board of the Conference Electrical Engineering, Information Technology and Telecommunication 'ELOSYS 2010', Trenčín, October 2010 (A. Beláň, F. Janíček, A. Smola)

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] DUŠIČKA, P. - VECHTER, J.: Small Hydro Power Plant - Have Protagonists and Antagonists. In: Transfer. - ISSN 1337-9747. - Vol.2, No. 3 (2010), p. 24-25. (in Slovak)
- [2] ELESCHOVÁ, Ž. - SMITKOVÁ, M. - BELÁŇ, A.: Evaluation of Power System Transient Stability and Definition of the Basic Criterion. In: International Journal of Energy. - ISSN 1998-4316. - Vol. 4, Issue 1 (2010), p. 9-16. (in English)
- [3] ELESCHOVÁ, Ž. - BELÁŇ, A. - PÍPA, M. - KMENT, A.: Restoration of Power System after Blackout and Synchro-Check Relays Setting in Transmission System. In: WSEAS Transactions on Power Systems. - ISSN 1790-5060. - Vol. 5, Iss. 3 (2010), p. 172-181. (in English)
- [4] JANÍČEK, F. - MUCHA, M. - ČESNEK, K. - KOVÁČIK, J.: Controlled Switching of the T 402 Transformer on the Križovany 400 kV Substation. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 1 (2010), p. 11-19. (in English)
- [5] JANÍČEK, F. - POLJOVKA, P. - ŠULC, I. - ŠEDIVÝ, J.: Electricity Market Operator in Slovak Republic. In: Zeszyty Naukowe Politechniki Opolskiej. - ISSN 1429-1533. - Z. 64, Nr. 336 (2010), p. 51-53. (in English)
- [6] JANÍČEK, F. - ŠEDIVÝ, J. - ŠULC, I. - ŠPOK, M.: Liberalized Electricity Market in Selected States of European Union. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 208-213. (in Slovak)
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- [10] JANIGA, P. - KOVAL', P. - LIŠKA, M.: Elimination of the Effects of Upper Harmonics in the Public Lighting Networks. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 219-221. (in Slovak)
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- [29] SMOLA, A.: Automotive Lighting - the most important developments. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 241-243. (in Slovak)

- [30] SMOLA, A.: Trends in Automobile Lighting. Part 2. Lighting Systems. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 3 (2010), p. 6-9. (in Slovak)
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- [7] GAŠPAROVSKÝ, D. - ERKIN, E.: EHB LiteCalc Software Tools for Energy Certification of Lighting. In: Lumen V4. 3rd Conference of the Visegrad Countries on Lighting: Brno, Czech Republic, 23.-25.6.2010. - Ostrava: Technical University, 2010. - ISBN 978-80-248-2247-1. - CD-ROM. (in English)
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- [9] GAŠPAROVSKÝ, D. - ERKIN, E. - ONAYGIL, S.: Implementation of EPBD in the Field of Lighting in Accordance with National Conditions. In: Proceedings of CIE 2010 'Lighting Quality and Energy Efficiency': Vienna, Austria, 14.-17.3.2010. - Vienna: CIE, 2010. - ISBN 978-3-901906-83-1. - p. 103-111. (in English)

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- [59] SMOLA, A.: Experiences with Energy Certification of Building in the Slovak Republic for the Energy Use Area of Electrical Installations and Integrated Lighting. In: Energy in Buildings on Blue Planet: 3rd Visegrad Engineering Conference. Zuberec, Slovak Republic, October 2010. - Slovenská komora stavebných inžinierov, 2010. - ISBN 978-80-89113-64-4. - p. 57-62. (in Slovak)
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**VIII.3 Parts of Books**

- [1] ČERVEŇOVÁ, J. - JASENEK, J. - JANÍČEK, F. - KORENKO, B.: Teaching of Electromagnetism Using e-Courses. In: Proceedings of the Joint International IGIP-SEFI: Annual Conference 2010. Diversity Unifies - Diversity in Engineering Education. Trnava, Slovakia, 19.-22.9.2010. - Brussels: SEFI, 2010. - ISBN 978-2-87352-003-8. - CD-Rom. (in English)
- [2] JANÍČEK, F. - JASENEK, J.: Bologna Process and the Transformation of the Study at FEI STU Bratislava. In: Proceedings of the Joint International IGIP-SEFI: Annual Conference 2010. Diversity Unifies - Diversity in Engineering Education. Trnava, Slovakia, 19.-22.9.2010. - Brussels: SEFI, 2010. - ISBN 978-2-87352-003-8. - CD-Rom. (in English)
- [4] SMOLA, A. - GAŠPAROVSKÝ, D. - JANIGA, P.: Energy Demand at Lighting. In: Energy Efficiency and Energy Certification of Buildings. - Bratislava: Jaga Group, 2010. - ISBN 978-80-8076-060-1. - p. 202-249. (in Slovak)

**VIII.4 Book**

- [1] GAŠPAROVSKÝ, D. - JANIGA, P.: Electrical and Communication Installations. - Bratislava: Verlag Dashöfer, 2010. - 1250 p. - ISBN 1337-1324. (in Slovak)

**VIII.5 Textbook**

- [1] PETRÁŠ, D. - KRAJČÍK, M. - MURAN, J. - CHMÚRNY, I. - FÜRI, B. - KONKOL, R. - TAKÁCS, J. - KURČOVÁ, M. - PERÁČKOVÁ, J. - SMOLA, A. - ŠABÍKOVÁ, J. - JANUŠKA, J.: Energy Audit of the Elementary School Budatínska street No. 61. - Bratislava: STU, 2010. - 105 p. - ISBN 978-80-227-3285-7. (in Slovak)

**DEPARTMENT OF ELECTROMAGNETIC THEORY**

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**I. STAFF**

Professors	Prof. Ing. Jozef Jasenek, PhD., Prof. Ing. Jozef Sláma, PhD.
Associate Professors	Doc. Ing. Ivan Bojna, PhD., Doc. Ing. Jan Bydžovský, PhD., Doc. Ing. Rastislav Dosoudil, PhD., Doc. Ing. Peter Jahn, PhD., Doc. Ing. Vladimír Jančárik, PhD., Doc. Ing. Ľubomír Šumichrast, PhD., Doc. Ing. Elemír Ušák, PhD.
Assistant Professors	Ing. Jozefa Červeňová, PhD., Ing. Jaroslav Franek, PhD., Ing. Mojmír Kollár, PhD., Ing. Pavol Krivošík, PhD., Ing. Marian Štofka, PhD., Ing. Vladimír Olah, PhD.
Senior Scientists	Ing. Jozef Paľa, PhD., Ing. Marianna Ušáková, PhD., Ing. Martin Šoka
Technical Staff	Marta Jančovičová (secretary), Mária Brunovská, Milan Brunovský, Alojz Vďačný
PhD. Students	Ing. Branislav Korenko

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Laboratory of Electric Circuits
- Laboratory of Electromagnetic Field
- Laboratory of Optoelectronics
- Laboratory of Signal Processing
- Laboratory of Microwave Technology
- Laboratory of Pulse and Nonlinear Electrodynamics
- Laboratory of Electronics
- Laboratory of Applied Magnetism
- Laboratory of Magnetic Measurement
- Laboratory of Magnetic Materials Testing
- Laboratory of Magnetic Materials Technology
- Laboratory of Chemical Technology

**II.2 Special Measuring Instruments and Computers**

- Michelson Interferometer for Measurement of Chromatic Dispersion of Single Mode Optical Fibres
- Apparatus for Generation of Second Harmonics in Optical Frequency Range
- Apparatus for Back-Scattering Measurement in Optical Fibers Using Photon Counting Method
- Correlator and Signal Analyzer, frequency range to 50 kHz
- Microwave Power Meter HP-432 B
- Spectral Analyser 10 MHz - 4 GHz
- Precision Wattmeter 104B, 4mW - 60 kW, up to 200 kHz
- VSM Magnetometer,  $H_m$  up to 0.8 MA/m, temperature range 77 K - 800 K

- Precision Gaussmeter, 1  $\mu$ T - 10 T at DC, up to 1 kHz AC
- Lock-In-Amplifier DSP SR 850 2nV to 1V
- High Coercivity Measuring Apparatus
- PC Controlled AC/DC Hysteresisgraph
- Automated System for Magnetic Susceptibility Temperature Dependence Measurement
- Universal Counter HP53132A up to 12.4 GHz
- Vibrator DERRITRON SC-3000 – mechanical resistance testing equipment
- RF Impedance/Material Analyzer HP4191 A 1 MHz-1 GHz, 1 mOhm - 100 kOhm, APC-7 coaxial (50 Ohm) input, GPIB standard; spot, linear and logarithmic frequency sweep
- HP4192A LF Gain Phase - Impedance Analyser, 5 Hz - 13 MHz, 1 mOhm - 1 MOhm, GPIB
- Optical Fibre Reflectometer JDSU - MTS 6000L
- Optical Fibre Polarimeter – POD-101D - General Electronics
- Vector Network Analyzer Agilent 8714ET, 300 kHz - 3 GHz, GPIB interface

### **III. TEACHING**

#### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Electric Circuits I	(2nd+3rd sem., 3-2h)	V. Jančárik, R. Dosoudil
Electrotechnology I	(2nd+3rd sem., 3-2h)	J. Červeňová, M. Kollár
Electrotechnology	(2nd+3rd sem., 3-2h)	J. Sláma, E. Ušák,
Theory of Electricity I	(2nd+3rd sem., 3-2h)	J. Bydžovský, M. Kollár
Electric Circuits II	(3rd+4th sem., 3-2h)	E. Ušák, R. Dosoudil
Electrotechnology II	(2nd+3rd sem., 3-2h)	L. Šumichrast, M. Kollár
Theory of Electricity II	(2nd+3rd sem., 3-2h)	P. Jahn, M. Kollár
Theory of Electricity III	(2nd+3rd sem., 3-2h)	I. Bojna , J. Franek, J. Sláma
Electromagnetic Field	(4th+5th sem., 3-2h)	J. Jasenek
Basics of Electrical Engineering	(FIIT 3rd sem., 3-2h)	V. Jančárik
Electronics	(FIIT 4th sem., 3-2h)	E. Ušák

#### **III.2 Graduate Study (Ing.)**

Electromagnetism	(SvF 1st sem., 2-2h)	L. Šumichrast
Modelling of Fields	(1st sem., 2-2h)	L. Šumichrast
Numeric methods in Electromagnetism	(SvF 1st sem., 2-2h)	L. Šumichrast
Safety of Electric Equipment	(2nd sem., 2-1h)	I. Bojna
Optical Waveguides	(3rd sem., 2-1h)	J. Jasenek

#### **III.3 Doctoral Studies (PhD.)**

Electrodynamics of Optical Fibres	(2nd sem., 2-0 h)	J. Jasenek
Special Measurement Methods in Fibre Optics	(2nd sem., 2-0 h)	J. Jasenek

**IV. RESEARCH PROJECTS**

- Optical Fibre Sensors and their Application, 1/0617/09 (J. Jasenek, L. Šumichrast)
- Selected Effects of High-Frequency Electrodynamics - Methods and Algorithms of Computer Simulation with Applications, 1/0377/10 (L. Šumichrast, J. Jasenek)
- Research and Preparation of Prospective Magnetic Nanomagnetic and Hybrid Composite Materials for New Applications in Electrotechnology, Electronics, and Car Production, 1/0575/09 (J. Sláma, A. Grusková)
- Diagnostics of Electrical Steels and Construction Ferromagnetic Materials by Means of Novel Magnetic Defectoscopy Methods, 1/0747/09 (E. Ušák, J. Bydžovský)
- Research and Synthesis of Electronic Composites and Magnetic Dielectrics, 1/0529/10 (R. Dosoudil, J. Sláma)

**V. COOPERATION****V.1 Cooperation in Slovakia**

- Matador Púchov
- VA SNP L. Mikuláš
- EÚ SAV, Bratislava
- FÚ SAV, Bratislava
- IBOK, Bratislava
- EVPÚ, Nová Dubnica
- TU Košice (KEMT)
- FCHPT STU, Bratislava

**V.2 International Cooperation**

- School of Physics and Electronic Systems Engineering, University of South Australia, Pooraka
- TU Budapest, Hungary
- Doshisha University, Japan
- Nuclear Engineering Research Laboratory, University of Tokyo, Japan
- Department of Physics Colorado State University Fort Collins, USA
- Instituto Nazionale di Ricerca Metrologica
- TU Ilmenau, Germany
- Cardiff University, Wolfson Centre for Magnetic Technology, United Kingdom
- VEV Elektrotechnisch Vakondernus Nijkjerk, The Netherlands
- TU of Czenstochowa, Poland
- Warsaw University of Technology
- Moscow Energy Institute, Russia
- Lublin Technical University, Poland
- Institute of Physics, Academy of Sciences of Czech Republic, Prague, CzR
- Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, Prague, CzR
- Czech Technical University, Prague, CzR
- West Bohemian University, Pilsen, CzR
- Technical University, Brno, CzR
- CINVESTAV, Saltillo, Mexico
- Research Institute for Technical Physics and Materials Science, Hungarian Academy of Sciences, Budapest, Hungary
- Politehnika Zagreb, Chorvatsko
- Faculty of Engineering, Universidad Nacional Autonoma de Mexico (UNAM), Ciudad, Mexico

**V.3 Membership in International Organizations and Societies**

- IEEE, Optical Society of America, European Physical Society, The International Society for Optical Engineering (SPIE), European Association for International Education (EAIE), European Association for Education in Electrical and Information Engineering (EAEEIE), American Society for Engineering Education (ASEE) (J. Jasenek)
- IEE Slovak Centre (M. Kollár)
- IEE Slovak Centre, SAES, European Physical Society (J. Sláma)
- IEEE, IEE Slovak Centre, European Physical Society, President of the Slovak National Committee of the International Union of Radio Science (URSI), Optical Society of America (OSA), European Physical Society (L. Šumichrast)

**VI. THESES****VI.1 Masters Theses**

Masters theses supervised at the Institute of Control and Industrial Informatics. The names of supervisors are in brackets.

none

**VI.2 PhD Theses**

[1] Ušáková, M.: Ferrite Powder Materials as the Filler for Magnetocomposites

**VII. OTHER ACTIVITIES**

- Presidentship of the Slovak Committee of URSI and membership of International URSI Committee (L. Šumichrast)
- Memberships in the Commission for the ‘PhD Degree Award’ in the study field Theoretical Electromagnetic Engineering (5.2.10), (J. Jasenek, J. Sláma, L. Šumichrast, V. Jančárik, E. Ušák, J. Bydžovský, R. Dosoudil)
- Memberships in the Commission for the ‘Award of the title of Associate Professor’ in the study field Theoretical Electromagnetic Engineering (5.2.10), (J. Jasenek, J. Sláma, L. Šumichrast)
- Memberships in the Commission for the ‘PhD Degree Award’ in the study field Electrical Power Engineering (5.2.11), (P. Jahn)
- Membership in Slovak Expertise Commission for Electronics (J. Jasenek)
- Membership in Working Group of Accreditation Commission of the Government of Slovak Republic (J. Jasenek)
- Membership in Inauguration Commission at Military Academy L. Mikuláš (J. Sláma)
- Membership in Commission for Degree Doctor of Scienciare (DrSc) in Theoretical Electromagnetic Engineering (5.2.10), (J. Jasenek, J. Sláma)
- Membership in Slovak Academy of Engineering Sciences and Guarantor for Electrical Engineering (J. Sláma)
- Expert No. 256 for Branch of Metrology at the Institute of Normalization, Measurement and Standards (ÚNMS) of Slovak Republic (J. Bydžovský)
- Cooperation with Encyclopaedic Institute of Slovak Academy of Sciences - Encyclopaedia Beliana, (J. Sláma, P. Jahn, J. Franek)
- Executive Editor of Journal of Electrical Engineering - Elektrotechnický časopis (M. Kollár)
- Member of the Working Group for the implementation of the National Qualification Framework established by the Ministry of Education of the SR (J. Jasenek)
- Participation in the EIE-Surveyor: Reference point for Electrical and Information Engineering in Europe, Project Nr. 225997-CP-1-2005-1-FR-ERASMUS-TNPP, Project funded by the European Commission, SOCRATES Thematic Network, (J. Jasenek)

- Participation in the project ELLEIEC (Enhancing Lifelong Learning in Electrical and Information Engineering), Project number: 142814-LLP-1-2008-FR-ERASMUS-ENW, project funded by the European Commission, SOCRATES Thematic Network, (J. Jasenek)
- Membership in the Scientific Committee of Magnetic Measurement 2010 (J. Bydžovský, V. Jančárik, M. Kollár, J. Sláma, E. Ušák)
- Erasmus- Lifelong learning program, bilateral agreement for years 2007-2010, STU-NTUA (Greece), (J. Bydžovský)
- Membership in the Organizing Committee of EAEEIE Annual Conference 2010, Palanga, Lithuania (J. Jasenek)

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] BOJNA, I.: Low-Voltage Electrical Installations - Special Installations and Special Locations. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 2 (2010), Supplement Volt, p. 12-16. (in Slovak)
- [2] BOJNA, I.: Protective Separation, Physical Separation, Electrical Separation. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 3 (2010), Supplement Volt, p. 7. (in Slovak)
- [3] BOJNA, I.: Selection and Erection of Electrical Equipment - Devices for Protection against Overvoltages. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), Supplement Volt, p. 2-3. (in Slovak)
- [4] BOJNA, I.: Some Comments on the Notice No. 708/2009 in the Field of Professional Qualification. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 3 (2010), Supplement Volt. p. 2-6. (in Slovak)
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### VIII.2 Conference Proceedings

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### VIII.3 Parts of Books

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#### **VIII.4 Textbook**

- [1] BOJNA, I.: Textbook for Professional Examination According to Notice 718/2002. - Bratislava: FEI STU, 2010. - 193 p. (in Slovak)

**DEPARTMENT OF ELECTROTECHNOLOGY**  
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**I. STAFF**

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Assistant Professors	Ing. Juraj Packa, PhD., Ing. Peter Poljovka, PhD., Ing. Michal Váry, PhD.
Senior Scientists	Ing. Michal Ružinský, PhD., Ing. Vladimír Ďurman, PhD.
Technical Staff	Anna Ferenčíková (secretary), Marián Kamendy
PhD. Students	Ing. Milan Perný, Ing. Ján Budaj, Ing. Martin Kusko

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Photovoltaic Laboratory
- High Voltage and Ageing Tests Laboratory
- Laboratory of Cables and Wires
- Laboratory of Health Protection at Work
- Laboratory of Dielectric Properties of Materials
- Laboratory of Electrical Components
- Laboratory of Liquid Dielectrics
- Laboratory of Magnetic Materials

**II.2 Special Measuring Instruments and Computers**

- Test Chambers for Combined Ageing Tests of Insulating Systems
- Solar Simulator for Photovoltaics
- Climatic Test Chamber FEUTRON
- Systems for Measuring of Complex Impedance
- Vibration Magnetometer PVM-1
- Solar Cells Electric Characterization Equipment

**III. TEACHING**

**III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Safety and Protection of Health at Work I	(1st sem., 1-2h)	M. Kopča, J. Packa
Safety and Protection of Health at Work	(1st sem., 1-2h)	M. Kopča, V. Šály
Materials for Electrical Engineering	(3rd sem., 2-3h)	V. Šály
Materials and Technology for Electrical Engineering	(3rd sem., 2-3h)	J. Lelák

Safety and Protection of Health at Work II	(4th sem., 1-4h)	M. Kopča, V. Šály
Technological Processes	(6th sem., 2-3h)	V. Šály, A. Grusková

**III.2 Graduate Study (Ing.)**

Technology of Electronic Devices	(1st sem., 2-2h)	M. Kopča
Renewable Energy Sources	(1st sem., 2-1h)	M. Ružinský
Technology of Ceramic Composites	(2nd sem., 2-2h)	A. Grusková
Materials Physics 2	(2nd sem., 2-3h)	V. Ďurman
Photovoltaic Cells and Systems	(3rd sem., 2-2h)	V. Šály
Quality Management	(3rd sem., 2-1h)	P. Poliovka
Quality Management	(4th sem., 2-1h)	P. Poliovka
Metallic and Optical Cables	(3rd sem., 2-2h)	J. Lelák

**III.3 Undergraduate Study (Bc. Distance Education Method)**

Safety and Protection of Health at Work I	(1st sem.)	M. Kopča
Safety and Protection of Health at Work II	(4th sem.)	M. Kopča
Materials for Electrical Engineering	(3rd sem.)	J. Lelák

**IV. RESEARCH PROJECTS**

- Research and Application of New Composite Materials for Cables Used in Vehicles APVV-0257-07, VUKI (J. Lelák)
- Research on Properties of Composite Materials Based on Micro-Filler for Electrical Insulation Systems, VEGA1/0445/10 (J. Lelák)
- Materials and Material Structures for Photovoltaic Cells and Modules, VEGA 1/0443/10 (V. Šály)
- Research and Preparation of Perspective Magnetic, Nanomagnetic and Hybrid Composite Materials for New Applications in Electrical Engineering and Automobile Industry, VEGA 1/0575/09 (J. Sláma, A. Grusková, V. Ďurman)
- Structural and Magnetic Changes of Disordered and Nanocrystalline Alloys, VEGA 1/0606/09 (J. Sitek, A. Grusková)

**International Scientific Projects:**

- Preparation and Characterization of Materials Based on Iron Oxides by Magnetic Methods, Czech /Slovak cooperation, ZS-4/2001-2015 (J. Šubrt, A. Grusková)
- Magnetic and Microstructural Studies of New Nanocomposited and Substituted Ferrites, Synthesized by Mechanical Alloying and Other Advanced Methods, CONACYT project 89783 (UABC, Mexicali), Mexico Slovak Cooperation (A. González, A. Grusková)

**V. COOPERATION****V.1 Cooperation in Slovakia**

- VUKI jsc, Bratislava
- EZ-Elektronmont jsc
- VÚJE jsc, Trnava

- MURAT Ltd., Pezinok
- BEZ jsc, Bratislava
- HAKL Ltd., Bratislava
- DELTA ENERGY SYSTEMS Ltd Nová Dubnica
- SE jsc OZ EBO, Jaslovské Bohunice
- SYLEX Ltd., Bratislava
- Elkond HHK jsc, Trstená
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- VUSAPL, Nitra
- ELBA jsc, Kremnica
- PPC Čab jsc, Nové Sady
- TAU-CHEM Ltd., Bratislava
- All Deco Ltd., Jaslovské Bohunice
- Institute of Materials Research, Slovak Academy of Sciences, Košice
- Elektroservis jsc, Bratislava
- SONY Slovakia Ltd., Nitra Plant
- UPJŠ Košice
- ZSE jsc, Bratislava
- UMMS-SAV, Bratislava

#### V.2 International Cooperation

- ABB Corporate Research, Baden Daettwil, Switzerland
- Technical University, Brno, CzR
- Czech Technical University, Prague, CzR
- University of West Bohemia, FEE Pilsen
- Institute of Anorganic Chemistry, Academy of Sciences, Řež, CzR
- Piezoceram Ltd., Hradec Králové, CzR
- Motorpal, jsc Světlá Hora, CzR
- Silcotec Europe Ltd., Ireland
- PROTECH Group, Ltd., Klatovy, CzR
- Fraunhofer Institute for Solar Energy Systems ISE, Freiburg, Germany
- EC JRC Ispra, Italy
- Solartec Ltd., Rožnov pod Radhoštěm, CzR
- Foundation for Research and Technology, MRG-IESL, Heraklion, Crete, Greece
- WSC – World Solar Challenge, Adelaide, Australia
- Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland
- WREN - World Renewable Energy Network, Reading, UK
- UA of BAJA CALIFORNIA, Mexicali, Mexico
- Aristotle University, Thessaloniki, Greece
- Angel Kunchev University of Rousse, Bulgaria

#### V.3 Membership in International Organizations and Societies

- Senior Member, IEEE - EDS (Electron Devices Society), USA (M. Ružinský)
- WREN - World Renewable Energy Council /Network, UK (M. Ružinský)
- WREN - World Renewable Energy Council /Network, UK (V. Šály)
- Member of International Steering Committee EMFM, (A. Grusková)

#### V.4 Contracts

- Long Time Combine Ageing Tests of Insulation Systems. Contract with ABB Corporate Research, Baden Daettwil, Switzerland (J. Lelák et al.)
- Measurement of Dielectric Properties of Cables. Contract with VUJE jsc, Trnava VUJE (J. Lelák et al.)
- Treatment of Data&Signal Cables. Contract with Silcotec Europe Ltd. Ireland (J. Lelák et al.)

- Impulse and AC Breakdown Voltage Tests of 22 kV XLPE Cables. Contract with NKT Cables Velké Meziříčí k.s., NKT Group, Czech Republic (J. Lelák et al.)
- Testing of High Voltage Ceramic Insulators. Contract with Polyservis s.r.o., Nitra (J. Lelák et al.)
- A Comprehensive Evaluation of the Causes of Disorder 6 kV Cable and Design Appropriate Solutions for Fire Penetrations, Contract with ENEL jsc. Bratislava (J. Lelák et al.)

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Electrotechnology. The names of supervisors are in brackets.

- [1] Kovačič, M.: The Properties of Cable System in Extreme Conditions (M. Váry)

### **VI.2 PhD Theses**

- [1] Rusnák, J.: Development of Selected Electrical Methods for Research of Photovoltaic Crystalline Silicon Based Materials (M. Ružinský, E. Pinčík)  
[2] Ušáková, M.: Ferrite Powder Materials as the Filter for Magnetocomposites (A. Grusková)

## **VII. OTHER ACTIVITIES**

- Organising of 18<sup>th</sup> International Conference DISEE 2010 in Demänovská Dolina, 22 - 24 September 2010
- Members of International Steering Committee of 'World Renewable Energy Congress XI', WREC 2010, Abu-Dhabi (M. Ružinský, V. Šály)
- Activities in: Renewable Energy World/PennWell's International Directories, 2010-2011 Review Issue (M. Ružinský)
- Bilateral Agreement, Socrates Programme Higher Education (ERASMUS) STU Bratislava - Angel Kunchev University of Rousse (V. Šály)
- Participation in National Centre for Research and Application of Renewable Energy Sources
- The Accredited Educational Activity 'The Education in the Area of Safety and Protection of Health at Work - § 21, § 22, § 23' (M. Kopča)
- The Accredited Educational Activity 'The Electrical Minimum' (M. Kopča)

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] DOSOUDIL, R. - UŠÁKOVÁ, M. - GRUSKOVÁ, A. - SLÁMA, J.: Complex Permeability of LiZn/MnZn/PVC Composite Materials. In: Acta Physica Polonica A. - ISSN 0587-4246. - Vol. 118, No. 5 (2010), p. 1049-1050. (in English)
- [2] DOSOUDIL, R. - UŠÁKOVÁ, M. - FRANEK, J. - SLÁMA, J. - GRUSKOVÁ, A.: Particle Size and Concentration Effect on Permeability and EM-Wave Absorption Properties of Hybrid Ferrite Polymer Composites. In: IEEE Transactions on Magnetics. - ISSN 0018-9464. - Vol. 46 (2010), p. 436-439. (in English)
- [3] ĎURMAN, V. - LELÁK, J.: Influence of Radiation on the Dielectric Properties of XLPE Based Insulation Systems. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 4 (2010), p. 229-234. (in English)

- [4] GONZÁLEZ-ANGELES, A. - LIPKA, J. - GRUSKOVÁ, A. - SLÁMA, J. - JANČÁRIK, V. - SLUGEŇ, V.: Magnetic Comparison of BaCa and BaSr Substituted Hexaferrite Powders. In: Journal of Physics: Conference Series. - ISSN 1742-6588. - Vol. 217 (2010), Art. no. 012137. (in English)
- [5] GRUSKOVÁ, A. - SLÁMA, J. - UŠÁKOVÁ, M. - ŠOKA, M. - DOSOUDIL, R. - DEGMOVÁ, J.: Study of Magnetic and Structural Properties of Non-Stoichiometric NiZn Ferrites Prepared by Wet Method. In: Acta Physica Polonica A. - ISSN 0587-4246. - Vol. 118, No. 5 (2010), p. 780-781. (in English)
- [6] JANÍČEK, F. - POLJOVKA, P. - ŠULC, I. - ŠEDIVÝ, J.: Electricity Market Operator in Slovak Republic. In: Zeszyty Naukowe Politechniki Opolskiej. - ISSN 1429-1533. - Z. 64, Nr. 336 (2010), p. 51-53. (in English)
- [7] JANÍČEK, F. - DARUĽA, I. - POLJOVKA, P. - ŠEDIVÝ, J. - ŠULC, I.: Trading with Electric Power in the Conditions of a Liberalized Electricity Market in Slovakia. In: Zeszyty Naukowe Politechniki Opolskiej. - ISSN 1429-1533. - Z. 64, Nr. 336 (2010), p. 53-55. (in English)
- [8] PERNÝ, M. - ŠÁLY, V.: AC Measurements of Photovoltaic Cells or Moduls. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 2 (2010), p. 32-34. (in Slovak)
- [9] PERNÝ, M. - ŠÁLY, V. - KUSKO, M. - RUŽINSKÝ, M. - SMITKOVÁ, M.: Complex Impedance of PV Cells and its Voltage and Temperature Dependence at the Dark Condition. In: Energetika. - ISSN 0375-8842. - Vol. 60 (2010), p. 573-575. (in Slovak)
- [10] PERNÝ, M. - ŠÁLY, V. - HURAN, J.: Electrical Properties of Nanocrystalline SiC as a Part MSM Structure. In: Energetika. - ISSN 0375-8842. - Vol. 60 (2010), p. 654-657. (in Slovak)
- [11] REHÁKOVÁ, M. - CACIOLA, M. - ČUVANOVÁ, S. - WADSTEN, T. - ŠÁLY, V. - NAGYOVÁ, S. - FORTUNOVÁ, L. - SGANAPPA, M. - PACKA, J.: Nanosized Composites of Synthetic Zeolites and Silver Iodide as Potentially Electrochemically Active Materials. In: Journal of Inclusion Phenomena and Macrocyclic Chemistry. - ISSN 0923-0750. - Vol. 66 (2010), p. 319-325. (in English)
- [12] RUŽINSKÝ, M.: Dream Cup Solar Car Race Suzuka 2010. Formula 1 of Solar Cars. In: Stop. - ISSN 1335-0730. - Vol. 40, No. 16 (2010), p. 46-47. (in Slovak)
- [13] RUŽINSKÝ, M.: Solar Automobiles. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 2 (2010), p. 40-42. (in Slovak)
- [14] RUŽINSKÝ, M.: Solar Car Events in 2010. In: Elektrotechnika v praxi. - ISSN 0862-9730. - Vol. 20, No. 11-12 (2010), p. 76-78. (in Slovak)
- [15] RUŽINSKÝ, M.: World Solar Challenge - Observers & Volunteers in Solar-Powered Racing. In: Polska energetyka słoneczna. - ISSN 1730-2420. - Nr. 1-4/2009, Nr. 1 (2010), p. 68-71. (in English)
- [16] SLÁMA, J. - GRUSKOVÁ, A. - ŠOKA, M. - UŠÁKOVÁ, M. - JANČÁRIK, V.: Analysis of Magnetic Properties of Substituted Li Ferrites. In: IEEE Transactions on Magnetics. - ISSN 0018-9464. - Vol. 46 (2010), p. 455-458. (in English)
- [17] SLÁMA, J. - UŠÁK, E. - ŠOKA, M. - GRUSKOVÁ, A. - UŠÁKOVÁ, M. - JANČÁRIK, V.: Analysis of Selected Be-Substituted NiZn Ferrites. In: IEEE Transactions on Magnetics. - ISSN 0018-9464. - Vol. 46 (2010), p. 447-450. (in English)

- [18] SLÁMA, J. - ŠOKA, M. - GRUSKOVÁ, A. - UŠÁKOVÁ, M. - OLAH, V. - JANČÁRIK, V.: Changes of NiZn Properties by Substitution of Zn with Cu And Co Ions. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 7/s (2010), p. 160-162. (in English)
- [19] ŠÁLY, V. - PACKA, J. - RUŽINSKÝ, M. - PERNÝ, M. - KUSKO, M. - DURNÝ, R.: Activities in Area of Photovoltaics at FEI STU in Bratislava. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16. No. 4 (2010), 10-11, 24. (in Slovak)
- [20] ŠOKA, M. - SLÁMA, J. - GRUSKOVÁ, A. - UŠÁKOVÁ, M. - DOSOUDIL, R.: Role of Thermomagnetic Curves at Preparation of NiZn Ferrites with Fe Ions Deficiency. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 7/s (2010), p. 163-165. (in English)
- [21] UHRÍK, M. - ŠÁLY, V.: Impact of Stator Lamination on Disk Generator Losses in Wind Powered Energy Plant Sources. In: Energetika. - ISSN 0375-8842. - Vol. 60 (2010), p. 650-653. (in Slovak)
- [22] VÁRY, M. - FIRICKÝ, E.: Organic Semiconductors for Solar Cells. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 3 (2010), p. 29-31. (in Slovak)

### VIII.2 Conference Proceedings

- [1] BUDAJ, J.: Polymer Nanocomposites - an Overview. In: Dielectric and Insulating Systems in Electrical Engineering: 18th International Conference DISEE 2010. Demänovská Dolina, Slovak Republic, 22.-24.9.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3366-3. - p. 198-200. (in English)
- [2] DOSOUDIL, R. - UŠÁKOVÁ, M. - GRUSKOVÁ, A. - SLÁMA, J.: Complex Permeability of LiZn/MnZn/PVC Composite Materials. In: CSMAG '10. 14th Czech and Slovak Conference on Magnetism: Košice, Slovak Republic, 6.-9.7.2010. - Košice: Pavol Jozef Šafárik University, 2010. - ISBN 978-80-7097-804-7. - p. 234. (in English)
- [3] ĎURIŠ, T. - ŠÁLY, V. - ĎURMAN, V. - PACKA, J. - PERNÝ, M. - KUSKO, M. - BAŘINKA, R.: Assessment of PV Module Encapsulant as an Insulation System. In: 25th European Photovoltaic Solar Energy Conference. 5th World Conference on Photovoltaic Energy Conversion: Valencia, Spain, 6.-10.9.2010. - Munich: WIP-Renewable Energies, 2010. - ISBN 3-936338-26-4. - p. 4056-4059. (in English)
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- [7] ĎURMAN, V. - ŠÁLY, V.: Slow Polarization Processes in Dielectric Structures. In: APCOM 2010. Applied Physics of Condensed Matter: Proceedings of 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: Nakladatel'stvo STU, 2010. - ISBN 978-80-227-3307-6. - p. 142-145. (in English)

- [8] GRUSKOVÁ, A. - SLÁMA, J. - UŠÁKOVÁ, M. - ŠOKA, M. - DOSOUDIL, R. - DEGMOVÁ, J.: Study of Magnetic and Structural Properties of Non-Stoichiometric NiZn Ferrites Prepared by Wet Method. In: CSMAG '10. 14th Czech and Slovak Conference on Magnetism: Košice, Slovak Republic, 6.-9.7.2010. - Košice: Pavol Jozef Šafárik University, 2010. - ISBN 978-80-7097-804-7. - p. 105. (in English)
- [9] HURAN, J. - PERNÝ, M. - ŠÁLY, V.: Dielectric Characterization of SiC for PV Application. In: 5th Czech Photovoltaic Conference: Brno, 10.-13. 12.2010. - Rožnov pod Radhoštěm: Czech RE Agency, 2010. - ISBN 978-80-254-8906-2. - p. 106-109. (in English)
- [10] KOPČA, M. - VÁRY, M.: Current and Power Load Characteristics of LV and MV Cables and Conductors. In: Eltech SK 2010: 1st National Meeting of the Electrical Devices Inspectors, Designers, Workers in Electrical Engineering and Electrical Maintenance Companies with Technical Inspection of Slovak Republic. Štrbské pleso, Slovak Republic, 8.-10.6.2010. - Prague: Saltek, 2010. - DVD-Rom. (in Slovak)
- [11] KOPČA, M. - VÁRY, M.: Regulations in the Dimensioning of the Current Capacity of LV and MV Cables. In: Dielectric and Insulating Systems in Electrical Engineering: 18th International Conference DISEE 2010. Demänovská Dolina, Slovak Republic, 22.-24.9.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3366-3. - p. 208-210. (in English)
- [12] KUSKO, M. - ŠÁLY, V.: AC and DC Response of Non-Standard Poly-Si Solar Cells. In: 5th Czech Photovoltaic Conference: Brno, 10.-13.12.2010. - Rožnov pod Radhoštěm: Czech RE Agency, 2010. - ISBN 978-80-254-8906-2. - p. 94-97. (in English)
- [13] KUSKO, M. - ŠÁLY, V.: Comparison of AC and DC Parameters of poly-Si PV Cells with Alternative Top Electrode Topology. In: Dielectric and Insulating Systems in Electrical Engineering: 18th International Conference DISEE 2010. Demänovská Dolina, Slovak Republic, 22.-24.9.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3366-3. - p. 178-181. (in English)
- [14] KUSKO, M.: The Influence of Counter Electrode Topology Alteration on Selected Parameters of Poly-Si PV Cells. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [15] OVČIARIK, M. - SULOVÁ, J. - VERBICH, O. - LELÁK, J.: Electrical Insulating Materials for Cables in Transport Systems. In: Dielectric and Insulating Systems in Electrical Engineering: 18th International Conference DISEE 2010. Demänovská Dolina, Slovak Republic, 22.-24.9.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3366-3. - p. 163-166. (in Slovak)
- [16] PERNÝ, M. - HURAN, J.: Electrical Properties of Amorphous SiC Prepared by PECVD on Si Substrate. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [17] PERNÝ, M. - ŠÁLY, V. - ĎURMAN, V. - HURAN, J.: Electrical Properties of Nanocrystalline SiC (SiCN) within MSM Structure. In: 25th European Photovoltaic Solar Energy Conference. 5th World Conference on Photovoltaic Energy Conversion: Valencia, Spain, 6.-10.9.2010. - Munich: WIP-Renewable Energies, 2010. - ISBN 3-936338-26-4. - p. 3307-3310. (in English)
- [18] PERNÝ, M. - ŠÁLY, V. - HURAN, J.: Material Properties of SiC and Its Application for Photovoltaic Devices. In: Dielectric and Insulating Systems in Electrical Engineering: 18th International Conference DISEE 2010. Demänovská Dolina, Slovak Republic, 22.-24.9.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3366-3. - p. 182-185. (in English)

- [19] PERNÝ, M. - ŠÁLY, V.: PV Cell Complex Impedance and its Voltage and Temperature Dependencies in Dark Condition. In: Power Engineering 2010. Renewable Energy Sources: 1st International Scientific Conference.: Tatranské Matliare, Slovak Republic, 18.-20. 5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-24-3, CD-Rom. (in English)
- [20] PERNÝ, M. - KUSKO, M. - ŠÁLY, V. - PACKA, J.: PV Concentrator Cells Complex Impedance under the Bias in the Dark. In: 35th IEEE Photovoltaic Specialists Conference: Honolulu, 20.-25.6.2010. - Piscataway: IEEE, 2010. - ISBN 978-1-4244-5891-2. - CD-Rom. (in English)
- [21] POLJOVKA, P. - ŠULC, I.: Energy Management Systems in Organisations. In: Power Engineering 2010. Energy, Ecology, Economy: 9th International Scientific Conference. Tatranské Matliare, Slovakia, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-23-6, p. 68-69. (in English)
- [22] POLJOVKA, P. - VÁRY, M.: The Enterprise Management Systems. In: Dielectric and Insulating Systems in Electrical Engineering: 18th International Conference DISEE 2010. Demänovská Dolina, Slovak Republic, 22.-24.9.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3366-3. - p. 205-207. (in English)
- [23] RUSNÁK, J. - RUŽINSKÝ, M. - KOBAYASHI, H. - MADANI, K. - TAKAHASHI, M. - PINČÍK, E.: Development and Realization of Advanced Equipment for Q-DLTS and C-V Measurements Using Transient Methods and I-V Measurements. In: CCATM'2010. 15th CSM Conference and Exhibition on Analysis & Testing of Materials: Beijing, China, 12-15.9.2010. - Beijing: The Periodical Office on Metallurgical Analysis, 2010. - p. 988-1001. (in English)
- [24] RUSNÁK, J. - RUŽINSKÝ, M. - KOBAYASHI, H. - MADANI, K. - TAKAHASHI, M. - PINČÍK, E.: Development and Realization of Advanced Equipment for Q-DLTS, C-V and I-V Measurements. In: 7th Solid State Surfaces and Interfaces: Extended Abstract Book. Smolenice Castle, Slovak Republic, 22.-25.11.2010. - Bratislava: Comenius University, 2010. - ISBN 978-80-223-2938-5. - p. 57. (in English)
- [25] RUSNÁK, J. - RUŽINSKÝ, M. - KOBAYASHI, M. - ŠTEFEČKA, M. - PINČÍK, E.: Research of HCN Passivated Very Thin Oxide/Silicon Structures with Advanced Equipment Based on Transient Event Principle. In: CCATM'2010. 15th CSM Conference and Exhibition on Analysis & Testing of Materials: Beijing, China, 12.-15.9.2010. - Beijing: The Periodical Office on Metallurgical Analysis, 2010. - CD-Rom. (in English)
- [26] RUŽINSKÝ, M. - ŠÁLY, V. - PACKA, J. - VÁRY, M. - PERNÝ, M. - KUSKO, M.: Photovoltaic Research, Education and Training - at the Slovak University of Technology in Bratislava. In: IWTPV '10. 5th International Workshop on Teaching in Photovoltaics: Prague, Czech Republic, 25.-26.3.2010. - Prague: Czech Technical University, 2010. - ISBN 978-80-04532-9. - p. 57-62. (in English)
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- [28] SLÁMA, J. - ŠOKA, M. - GRUSKOVÁ, A. - GONZÁLEZ-ANGELES, A. - JANČÁRIK, V.: Hopkinson Effect Study in a Spinel and Hexagonal Ferrites. In: Magnetic Measurements '2010: Book of Abstracts. Prague, Czech Republic, 12.-15.9.2010. - Prague: ČVUT, 2010. - ISBN 978-80-01-04616-6. - p. 24. (in English)

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- [30] ŠÁLY, V. - PACKA, J. - RUŽINSKÝ, M. - PERNÝ, M. - KUSKO, M.: Photovoltaics at Faculty of Electrical Engineering and Information Technology STU Bratislava. In: Power Engineering 2010. Renewable Energy Sources: 1st International Scientific Conference. Tatranské Matliare, Slovak Republic, 18.-20. 5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-24-3, CD-Rom. (in English)
- [31] ŠOKA, M. - SLÁMA, J. - GRUSKOVÁ, A. - UŠÁKOVÁ, M. - DOSOUDIL, R.: Role of Thermomagnetic Curves at Preparation of NiZn Ferrites with Fe Ions Deficiency. In: Magnetic Measurements '2010: Book of Abstracts. Prague, Czech Republic, 12.-15.9.2010. - Prague: ČVUT, 2010. - ISBN 978-80-01-04616-6. - p. 78. (in English)

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Assistant Professors	RNDr. Igor Brilla, PhD., RNDr. Karla Čipková, PhD., RNDr. Mária Kečkemétyová, PhD., RNDr. Hana Lichardová, PhD., RNDr. Ivica Marínová, PhD., Mgr. Dávid Pancza, PhD., RNDr. Elena Pastuchová, PhD., Mgr. Marcel Polakovič, PhD.
Research Worker	RNDr. Anton Galan
PhD. Students	Mgr. Viktoria Rozborová, Mgr. Tomáš Žilka
Technical Staff	Gabriela Grúňová (secretary)

**II. EQUIPMENT**

None

**III. TEACHING**

**III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer:

Calculus I	(1st sem., 4-2h)	M. Kečkemétyová B. Rudolf L. Satko
Logic Systems	(1st sem., 4-1h)	V. Čerňanová V. Olejček M. Polakovič
Calculus II	(2nd sem., 4-2h)	I. Brilla B. Rudolf L. Satko
Linear Algebra I	(1st sem., 2-2h)	M. Zajac
Calculus III	(3rd sem., 3-2h)	Ľ. Marko

Ordinary Differential Equations	(3rd sem., 2-2h)	L. Marko
Discrete Mathematics and Logic	(3rd sem., 3-2h)	I. Marínová
Numerical and Statistical Computations	(3rd sem., 3-2h)	P. Volauf
Numerical and Statistical Computations	(4th sem., 3-2h)	V. Olejček
Statistical Methods in Informatics	(4th sem., 2-2h)	E. Pastuchová
Partial Differential Equations	(4th sem., 2-2h)	I. Bock
Probability and Statistics	(4th sem., 2-2h)	P. Volauf
Linear Algebra and Linear Programming	(6th sem., 2-2h)	M. Zajac
Discrete Mathematics	(6th sem., 3-2h)	J. Galanová

**III.2 Graduate Study (Ing.)**

Coding Theory	(1st sem., 3-1h)	K. Čipková
Differential Systems and Stability	(1st sem., 2-2h)	I. Bock
Partial Differential Equations	(1st sem., 3-1h)	I. Bock
Mathematical Logic	(1st sem., 3-1h)	J. Galanová
Functional Analysis I	(1st sem., 2-2h)	M. Zajac
Differential and Difference Systems	(1st sem., 2-2h)	B. Rudolf
Numerical Solutions of Differential Equations	(2nd sem., 2-0h)	I. Bock
Graph Theory	(2nd sem., 3-1h)	J. Galanová
Stochastic Models	(2nd sem., 2-2h)	V. Olejček

**III.3 Undergraduate Study (Bc. Distance Education Method)**

Mathematics I	(1st year)	L. Marko
Logic Systems	(1st year)	D. Pancza
Mathematics II	(1st year)	I. Brilla
Mathematics III	(2nd year)	L. Marko
		P. Volauf
Mathematics IV	(2nd year)	V. Olejček

**III.4 Graduate Study (Ing. Distance Education Method )**

Mathematics	(1st year)	I. Bock
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**IV. RESEARCH PROJECTS**

- The Analysis of Quasistatic Dynamic Contact Problems of Mechanics. VEGA 1/0021/10 (I. Bock)
- Probabilistic and Algebraic Uncertainty Methods for Quantum Structures. APVV-0071-06 (A. Dvurečenskij, MU SAV; deputy Z. Riečanová)
- Joint States and Conditioning. APVV-0375-06 (R. Mesiar, SvF STU; deputy Z. Riečanová)

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- Mathematical Institute, Slovak Academy of Sciences, Bratislava
- Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava
- Department of Mathematics, Faculty of Civil Engineering, STU, Bratislava
- Department of Mathematics, Faculty of Mechanical Engineering, STU, Bratislava
- Institute of Information Engineering, Automation and Mathematics, Faculty of Chemical and Food Technology, STU, Bratislava
- Faculty of Informatics and Information Technology, STU, Bratislava
- Faculty of Natural Sciences, University of Transport and Communications, Žilina
- Faculty of Natural Sciences, Matej Bel University, Banská Bystrica

### **V.2 International Cooperation**

- Abt. für Mathematik III, Universitaet Ulm, Germany
- Institut für Algebra und Computermathematik TU Vienna, Austria
- Department of Mathematics, FEE CTU, Prague, CzR
- Academy of Sciences of the Czech Republic, Prague, CzR
- Department of Mathematics, Faculty of Natural Sciences of MU, Brno, CzR
- Department of Mathematics, Univ. Louis Pasteur, Strasbourg, France
- Math. Institute, Polish Academy of Sciences, Warsaw, Poland
- Zhejiang University, Hangzhou, China

### **V.3 Membership in International Organizations and Societies**

- ISIMM - International Society for the Interaction of Mechanics and Mathematics (I. Brilla)
- IQSA - International Quantum Structures Association (Z. Riečanová, V. Olejček, G. Jenča)
- Bernoulli Society (Z. Riečanová, V. Olejček)
- AMS - American Mathematical Society (I. Bock, V. Olejček, Z. Riečanová)
- IACM - International Association for Computational Mechanics (I. Brilla, L. Marko)
- Emmy Noether Society (Z. Riečanová, I. Marínová, E. Pastuchová, G. Jenča)
- GAMM - Gesellschaft für Angewandte Mathematik und Mechanik (I. Bock)
- ISSMO - Society for Structural and Multidisciplinary Optimization (I. Bock)
- SIAM - Society for Industrial and Applied Mathematics (V. Olejček, L. Satko)

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Mathematics. The names of supervisors are in brackets.

none

### **VI.2 PhD Theses**

none

## **VII. OTHER ACTIVITIES**

- Department is a Coeditor of Tatra Mountains Mathematical Publications
- Member of Editorial Board of Tatra Mountains Mathematical Publications (Z. Riečanová)

- Members of Editorial Board of Mathematica Slovaca (M. Zajac, I. Bock)
- Reviewers for Mathematical Reviews (I. Bock, M. Zajac)
- Reviewers for Zentralblatt für Mathematik (I. Bock, M. Zajac)

**The department supervises the postgraduate study in:**

- Boolean Algebras and Boolean Functions
- Differential Equations in Mathematical Physics
- Functional Analysis
- Quantum Structures
- Ordinary Differential Equations and Variational Calculus

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] BOCK, I. - JARUŠEK, J.: Dynamic Contact Problem for a Bridge Modeled by a Viscoelastic Full von Kármán System. In: Zeitschrift für angewandte Mathematik und Physik - ZAMP. - ISSN 0044-2275. - Vol. 61 (2010), p. 865-876. (in English)
- [2] BRAČIČ, J. - MÜLLER, V. - ZAJAC, M.: Reflexivity and Hyperreflexivity of the Space of Locally Intertwinning Operators. In: Journal of Operator Theory. - ISSN 0379-4024. - Vol. 63 (2010), p. 101-114. (in English)
- [3] KALINA, M. - PASEKA, J. - RIEČANOVÁ, Z.: Sharply Orthocomplete Effect Algebras. In: Acta Polytechnica. - ISSN 1210-2709. - Vol. 50, No. 5 (2010), p. 51-56. (in English)
- [4] MESIAR, R. - NÁNÁSIOVÁ, O. - PASEKA, J. - RIEČANOVÁ, Z.: Editorial: Quantum Structures, States and Related Topics. In: Kybernetika. - ISSN 0023-5954. - Vol. 46, No. 6 (2010), p. 931-934. (in English)
- [5] NÁNÁSIOVÁ, O. - PASTUCHOVÁ, E. - VÁCLAVÍKOVÁ, Š.: One Expression of Associative Coefficients. In: Forum Statisticum Slovacum. - ISSN 1336-7420. - Vol. 6, No. 5 (2010), p. 176-179. (in English)
- [6] OLEJČEK, V.: Every Uniformly Archimedean Atomic MV-Effect Algebra is Sharply Dominating. In: Kybernetika. - ISSN 0023-5954. - Vol. 46, No. 6 (2010), p. 948-952. (in English)
- [7] PASEKA, J. - RIEČANOVÁ, Z. - WU, J.D.: Almost Orthogonality and Hausdorff Interval Topologies of Atomic Lattice Effect Algebras. In: Kybernetika. - ISSN 0023-5954. - Vol. 46, No. 6 (2010), p. 953-970. (in English)
- [8] PASEKA, J. - RIEČANOVÁ, Z.: Compactly Generated de Morgan Lattices, Basic Algebras and Effect Algebras. In: International Journal of Theoretical Physics. - ISSN 0020-7748. - Vol. 49, No. 12 (2010), p. 3216-3223. (in English)
- [9] RIEČANOVÁ, Z.: Archimedean Atomic Lattice Effect Algebras with Complete Lattice of Sharp Elements. In: Symmetry, Integrability and Geometry: Methods and Applications. - ISSN 1815-0659. - Vol. 6 (2010), Art. no.001. (in English)

### **VIII.2 Conference Proceedings**

- [1] BOCK, I. - LOVÍŠEK, J.: On Optimal Control Problem for Reissner-Mindlin Plates with Contact Conditions. In: New Trends in Statics and Dynamics of Buildings: 8th International Conference. Bratislava, Slovak Republic, 21.-22.10.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3373-1. - p. 21-24. (in English)

- [2] BOCK, I.: On the Dynamic Contact Problem for a Viscoelastic Plate. In: ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis (ESDA2010): Turkey, Istanbul, 12.-14.7.2010. - ASME, 2010. - ISBN 978-0-7918-3877-8. - CD-Rom. (in English)
- [3] BRILLA, I.: Numerical Solution of Boundary Inverse Problems for Plane Orthotropic Solids. In: PACAM XI. 11th Pan-American Congress of Applied Mechanics: Foz do Iguacu, Brazil, 4.-8.1.2010. - Sao Carlos: EESC, 2010. - ISBN 978-85-85205-98-0. - CD-Rom. (in English)
- [4] ČERŇANOVÁ, V.: Vector in Mathematics and in Physics. In: 42nd Conference of Slovak Mathematicians: Jasná pod Chopkom, Slovak Republic, 2.-5.12.2010. - Žilina: JSMF pri SAV, 2010. - ISBN 978-80-554-0288-8. - p. 28. (in Slovak)
- [5] DIBALA, M. - RUDOLF, B.: On the Critical Value of Damping Coefficient of the Pendulum with Constant Torque. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom, (in Slovak)
- [6] MARKO, L. - ŽÁKOVÁ, K. - HUBA, M.: On-Line Reviving of the Course 'Introduction to Engineering Mathematics'. In: ICETA 2010: 8th International Conference on Emerging eLearning Technologies and Applications. Stará Lesná, Slovakia, 28.-29.10.2010. - Košice: Elfa, 2010. - ISBN 978-80-8086-166-7. - CD-Rom. (in English)
- [7] VÁCLAVÍKOVÁ, Š. - NÁNÁSIOVÁ, O. - PASTUCHOVÁ, E.: Classification of Association Coefficients and its Application. In: ISCAMI 2010: Book of Abstracts. Bratislava, Slovak Republic, 20.-23.5.2010. - Bratislava: STU, 2010. - p. 42. (in English)

**DEPARTMENT OF MEASUREMENT**  
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**I. STAFF**

Professors	Prof. Ing. Viktor Smieško, PhD., Prof. Ing. Július Bajcsy, PhD., professor emeritus
Associate Professors	Doc. Ing. René Hartanský, PhD., Doc. Ing. Eduard Kaluš, PhD., Doc. Ing. Karol Kováč, PhD., Doc. Ing. Peter Kukuča, PhD., Doc. Ing. Rudolf Ravas, PhD., Doc. Ing. Lívia Syrová, PhD.
Assistant Professors	Ing. Ol'ga Čižáková, Mgr. Ján Grman, PhD., Ing. Miroslav Kamenský, PhD., Ing. Eva Králiková, Ing. Iveta Ondrášová, PhD.
Senior Scientists	Ing. Mikuláš Bittera, PhD., Ing. Jozef Hallon, PhD., Ing. Milan Hanajík, PhD., Ing. Jaroslav Hricko, Ing. Anton Krammer, Ing. Lucia Noskovičová, Ing. Imrich Szolik
Technical Staff	Ružena Nagyová (secretary)
PhD. Students	Ing. Miroslav Földi, Ing. Anton Krammer, Ing. Lukáš Maršalka, Ing. Marek Šuplata, Ing. Gabriel Války

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Electromagnetic Compatibility (EMC) Laboratory with a 4,5 x 4,5 x 8 m Semianechoic Shielded Chamber
- Precise Measurements Laboratory
- Laboratory of Distributed Measurement Systems
- Laboratory of Digital Signal Processing
- Laboratory of Diagnostics Systems
- Laboratory of Power Saving
- Laboratory of Nonelectrical Quantities
- Laboratory of Microprocessor Engineering
- Laboratory of Artificial Intelligence
- Laboratory of Visual Systems
- Laboratory of Telematics
- Metrological Laboratory

**II.2 Special Measuring Instruments and Computers**

- Calibrator DATRON 4700
- Digitizing Oscilloscopes up to 4 channels 1 GHz 5 GS/s
- VXI System (VX 4236 Digital Multimeter, VX 5520 VXI SLOT O Resource Manager, VX 1500 VXI D-Size Mainframe - 13 Slot, VX 4223 Counter/Timer)
- HP 84100A EMC Design Development System (HP 8591A Spectrum Analyzer and HP 11945A Close Field Probe Set)
- Agilent E7405A 26GHz EMC Analyzer
- R&S Measuring Receivers 9 kHz - 7000 MHz (ESVP, ESH3, ESHS10, ESVS10 and ESP17)

- Handheld Spectrum Analyzer Rohde&Schwarz FSH8 9 kHz – 8 GHz
- Time Domain EMI Measuring Receiver TDEMI 1G
- Measuring Antenna Set (BiConLog, Log, Periodic, Biconical, Active Rod and Active Loop Antennas)
- Low Frequency Field Intensity Meter Chauvin Arnoux C. A 42 DC – 400 kHz 100nT – 1T,
- Line Interference Simulator Set - Schaffner NSG 200
- Schaffner BEST 96 - Burst, Surge and Power Drop-out Simulator
- EM TEST VCS500 Combination Wave Generator
- EM TEST EFT500 Electric Fast Transients Generator
- EM TEST CWS500 Combination Wave Generator
- EM TEST UCS500 Combination Wave Generator
- Haefely PEFT - Electric Fast Transients/Burst Generator with EM 101 Coupling Clamp
- Haefely PESD 1600 - Electrostatic Discharge Simulator
- Rohde and Schwarz Signal Generator SMH (100 kHz ... 2000 MHz)
- Agilent E8257D PSG Analog Signal Generator 20 GHz
- Programmable AC Power Supply Chroma 61503 1500 VA Low Distortion
- Agilent ENA RF Network Analyzer E5071C 9 kHz – 3 GHz
- Automotive EMC Testing System UCS200N, LD200N, VDS 200N and PFS200
- High Voltage Divider HTS6-1
- Reference Noise Generator CGE 01 up to 18 GHz
- RF Network/Spectrum/Impedance Analyzer Agilent 4396B
- MicroWave Switch & Attenuator Agilent L4445A
- Calibration Set for RF Attenuators Agilent
- RF Power Amplifier Research 150 W 80 – 1000 MHz
- HF Power Amplifier MILMEGA AS0840 0.8 – 4 GHz 30/17W
- HF Broadband Amplifier Research 1W 4 – 10,6 GHz
- High Power Supply with Power Factor Correction SW 3500
- Low Distortion Amplifier/Harmonic Analyzer Tti HA1600A
- Electromagnetic Field Intensity Meter MP60000
- Large Set of Coupling Decoupling Networks for EMC Testing
- EM Field Simulation Station ThinkStation D20
- EMC Measurement Software

### **III. TEACHING**

#### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of lecturer.

Introduction to Engineering	(1st sem., 2-2h)	R. Ravas
Measuring Information Systems	(4th sem., 2-2h)	L. Syrová
Measuring Information Systems	(3rd sem., 2-2h)	L. Syrová
Measurement	(4th sem., 2-3h)	P. Kukuča
Measurement	(5th sem., 2-2h)	P. Kukuča
Diagnostics and Testing of Automobiles	(6th sem., 2-2h)	K. Kováč
Microprocessor Engineering	(6th sem., 2-2h)	R. Ravas
Technical Diagnostics	(6th sem., 3-2h)	K. Kováč
Measurement Technology	(3rd sem., 2-3h)	V. Smieško
Measurement Technology	(4th sem., 2-3h)	V. Smieško

Computer Architecture	(2nd sem., 3-2h)	R. Ravas
Measurement in Information Technology	(5th sem., 2-2h)	L. Syrová
Methodology of Measurement	(5th sem., 2-1h)	L. Syrová

**III.2 Graduate Study (Ing.)**

Electromagnetic Compatibility	(2nd sem., 3-2h)	K. Kováč
Electromagnetic Compatibility	(1st sem., 3-2h)	K. Kováč
Visual Systems	(3rd sem., 2-3h)	R. Ravas
Telemetry and Information Transmission	(3rd sem., 3-2h)	P. Kukuča
Telemetry and Information Transmission	(4th sem., 3-2h)	P. Kukuča
Theory of Measuring Systems	(2nd sem., 3-2h)	R. Ravas
Digital Signal Processing	(2nd sem., 3-2h)	K. Kováč
Distributed Measurement Systems	(1st. sem., 2-3h)	V. Smieško
Distributed Measurement Systems	(3rd. sem., 2-3h)	V. Smieško
Digital Image Processing	(1st. sem., 2-3h)	R. Ravas
Diagnostic Systems	(1st. sem., 3-2h)	K. Kováč
Diagnostic Systems	(3rd sem., 3-2h)	K. Kováč
Designing of Information Systems	(1st sem., 2-3h)	R. Ravas
Methods and Tools of Artificial Intelligence	(2nd sem., 2-3h)	R. Ravas
Methods and Tools of Artificial Intelligence	(4th sem., 2-3h)	R. Ravas
Metrology, Testing and Quality Control	(2nd sem., 3-2h)	P. Kukuča

**III.3 Distance Study (Bc.)**

Measurement Technology	(6th sem.)	V. Smieško
Measuring Information Systems	(5th sem.)	L. Syrová
Measuring Information Systems	(6th sem.)	L. Syrová
Methodology of Measurement	(7th sem.)	L. Syrová
Technical Diagnostics	(8th sem.)	K. Kováč
Computer Architecture	(2nd sem.)	R. Ravas

**III.4 Distance Study (Ing.)**

Methods and Tools of Artificial Intelligence	(2nd sem.)	R. Ravas
Visual Systems	(3rd sem.)	R. Ravas
Electromagnetic Compatibility	(2nd sem.)	K. Kováč

**III.5 Undergraduate Study for Foreign Students (in English Language)**

Measurement Technology	(3rd sem.)	V. Smieško L. Syrová
Electronic Measurement	(4th sem.)	P. Kukuča
Microprocessor Systems	(7th sem.)	K. Kováč

Methodology and Measurement (5th sem.) L. Syrová

### **III.6 Graduate Study (Ing.) for Foreign Students (in English Language)**

Electromagnetic Interference and Compatibility (1st sem.) K. Kováč

## **IV. RESEARCH PROJECTS**

- Electromagnetic Compatibility of Large Systems. VEGA, 1/0551/09 (V. Smieško)
- The Use of Image Information in the Measurement and Diagnostics. VEGA, 1/0490/10 (R. Ravas)
- Construction and Control of Micro-electro-mechanical Elements and Devices. VEGA, 2/0006/10 (R. Hartanský)
- Support of Research and Development Infrastructure from the Point of View of Electromagnetic Compatibility Requirements. State Research and Development Program, 338/2003, 2003 – 2010 (K. Kováč)
- Effective Control of Production and Consumption of Energy from Renewable Resources, ENERGOZ 26240220028, Operational Programme Research and Development, European Regional Development Fund, 2010-2013 (V. Smieško, M. Bittera, R. Hartanský, E. Kaluš)

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- Institute of Measurement Science, Slovak Academy of Sciences, Bratislava
- Slovak Institute of Metrology, Bratislava
- Nuclear Power Plants Research Institute, Trnava
- Department of Theoretical Electrical Engineering and Electrical Measurement, FEI TU Košice
- Slovak Institute of Technical Standardization, Bratislava
- Office for Standardization, Metrology and Testing of Slovak Republic, Bratislava
- National Security Authority, Bratislava
- Slovak Power Plants, Bratislava
- University of Žilina, Žilina
- Faculty of Mechatronics, Trenčín University, Trenčín
- Volkswagen Slovakia, jsc., Bratislava
- Slovak Electric Transmission System, jsc., Bratislava
- Západoslovenská energetika, jsc., Bratislava
- Stredoslovenská energetika, jsc., Žilina
- Elektrovod Holding, jcs., Bratislava
- LIV ELEKTRA, jcs., Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Detached branches Banská Bystrica

### **V.2 International Cooperation**

- Department of Measurement, Czech Technical University, Prague, Czech Republic
- Katholieke Hogeschool Brugge - Oostende, Oostende, Belgium
- University of York, York, England
- European Organization for Nuclear Research CERN, Geneve, Switzerland
- Institute of Logistics and Warehousing (ILIM), Poznań, Poland
- Austrian Research Centre, Seibersdorf, Austria
- Izhevsk State Technical University, Russian Federation

### **V.3 Membership in International Organizations and Societies**

- The European Academy of Sciences and Arts (V. Smieško)
- IEEE - The Institute of Electrical and Electronics Engineers (V. Smieško)

- IEEE - The Institute of Electrical and Electronics Engineers (R. Harfanský)
- IET - The Institution of Engineering and Technology (V. Smieško)
- IET - The Institution of Engineering and Technology (P. Kukuča)
- The International Information Academy (V. Smieško)
- URSI – Scientific Commission for Electromagnetic Noise and Interference (V. Smieško)

**V.4 Contracts**

- EMC Testing and Consultancy. Contracts for Small and Medium Enterprises (K. Kováč et al.)

**VI. THESES****VI.1 Masters Theses**

Masters theses supervised at the Department of Measurement. The names of supervisors are in brackets.

- [1] Ambróš, T.: Measuring and Security Central Unit for EMC Laboratories (J. Hallon)
- [2] Hipp, T.: Optimization of Problems and Genetic Algorithms (J. Grman)
- [3] Juhas, M.: Recognition of Colour Textures (R. Ravas)
- [4] Lipovský, M.: Simulation of the Artificial Life (J. Grman)
- [5] Majzel, M.: Application of Information Theory in the Telemetry System Used in E-learning (O. Čičáková)
- [6] Nečas, T.: Interactive Design of 34-D Scene Model (L. Syrová)
- [7] Polák, T.: Modeling and Visualization of 3D Landscape (J. Grman)

**VI.2 PhD Theses**

- [1] Hallon, J.: Speciality of EMC Measurement of Large Systems (K. Kováč)

**VII. OTHER ACTIVITIES**

- Chairman of the Council of Universities of Slovak Republic (V. Smieško)
- Member of Slovak Republic Government Council for Science and Technology (V. Smieško)
- Member of Scientific Council of the Slovak Academy of Sciences (V. Smieško)
- Vice-chairman of Scientific Council for Electronics of the Slovak Academy of Sciences (V. Smieško)
- Member of Scientific Council of Institute of Measurement Science in Slovak Academy of Sciences (V. Smieško)
- Member of Scientific Council of the FEI STU (V. Smieško)
- Chairman of Council for State Program of Ministry of Education SR (V. Smieško)
- Member of Chairmanship of Slovak Research and Development Agency (V. Smieško)
- Member of Accreditation Board for Research Institution in SR (V. Smieško)
- Membership in the Slovak Electrotechnical Committee (P. Kukuča)
- Membership in the Scientific Council of the Slovak Institute of Metrology (V. Smieško)
- Membership in the Slovak National Technical Standardisation Committees (K. Kováč, P. Kukuča)
- Membership in the Technical Subcommittees of IMEKO (TC1 - J. Bajcsy, TC19 - K. Kováč)

**Participation in the Program Committees of Conferences:**

- Electrical Engineering and Information Technology 2010, Trenčín (V. Smieško)
- International Symposium Advances in Mechatronics 2010, Brno (V. Smieško)
- International Conference Applied Electronics 2010, Plzeň (P. Kukuča)

**Membership in the Editorial Boards of Journals:**

- Journal of Electrical Engineering (V. Smieško)

- AT&P Journal (V. Smieško)
- EE - Journal of Electrical and Power Engineering (V. Smieško, P. Kukuča)
- Metrology and Testing (P. Kukuča)
- Measurement Science Review – on-line edition (V. Smieško)
- Radioengineering Journal - rewiever (R. Hartanský)
- Auditor of Slovak National Accreditation Service (J. Bajcsy, K. Kováč, M. Bittera, J. Hallon)

**Courses for Practical Engineers:**

- EMC for Electronic Equipment Designers, June 2010

**VIII. PUBLICATIONS****VIII.1 Journals**

- [1] BITTERA, M. - HALLON, J. - HARŤANSKÝ, R. - KOVÁČ, K. - SMIEŠKO, V.: A Sensitivity Analysis Theory of Cable Test against RF Fields. In: Vestnik Iževskogo gosudarstvennogo techničeskogo universiteta. - ISSN 1813-7903. - No. 3 (2010), p. 94-97. (in Russian)
- [2] BITTERA, M. - SMIEŠKO, V. - KOVÁČ, K. - HALLON, J.: Directional Properties of the Bilog Antenna as a Source of Radiated Electromagnetic Interference Measurement Uncertainty. In: IET Microwave Antennas & Propagation. - ISSN 1751-8725. - Vol. 4, Iss. 10 (2010), p. 1469-1474. (in English)
- [3] BITTERA, M. - SMIEŠKO, V.: Influence of Interface Cables Termination Impedance on Radiated Emission Measurement. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 10, No. 5 (2010), p. 157-161. (in English)
- [4] BITTERA, M.: The Shielded Cabin of the Laboratory of EMC in a New Garment. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 5 (2010), p. 36. (in Slovak)
- [5] ČIČÁKOVÁ, O. - KRÁLIKOVÁ, E.: The Use of Automated Measuring Systems in Teaching at the Department of Measurement FEI STU. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), p. 10-12. (in Slovak)
- [6] HARŤANSKÝ, R. - HALLON, J.: Electromagnetic Field Sensor for Electrical Parts. In: Vestnik Iževskogo gosudarstvennogo techničeskogo universiteta. - ISSN 1813-7903. - No. 4 (2010), p. 119-122. (in Russian)
- [7] KALUŠ, E. - KUKUČA, P.: Power Factor - Nothing Simpler? In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), p. 40-43. (in Slovak)
- [8] KRÁLIKOVÁ, E. - RAVAS, R.: Effect of Selected Factors on the Choice Error Correction Method of Sensors. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 46-49. (in Slovak)
- [9] KRAMMER, A.: Alternative Method of Susceptibility Test of Large system EMC. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 50-52. (in Slovak)
- [10] KRAMMER, A. - SMIEŠKO, V.: Equipment of Analog Signal Transmission in Area with High Level Disturbance. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), p. 20-22. (in Slovak)
- [11] KRAMMER, A. - SZOLIK, I.: Fundamentals of Generation of High Frequency Disturbing Voltage at Cable Interface and its Effect on Electronic System. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), p. 16-19. (in Slovak)

- [12] VÁLKY, G. - BITTERA, M. - HALLON, J.: Automation and Optimization of a Station for Measuring Electromagnetic Emissions. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 3 (2010), p. 14-16. (in Slovak)

### VIII.2 Conference Proceedings

- [1] BITTERA, M. - SMIEŠKO, V. - KOVÁČ, K.: Novel Approach to Uncertainty of Antenna Factor Measurement. In: IMEKO Symposium TC-4., TC-19 & IWADC Instrumentation for the ICT Era. Košice, Slovakia, 8-10.9.2010. - Košice: Technical University, 2010. - ISBN 978-80-553-0424-3. - CD-Rom. (in English)
- [2] CHRAPČIAK, I. - KALUŠ, E.: Efficient Use of Electrical Energy. Is it Enough to Measure what we Measure Now? In: Power Engineering 2010. Energy, Ecology, Economy: 9th International Scientific Conference. Tatranské Matliare, Slovakia, 18.-20.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-23-6, - p. 80-81. (in English)
- [3] ČIČÁKOVÁ, O. - JANÍK, J. - VESELÝ, M. - VINDUŠKA, P.: Computerized Measurements in Vacuum. In: JVC-13. Programme and Book of Abstracts: 13th Joint Vacuum Conference. Štrbské Pleso, Slovak Republic, 20.-24.6.2010. - Bratislava: Slovak Vacuum Society, 2010. - ISBN 978-80-7399-969-8. - p. 120. (in English)
- [4] FÖLDI, M. - RAVAS, R.: Contour Vectorization from Medical Images. In: InterTech 2010: 3rd International Interdisciplinary Technical Conference of Young Scientists. Poznań, Poland, 19.-21.5.2010. - Poznań: Uczelniany Samorząd Doktorantów Politechniki Poznańskiej, 2010. - ISBN 978-83-926896-2-1. - p. 154-157. (in English)
- [5] HARTANSKÝ, R. - BITTERA, M. - HALLON, J. - BENKÓ, P.: Increase of Calibrated Meter Range at Distance Measurement. In: IMEKO Symposium TC-4., TC-19 & IWADC Instrumentation for the ICT Era. Košice, Slovakia, 8.- 10.9.2010. - Košice: Technical University, 2010. - ISBN 978-80-553-0424-3. - CD-Rom. (in English)
- [6] HAVRILA, L. - KRÁLIKOVÁ, E.: Temperature Stabilization During the Measurement of AC Losses in Superconductors. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [7] HRICKO, J. - HAVLÍK, Š. - HARTANSKÝ, R.: Optimization in Designing Compliant Robotic Micro-Devices. In: RAAD 2010: 19th International Workshop on Robotics in Alpe-Adria-Danube Region. Budapest: Balatonfüred, Hungary, 23.-27.6.2010. - Piscataway: IEEE, 2010. - ISBN 978-1-4244-6884-3. - p. 397-402. (in English)
- [8] JANÍK, J. - VINDUŠKA, P. - VESELÝ, M. - ČIČÁKOVÁ, O.: Some Remarks to Calculations of Field Enhancement Factor. In: JVC-13: 13th Joint Vacuum Conference. Štrbské Pleso, Slovak Republic, 20.-24.6.2010. - Bratislava: Slovak Vacuum Society, 2010. - ISBN 978-80-7399-969-8. - p. 121. (in English)
- [9] KALUŠ, E. - KUKUČA, P.: Single (value) is not Enough. In: Power Engineering 2010. Energy, Ecology, Economy: 9th International Scientific Conference. Tatranské Matliare, Slovakia, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-23-6, p. 86-87. (in English)
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### VIII.3 Part of Book

- [1] BITTERA, M. - SMIEŠKO, V. - KOVÁČ, K. - HALLON, J.: The Interference between Ground Plane and Receiving Antenna and its Effect on the Radiated EMI Measurement Uncertainty. In: Microwave and Millimeter Wave Technologies: Modern UWB Antennas and Equipment. - Vukovar: In-Tech, 2010. - ISBN 978-953-7619-67-1. - 215-228. (in English)

**DEPARTMENT OF MECHANICS**  
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**I. STAFF**

Professors	Prof. Ing. Justín Murín, DrSc., Prof. Ing. Viktor Ferencey, CSc.
Associate Professors	Doc. Ing. Vladimír Kutiš, PhD.
Assistant Professors	Ing. Andrej Kalaš, PhD., Ing. Vladimír Goga, PhD., Ing. Tibor Sedlár, Ing. Juraj Matej, PhD., Ing. Viktor Královič
Research Workers	Ing. Róbert Fric, PhD.
Part-time Workers	Prof. Ing. Miroslav Vereš, PhD., Ing. Stanislav Stančík, Ing. Juraj Paulech
Technical Staff	Katarína Beringerová, Katarína Kermietová (secretary), František Erdödy
PhD. Students	Ing. Rastislav Ďuriš, Ing. Rastislav Belák, Ing. Viktor Královič, Dipl. Ing. Rolf Seemann, Dipl. Ing. Stepha Kugler, Ing. Tibor Sedlár, Ing. Juraj Paulech, Ing. Stanislav Stančík, Ing. Vladimír Staňák, Ing. Martin Bugár, Ing. Martin Kndl, Ing. Juraj Hrabovský, Ing. Tomáš Jediný

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Laboratory of Thermopower Machines and Devices
- Laboratory of Mechanics of Strength and Deformable Bodies
- Centre of Designing and Computational Mechanics

**II.2 Special Measuring Instruments, Software and Computers**

- Insert Press Monitoring System DMF-P V3
- Boiler Gas Analyser Industrial Combustion Optimiser Neotronics
- Experimental Impulse Turbine F800 - Hilton, Ltd. England
- Advantech PC-LabCard PCI 1710 with equipment
- Digital Oscilloscope RIGOL DS1052E
- Waveform Generator RIGOL DG1012
- Horizon Fuel Cell Software Adaptor
- Renewable Energy Education Science Set
- IR Thermometer FLUKE 572
- Mathematica 6
- Matlab R14
- Catia V5
- SolidEdge V20
- NX5
- ANSYS Multiphysics
- MSC.Software
- AutoCAD
- IQ – 100

**III. TEACHING****III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Basis of Engineering and Technical Documentation (1st sem., 2-2h)	M. Vereš T. Sedlár
CAD in Technical Documentation	(opt. sem., 1-3h) A. Kalaš
Mechanics (for Electrotechnics)	(5th sem., 3-2h) J. Murín
Mechanics (for Automotive Electronics)	(6th sem., 2-2h) J. Murín
Introduction to Modelling and Simulation	(5th sem., 3-2h) V. Kutíš A. Beláň
Structural Elements and Systems	(5th sem., 2-2h) M. Vereš
Design of Vehicles	(6th sem., 2-2h) V. Ferencey
Continuum Mechanics	(5th sem., 2-2h) J. Murín

**Distance study**

Basis of Engineering and Technical Documentation (1st sem.)	T. Sedlár
Mechanics	(5th sem.) J. Murín
Introduction to Modelling and Simulation	(5th sem.) V. Kutíš A. Beláň

**III.2 Graduate Study (Ing.)**

Nuclear Power Facilities	(1st sem., 2-2h) V. Kutíš
CAE of Mechatronic Systems	(1st sem., 3-2h) V. Goga
Applied Mechanics	(1st sem., 2-2h) J. Murín
Vehicle Dynamics	(1st sem., 2-2h) V. Ferencey
Designing of Luminaires	(2nd sem., 3-2h) R. Fric
Designing by Higher CAD Systems	(2nd sem., 1-3h) R. Fric
Numerical Solution of Field Theory Problems	(2nd sem., 3-2h) J. Murín
Finite Element Methods for Mechatronics	(1st sem., 2-3h) J. Murín
Computational Solution of Field Theory Problem	(2nd sem., 3-2h) J. Murín
Power machines	(2nd sem., 2-2h) V. Ferencey

**Distance study**

CAE of Mechatronic Systems	(1st sem.) V. Goga
Numerical Solution of Field Theory Problems	(2nd sem.) J. Murín
Applied Mechanics	(1st sem.) J. Murín

#### **IV. RESEARCH PROJECTS**

- Development of the New Multiphysical Beam Finite Elements with Composite or Functionally Graded Materials. VEGA 1/0093/10 (J. Murín)
- Research of Hybrid Powertrain Control Strategies of Vehicle in the Term of Ecological Parameters, Economical Efficiency and Vehicle Performances. VEGA 1/0627/10 (V. Ferencey)
- Support for Modelling and Simulations of Cooperation of Advanced Hybrid Energy Sources in Mechatronic Systems. OVVČ/2010 (V. Staňák)
- Use of Computer Aided Engineering Systems to Solve Mechatronic Systems OVVČ/2010 (V. Goga)
- Advanced GaN Mechanical Sensors for Extreme Conditions SK-FR-0041-09 (principal investigator: T. Lalinsky - ELU SAV, co-workers: V. Kutiš - KMECH FEI STU)
- National Centre for Research and Application of Renewable Energy Sources (ITMS: 26240120028), supported by the Research & Development Operational Programme funded by the ERDF (principal investigators F. Janíček, L. Jelemenský) Activity 3.2 (principal investigator J. Murín)

#### **V. COOPERATION**

##### **V.1 Cooperation in Slovakia**

- VÚJE jsc, Trnava
- Sova jsc, Bratislava
- JE Jaslovské Bohunice
- JE Mochovce
- SjF ŽU Žilina
- Škoda Auto Slovakia, Bratislava
- Institute of Construction and Architecture, Slovak Academy of Sciences
- IPT Pezinok
- OMS Senica
- ZSE jsc
- SEZ Dolný Kubín
- Ministry of Interior of the Slovak Republic
- Defense and Strategy Studies Institute jsc
- Institute of Electrical Engineering, Slovak Academy of Sciences
- International Laser Centre, Bratislava
- Armed Forces Academy of General Milan Rastislav Štefánik, Liptovský Mikuláš
- Alexander Dubček University of Trenčín
- Technical University of Košice

##### **V.2 International Cooperation**

- Energovýzkum Ltd., Brno, Czech Republic
- Vienna University of Technology, Austria
- Technical University Ilmenau, Germany
- University College of Swansea, United Kingdom
- FSB University Zagreb, Croatia
- TU Rijeka, Croatia
- TU Novi Sad, Serbia
- TU Niš, Serbia
- Brno University of Technology, Czech Republic
- University of West Bohemia, Czech Republic
- Military School, Brno, Czech Republic

**V.3 Membership in Slovak Organizations and Societies**

- Co-chairman in Slovak Society for Mechanics (J. Murín)
- Slovak Society for Mechanics (V. Kutiš)
- Vice President of Association of the Defence Industry of the Slovak Republic (V. Ferencey)

**V.4 Membership in International Organizations and Societies**

- Chair of Slovak branch of Central European Association for Computational Mechanics (CEACM) (J. Murín)
- European Community on Computational Methods in Applied Sciences (ECCOMAS) (J. Murín)
- International Association for Computational Mechanics (IACM) (J. Murín)
- Central European Association for Computational Mechanics (CEACM) (V. Kutiš)
- Institute for Mechanics of Materials and Structures, TU Vienna, Austria (J. Murín)

**VI. THESES****VI.1 Masters Theses**

Masters theses supervised at the Department of Mechanics. The names of supervisors are in brackets.

- [1] Mucha, P.: Creating Electro-Termal-structural Coupled Field of FEM in Mathematica (V. Kutiš)
- [2] Hrabovský, J.: Solution of Coupled Electric-Termal-Structural Problem Using New Finite Element with Spatial Variation of Material Properties (J. Murín)
- [3] Jediný, T.: Electronic Differential Lock – EDS System (V. Goga)
- [4] Kikta, P.: Equipment Design for Testing Absorption Properties of Materials (V. Goga)
- [5] Sojčák, J.: Design Traction and Geometry Optimization of the Selected Member of the Crank Mechanism (V. Goga)

**VI.2 PhD Theses**

- [1] Ďuriš, R.: Solution of Non-linear Problems with Full Non-linear Stiffness Matrices (J. Murín)
- [2] Kugler, S.: Development of a Laterally Pressed Quadrilateral Shell Element (J. Murín)
- [3] Seemann, R.: Modelling and Optimisation of a Mechanical Structure for a Rotating Ion-Optical System (J. Murín, M. Pavlovič)
- [4] Matej, J.: Optimization of Power Distribution in Parallel Hybrid Vehicle (V. Ferencey)

**VII. OTHER ACTIVITIES**

- Membership in the editorial board of journal: Mechanical Engineering (J. Murín)
- Membership in the Scientific Editorial Advisory Board of Journal: Engineering Review, Croatia (M. Vereš)
- Expert in Mechanical Engineering (T. Sedlár)
- Participation with the Stuba Green Team on the Formula Student Electric Race Car Project. (V. Staňák)

**VIII. PUBLICATIONS****VIII.1 Journals**

- [1] BUGÁR, M. - STAŇÁK, V.: Energy Management of Fuel Cell / Battery / Supercapacitor Hybrid Power Source for Vehicle Applications. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 185-188. (in English)

- [2] FERENCEY, V.: Fuel Cells - Electricity Source for Motor Vehicles. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 194-198. (in English)
- [3] FRIC, R.: Light Source Thermal Analysis I - Sodium High-Pressure Discharge Lamp. In: Posterus.sk. - ISSN 1338-0087. - November (2010), <http://www.posterus.sk/?p=9314>. (in English)
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- [5] GOGA, V.: Cellular Solids - Foam Materials I. Introduction, Structure and Applications. In: Posterus.sk. - ISSN 1338-0087. - July (2010), <http://www.posterus.sk/?p=7861>. (in Slovak)
- [6] GOGA, V.: Cellular Solids - Foam Materials II. Manufacturing of Cellular Solids. In: Posterus.sk. - ISSN 1338-0087. - July (2010), <http://www.posterus.sk/?m=201007>. (in Slovak)
- [7] GOGA, V.: Cellular Solids - Foam Materials III. Properties. In: Posterus.sk. - ISSN 1338-0087. - September (2010), <http://www.posterus.sk/?p=8404>. (in Slovak)
- [8] GOGA, V.: Measurement of the Energy Absorption Capability of Polyurethane Foam. In: Posterus.sk. - ISSN 1338-0087. - March (2010), <http://www.posterus.sk/> (in English)
- [9] GOGA, V.: Testing and Application of New Phenomenological Material Model for Foam Materials. In: Posterus.sk. - ISSN 1338-0087. - January (2010), <http://www.posterus.sk/?p=3923>. (in English)
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- [11] MATEJ, J. - BEBJAK, J.: Braking Simulation of Vehicle. In: Posterus.sk. - ISSN 1338-0087. - July (2010), <http://www.posterus.sk/?p=8012>. (in Slovak)
- [12] MATEJ, J. - GOGA, V. - JEDINÝ, T.: Virtual Prototyping Utilized in Industry Production. In: Posterus.sk. - ISSN 1338-0087. - December (2010), <http://www.posterus.sk/?p=9438>. (in English)
- [13] KLÉČIK, M. - SEDLÁR, T.: Mechatronical Device for Training of the Service Dogs 2. In: Metalurgija. Metallurgy. - ISSN 0543-5846. - Vol. 49, No. 2 (2010), p. 337-340. (in English)
- [14] KOMPIŠ, V. - VANČO, M. - FERENCEY, V.: Shock Waves Propagation in Composite Materials. In: Strojnícky časopis = Journal of Mechanical Engineering. - ISSN 0039-2472. - Vol. 61, No. 2 (2010), p. 73-87. (in English)
- [15] KRÁLOVIČ, V. - PAULECH, J. - STANČÍK, S.: Fluid-Thermal Analysis of Bundle Conductors. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 226-229. (in English)
- [16] KUGLER, S. - FOTIU, P.A. - MURÍN, J.: A Highly Efficient Membrane Finite Element with Drilling Degrees of Freedom. In: Acta Mechanica. - ISSN 0001-5970. - Vol. 213, Nr. 3-4 (2010), p. 323-348. (in English)
- [17] MURÍN, J. - AMINBAGHAI, M. - KUTIŠ, V.: Exact Solution of the Bending Vibration Problem of FGM Beams with Variation of Materials Properties. In: Engineering Structures. - ISSN 0141-0296. - Vol. 32 (2010), p. 1631-1640. (in English)

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- [20] SEEMANN, R. - PAVLOVIČ, M. - MURÍN, J.: Methodology for Assessment of Beam-Transport Accuracy at Rotating Ion-Therapy Gantryes. Part IV. In: Metrológia a skúšobníctvo. - ISSN 1335-2768. - Vol. 15, No. 1 (2010), p. 3-11. (in English)
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- [24] VANKO, G. - DRŽÍK, M. - VALLO, M. - LALINSKÝ, T. - KUTIŠ, V. - STANČÍK, S. - RÝGER, I. - KOSTIČ, I.: AlGaN/GaN C-HEMT Structures for Dynamic Stress Detection. In: Procedia Engineering. - ISSN 1877-7058. - Vol. 5 (2010), p. 1405-1408. (in English)

### VIII.2 Conference Proceedings

- [1] AMINBAGHAI, M. - MURÍN, J. - KUTIŠ, V.: Free Vibration of the Multilayer FGM Beams under Longitudinal Variable Elastic Foundation with Effect of Large Axial Force. In: New Trends in Statics and Dynamics of Buildings: 8th International Conference. Bratislava, Slovak Republic, 21.-22.10.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3373-1. - p. 1-8. (in English)
- [2] BELÁK, R. - KUTIŠ, V.: Piezoelectric Beam Element for Finite Element Method. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [3] BENKOVSKÝ, P. - STAŇÁK, V.: Implementation of Electric Propulsion in Small Race Car. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [4] BUGÁR, M.: Energy Budget Optimization of Electric Vehicle Driving Dynamics. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [5] BUGÁR, M. - STAŇÁK, V. - FERENCEY, V.: Influence of Implementation of Electric Drive in the Vehicle on its Reliability in Operation. In: 9th International Technical Systems Degradation Conference: Liptovský Mikuláš, Slovak Republic, 7.-10.4.2010. - Lublin: Wydawnictwo-Drukarnia Liber Duo s.c., 2010. - ISBN 978-83-911726-8-1. (in English)

- [6] BUGÁR, M. - STAŇÁK, V. - FERENCEY, V.: Optimal Power Management Design for Battery Powered Electric City Bus. In: Mechanical Engineering 2010: 13th International Conference on the Occasion of the 70th Anniversary of the Beginning of Education of Mechanical Engineering Students at the Slovak University of Technology in Bratislava. Bratislava, Slovak Republic, 21.10. 2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3304-5. - p. 6 -12. (in English)
- [7] BUGÁR, M. - STAŇÁK, V. - FERENCEY, V.: Optimized Design of Hybrid Powertrain for Unmanned Light Fighting Vehicle. In: Armament and Technics of Land Forces 2010: 16th International Conference. Liptovský Mikuláš, Slovak Republic, 10.-11.11.2010. - Liptovský Mikuláš: Armed Forces Academy, 2010. - ISBN 978-80-8040-409-3. - CD-Rom. (in English)
- [8] ĎURIŠ, I. - GOGA, V.: Electronic and Mechanical Systems of Aircraft Landing Gear and Simulation of Landing Gear Retraction. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [9] ĎURIŠ, R. - MURÍN, J.: 2D Geometric Nonlinear Beam Finite Element. In: Computational Mechanics 2010: 26th Conference with International Participation. Hrad Nečtiny, Czech Republic, 8.- 10.11.2010. - Pilsen: University of West Bohemia, 2010. - ISBN 978-80-7043-919-7. (in English)
- [10] ĎURIŠ, R. - MURÍN, J.: 2D Geometric Nonlinear Beam Finite Element with Full Nonlinearised Stiffness Matrices. In: ECCM 2010: 4th European Conference on Computational Mechanics. Solid, Structures and Coupled Problems in Engineering. Paris, France, 16.-21.5.2010. - Paris: Computational Structural Mechanics Association, 2010. - CD-Rom. (in English)
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- [12] HERETÍK, P. - MURÍN, J.: Modelling of the Temperature Rise of the Atomic Reactor Fuel Cell. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
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- [20] PAULECH, J.: Influence of Ambient Conditions on Measuring of Electric Field with Capacity Probe. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [21] STAŇÁK, V.: Systems of Electric Braking of Vehicles with Energy Recuperation. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
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### VIII.3 Textbook

- [1] KUTIŠ, V.: Introduction to Modeling and Simulation. - Bratislava: STU, 2010. - 133 p. - ISBN 978-80-227-3345-8. (in Slovak)

### VIII.4 Patent

- [1] KALAŠ, A.: Impact Forces Signalizing Device for Stationary Vehicle: Patent number 5406. - 4 p. – Mediation Date: 17.2.2010. (in Slovak)

**DEPARTMENT OF MICROELECTRONICS**

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**I. STAFF**

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**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Laboratory of Thin Films I
- Laboratory of Thin Films II
- Laboratory of Semiconductor Structures
- Laboratory of Optoelectronics

- Laboratory of Surface Analysis
- Laboratory of Electronic Devices
- Laboratory of Electrophysical Measurements
- Laboratory of Computer Analysis
- Laboratory of Microelectronic Devices Diagnostics
- Laboratory of Material for Electronics
- Laboratory of Electronic Devices
- Laboratory of Semiconductor Structures
- Laboratory of Sensor Systems and Microsystems
- Laboratory of Thin Film Sensors
- Laboratory of Vacuum Technique and Electronics
- Laboratory of IC Design
- Laboratory of Raman Spectroscopy
- Laboratory of Vacuum Technology I
- Laboratory of Vacuum Technology II
- Laboratory of Chemical Processes I
- Laboratory of Chemical Processes II
- Laboratory of Optoelectronic Device Technology
- Laboratory of Deposition Technology
- Laboratory of Plasma Processes
- Laboratory of Microwave Electronics
- Laboratory of Digital Signal Processing
- Laboratory of Optical Measurements
- Laboratory of Sensors and Security Technique
- Laboratory of Microlithography
- Laboratory of Biochemical Sensors
- Laboratory of ICs
- Laboratory of Digital Circuits
- Laboratory of Semiconductor Structure and IC Design
- Laboratory of IC Design and Testing
- Laboratory of Nanostructures and Electronic Devices Characterisation
- Laboratory of Electronic Measurements

## II.2 Special Measuring Instruments and Computers

- Computer Controlled System for I-V and C-V Measurements and Analysis (from 20 to 400 K)
- QDLTS Time Domain Spectrometer
- DL8000 Digital Deep Level Transient Spectrometer ACCENT
- Microwave Network Analyzer HP 8408 S + HP83421A Lightwave Source (20 GHz)
- Microwave Network Analyzer (40 GHz) Agilent E8363 B (temperature range: RT – 400K)
  - RFOW measurements
- Semiconductor Parameter Analyzer, Agilent 4155C
- Arbitrary Function Generator TEKTRONIX AFG3252 (240 MHz, 2 channel)
- Digital Oscilloscope TEKTRONIX TDS20225
- DSA 8200 Digital Serial Analyser - Sampling Oscilloscope with TDR Module
- Digital Pulse Generator DTG5334
- SUSS Manual Prober PM5, SUSS MicroTec, Test Systems
- Experimental System for Low-frequency Noise Measurement
- Micromanipulators with Nanotips for Measurement and Testing of Electronic Devices, and Manipulation of Micro-/nano-objects
- AFM, Park XE-100
- Raman Spectrometer (ISA-Jobin Yvon-Dilor-Horiba)
- X-ray Photoelectron Spectrometer (VG Microtech)
- Spectroscopic Ellipsometer Angstrom Advanced PHE 102
- Surface Profiler Dektak 150 (Veeco)
- Talystep S112 Profilometer
- Auger Electron Spectrometer (Varian) equipped with EX 05 VG ion gun

- Mask Aligner Suss KSM MJB 3HP
- Compact Plasma System - PECVD, Plasmalab80Plus, Oxford Instruments Plasma Technology
- Modular Cluster System – RIE, PlasmalabSystem100, Oxford Instruments Plasma Technology
- Sputter Etcher XNE-01 (Secon)
- Sputtering Unit Perkin-Elmer Ultek/Randex 2400/8L
- Vacuum System B55.3 Hochvakuum Dresden with magnetron sputtering sources
- Arc Discharge Reactor for CNT Growth (home made)
- CVD Reactor for CNT Growth (home made)
- RTA - Rapid Thermal Annealing (home made)
- Contact Angle Measurement System (home made)
- Equipment for Emission Measurements (home made)
- Leak Detector, SmartTest
- XILINX and ALTERA (xiClone) Systems - boards and SW, Development Kits, Xilinx ISE6.3i
- VisualDSP++ SHARC Processor Development Tools, ADSP-21364 and ADSP-TS201S Evaluation Kits, Analog Devices donation
- MC9S08LC60/36 Demonstration Board + complete CodeWarrior Development Studio for HC08 and HC12, FreeScale donation
- Sonnet – Planar Structures Electromagnetic Simulator, University licence

**Design Tools-via EUROPRACTICE**

- Synopsys TCAD Sentaurus A\_2007.12
- Synopsys Analog Simulation and Modelling (HSpice)
- Cadence IC Package
- Mentor Graphics Full Suite
- Dolphin Integration Smash HDL & SLED

**Design Kits:**

- AMS 0.35 µm
- TSMC 90 nm

**Running on:**

- IBMx3400 Quad Core E5335 server (Linux), Workstations SunBlade 1000, 2 pc Sun Ultra 10 (all Solaris), HP Proliant ML 370 - HP ML370G5 QC E5420 (Linux), and 21 PCs Core Duo/Quad (WinXP/Linux)

**III. TEACHING****III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Logic Systems (two weeks part)	(1st sem., 4-1h)	F. Mika
Materials for Electronics	(3rd sem., 3-2h)	D. Donoval
Electronics (dist. study)	(3rd sem., 3-2h)	L. Stuchlíková
Electronic Devices and Circuits	(3rd sem., 3-2h)	R. Redhammer
Design and Reliability of IC and Systems	(3rd sem., 3-2h)	D. Ďuračková, V. Stopjaková
Electronic Systems	(3rd sem., 3-2h)	M. Žiška
Optoelectronics and Laser Technique	(4th sem., 2-2h)	F. Uherek
Electronic Devices	(4th sem., 2-2h)	L. Stuchlíková
Quality Management	(4th sem., 2-1h)	M. Žiška
Systems for Objects Security and Safety	(4th sem., 3-2h)	V. Tvarožek, I. Hotový

Optoelectronics	(5 <sup>th</sup> sem., 3-2h)	F. Uherek
Microelectronics	(5 <sup>th</sup> sem., 2-2h)	D. Donoval, J. Breza
Sensor Systems for Automobiles	(5 <sup>th</sup> sem., 2-2h)	V. Tvarožek
Electronic Circuits	(5 <sup>th</sup> sem., 3-2h)	F. Mika
Electronic Devices and Circuits	(5 <sup>th</sup> sem., 3-2h)	R. Redhammer
Quality Management	(5 <sup>th</sup> sem., 2-1h)	M. Žiška
Bachelor Project 1	(5 <sup>th</sup> sem., 0-4h)	F. Uherek
Principles of IC Design	(6 <sup>th</sup> sem., 2-2h)	D. Ďuračková
Digital and Pulse Circuits	(6 <sup>th</sup> sem., 3-2h)	F. Mika
Sensorics	(6 <sup>th</sup> sem., 2-2h)	V. Tvarožek
Bachelor Project 2	(6 <sup>th</sup> sem., 0-8h)	F. Uherek

**III.2 Graduate Study (Ing.)**

Team Project	(1st sem., 0-6h)	F. Uherek, L. Stuchlíková
Computer Circuit Analysis	(1st sem., 2-2h)	M. Tomáška
CAD of Electronic Devices	(1st sem., 2-2h)	D. Donoval
Electronic Measurement of Devices and Systems	(1st sem., 2-2h)	A. Šatka
Programmable ICs	(1st sem., 2-2h)	J. Jakabovič
Scientific Communication	(1st or 2nd sem., 1-0h)	F. Uherek, D. Donoval, J. Breza
Vacuum Electronics and Technique	(1st sem., 2-1h)	M. Veselý
Analog IC Design	(1st sem., 2-1h)	D. Ďuračková
Diploma Project 1	(2nd sem., 0-6h)	D. Donoval
Computer Aided IC Design	(2nd sem., 3-2h)	V. Stopjaková
Applied Optoelectronics and Lasers	(2nd sem., 3-2h)	J. Kováč, F. Uherek
Nanoelectronics	(2nd sem., 3-2h)	R. Redhammer
Industrial Electronics	(2nd sem., 3-2h)	A. Šatka
Structures of IC	(2nd sem., 2-2h)	M. Žiška
DSP Circuits and Methods	(2nd sem., 2-1h)	A. Šatka
Optical Communication Systems	(2nd sem., 2-1h)	F. Uherek
Diploma Project 2	(3rd sem., 0-6h)	D. Donoval
Sensor Microsystems	(3rd sem., 2-2h)	V. Tvarožek
Diagnostics of Integrated Circuits and Systems	(3rd sem., 2-2h)	V. Stopjaková
Spectroscopic Methods of Analysis and Inspection of Matter	(3rd sem., 3-1h)	J. Breza

RF Circuit Design	[sem., 2-1h)	M. Tomáška
Physical Electronics of Solids	[sem., 2-1h)	M. Veselý
Superconductor Electronics	[sem., 2-1h)	J. Breza
Microsystems Technology	[sem., 2-1h)	I. Hotový
Integrated Optoelectronics	[sem., 2-1h)	J. Kováč
Diploma Project 3	[sem., 0-8h)	D. Donoval

#### IV. RESEARCH PROJECTS

##### National Centres of Excellence

- **SMART** - Support of Centre of Excellence for Smart Technologies, Systems and Services, No. NFP26240120023 (2009-2010), coordinator: R. Redhammer
- **SMART 2** – Support of Centre of Excellence for Smart Technologies, Systems and Services:II, No. AŠF EÚ MŠ SR, ITMS 26240120029 (2010-2012), coordinator: R. Redhammer
- **NanoNet** – Centre of Excellence for Design, Preparation and Diagnostics of Nanostructures for Electronics and Photonics, No. AŠF EÚ MŠ SR, ITMS 26240120010 (2009-2011), coordinator: F. Uherek
- **NanoNet 2** – Centre of Excellence for Design, Preparation and Diagnostics of Nanostructures for Electronics and Photonics 2, No. AŠF EÚ MŠ SR, ITMS: 26240120018 (2010-2012), coordinator: F. Uherek
- **CENAMOST** – Centre of Excellence Nano-Microelectronic, Optoelectronic and Sensoric Technologies, No. APVV VVCE-0049-07 (2008–2010), coordinator: D. Donoval

##### National R&D and Educational Projects within Ministry of Education (MŠ SR) and Development and Research Agency (APVV) Actions

- Cooperation Center for the Transfer of Innovative Technologies from Research to Industry, No. APVV SUSPP-0008-09 (2009-2013), coordinator: F. Uherek
- Study of Diamond and Diamond-like Carbon Properties for Electrochemical and Bio-sensoric Applications, No. APVV LPP-0094-09 (2009-2012), coordinator: V. Tvarožek
- Biocompatible Thin Films for Medical Application, No. APVV LPP-0149-09 (2009-2012), coordinator: M. Veselý
- Characterization Of Electrical Properties of HEMT and MOSHFET Transistors on AlGaN(InAlN)/GaN Heterostructures Supported By 2/3-D Modelling and Simulation, No. APVV LPP-0195-09 (2009-2012), coordinator: D. Donoval
- Advanced Parametric Test Methods for the Reliability Enhancement of Mixed-Signal Integrated Circuits and Systems, No. VEGA 1/0285/09 (2009-2012), coordinator: V. Stopjaková
- Development of Special Methods of Characterization and Diagnostics of Advanced Semiconductor Micro-/Nano-Structures and Devices, No. VEGA 1/0716/09 (2009-2012), coordinator: A. Šatka
- Electro-Physical Properties and Technological Issues of Si, GaN and ZnO Semiconductor Materials and Structures for a New Generation of Electronic Devices and Circuits, No. VEGA 1/0507/09 (2009-2012), coordinator: L. Harmatha
- Development and Characterization of Advanced Nano-Dimensional Structures Based on Compound and Organic Semiconductors for Applications in Microelectronics and Photonics, No. VEGA 1/0689/09 (2009-2012), coordinator: J. Kováč
- Design, Research and Preparation of Advanced Electronic Systems to Be Used to Improve Quality Of Life, No. APVV VMSP-P-0127-09 (2009-2011), coordinator: D. Donoval
- Nanostructured Thin Film Systems for MEMS Sensor Applications, No. VEGA 1/0553/09 (2009-2011), coordinator: I. Hotový

- Advanced MEMS Chemical Sensors for Extreme Conditions, No. APVV-0655-07 (2008 – 2011), coordinator: T. Lalinský, IEE SAS, local coordinator: I. Hotový
- Thin Films of Transparent Conductive Oxides for Photovoltaic Solar Cells, No. VEGA 1/0220/09 (2009-2011), coordinator: V. Tvarožek
- Nanotechnologies - Synthesis Of Carbon Nanotubes and Nanocomposites on Natural Catalysts, No. VEGA 1/0746/09 (2009-2011), coordinator: M. Kadlecíková
- Modelling and Simulation of Electrical Properties of Structures Based on Wide Band Gap semiconductors, No. VEGA 1/0601/10 (2010-2011), coordinator: J. Racko
- Optimized Ohmic Contacts to p-GaN, Contribution to Quantitative Auger Analysis of Group III Nitrides, No. VEGA 1/0779/10 (2010-2011), coordinator: J. Liday
- New Architecture of Neurochips and their Application as the Neuroimplants, No. VEGA 1/0693/08 (2008-2010), coordinator: D. Ďuračková
- Educational and Training Support of Soft Skills for Undergraduate Students of FEI and FIIT STU, No. KEGA 3/7413/09 (2009-2011), coordinator: M. Žiška
- Research of Growth and Doping of D- and DLC Layers for Electronic Applications, No. APVV LPP-0246-06 (2006-2010), coordinator: M. Veselý
- Preparation of Carbon Nanotubes and Study of Electronic Devices Based on Carbon Nanotubes Networks, No. APVV-0628-06 (2007–2010), coordinator: V. Skákalová, PhD., Danubia NanoTech, local coordinator: M. Veselý
- Advanced Opto and Microelectronic Devices Based on Organic Materials, ADOPMOD, No. APVV-0290-06 (2007–2010), coordinator: J. Kováč
- Metal-Insulator-Metal Structures for Nanoscale DRAM Memories, No. APVV-0133-07 (2008-2010), coordinator: K. Fröhlich, IEE SAS, local coordinator: L. Harmatha
- Diamond Electrodes for Electrochemical Applications, No. APVV-0548-07 (2008-2010), coordinator: M. Veselý
- Design, Preparation and Characterization of High Speed Power Electronic Devices Based on Submicon Semiconductor Structures Supported by 2/3-D Modelling and Simulation, No. VEGA 1/0742/08 (2008-2010), coordinator: D. Donoval
- Field Emission from Carbon Nanotubes, No. VEGA 1/0807/08 (2008-2010), coordinator: J. Janík
- Nanocrystalline Diamond Doping Mechanism Investigation, No. VEGA 1/0857/08 (2008-2010), coordinator: R. Redhammer

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- International Laser Centre, Bratislava
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Research Institute for Welding, Bratislava
- Semikron, Vrbové
- Applied Precision, Bratislava
- LOX Technologies, Piešťany
- University of Žilina, Žilina
- Danubia NanoTech, Bratislava
- Bratislava Development Center (BDC), ON Semiconductor, Bratislava
- AudioAsics a.s., Bratislava

### **V.2 International Cooperation**

- Czech Technical University, Department of Microelectronics, Prague, Czech Republic
- Technical University of Brno, Department of Microelectronics, Czech Republic
- West Bohemian University, New Technology Center, Pilsen, Czech Republic
- IMEC Leuven, Belgium

- STMicroelectronics Italy.
- Infineon Technologies, Germany
- Johannes Kepler Universität Linz, Linz, Austria
- Technical University Ilmenau, Germany
- Hungarian Academy of Sciences Budapest, Hungary
- Universität Leipzig, Fakultät für Physik und Geowissenschaften, Fakultät für Chemie und Mineralogie, Leipzig, Germany
- Technical University Vienna, Austria
- Technical University Munich, Germany
- Institute of Scientific Instruments, Czech Academy of Sciences, Brno, Czech Republic
- University of Athens, Department of Physics, Greece
- Regensburg University, Germany
- Institut für Schicht- und Ionen Technik Jülich, Germany
- Faculty of Microsystem Electronics and Photonics, Wroclaw University of Technology, Poland
- Institute of Solid State Physics, Technical University Graz, Graz, Austria
- Physikalisches Institut, Universität Würzburg, Germany
- Imperial College, Department of Materials, London, UK
- Instituto per la Microelettronica ed i Microsistemi CNR, Lecce, Italy
- Umweltsensorstechnik GmbH, Geschwenda, Germany
- City University of Hong Kong, Hong Kong, China
- Technische Universität, Bergakademie Freiberg, Institut für Theoretische Physik, Freiberg, Germany
- National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, Athens, Greece
- Photon Technologies GmbH, Bregenz, Austria
- Eberhard Karls Universität, Institut für Angewandte Physik, Tübingen, Germany
- Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic
- Institute of Nuclear Sciences, Laboratory for Atomic Physics, Belgrade, Serbia
- Lanzhou University, Lanzhou, China

### V.3 International Scientific Projects

#### Projects within the 7<sup>th</sup> EC Framework Program and ENIAC JU

- **ENIAC-END** - 'Models, Solutions, Methods and Tools for Energy-Aware Design', ENIAC JU No. 120214 (2010-2014). Coordinator: STMicroelectronics Italy. Local coordinator: D. Donoval
- **ENIAC-MAS** - 'Nanoelectronics for Mobile Ambient Assisted Living (AAL) Systems', ENIAC JU No. 120228 (2010-2013). Coordinator: Dr. W. Dettmann, Infineon Technologies, Germany. Local coordinator: V. Stopjaková
- **IDEA-2** – 'Implementation of Widespread IC Design Skills in Advanced Deep Submicron Technologies at European Academia', FP7-ICT-CSA No. 246906, (2009-2012). Coordinator: Dr. Bart De Mey, IMEC, Leuven, Belgium. Local coordinator: V. Stopjaková
- **EURO-DOTS** - 'European Doctoral Training Support in Micro/Nano-Electronics', FP7-ICT-2009-5 No. 257051, (2010-2012). Coordinator: Prof. H. E. Maes, IMEC, Leuven, Belgium. Local coordinator: D. Donoval
- **MORGaN** - 'Materials for Robust Gallium Nitride', FP7-NMP-2007-LARGE-1 No. 214610 (2008-2011). Coordinator: Dr. S. Delage, Alcatel Thales, France. Local coordinator: J. Kováč
- **EDIGRA** – 'European Dimension for Graduates in Technology Fields for Slovak Graduates', Lifelong Learning Programme / Leonardo da Vinci (2008-2010). Coordinator: M. Veselý

#### Projects within the bilateral co-operation Slovakia – Germany

- Preparation and Characterization of Nanostructures Mixing Metal Oxides for Gas Detection DAAD 2009/I (2009-2010). Cooperating institution: Technische Universität Ilmenau, Fakultät für Elektrotechnik und Informationstechnik. Local coordinator: I. Hotový

- Growth and Characterization of Advanced Organic Semiconductor Structures for Application in Organic Electronic DAAD 2009 (2009-2010). Cooperating institution: Universität Tübingen, Institut für Angewandte Physik. Local coordinator: J. Kováč

**Projects within the bilateral co-operation Slovakia – Czech Republic**

- METACARBON - Investigation of Electrical and Optical Properties of Nanodiamond and Diamond-like Carbon Thin Films, APVV CK-CZ-0139-09 (2010-2011). Cooperating institution: Institute of Physics, CAS Prague. Coordinators: Z. Remeš (IP CAS), M. Veselý
- Materials and Components for Protection of Environment, ZČU-OZP (2006-2011). Cooperating institution: West Bohemian University, Pilsen. Coordinators: P. Šutta (WBU), V. Tvarožek

**Projects within the bilateral co-operation Slovakia – Italy**

- NANOMIXSENS - Nanostructured Mixing Metal Oxides for MEMS Gas Sensors, APVV SK-IT-0030-08 (2009-2011). Cooperating institution: Italian National Council of Research, Institute for Microelectronics and Microsystems. Coordinators: S. Capone (INCR), I. Hotový

**Projects within the bilateral co-operation Slovakia – Poland**

- MICROHET - Technology and Characterization of Advanced Semiconductor Heterostructures for Micro and Optoelectronic Devices, APVV SK-PL-0017-09 (2010-2011). Cooperating institution: Wroclaw University of Technology. Coordinators: M. Tlaczala (PWR-TUW), J. Kováč

**Projects within the bilateral co-operation Slovakia – Serbia**

- DOSUZOIFI - Doping and Surface Modification of Zinc-oxide Thin Films, APVV SK-SRB 0012-09 (2010-2011). Cooperating institution: VINCA Institute of Nuclear Sciences, Laboratory for Atomic Physics, Belgrade. Coordinators: M. Milosavljević, (VINCA), V. Tvarožek

**Projects within the bilateral co-operation Slovakia – China**

- Fabrication of Infrared Sensitive Organic Field Effect Transistors, (2010-2011). Cooperating institution: Lanzhou University. Coordinators: Yingquan Peng, (LU), J. Jakabovič

**Project within the bilateral co-operation Slovakia – Austria**

- Characterization of Advanced Materials for Novel Technologies, No. 2010-05-15-0001 Austrian and Slovak Scientific and Educational Cooperation (2010-2011). Cooperating institution: JKU Linz. Coordinators: C. Simbrunner (JKU), J. Breza

## VI. THESES

### VI.1 Masters Theses

Masters theses supervised at the Department of Microelectronics. The names of supervisors are in brackets.

- [1] Ďurmek, L.: Ignition Systems of Automobile Combustion Engine (F. Mika)
- [2] Fekete, T.: The Construction, Controlling and Testing of the V6 TFSI Hybrid Engine in the Manufacturing Process (F. Uherek)
- [3] Guldán, M.: Optoelectronic Devices Spectral Characteristics Measurement and Data Evaluation (J. Kováč)
- [4] Holásek, M.: Model Design and Electric Properties Simulations of InAlN/GaN HEMT (J. Marek)
- [5] Igaz, D.: Model of a Photonic Sensor for Monitoring Glucose Levels (F. Uherek)
- [6] Jarošková, S.: GaN Processing by Wet Chemical Etching (J. Škrinjarová)
- [7] Jurkovič, M.: MOS Structure Diagnostics by Means of Conductance Technique (L. Harmatha)
- [8] Kalma, J.: Microstrip Antenna Array (P. Hajach)
- [9] Kikta, P.: Equipment Design for Testing Absorption Properties of Materials (V. Goga)
- [10] Klinovský, M.: Photonic Devices for Optical Communication Systems (F. Uherek)
- [11] Kotlár, M.: Arc Discharge Reactor for Growth of Carbon Nanotubes (M. Marton)
- [12] Kubiš, P.: Development of a Thin Film Packaging Process of Organic Solar Cells by Thermal Evaporation of Oxides (J. Jakabovič)
- [13] Kunzo, P.: Gas Sensor Based on Carbon-Polymer Composites (A. Šatka)
- [14] Lukáč, V.: Data Storage Devices as a Part of eLearning (Ľ. Stuchlíková)

- [15] Lupták, R.: Progressive Materials for Photonic Elements (F. Uherek)
- [16] Matúš M.: Analysis of Errors at GPS Navigation Systems (M. Minárik)
- [17] Matušková, B.: Detection of Crystallographic Defects in Semiconductor Material GaP Using Wet Chemical Etching (J. Škriniarová)
- [18] Molnár, M.: Simulation of Selected Electronic Properties of HEMT Based on GaN-Al<sub>x</sub>Ga<sub>1-x</sub>N Heterostructures (J. Racko)
- [19] Packa, M.: Software Analyzer for CAN Systems (M. Rakús)
- [20] Priesol, J.: Monte Carlo Simulation of Electron Beam Interaction With Semiconductor Structures (A. Šatka)
- [21] Rybár, J.: Multimedia in Electronics (L. Stuchlíková)
- [22] Sedlák, V.: Creation of Simulator in the Microsoft Visual Studio to Analyze Neural Networks (D. Ďuračková)
- [23] Ščepka T.: AFM and its Use in Studying the Surfaces of the Semiconductors A<sub>3</sub>B<sub>5</sub> (J. Škriniarová)
- [24] Srnová M.: Microprocessor System for Measurement of Signals from a Raster System (A. Šatka)

**VI.2 PhD Theses**

- [1] Flickynerová, S.: Sputtering of Transparent Conducting Thin Films Based on ZnO (V. Tvarožek)
- [2] Haščík, Š.: Dry Plasma Etching and Microstructure Patterning for Microelectronic and Microsensor Applications (I. Hotový)
- [3] Kuruc, M.: Application of Spreading Resistance Profiling for Semiconductor Technological Processes Monitoring (L. Hulényi)
- [4] Majer, L.: Contribution to Design and Implementation of RF Integrated Circuits in CMOS Technology (V. Stopjaková)
- [5] Malík, P.: Contribution to Forward and Backward MDCT Algorithms and Design of Highly Scalable Hardware Architecture to Accelerate MDCT Computation (D. Ďuračková)
- [6] Pavlov, J.: Investigation of Selected Factors Influence on Diamond Layer Quality and its Adhesion to Cutting Tool (J. Janík)
- [7] Raschman, E.: The Digital Design of CNN for Pattern Recognition (D. Ďuračková)

**VII. OTHER ACTIVITIES****Conferences organised/co-organised by the Department of Microelectronics:**

- **ASDAM 2010** – The 8th International Conference on Advanced Semiconductor Devices and Microsystems, Smolenice, Slovakia, 25th – 27th October, 2010 ([www.kme.elf.stuba.sk/asdam](http://www.kme.elf.stuba.sk/asdam)). Head of organising committee: Prof. D. Donoval
- **JVC 13**, The 13th Joint Vacuum Conference, Štrbské Pleso, Slovakia, 20th – 24th June, 2010, (<http://www.jvc13.stuba.sk/>), organised by Slovak Vacuum Society in cooperation with the Department of Microelectronics, Head of organising committee: Assoc. Prof. M. Veselý

**EUROPRACTICE** membership of the University is managed by the Department

(responsible: M. Veselý)

**Other activities:**

- Member of 'Education and Training Coordination Board' and 'Scientific Community Council' of ENIAC JU, (D. Donoval)
- Member of 'Steering Committee of European Workshop in Microelectronics Education' EWME (D. Donoval)
- Member of European Technology Platform PHOTONICS21, Education Working Group WG7 (F. Uherek)
- Alternate Councillor of IUVSTA (M. Veselý)
- Opening of the National Centre for Electron Microscopy in France, Rouen, 2-4 November, 2010, invited participant (M. Veselý)
- Member of the Slovak Research and Development Agency (APVV) Boards for FP7 and International R&D Cooperation (M. Veselý)

- Member of the Slovak Research and Development Agency (APVV) Boards, Working Group of Technical Sciences (M. Žiška)
- National Expert for CEEPUS Program (M. Veselý)
- Head of Office for European Union Programs at Faculty of EE&IT (M. Veselý)
- Teaching a course of 'Vacuum Science, Materials for Vacuum and Clean Rooms' at TU Ilmenau, 5 – 19 December, 2010 (M. Veselý)

### **VIII. PUBLICATIONS**

#### **VIII.1 Journals**

- [1] BALÁŽ, P. - ŠKORVÁNEK, I. - FABIÁN, M. - KOVÁČ, J. - STEINBACH, I. - FELDHOFF, A. - ŠEPELÁK, V. - JIANG, J. - ŠATKA, A. - KOVÁČ, J.: Properties of Magnetically Diluted Nanocrystals Prepared by Mechanochemical Route. In: Journal of Alloys and Compounds. - ISSN 0925-8388. - Vol. 504 (2010), p. 5340-5344. (in English)
- [2] BALOG, M. - KOVÁČ, J. - ŠATKA, A. - HAŠKO, D. - ZHANG, J. - CRIMP, M.A. - VÁVRA, O. - VÁVRA, I.: SiC-Based Cermet with Electrically Conductive Grain Boundaries. In: Materials Characterization. - ISSN 1044-5803. - Vol. 61, Iss. 4 (2010), p. 420-426. (in English)
- [3] BIELIK, P. - KADLEČÍKOVÁ, M. - KADLEČÍK, J.: The Future is in Nanoscience. In: Quark. - ISSN 1335-4000. - Vol. 16, No. 5 (2010), p. 32. (in Slovak)
- [4] ČAPLOVIČOVÁ, M. - ČAPLOVIČ, E. - BÚC, D. - JANÍK, J. - VINDUŠKA, P.: Carbon Nanostructures Grown on Fe-Cr-Al Alloy. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61. No. 6 (2010), p. 379-383. (in English)
- [5] DONOVAL, D. - CHVÁLA, A. - ŠRAMATÝ, R. - KOVÁČ, J. - CARLIN, J.F. - GRANDJEAN, N. - POZZOVIVO, G. - KUZMIK, J. - POGANY, A. - STRASSER, G. - KORDOŠ, P.: Current Transport and Barrier Height Evaluation in Ni/InAlN/GaN Schottky Diodes. In: Applied Physics Letters. - ISSN 0003-6951. - Vol. 96 (2010), art. no. 223501. (in English)
- [6] FLICKYNGEROVÁ, S. - ŠKRINIAROVÁ, J. - NETRVALOVÁ, M. - KOVÁČ, J. - NOVOTNÝ, I.: Surface Modification of Doped ZnO Thin Films. In: Applied Surface Science. - ISSN 0169-4332. - Vol. 256 (2010), p. 5606-5609. (in English)
- [7] FLICKYNGEROVÁ, S. - TVAROŽEK, V. - GAŠPIERIK, P.: Zinc Oxide - A Unique Material for Advanced Photovoltaic Solar Cells. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 5 (2010), p. 291-295. (in English)
- [8] HOLOVSKÝ, J. - DAGKALDIRAN, U. - REMEŠ, Z. - PURKRT, A. - IŽÁK, T. - PORUBA, A. - VANEČEK, M.: Fourier Transform Photocurrent Measurement of Thin Silicon Films on Rough, Conductive and Opaque Substrates. In: Physica Status Solidi (a)-Applications and Materials Science. - ISSN 1862-6300. - Vol. 207 (2010), p. 578-581. (in English)
- [9] HORÍNEK, F. - DAŘÍČEK, M. - HORNIAK, M. - DONOVAL, M. - VAVRINSKÝ, E. - RENDEK, K. - DONOVAL, D.: Modular System for High-speed Diseases Diagnostic and Health Care Quality Improvement. In: EE - Journal of Electrical and Power Engineering. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 165-167. (in Slovak)
- [10] HOTOVÝ, I. - PEZOLDT, J. - KADLEČÍKOVÁ, M. - KUPS, T. - SPIESS, L. - BREZA, J. - SAKALAUSKAS, E. - GOLDHAHN, R. - ŘEHÁČEK, V.: Structural Characterization of Sputtered Indium Oxide Films Deposited at Room Temperature. In: Thin Solid Films. - ISSN 0040-6090. - Vol. 518 (2010), p. 4508-4511. (in English)

- [11] HOTOVÝ, I. - KUPS, T. - HOTOVÝ, J. - LIDAY, J. - BÚC, D. - ČAPLOVIČOVÁ, M. - ŘEHÁČEK, V. - SITTER, H. - SIMBRUNNER, C. - BONNANI, A. - SPIESS, L.: Structural Evolution of Sputtered Indium Oxide Thin Films. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 6 (2010), p. 382-385. (in English)
- [12] HUŠEKOVÁ, K. - DOBROČKA, E. - ROSOVÁ, A. - ŠOLTÝS, J. - ŠATKA, A. - FILLOT, F. - FRÖHLICH, K.: Growth of RuO<sub>2</sub> Thin Films by Liquid Injection Atomic Layer Deposition. In: Thin Solid Films. - ISSN 0040-6090. - Vol. 518 (2010), p. 4701-4704. (in English)
- [13] IŽÁK, T. - MARTON, M. - VOJS, M. - REDHAMMER, R. - VARGA, M. - VESELÝ, M.: A Raman Spectroscopy Study on Differently Deposited DLC Layers in Pulse Arc System. In: Chemical Papers. - ISSN 0366-6352. - Vol. 64, Iss. 1 (2010), p. 46-50. (in English)
- [14] JANÍK, J.: Technologies and Materials for Micro and Nano-Electronics. In: Acta Electrotechnica et Informatica. - ISSN 1335-8243. - Vol. 10, No. 3 (2010), p. 93-96. (in English)
- [15] KÁDÁR, O. - UHEREK, F. - CHOVAR, J.: Modern Telecommunication Optical Fibers. In: Posterus.sk. - ISSN 1338-0087. - April (2010), <http://www.posterus.sk/?p=6830>. (in English)
- [16] KADLEČÍKOVÁ, M. - BREZA, J. - LIDAY, J. - SITTER, H. - AL-BAQI, S.A.: Raman Spectra of Two Samples of Rubrene Layers. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 61, No. 5 (2010), p. 296-298. (in English)
- [17] KORDOŠ, P. - STOKLAS, R. - GREGUŠOVÁ, D. - GAŽI, Š. - NOVÁK, J.: Trapping Effects in Al<sub>2</sub>O<sub>3</sub>/AlGaN/GaN Metal-Oxide-Semiconductor Heterostructure Field-Effect Transistor Investigated by Temperature Dependent Conductance Measurements. In: Applied Physics Letters. - ISSN 0003-6951. - Vol. 96 (2010), Art. no. 013505. (in English)
- [18] KOŠEL, V. - ILLING, R. - GLAVANOVICS, M. - ŠATKA, A.: Non-Linear Thermal Modeling of DMOS Transistor and Validation using Electrical Measurements and FEM Simulations. In: Microelectronics Journal. - ISSN 0026-2692. - Vol. 41 (2010), p. 889-896. (in English)
- [19] KUBICOVÁ, I. - PUDIŠ, D. - ŠUŠLÍK, L. - ŠKRINIAROVÁ, J.: NSOM Lithography as a Promising Technique for Submicrometer Structures Fabrication. In: Technológ. - ISSN 1337-8996. - Vol. 2, No. 1 (2010), p. 26-30. (in English)
- [20] KUCHARIK, M. - KORENKO, M. - JANÍČKOVIČ, D. - KADLEČÍKOVÁ, M. - BOČA, M. - OBOŇA, J.V.: Rapid Solidification of Cryolite and Cryolite-Alumina Melts. In: Monatshefte für Chemie - Chemical Monthly. - ISSN 0026-9247. - ISSN 1434-4475. - Vol. 141, No. 1 (2010), p. 7-13. (in English)
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- [23] MIKOLÁŠEK, M. - RACKO, J. - HARMATHA, L. - GAŠPIERIK, P. - ŠUTTA, P.: Influence of the Broken Symmetry of Defect State Distribution at the a-Si:H/c-Si Interface on the Performance of Hetero-Junction Solar Cells. In: Applied Surface Science. - ISSN 0169-4332. - Vol. 256 (2010), p. 5662-5666. (in English)

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- [26] RASCHMANN, Š. - ZÁLUSKÝ, R. - ĎURAČKOVÁ, D.: New Digital Architecture of CNN for Pattern Recognition. In: *Journal of Electrical Engineering.* - ISSN 1335-3632. - Vol. 61, No. 4 (2010), p. 222-228. (in English)
- [27] REMEŠ, Z. - IŽÁK, T. - KROMKA, A. - VANEČEK, M.: High Optical Quality Nanocrystalline Diamond with Reduced Non-Diamond Contamination. In: *Diamond and Related Materials.* - ISSN 0925-9635. - Vol. 19 (2010), p. 453-456. (in English)
- [28] SHTEREVA, K. - NOVOTNÝ, I. - TVAROŽEK, V. - ŠUTTA, P. - VINCZE, A. - PULLMANNOVÁ, A.: ZnO Doping and Co-Doping Paradigm and Properties. In: *Journal of the Electrochemical Society.* - ISSN 0013-4651. - Vol. 157 (2010), p. H891-895. (in English)
- [29] RYBÁR, J. - STUCHLÍKOVÁ, I. - KOVÁČ, J.jr. - KOVÁČ, J.: Virtual Tour in Optoelectronics Laboratory. In: *Posterus.sk.* - ISSN 1338-0087. - March (2010), <http://www.posterus.sk/?p=5600> . (in Slovak)
- [30] SHTEREVA, K. - NOVOTNÝ, I. - TVAROŽEK, V. - ŠUTTA, P. - VINCZE, A. - PULLMANNOVÁ, A.: ZnO Doping and Co-Doping Paradigm and Properties. In: *Journal of the Electrochemical Society.* - ISSN 0013-4651. - Vol. 157 (2010), p. H891-895. (in English)
- [31] SRNÁNEK, R. - JAKABOVIČ, J. - DOBROČKA, E. - IRMER, G. - HEINEMEYER, U. - BROCH, K. - SCHREIBER, F. - VINCZE, A. - MACHOVIČ, V. - KOVÁČ, J. - DONOVAL, D.: Evidence of Pentacene Bulk and Thin Film Phase Transformation into an Orthorhombic Phase by Iodine Diffusion. In: *Chemical Physics Letters.* - ISSN 0009-2614. - Vol. 484, Iss. 4-6 (2010), p. 299-303. (in English)
- [32] UHEREK, F. - CHORVÁT, D. - CHORVÁTOVÁ, A.: Current Trends in Application of Lasers and Photonics in Medicine. In: *EE - Journal of Electrical and Power Engineering* - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 176-180. (in Slovak)

## VIII.2 Conference Proceedings

- [1] ARBET, D. - STOPJAKOVÁ, V.: Fault Detection in 2-R Ladder D/A Converter Using Parametric Test Methods. In: *ELITECH'10: 12th Conference of Doctoral Students.* Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [2] ARBET, D. - STOPJAKOVÁ, V.: Parametric Tests and Fault Detection in Mixed-Signal Sub-Circuits. In: *Computer Architecture and Diagnostic 2010: Czech-Slovak Workshop for PhD Students.* Českovice, Czech Republic, 13.-15.9.2010. - Zlín: Tomas Bata University in Zlín, 2010. - p. 9-14. (in English)
- [3] BALLO, P. - HARMATHA, L. - VITKOVSKÁ, E.: Introduction to Computational Physics and Supercomputing. In: *APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference.* Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 16-19. (in English)

- [4] BEDERKA, Š. - VESELÝ, M. - VARGA, M. - VOJS, M. - REDHAMMER, R. - MARTON, M. - MICHALÍKOVÁ, L. - IŽÁK, J.: Combined Hot Filament CVD/Microwave Plasma-Assisted CVD Reactor for the Growth of Diamond Films under Low Pressures. In: JVC-13: 13th Joint Vacuum Conference. Štrbské Pleso, Slovak Republic, 20.-24.6.2010. - Bratislava: Slovak Vacuum Society, 2010. - ISBN 978-80-7399-969-8. - p. 53. (in English)
- [5] BENKO, P. - HARMATHA, L. - NOVOTNÝ, I. - ŘEHÁČEK, V. - VINCZE, A.: Electrical Characterization of MOS Structures with Nickel Gate Electrodes. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 166-169. (in English)
- [6] BENKO, P. - VINCZE, A. - HARMATHA, L. - NOVOTNÝ, I. - ŘEHÁČEK, V.: Electrical Properties of Nickel Electrodes for High-k MOS Structures. In: JVC-13: 13th Joint Vacuum Conference. Štrbské Pleso, Slovak Republic, 20.-24.6.2010. - Bratislava: Slovak Vacuum Society, 2010. - ISBN 978-80-7399-969-8. - p. 150. (in English)
- [7] BENKOVSKÁ, J. - STUCHLÍKOVÁ, Ľ. - ŠEBOK, J. - RYBÁR, J.: e-Learning and Mysterious World of Science and Technology. In: ICETA 2010: 8th International Conference on Emerging eLearning Technologies and Applications. Stará Lesná, Slovakia, 28.-29.10.2010. - Košice: Elfa, 2010. - ISBN 978-80-8086-166-7. - p. 307-312. (in English)
- [8] BRATH, T. - BÚC, D. - ČAPLOVIČOVÁ, M. - ČAPLOVIČ, Ľ. - MIKULA, M.: Preparation and Properties of ZnO Nanomaterials. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [9] BRATH, T. - BÚC, D. - ČAPLOVIČOVÁ, M. - ČAPLOVIČ, Ľ. - PREDANOCY, M. - HRNČIAR, V.: Preparation and Properties of ZnO Nanomaterials for Sensoric Applications. In: ASDAM 2010. 8th International Conference on Advanced Semiconductor Devices and Microsystems: Smolenice Castle, Slovak Republic. 25.-27.10.2010. - Piscataway: IEEE, 2010. - ISBN 978-1-4244-8572-7. - p. 61-64. (in English)
- [10] BRUNCKO, J. - NETRVALOVÁ, M. - ŠUTTA, P. - VINCZE, A. - HAŠKO, D. - UHEREK, F.: Annealing and Recrystallization of ZnO Thin Films. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 264-267. (in English)
- [11] CHITU, L. - HALAHOVETS, Y. - JERGEL, M. - MAJKOVÁ, E. - SIFFALOVIČ, P. - LUBY, Š. - KOSTIČ, I. - ŠATKA, A. - ULMEANU, M. - SZYMANSKI, B. - STOBIECKI, F.: Nanosphere Lithography for Fabrication of Novel Magnetic Nanostructures. In: JVC-13: 13th Joint Vacuum Conference. Štrbské Pleso, Slovak Republic, 20.-24.6.2010. - Bratislava: Slovak Vacuum Society, 2010. - ISBN 978-80-7399-969-8. - p. 79. (in English)
- [12] CHOVAR, J. - UHEREK, F. - KURINEC, R. - GOLIAN, I. - BENKE, G.: Measurement of Temperature Dependence of Properties of Passive Optical Elements for FTTH WDM –PON Systems. In: Optical Communications 2010: Prague, Czech Republic, 21.-22.10.2010. - Prague: Action M, 2010. - ISBN 978-80-86742-29-8. - p. 39-46. (in Slovak)
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**VIII.3 Parts of Books**

- [1] SOLÁRIKOVÁ, P. - VAVRINSKÝ, E.: Continual Monitoring of Psycho-Physiological Correlations under Stress. In: Psychologica XL. - Bratislava: STIMUL, 2010. - ISBN 978-80-89236-93-0. - p. 591-598. (in Slovak)
- [2] SPIESS, L. - KUPS, T. - HOTOVÝ, I. - ŘEHÁČEK, V. - WILKE, M.: Microstructure and Surface Morphology of Sputtered TiO<sub>2</sub> Thin Films. In: Thüringer Werkstofftag 2010: Ilmenau, Germany, 24.3.2010. - Ilmenau: Technische Universität, 2010. - ISBN 978-3-939473-74-9. - p. 121-126. (in German)
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**VIII.4 Textbooks**

- [1] HOTOVÝ, I.: Basic Processes of Microelectronics. - Bratislava: STU, 2010. - CD-Rom [102 p.]. - ISBN 978-80-227-3301-4. (in Slovak)
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**DEPARTMENT OF NUCLEAR PHYSICS AND TECHNOLOGY**

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**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

**Nuclear Technologies Centre:**

- Computer Laboratory
- Ion Beams Laboratory
- Laboratory of Low Level Radioactivity Measurement
- Laboratory of Mössbauer Spectroscopy
- Laboratory of Neutron Physics
- Laboratory of Optical Spectroscopy
- Laboratory of Positron Annihilation Spectroscopy
- Laboratory of Radioactive Isotopes
- Laboratory of Reactor Physics
- Laboratory of Semiconductor Detectors

**II.2 Special Measuring Instruments and Computers**

- Mössbauer Spectrometers - 4 units (77 - 1200 K)
- 1 MV Cascade Accelerator. Ion beam analyses: 2 MeV He<sup>2+</sup> RBS with UHV target chamber, sample heating 300 - 1200 K, 1 MeV H<sup>+</sup> PIXE; Ion beam modification: 10 keV - 1 MeV ion implantation, high dose ~ 10<sup>19</sup> ions/cm<sup>2</sup>
- Life-Time and Angular Correlation Positron Annihilation Spectrometers
- Doppler Broadening Spectrometer
- Low-Background Chamber with HPGe Detector and Gamma Ray Spectrometer

- Department's LAN computer network
- 16 PC Cluster
- Amptek Experiment's XRF Kit
- KETEK SDD and AXAS-D Systems
- Supercomputer (48 core)

### **II.3 Special Software**

- Particle Beam Optics Laboratory PBO Lab™ 2.1
- Transport
- Trace-3D
- Electrostatic Palette
- WinAGILE
- MATLAB R2006A
- SRIM
- MCNP-4C2, MCNP 5
- VISED
- SCALE 4.4a, SCALE 6
- GENIE 2000
- GoldSim
- CONFIT
- Field Precision - STATIC FIELD ANALYSIS TOOLKIT (TK 0300)
- Visiplan Suite 4.0 3D ALARA planning tool

## **III. TEACHING**

### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Nuclear Installations	(4th sem., 3-2h)	V. Nečas, J. Haščík, V. Slugeň
Sources of Radiation	(6th sem., 2-3h)	M. Miglierini
Nuclear Installations	(6th sem., 20 h)	J. Sitek
Environmentalistics	(6th sem., 3-2h)	J. Sitek, J. Degmová

### **III.2 Graduate Study (Ing.)**

Nuclear Physics and Technology	(1st sem., 2-2h)	J. Lipka
Team Projects 1	(1st sem., 0-4h)	M. Pavlovič
Team Projects 1 (AI)	(1st sem., 0-3h)	K. Vitázek
Team Projects 2 (TLK)	(2nd sem., 0-4h)	K. Vitázek
Theory of Nuclear Reactors	(2nd sem., 2-2h)	J. Haščík
Material of Nuclear Power Plants	(2nd sem., 2-2h)	V. Nečas
Atomic and Molecular Spectroscopy	(2nd sem., 2-2h)	M. Miglierini
Experimental Reactor Techniques	(2nd sem., 2-2h)	J. Haščík
Dosimetry and Radiation Protection	(2nd sem., 2-2h)	R. Hinca
Methods of Nuclear Physics	(3rd sem., 2-2h)	J. Sitek

Operation of Nuclear Power Plants	(3rd sem., 2-2h)	V. Slugeň
Decommissioning of Nuclear Power Plants	(3rd sem., 2-2h)	V. Nečas
Safety and Reliability of Power Engineering		
Installations	(4th sem., 2-2h)	V. Slugeň
Safety and Reliability of Power Engineering		
Installations	(4th sem., 20h)	V. Slugeň
Nuclear Electronics	(1st sem., 2-1h)	J. Sitek
Team Projects 1 (EE)	(1st sem., 0-4h)	R. Hinca, J. Haščík, G. Farkas

**IV. RESEARCH PROJECTS**

- Materials of Alternative Nuclear Fuel Cycles and Decommissioned NPP, VEGA 1/0685/09 (V. Nečas)
- Semiconductor Detectors for Hot Plasma Diagnostics VEGA 2/0192/10 (V. Nečas)
- Research and Development of Methods for Increasing the Effectiveness and Safety of Nuclear Installations Decommissioning, APVV-0761-07 (V. Nečas)
- Conditional Release of Materials from Decommissioning (CONRELMAT), Incentives MŠ SR № CD-2009-36909/39460-1:11 (V. Nečas)
- Depth Profiling Radiation Induced Defect Concentration in DEMO Structural Materials Using Pulsed Low Energy Positron System (PLEPS). 7<sup>th</sup> Framework Project of the European Atomic Energy Community No FU70-Euratom.CU (2007-2011) (V. Slugeň)
- Nondestructive of Microstructural Changes in Ion Implanted Model Alloys (SMORE). IAEA Research No 14991/RO (V. Slugeň)
- Nuclear Installation Material Study in Extreme Radiation Load Condition, VEGA 1/0129/09 (V. Slugeň)
- Enhancement of Education Process for Graduates Focused on Working Positions with Impact on Increase of NPP Safe Operation and Decommissioning , KEGA 3/7241/09 (R. Hinca)
- Structural and Magnetic Changes of Disordered and Nanocrystalline Alloys, VEGA 1/0606/09 (J. Sitek)
- Irradiation Tests of Magnetic Alloy and Organic Insulator Materials. Bilateral Agreement STU-GSI Darmstadt (M. Pavlovič)
- Training Schemes on Nuclear Safety Culture for Managers (TRASNUSAFA) 7<sup>th</sup> Framework Project of the European Atomic Energy Community No249674 (2010-2014) (V. Slugeň)
- Hyperfine Interactions in Fe-Based Amorphous and Nanocrystalline Alloys. VEGA 1/0033/10 (M. Miglierini)
- Structural Modification of Amorphous and Nanocrystalline Fe-Based Alloys. Bilateral Project SK-PL-0013-09 (M. Miglierini)
- Nanoalloys as Advanced Materials: From Structure to Properties and Applications (Nanoalloy). Cost Action MP 0903 (M. Miglierini)
- EUJEP 2010-2013 (J. Haščík)
- ENEN Cooperation with Russian in Nuclear Education, Training and Knowledge Management (J. Haščík)

**V. COOPERATION****V.1 Cooperation in Slovakia**

- DECOM a.s., Trnava

- DECONTA a.s., Trnava
- Faculty of Natural Science, Comenius University, Bratislava
- Geological Institute, Slovak Academy of Sciences, Bratislava
- Comenius University in Bratislava, Faculty of Natural Sciences, Department of Geology and Paleontology, Bratislava
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Experimental Physics, Slovak Academy of Sciences, Košice
- Institute of Measurement Science, Slovak Academy of Sciences, Bratislava
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Institute of Preventive and Clinical Medicine, Bratislava
- International Laser Centre, Bratislava
- University of P. J. Šafárik, Institute of Physical Sciences, Košice
- VUJE a.s., Trnava
- Nuclear Regulatory Authority of the Slovak Republic, Bratislava
- Relko Ltd., Bratislava
- Slovak Electric Ltd., Bratislava
- Nuclear Decommissioning Company, plc., (JAVYS) Bratislava
- Slovak Electric Ltd., Mochovce Nuclear Power Plant, Mochovce
- Slovak Electric Ltd., Bohunice Nuclear Power Plant, Jaslovské Bohunice
- Slovak Office for Normalization, Metrology and Testing, Bratislava
- Slovak Institute of Metrology, Bratislava
- BIONT Inc., Bratislava
- National Nuclear Fund of Slovak Republic, Bratislava

## V.2 International Cooperation

- All-Russian Scientific Institute of Experimental Physics, Theoretical Physics Department, Sarov, Russia
- Atominstitut der Technischen Universität, Vienna, Austria
- Centro de Investigación y de Estudios Avanzados del IPN Unidad Saltillo, Mexico
- Department of Nuclear Reactors, Czech Technical University in Prague, CzR
- EFDA Close Support Unit, Garching, Germany
- Flerov Laboratory of Nuclear Reactions, Joint Institute of Nuclear Research, Dubna, Russia
- Forschungszentrum Jülich, Institute of Bio- and Nanosystems, Germany
- AREVA-NP, Erlangen, Germany
- GSI, Accelerator Department, Darmstadt, Germany
- Leibniz Institut für Festkörper- und Werkstoffsorschung, Dresden, Germany
- Institute for Nuclear Research of the Russian Academy of Sciences, Neutron Research Department, Moscow, Russia
- Institute for Theoretical and Experimental Physics, High Energy Density in Matter Produced by Heavy Ion Beam Department, Moscow, Russia
- Institute for Energy, European Commission, JRC Petten
- Institute of Nuclear Techniques, Budapest University of Technology and Economics, Hungary
- Institute of Thin Films and Interfaces, Research Centre Jülich, Germany
- International Atomic Energy Agency, Vienna, Austria
- Laboratory of Nuclear Problems, Joint Institute of Nuclear Research, Dubna, Russia
- Leibniz Institute für Festkörperphysik, University Vienna, Austria
- Nuclear Research Institute, Řež, CzR
- Universität der Bundeswehr, München, Germany
- University of Gent, Belgium
- Palacky University, Olomouc, CzR
- Institute of Experimental and Applied Physics, Czech Technical University in Prague, CzR
- Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, Řež, CzR
- University of Applied Sciences, Wiener Neustadt, A-2700, Austria

- Aalto University School of Science and Technology, Finland
- Wroclaw University of Technology, Wroclaw, Poland

### V.3 Membership in Slovak Organizations and Societies

- Board of Nuclear Safety SE-EBO (J. Haščík)
- Board of Nuclear Safety SE-EMO (V. Slugeň)
- Board of Nuclear Safety JAVYS (V. Nečas)
- Council of Nuclear Regulatory Authority of the Slovak Republic (V. Nečas, V. Slugeň)
- Co-ordination Board for Cooperation with JINR Dubna (V. Nečas)
- Scientific Council of FEI SUT (V. Nečas)
- Scientific Council of Slovak Institute of Metrology (J. Lipka, V. Nečas)
- Slovak Nuclear Forum (J. Lipka – vice-president)
- Slovak Nuclear Society (V. Slugeň - chairman, J. Degmová, J. Haščík, R. Hinca, Š. Krnáč, G. Farkas, K. Vitázek, J. Lipka, M. Miglierini, V. Nečas, M. Petriska, J. Sitek, A. Šagátová, M. Seberíni, M. Pavlovič)
- Slovak Physical Society (M. Miglierini, V. Nečas, J. Sitek, V. Slugeň, M. Pavlovič)
- Slovak Spectroscopic Society (M. Miglierini - president, J. Degmová, J. Haščík, Š. Krnáč, J. Lipka, M. Seberíni, J. Sitek, V. Slugeň, I. Tóth, members)
- State Examination Committee for the Verification of Operating Staff of Nuclear Installations Specific Abilities (J. Haščík, V. Slugeň)
- Slovak National Nuclear Found (V. Slugeň, vice-chairman)

### V.4 Membership in International Organizations and Societies

- European Nuclear Society (V. Slugeň, President)
- ENEN Association (M. Miglierini, J. Haščík, V. Slugeň)
- European Physical Education Network (V. Slugeň)
- German Nuclear Society (V. Slugeň)
- International Board on the Applications of the Mössbauer Effect "IBAME" (M. Miglierini)
- International Journal of Nuclear Energy Science and Technology, Member of the Editorial Board (V. Nečas)
- International Journal of Nuclear Knowledge Management, Member of the Editorial Board (J. Lipka, V. Slugeň)
- OECD/NEA Bank's Computer Program Service (J. Lipka -Liaison Officer)
- Science and Technology Advisory Committee of EU - Area Nuclear Fusion (V. Slugeň)
- The Research Board of Advisors of the American Biographical Institute (M. Pavlovič)
- The Advisory Council of the International Biographical Centre Cambridge (M. Pavlovič)
- The Scientific Board of Nuclear Research Institute Řež, plc, CzR (V. Slugeň)
- The High Scientific Council at European Nuclear Society (V. Slugeň)
- International Jordan Journal of Physics, Member of the International Advisory Board (J. Lipka)
- Evaluator of EC 7th Framework Projects – Area Reactor Systems (V. Slugeň)

### V.5 Contracts

- Periodical Training of Supervising Physicists of the NPP Bohunice, JAVYS and Mochovce on the Experimental Nuclear Reactors. Contract with NPP Bohunice, Mochovce and JAVYS, Jaslovské Bohunice (J. Haščík)
- Post-gradual Requalification Training Course: Safety Aspects of Nuclear Installations Operation. Contract with SE, a. s. (J. Haščík, R. Hinca, J. Lipka, V. Nečas, V. Slugeň)
- Computer Simulation of Neutron Physical Characteristics of VVER-440 Reactors and their Experimental Validation. Contract with SE, a. s. (V. Slugeň, J. Haščík, G. Farkas, S. Michálek, M. Petriska, A. Balga, K. Vitázek, R. Hinca, Š. Krnáč, M. Stacho, I. Neuhold, T. Melo, A. Vanková)
- Evaluation of the Technical Concept of the Slovak Cyclotron Centre, Contract with Turner & Townsend GmbH, Munich, Germany (M. Pavlovič)

- Distant Teaching of Radiation and Nuclear Physics at the University of Applied Sciences Wiener Neustadt, Austria (M. Pavlovič)
- Radiation Degradation Assessment of NPP Materials, Contract with SE a. s. (V. Slugeň, J. Haščík, J. Degmová, K. Vitázek, R. Hinca, Š. Krnáč, G. Farkas, M. Petriska, J. Dekan, M. Stacho, S. Sojak, J. Veterníková)

## **VI. THESES**

### **VI. 1 Masters Theses**

Masters theses supervised at the Department of Nuclear Physics and Technology. The names of supervisors are in brackets.

- [1] Balážik, O.: Transition Period from Operation to Decommissioning of Nuclear Installations (V. Nečas, I. Rehák)
- [2] Čerba, Š.: Nuclear Energy in the Future Power Engineering of Slovakia (V. Nečas, P. Dařílek)
- [3] Horváth, R.: Radiation Protection in Nuclear Engineering (R. Hinca)
- [4] Javorník, A.: Exposure Components of the Environment and the Critical Groups of People due to Uranium Mining (R. Hinca, D. Nikodemová)
- [5] Krampl, M.: Determination of Fast Neutrons in the Plasmas by Semiconductor Detectors Based on Semi-Insulating GaAs (V. Nečas, B. Zaťko)
- [6] Kubačka, J.: Dynamics of Hydrogen in the Containment of a Nuclear Unit during Severe Accidents (V. Slugeň, J. Jančovič)
- [7] Lüley, J.: Impact of Delayed Neutrons Parameters on Reactimeter Measurement on VVER 440 (J. Haščík, P. Páleník)
- [8] Michálek, M.: Possibilities of  $\beta_{\text{eff}}$  (effective delayed neutrons fraction) Determination on Pressurized Water Reactors (J. Haščík)
- [9] Molnár, T.: Study of the Influence of Annealing to Microstructure of Nuclear Power Plant Structural Materials with Application of Positron Annihilation Spectroscopy (V. Slugeň, S. Sojak)
- [10] Okkel, M.: Costs Aspects of Decommissioning of Nuclear Facilities (V. Nečas, I. Rehák)
- [11] Sabelová, V.: Safety Analysis of the Initiating Event 'Trip of Main Circulation Pumps at Mochovce NPP Unit 1' using conservative and best estimates approaches and uncertainty evaluation of base criterion parameter (V. Slugeň, T. Kliment)
- [12] Sačková, M.: Analysis of Temperature Field in the Fuel Rod (V. Nečas, B. Hatala)
- [13] Šalát, T.: Detector for Hot Plasmas Diagnostics Based on Semi-Insulating GaAs (V. Nečas, F. Dubecký, B. Zaťko)
- [14] Šeliga, P.: Safety Analysis of Steam Generators VVER-440 (V. Slugeň)
- [15] Vrban, B.: Monitoring of Nuclide Composition as a Function of Burn up and Fuel in Reactors VVER-440 Reactors (J. Haščík, G. Farkas)

### **VI.2 PhD Theses**

- [1] Breza, J.: Innovative Nuclear Fuel Cycles and their Application in Light Water Reactors (V. Nečas)
- [2] Dekan, J.: Analysis of Archaeological Artifacts Using Analytical Techniques (M. Miglierini)
- [3] Michálek, S.: Methodology Development for Experimental Evaluation of Effective Delayed Neutron Fraction in Nuclear Reactors (J. Haščík)
- [4] Pavúk, M.: Structural Transformations in the NANOPERM-type Amorphous Alloys (M. Miglierini)
- [5] Zajac, R.: The Heavy Nuclides Transmutation in Thermal and Fast Reactors (V. Nečas)
- [6] Zajacová, Z.: Assessment of Radiological Risks at the ATLAS Experiment (M. Pavlovič, V. Hedberg, M. Silari)

- [7] Vittek, R.: Dependence of Hyperfine Interactions from Microstructure in Selected Nanocrystalline Alloys of NANOPERM (J. Sitek)

## **VII. OTHER ACTIVITIES**

- Organization of the Postgraduate Study 'Nuclear Installation Operation Safety Aspects' for participants from different organizations. Organised for SE, a. s.
- Organization of students excursion to Atom Institute in Vienna
- Students Practical Exercises at the TRIGA Mark II Reactor in Atom Institute of the Austrian Universities, Vienna, Austria
- Students Practical Exercises at the Training Reactor of the Budapest University of Technology and Economics, Budapest, Hungary
- Students Practical Exercises at the Training Reactor of the Czech Technical University in Prague, Czech Republic
- Organization of French-Slovak Seminary 'Reactor generation 4', Demänová, 6 - 8 February 2010
- Organization of French-Slovak Summer School 'Reactor Generation 3', Kočovce, 13 - 17 September 2010
- Contribution to the '7th International Conference Secure Energy Supply 2010', Bratislava, 22 - 23 September 2010
- Organization of International Colloquium 'Mössbauer Spectrometry in Material Science' (MSMS 2010), Liptovský Ján, 31. 1.- 5. 2. 2010

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

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- [2] BREZA, J. - DAŘÍLEK, P. - NEČAS, V.: Study of Thorium Advanced Fuel Cycle Utilization in Light Water Reactor VVER-440. In: Annals of Nuclear Energy. - ISSN 0306-4549. - Vol. 37 (2010), p. 685-690. (in English)
- [3] BUTVIN, P. - BUTVINOVÁ, B. - SILVEYRA, J.M. - CHROMČÍKOVÁ, M. - JANIČKOVIČ, D. - SITEK, J. - ŠVEC, P. - VLASÁK, G.: Effects of Substitution of Mo for Nb on Less-Common Properties of Finemet Alloys. In: Journal of Magnetism and Magnetic Materials. - ISSN 0304-8853. - Vol. 322, Iss. 20 (2010), p. 3035-3040. (in English)
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- [5] DEGMOVÁ, J. - DEBARBERIS, L. - KRŠJAK, V.: Model Materials for Reactor Pressure Vessel. In: Acta Physica Polonica A. - ISSN 0587-4246. - Vol. 118, No. 5 (2010), p. 1054-1056. (in English)
- [6] FARKAS, G. - SLUGEŇ, V. - HAŠČÍK, J.: Determination of Weighting Functions of Ex-Core Detectors for VVER-440 by Monte Carlo Method. In: Metrológia a skúšobníctvo. - ISSN 1335-2768. - Vol. 15, No. 2 (2010), p. 10-20. (in Slovak)

- [7] GONZÁLEZ-ANGELES, A. - LIPKA, J. - GRUSKOVÁ, A. - SLÁMA, J. - JANČÁRIK, V. - SLUGEŇ, V.: Magnetic Comparison of BaCa and BaSr Substituted Hexaferrite Powders. In: Journal of Physics: Conference Series. - ISSN 1742-6588. - Vol. 217 (2010), Art. no. 012137. (in English)
- [8] GRUSKOVÁ, A. - SLÁMA, J. - UŠÁKOVÁ, M. - ŠOKA, M. - DOSOUDIL, R. - DEGMOVÁ, J.: Study of Magnetic and Structural Properties of Non-Stoichiometric NiZn Ferrites Prepared by Wet Method. In: Acta Physica Polonica A. - ISSN 0587-4246. - Vol. 118, No. 5 (2010), p. 780-781. (in English)
- [9] HAEHNEL, V. - FÄHLER, S. - SCHAAF, P. - MIGLIERINI, M. - MICKEI, C. - SCHULTZ, L. - SCHLÖRB, H.: Towards Smooth and Pure Iron Nanowires Grown by Electrodeposition in Self-Organized Alumina Membranes. In: Acta Materialia. - ISSN 1359-6454. - Vol. 58, Iss.8 (2010), p. 2330-2337. (in English)
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- [16] MIGLIERINI, M.: Hyperfine Interactions and Crystallization Kinetics of Co-Substituted NANOPERM-Type Alloys. In: Journal of Physics: Conference Series. - ISSN 1742-6588. - Vol. 217 (2010), Art. no. 012092. (in English)
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### VIII.2 Conference Proceedings

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- [3] BAJUSOVÁ, A. - GREŽDO, J. - MIGLIERINI, M.: Verification of 2-D Dosimeter Matrix as a Tool for Quality Assurance in Brachytherapy. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 121-124. (in English)
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- [91] VETERNÍKOVÁ, J. - DEGMOVÁ, J. - KILPELÄINEN, S. - SLUGEŇ, V. - TUOMISTO, F. - RÄISÄNEN, J.: Non-Destructive Examination of Radiation Loaded HTRs Construction. In: 5th International Conference on High Temperature Reactor Technology HTR 2010: Prague, Czech Republic, 18.-20.20.2010. - Flashdisk. (in English)

- [92] VETERNÍKOVÁ, J. - DEGMOVÁ, J. - KILPELÄINEN, S. - SLUGEŇ, V. - TUOMISTO, F.: Radiation Resistance of Construction Steels for High Temperature Reactors. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 125-129. (in English)
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- [96] ZAŤKO, B. - DUBECKÝ, F. - BOHÁČEK, P. - NEČAS, V. - RYC, L.: Detection of Soft X-Rays Using Semi-Insulating GaAs Detector. In: ASDAM 2010. The 11th International Conference on Advanced Semiconductor Devices and Microsystems: Smolenice Castle, Slovak Republic. 25.-27.10.2010. - Piscataway: IEEE, 2010. - ISBN 978-1-4244-8572-7. - p. 219-222. (in English)
- [97] ZAŤKO, B. - DUBECKÝ, F. - BOHÁČEK, P. - NEČAS, V. - RYC, L.: Evaluation of Semi-Insulating GaAs Detector in Soft X-Ray region. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 236-239. (in English)

### VIII.3 Parts of Books

- [1] BEDNARČÍK, J. - MIGLIERINI, M. - CURFS, C. - FRANZ, H.: Thermal Expansion of NANOPERM-Type Alloys from In-Situ X-Ray Diffraction. In: AIP Conference Proceedings. - ISSN 0094-243X. - Vol. 1258 Mössbauer Spectroscopy in Materials Science (2010), p. 1-6. (in English)
- [2] DEGMOVÁ, J. - SITEK, J.: Influence of Weak External Magnetic Field on Amorphous and Nanocrystalline Fe-Based Alloys. In: AIP Conference Proceedings. - ISSN 0094-243X. - Vol. 1258 Mössbauer Spectroscopy in Materials Science (2010), p. 7-13. (in English)
- [3] LANCOK, A. - KOHOUT, J. - MIGLIERINI, M. - FENDRYCH, F. - KLEMENTOVÁ, M. - LANCOK, D.: Study of Fe-Co Nanocomposite Films. In: AIP Conference Proceedings. - ISSN 0094-243X. - Vol. 1258 Mössbauer Spectroscopy in Materials Science (2010), p. 82-89. (in English)
- [4] MIGLIERINI, M. - RUSAKOV, V.S.: 57Fe and 119Sn Mössbauer Effect Study of Fe-Sn-B Amorphous Alloys. In: AIP Conference Proceedings. - ISSN 0094-243X. - Vol. 1258 Mössbauer Spectroscopy in Materials Science (2010), p. 29-38. (in English)
- [5] SLUGEŇ, V. - LIPKA, J. - DEKAN, J. - TÓTH, I. - SMIEŠKO, I.: Corrosion at Nuclear Power Plant from Mössbauer Point of View. In: AIP Conference Proceedings. - ISSN 0094-243X. - Vol. 1258 Mössbauer Spectroscopy in Materials Science (2010), p. 120-126. (in English)

**VIII.4 Book**

- [1] PAVLOVIĆ, M.: Transport of Ion-Therapy Beams in Rotating Gantry. - New York: Nova Science Publishers, Inc., 2010. - 68 p. - ISBN 978-1-60876-504-1. (in English)

**VIII.5 Patents and Standards**

- [1] HABERER, T. - KRÄMER, M. - KRAFT, G. - SCHARDT, D. - SCHOLZ, M. - WEBER, U. - PAVLOVIĆ, M. - DOLINSKI, A. - ET AL.: Ion Beam Therapy System and a Method for Operating the System. - 27 p. - Patent No.: EP 0 986 070 B1 – Mediation Date: 30.06.2010. (in English)
- [2] HABERER, T. - KRÄMER, M. - KLABUNDE, J. - KRAFT, G. - SCHARDT, D. - SCHOLZ, M. - WEBER, U. - DOLINSKI, A. - PAVLOVIĆ, M. - et al: Ion Beam Therapy System and a Method for Operating the System: Patent No EP 1 112 579 B1. Mediation Date: 23.6.2010. - 32 p. (in German)

**DEPARTMENT OF PHYSICS**  
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**I. STAFF**

Professors	Prof. Ing. Peter Ballo, PhD., Prof. Ing. Július Cirák, PhD., Prof. Ing. Rudolf Durný, DrSc., Prof. RNDr. Július Krempaský, DrSc.
Associate Professors	Doc. Ing. Peter Bokes, PhD., Doc. RNDr. Ivan Červeň, PhD., Doc. Ing. Peter Dieška, PhD., Doc. RNDr. Edmund Dobročka, PhD., Doc. RNDr. Peter Markoš, DrSc., Doc. Ing. Ján Vajda, PhD., Doc. RNDr. Pavol Valko, PhD.
Assistant Professors	Ing. Ondrej Foltin, PhD., RNDr. Juraj Chlpík, PhD., Mgr. Michal Kopčok, Ing. Tatiana Šrámková, RNDr. Mária Valková, Mgr. Marek Vančo, PhD., Ing. Ivan Zelenay, PhD.
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Technical Staff	Zuzana Váčiová (secretary), Štefan Kučera
PhD. Students	Ing. Tomáš Váry

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Laboratories of elementary and advanced physics
- Laboratory of bioelectronics and organic electronics
- Laboratory of applied optics
- Laboratory of X-ray diffraction
- Laboratory of thermophysical properties
- Laboratory of macrostructure of composites
- Laboratory of material simulation
- Laboratory of spectroscopy
- Center for computational materials science

**II.2 Special Measuring Instruments and Computers**

- Refrigerator cooled cryostat NOK-10-3D
- Langmuir - Blodgett deposition device, Nima, UK
- Modular LB technology for deposition of organic layers
- Spectroscopic ellipsometer Horiba MM-16
- Measuring microscope CZJ
- Brewster angle microscope
- X-ray diffraction powder goniometer
- Numerical server with 16 nodes (128 cores) with infiniband

- 3 numerical servers (clusters) with 50 nodes (120 cores) - supporting infrastructure  
(incl. Myrinet)
- Sun storage tek 6140 FC maxperf
- 2 x Sun Fire server

### **III. TEACHING**

#### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of lecturer.

Introduction to Technical Physics	(1st sem., 0-2h)	P. Ballo, P. Bokes, J. Cirák, P. Markoš, P. Valko
Physics	(2nd sem., 3-2h)	J. Cirák
Physics I	(2nd sem., 3-2h)	P. Ballo, P. Bokes, T. Šrámková
Special Seminar - Physics I	(2nd sem., 0-2h)	P. Ballo, P. Bokes
Physics	(2nd sem., 3-2h)	P. Valko
Special Seminar - Physics	(2nd sem., 0-2h)	P. Valko
Physics II	(2nd sem., 3-2h)	M. Vančo
Special Seminar - Physics II	(2nd sem., 0-2h)	M. Vančo
Physics	(3rd sem., 3-2h)	P. Valko
Special Seminar - Physics	(3rd sem., 0-2h)	P. Valko
Physics I	(3rd sem., 3-2h)	M. Vančo
Special Seminar - Physics I	(3rd sem., 0-2h)	M. Vančo
Physics II	(3rd sem., 3-2h)	J. Cirák, P. Markoš, T. Šrámková
Special Seminar - Physics II	(3rd sem., 0-2h)	J. Cirák, P. Markoš,
Physics III	(4th sem., 2-2h)	P. Valko
Modern Physics	(5th sem., 3-2h)	P. Markoš
Modern Methods of Material Diagnostics	(5th sem., 3-2h)	E. Dobročka
Modelling and Simulation	(5th sem., 2-3h)	P. Ballo
Thermodynamics of Materials and Statist. Physics	(6th sem., 3-2h)	M. Moško
Solid State Physics	(6th sem., 3-2h)	R. Durný

#### **III.2 Graduate Study (Ing.)**

Physics of Processes	(1st sem., 3-2h)	P. Bokes
Superconductivity and Low Temperature Physics	(1st sem., 2-2h)	P. Valko
Bioelectronics	(1st sem., 2-1h)	J. Cirák
Principles of Applied Optics	(1st sem., 2-2h)	J. Vajda

Non-equilibrium Systems and Chaos	(1st sem., 3-2h)	P. Ballo
Applied Optics	(2nd sem., 3-2h)	J. Vajda
Computer Physics	(2nd sem., 2-2h)	P. Markoš
Biomaterials and Biosystems	(2nd sem., 2-2h)	J. Cirák
Physics of Materials I	(3rd sem., 3-2h)	P. Dieška, R. Durný

**IV. RESEARCH PROJECTS**

- Integrated Education in Nanotechnology and Material Science. KEGA 3/637108 (P. Ballo)
- Gradient Materials Prepared by Powder Metallurgy of Micro- and Nano-particles. APVV-20-057805 (J. Bielek)
- Sound, Image and Biomedical Signals Digital Processing. 102/VTP/2000 (J. Bielek, P. Fuchs)
- Investigation of Magnetic Materials for Electrical Engineering, Electronics, Recording and Electromagnetic Compatibility Applications. VEGA 1/3096/06 (J. Bielek, J. Sláma)
- Controlling Spin Polarization in Nanostructures Using Electrical Currents. VEGA 1/0452/09 (P. Bokes)
- Transport Properties of Anchored Dithioazobenzene Switches. ETSF 220 (P. Bokes)
- National Centre for Research and Application of Renewable Energy Sources. Operational Program Research:
  - IMTS 26240120016 (J. Cirák, R. Durný)
  - IMTS 26240120028 (J. Cirák, R. Durný, P. Markoš)
- Nanostructures for Development of Biosensors. APVV-0362-07 (J. Cirák, R. Durný)
- Investigation of New Materials for Hybrid Electronics. VEGA 2/7118/27 (R. Durný)
- The Role of Water in Porous Structures. VEGA 2/0146/08 (P. Dieška)
- Thermo Physical Sensors. APVV-0497-07 (P. Dieška)
- Inelastic Transport of Electrons Through Nanojunctions with Phonons. VEGA 1/0632/10 (M. Konopka)
- Electronic and Electromagnetic Waves in Small Systems: Transport properties. VEGA 0633/09 (P. Markoš)

**V. COOPERATION****V.1 Cooperation in Slovakia**

- Faculty of Chemical and Food Technology, STU, Bratislava
- Faculty of Informatics and Information Technologies, STU, Bratislava
- Faculty of Mechanical Engineering, STU, Bratislava
- Faculty of Material Technology, STU, Trnava
- International Laser Centre, Bratislava
- Natural Science Faculty, Comenius University, Bratislava
- School of Medicine, Comenius University, Bratislava
- Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava
- Faculty of Pharmacy, Comenius University, Bratislava
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Institute of Materials and Machine Mechanics, Slovak Academy of Sciences, Bratislava
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- Institute of Polymers, Slovak Academy of Sciences, Bratislava
- University of Trnava, Trnava
- Technical University, FEI, Košice
- Electrotechnical Faculty, University of Žilina, Žilina

**V.2 International Cooperation**

- Tomáš Baťa University, Zlín, CzR
- Institute of Macromolecular Chemistry, AVČR, Prague, CzR
- Natural Science Faculty, Charles University, Prague, CzR
- University of West Bohemia, Plzeň, CzR
- Tokyo Institute of Technology, Tokyo, Japan
- Fukuoka University, Fukuoka, Japan
- King's College, London, UK
- University of York, UK
- Universitat Politècnica de Catalunya, Barcelona, Spain
- Centro de Física Nuclear, Lisbon, Portugal
- PTB Braunschweig, Germany
- Ruhr Universität, Bochum, Germany
- Delft University, Delft, The Netherlands
- Institute of Solid State Physics, Graz University of Technology, Graz, Austria
- Università di Modena e Reggio Emilia, Modena, Italy
- Ames Laboratory, Ames, Iowa, USA

**V.3 Membership in International Organizations and Societies**

- American Physical Society (J. Cirák)
- Europhysical Society (P. Ballo, P. Bokes, J. Cirák, I. Červeň, R. Durný, J. Krempaský, P. Markoš, P. Valko)
- IEEE (J. Cirák)
- The New York Academy of Sciences (J. Krempaský)
- Academia Scientiarum et Artium Europaea (J. Krempaský)
- Optical Society of America (P. Markoš)

**VI. THESES****VI.1 Masters Thesis**

Masters thesis supervised by the member of the Department of Physics. The name of supervisor is in brackets.

[1] Peterková, D.: Effect of Calcium Ions on Phospholipid Monolayers (J. Cirák)

**VII. OTHER ACTIVITIES**

- Organizing the 16th international conference - Applied Physics of Condensed Matter, APCOM 2010, Malá Lučivná, 16 – 18 June 2010 (P. Ballo, J. Vajda, M. Vančo, M. Weis)
- Organizing the 1<sup>st</sup> International scientific conference: Renewable energy sources. Tatranské Matliare, May 2010 (J. Cirák – conference chairman)
- Board of editors, Journal Electrical Engineering (P. Ballo)
- Beamline coordinator in European theoretical spectroscopy facility (P. Bokes)
- Club of physicists (J. Cirák)
- Board of editors, Horizons of mathematics, physics and computer sciences (I. Červeň)
- Board of editors, Beliana (I. Červeň)
- Member of Scientific Council of FEI STU (R. Durný)
- Organizing the conference - Open source software in education, research and IT solutions. 1 – 4 June 2010, University of Žilina. (T. Šrámková)

**VIII. PUBLICATIONS****VIII.1 Journals**

- [1] BOKES, P. - HORVÁTH, F.: Edge-Induced Spin Polarization in Two-Dimensional Electron Gas. In: Physical Review B. - ISSN 1098-0121. - Vol. 81, Iss. 18 (2010), Art.no. 125302. (in English)
- [2] CHLPÍK, J. - DRŽÍK, M. - KOLEDÁ, M.: Time Resolved Photothermal Deflection Measurement of Semiconductor Materials Thermal Parameters. In: Acta Electrotechnica et Informatica. - ISSN 1335-8243. - Vol. 10, No. 3 (2010), p. 86-89. (in English)
- [3] CIRÁK, J.: Self-Organization in Two-Dimensional Organic Molecular Systems (Applications in Biomembranes). In: The Open Macromolecules Journal. - Vol. 4 (2010), p. 48-52. (in English)
- [4] ČERVEŇ, I.: Notes to the Energy Band Term in Semiconductors. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), p. 22. (in Slovak)
- [5] KREMPASKÝ, J. - KLUVÁNEK, P.: Universality of Lorenz System of Equations. In: Acta Facultatis Paedagogicae Universitatis Tyrnaviensis. - Ser. C, No. 13 (2010), p. 53-57. (in English)
- [6] MARKOŠ, P.: Absence of Diffusion in Certain Random Lattices: Numerical Evidence. In: Acta Physica Universitatis Comenianae. - ISSN 0231-889X. - Vol. 50-51 (2010), p. 45-52. (in English)
- [7] MARKOŠ, P.: Electron Transport in Strongly Disordered Structures. In: Physica B-Condensed Matter. - ISSN 0921-4526. - Vol. 405 (2010), p. 3029-3032. (in English)
- [8] MARKOŠ, P. - SCHWEITZER, L.: Logarithmic Scaling of Lyapunov Exponents in Disordered Chiral Two-Dimensional Lattices. In: Physical Review B. - ISSN 1098-0121. - Vol. 81, Iss. 18 (2010), Art. no. 205432. (in English)
- [9] MARKOŠ, P. - SCHWEITZER, L.: Role of the Symmetry Parameter Beta in the Strongly Localized Regime. In: Physical Review B. - ISSN 1098-0121. - Vol. 82 (2010), Art. no. 113412. (in English)
- [10] MARKOŠ, P.: Two-Dimensional Electron Systems beyond the Diffusive Regime. In: Physical Review B. - ISSN 1098-0121. - Vol. 82 (2010), Art.No. 094203. (in English)
- [11] SEBESTYÉN, K. - MARKOŠ, P.: Acceleration of Numerical Simulations with the Use of Graphic Card. In: Posterus.sk. - ISSN 1338-0087. - July (2010), <http://www.posterus.sk/?p=7900>. (in Slovak)
- [12] SOKOLSKÝ, M. - CIRÁK, J.: Dye-Sensitized Solar Cells: Materials and Processes. In: Acta Electrotechnica et Informatica. - ISSN 1335-8243. - Vol. 10, No. 3 (2010), p. 78-81. (in English)
- [13] SOKOLSKÝ, M. - CIRÁK, J.: Operating Principle of Solar Cell Based on Photosensitized Dye. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16. No. 4 (2010), p. 8-10. (in Slovak)
- [14] STANČÍK, S. - FRIC, R. - PAULECH, J. - KUTIŠ, V. - MURÍN, J. - CIRÁK, J.: Electro-Thermal and Fluidized-Thermal Analysis of the Rope Coupling Temperature Rise. In: Energetika. - ISSN 0375-8842. - Vol. 60 (2010), p. 569-572. (in Slovak)
- [15] ŠÁLY, V. - PACKA, J. - RUŽINSKÝ, M. - PERNÝ, M. - KUSKO, M. - DURNÝ, R.: Activities in Area of Photovoltaics at FEI STU in Bratislava. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16. No. 4 (2010), p. 10-11, 24. (in Slovak)

- [16] TURANSKÝ, R. - KONÓPKA, M. - DOLTSINIS, N.L. - ŠTICH, I. - MARX, D.: Optical, Mechanical, and Opto-Mechanical Switching of Anchored Dithioazobenzene Bridges. In: ChemPhysChem. - ISSN 1439-4235. - Vol. 11 (2010), p. 345-348. (in English)
- [17] TURANSKÝ, R. - KONÓPKA, M. - DOLTSINIS, N.L. - ŠTICH, I. - MARX, D.: Switching of Functionalized Azobenzene Suspended between Gold Tips by Mechanochemical, Photochemical, and Opto-Mechanical Means. In: Physical Chemistry Chemical Physics. - ISSN 1463-9076. - Vol. 12, Iss. 42 (2010), p. 13922-13932. (in English)
- [18] VÁRY, T. - MARKOŠ, P.: Propagation of Surface Plasmon Polaritons through Gradient Index and Periodic Structures. In: Opto-Electronics Review. - ISSN 1230-3402. - Vol. 18, No. 4 (2010), p. 400-407. (in English)
- [19] VÁRY, T. - MARKOŠ, P.: Scattering of the Surface Plasmon Polaritons on the Interface between Two Dielectrics. In: Physica B-Condensed Matter. - ISSN 0921-4526. - Vol. 405 (2010), p. 2982-2985. (in English)

### VIII.2 Conference Proceedings

- [1] BALLO, P. - HARMATHA, L. - VITKOVSKÁ, E.: Introduction to Computational Physics and Supercomputing. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 16-19. (in English)
- [2] CIRÁK, J. - SOKOLSKÝ, M.: Visualization of Domains in 2D Molecular Systems by Brewster Angle Microscope. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 199-203. (in English)
- [3] DIEŠKOVÁ, M. - BOKES, P.: Conduction of Tunnel Junctions from Simple Models and First Principles. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 96-99. (in English)
- [4] DOUGLAS, A. - MARKOŠ, P. - MUTTALIB, K.A.: Distribution of Conductance for Anderson Insulators: A Theory with a Single Parameter. In: Bulletin of the American Physical Society: March Meeting 2010. Portland, USA, 15.-19.3.2010. - Austin: American Physical Society, 2010. - V38.00004. (in English)
- [5] DURNÝ, R. - NÁDAŽDY, V. - PLECENÍK, A. - ZEMAN, M.: Staebler-Wronski Effect in Thin Silicon Films Deposited from Hydrogen Diluted Silane. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 301-304. (in English)
- [6] FERECH, T. - TÓBIK, J.: Wimshurst Machine. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in English)
- [7] JAKABOVIČ, J. - KOVÁČ, J. - SRNÁNEK, R. - WEIS, M. - SOKOLSKÝ, M. - HINDERHOFER, A. - BROCH, K. - SCHREIBER, F. - DONOVAL, D. - CIRÁK, J.: Pentacene-Gate Dielectric Interface Modification with Silicon Nanoparticles. In: IVC - 18th International Vacuum Congress: Beijing, China, 23.-27.8.2010. - Beijing: Chinese Vacuum Society, 2010. (in English)
- [8] KÁDÁR, O. - UHEREK, F. - CHLPÍK, J. - REMSA, J. - BRUNCKO, J. - VINCZE, A. - JELÍNEK, M.: Characterization and Optical Properties of TiO<sub>2</sub> Prepared by Pulsed Laser Deposition. In: ASDAM 2010. 8th International Conference on Advanced Semiconductor Devices and Microsystems: Smolenice Castle, Slovak Republic. 25.-27.10.2010. - Piscataway: IEEE, 2010. - ISBN 978-1-4244-8572-7. (in English)

- [9] KÁDÁR, O. - UHEREK, F. - CHLPÍK, J. - BRUNCKO, J. - FLICKYNGEROVÁ, S. - LUPTÁK, R. - CHOVAR, J.: Investigation of Optical Properties of ZnO Prepared by Pulse Laser Deposition and Sputtering. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 76-79. (in English)
- [10] KÁDÁR, O. - UHEREK, F. - CHLPÍK, J. - BRUNCKO, J. - FLICKYNGEROVÁ, S. - LUPTÁK, R. - CHOVAR, J.: ZnO as a Material for Integrated Photonics. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [11] KONÔPKA, M. - BOKES, P.: Simulation of Time-Dependent Currents in Resonant Nanojunction. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 36-39. (in English)
- [12] KREMPASKÝ, J.: Ethical Principles in Nature. In: Physics and Ethics IV. Science, Man, Nature – Activities, Dilemmas, Risks. Proceedings of Monographic Studies of Conference with International Participation. Nitra, Slovak Republic, 29.-30.6.2009. - Nitra: Constantine the Philosopher University, 2010. - ISBN 978-80-8094-700-2. - p. 79-89. (in Slovak)
- [13] MIKOLÁŠEK, M. - HARMATHA, L. - GAŠPIERIK, P. - BALLO, P.: Research and Development in the Area of Advantage Silicon Solar Cell Technologies. In: Power Engineering 2010. Renewable Energy Sources: 1st International Scientific Conference. Tatranské Matliare, Slovak Republic, 18.-20.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-24-3, CD-Rom. (in English)
- [14] MIKOLÁŠEK, M. - RACKO, J. - GAŠPIERIK, P. - HARMATHA, L. - BALLO, P. - ŠUTTA, P.: The Influence of the TCO/Emitter Schottky Barrier on the Performance of a-Si:H(n)/c-Si(p) Hetero-Structure Solar Cells. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 44-47. (in English)
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- [16] SEBESTYÉN, K. - MARKOŠ, P.: Acceleration of Numerical Simulations with the Use of Graphic Card. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [17] SKORŠEPOVÁ, T. - CHLPÍK, J. - MARKOŠ, P.: Surface Electromagnetic Waves. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [18] SOKOLSKÝ, M.: Operation Principles of Dye-Sensitized Solar Cells. In: Power Engineering 2010. Renewable Energy Sources: 1st International Scientific Conference. Tatranské Matliare, Slovak Republic, 18.-20.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-24-3, p. 41-42. (in English)
- [19] VÁRY, T. - MARKOŠ, P.: Propagation of the Surface Plasmon Polaritons through Periodic Structures. In: APCOM 2010. Applied Physics of Condensed Matter: 16th International Conference. Malá Lučivná, Slovak Republic, 16.-18.6.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3307-6. - p. 84-87. (in English)

- [20] VITKOVSKÁ, E. - BALLO, P.: Solid State Ab Initio Calculations. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)

### VIII.3 Books

- [1] ČERVEŇ, I.: Handbook of Physical Terms and Relations. - Bratislava: STU, 2010. - 151 p. - ISBN 978-80-227-3201-7. (in Slovak)
- [2] KOPČAJ, A. - KREMPASKÝ, J. - POLAKOVIČ, L. - BONČEK, R.: Management and Complexity. - Ostrava: VŠB - TU, 2010. - 68 p. - ISBN 978-80-248-2323-2. (in Slovak)

**DEPARTMENT OF RADIO AND ELECTRONICS**

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**I. STAFF**

Professors	professor emeritus Ing. Igor Baláž, DrSc., professor emeritus Ing. Florián Makáň, PhD.
Associate Professors	Doc. Ing. Peter Hajach, PhD., Doc. Ing. Ján Hribik, PhD., Doc. Ing. Vladimír Kudják, PhD., Doc. Ing. Peter Kulla, PhD., Doc. Ing. Oldřich Ondráček, PhD., Doc. Ing. Peter Podhoranský, PhD.
Assistant Professors	Ing. Zdenko Brezovič, PhD., Ing. Elena Cocherová, PhD., Ing. Miroslav Hagara, Ing. Zuzana Krajčušková, PhD., Ing. Peter Kubinec, PhD., Ing. Marek Kukučka, PhD., Ing. Branislav Lojko, PhD., Ing. Marián Minárik, PhD., Ing. Jozef Petrek, PhD., Ing. Anna Pribilová, PhD., Ing. Jozef Púčik, PhD., Ing. Vladimír Štofaník, PhD.
Research Workers	Doc. Ing. Peter Fuchs, PhD., Ing. Ján Bezek, PhD. Ing. Vladimír Bilík, PhD.,
Technical Staff	Bohumil Frey, Ivana Prokopová, Gabriela Vránová (secretary) Edita Bodová
PhD. Students	Ing. Martin Boriš, Ing. Marek Černý, Ing. Filip Krajčovič, Ing. Peter Kupec, Ing. Peter Olšovský, Ing. Abdullah Sultan Ing. Ľuboš Staňák

**II. EQUIPMENT**

**II.1 Teaching and Research Laboratories**

- Laboratory of Analog Circuits and Systems and Navigation
- Research Laboratory of Wireless Communication and Navigation
- Laboratory of RF Circuits and Systems
- Laboratory of Microwave Fundamentals
- Laboratory of Microwave Measurements
- Laboratory of Microwave Applications
- Laboratory of Antennas and Wave Propagation
- Laboratory of Radio Communication Technology
- Echoic Acoustical Chamber (subterrain)
- Laboratory of Power Radio Electronics
- Laboratory of Electroacoustics
- Laboratory of Analog and Digital Television
- Laboratory of Audio Engineering
- Laboratory of Signal Processors and Microcontrollers
- Laboratory of Digital Circuits
- Research Laboratory of Audio and Video Technologies
- Laboratory of Medical Electronics Instrumentation

- Research Laboratory of Electronic Power Measurement
- Research Laboratory of Signal Processors and Microcontrollers Applications
- Laboratory of Signal Processing
- Laboratory of Electronic Devices and Circuits
- Laboratory of Electronic Measurement
- Laboratory ESF - EDUCTV
- Laboratory of PhD. Graduates and Students
- Research Laboratory in Medical Engineering

## **II.2 Special Measuring Instruments and Measuring Systems**

- Six-Port Reflectometers and Automatic Impedance Matching System for High-Power Industrial Applications
- European Customer Training Centre – Texas Instruments (DSP TMS320C2xx, TMS370, TMS320C5x, TMS320C6xxx, MSP430)
- Precise Registration / Calibration Electricity Meter
- Precise Digital Network Analyzer and Standard Meter PEM 6711

## **III. TEACHING**

### **III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Electronic Devices and Circuits	(3rd, 4th sem., 3-2h)	V. Kudják
Signals and Systems	(4th sem., 3-2h)	O. Ondráček
Analog Circuits	(5th, sem., 3-2h)	V. Štofánik
Microwave Engineering	(5th, sem., 3-2h)	P. Hajach
Wireless Communications Technology	(5th sem., 2-2h)	P. Podhoranský
Electronic Circuits	(5th sem., 3-2h)	J. Hribík
Bachelor Project I	(5th, sem., 0-4h)	O. Ondráček
Digital and Pulse Circuits	(6th sem., 3-2h)	P. Kulla
Microwave Engineering and Radio Communications	(6th, sem., 3-2h)	P. Hajach, P. Podhoranský
Microcontrollers	(6th sem., 2-2h)	P. Fuchs
Bachelor Project II	(6th sem., 0-8h)	O. Ondráček

### **III.2 Graduate Study (Ing.)**

Digital Signal Processing	(1st sem., 3-2h)	O. Ondráček
Microcontrollers	(1st sem., 2-2h)	P. Fuchs
Circuits of Radio Communication Systems	(1st sem., 3-2 h)	V. Kudják
Sensors, Circuits and Devices of Medical Electronics	(1st sem., 3-2h)	M. Kukučka
Radio Communication	(2nd sem., 3-2h)	J. Petrek
Digital Signal Processors	(2nd sem., 3-2h)	P. Fuchs
Analysis of Biosignals and Systems	(2nd sem., 3-2h)	J. Půčík
Radionavigation Systems	(2nd sem., 3-2h)	M. Minárik
Antennas and Radio Communications Link Design	(2nd sem., 3-2h)	P. Hajach
Signal Recording	(2nd sem., 3-2h)	P. Podhoranský
Audio Engineering	(2nd sem., 3-2h)	A. Přibilová
Telemedicine Techniques	(2nd sem., 3-2h)	M. Kukučka, Z. Krajčušková
Diploma Project I	(1st, 2nd sem., 0-6h)	V. Kudják,

Diploma Project II	(2nd, 3rd sem., 0-6h)	O. Ondráček V. Kudják, O. Ondráček
Diagnostic in Medicine	(3rd sem., 3-2h)	M. Kukučka, J. Púčik
Sound Technology	(3rd sem., 3-2h)	A. Přibilová
Influence of Electromagnetic Radiation on Biological Objects	(3rd sem., 3-2h)	E. Cocherová
Radio Communication Technique	(3rd sem., 3-2h)	J. Petrek
Analog and Digital Television	(3rd sem., 3-2h)	P. Kulla
Team Project	(3rd sem., 0-8h)	V. Kudják, O. Ondráček
Diploma Project III	(3rd, 4th sem., 0-6h)	V. Kudják, O. Ondráček

### **III.3 Undergraduate and Graduate Study for Foreign Students (in English Language)**

Analog Circuits	V. Štofaník
Bachelor Project I	O. Ondráček
Microwave Engineering	P. Hajach
Wireless Communications Technology	P. Podhoranský
Sensors, Circuits and Devices of Medical Electronics	M. Kukučka

## **IV. RESEARCH PROJECTS**

- Audio-Visual Representation of Emotional States. COST 2102/STU/08 (A. Přibilová)
- Scanning Capacitance Transient Microscope for Semiconductor Analysis on the Nanoscale. VEGA No. 2/0107/08 (J. Hribík)
- Portable AC Current and Voltage Source for Electronic Electricity Meters Testing (J. Hribík, M. Hruškovic)
- Modern Methods of Digital Signal Processing in Radio Electronics, Biomedicine, Electronic Measurement, Multimedia and Vehicular Technology, AV-4/0012/07 (P. Fuchs)
- AMR and PLC Communication (P. Podhoranský)
- Digital Processing of Biomedical Signals (E. Cocherová)
- Digital 3-Phase Calibration Electricity Meter with DSP TMS320C6711 (P. Fuchs)
- Single Phase Electricity Meter with Micro-Controller MSP430FE427 (P. Fuchs)
- Electronic Calibration Station EKS 05-3 (P. Fuchs)
- Digital Frequency Locked Loop with High Spectral Purity (P. Fuchs, B. Lojko)
- Control Application Based on GSM, GPS and USB Technology (P. Fuchs, B. Lojko)
- Digital Calibration and Registration Electricity Meter (P. Fuchs, J. Hribík)

#### **Collaboration:**

- Digital Calibration/Registration Electricity Meter (Křížik GBI jsc, Prešov)
- Electronic Calibration Station EKS-03 (Applied Meters jsc, Prešov)
- Portable AC Current and Voltage Source for Electronic Electricity Meters Testing (Applied Meters, Inc., Prešov)
- Scanning Capacitance Transient Microscope for Semiconductor Analysis on the Nanoscale (Slovak Academy of Sciences, Bratislava)

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- Academy of Music and Dramatic Arts, Film and Television Faculty
- Applied Meters, Inc., Prešov

- ANDIS Ltd. Bratislava
- AMSET Ltd., Bratislava
- ComErgon Ltd., Bratislava
- HIS SENZOR Ltd., Prešov
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- Institute of Measurement, Slovak Academy of Sciences, Bratislava
- Institute of Molecular Physiology and Genetics, Slovak Academy of Sciences, Bratislava
- Institute of Metrology Bratislava
- Main Data, Bratislava
- Mediatech, Bratislava
- National Security Institute, Bratislava
- PHILIPS Slovakia, Bratislava
- Prof. Dérer Faculty Hospital, Bratislava
- RACOM, Slovakia
- SATRO Ltd., Bratislava
- Slovak Broadcasting Corporation, Bratislava
- Slovak Institute of Technical Normalization, Bratislava
- Slovak Television, Bratislava
- MIRONIX Bratislava
- Special Software and Systems, Bratislava
- Telecommunication Office SR, Bratislava
- T-Mobile
- University of Technology, Košice
- University of Technology, Žilina
- VÚS, Banská Bystrica
- ZPA Krížik GBI jsc, Prešov

**V.2 International Cooperation**

- Agilent Technologies, Inc., Santa Clara, CA, USA
- AS Crystal, Hradec Králové, CzR
- Institut für Allgemeine Physik, TU Vienna, Austria
- Ilmenau University of Technology, Germany
- Laboratory for Biomedical Informatics, Delft, the Netherlands
- MtronPTI, Orlando, FL, USA
- Nofech Electronics Ltd., Jerusalem, Israel
- PHILIPS, Components Center Vienna, Austria
- SAMSUNG Electronics, Co. Ltd.
- Technical University Brno, CzR
- Texas Instruments, Inc, USA
- URE AV CzR, CzR
- URSI Prague, CzR
- TR Instruments Ltd., Brno, CzR
- Xidian University, Xidian, China.

**V.3 Membership in International Organizations and Societies**

- URSI, Union Radio-Scientifique Internationale, Member of NC (I. Baláž)
- IEEE, The Institute of Electrical and Electronics Engineers, Member (I. Baláž)
- IEEE, The Institute of Electrical and Electronics Engineers, Member (E. Cocherová)
- IFMBE, the International Federation for Medical and Biological Engineering (E. Cocherová)
- Czech and Slovak Radioengineering Society, Member (E. Cocherová)
- Radioengineering, Proceedings of Czech and Slovak Technical Universities and URSI Committees, Members of Editorial Board, IEEE (Z. Krajčušková)
- URSI, Scientific Secretary (Z. Krajčušková)
- Czech and Slovak Radioengineering Society, Member (Z. Krajčušková)

- Radioengineering, Proceedings of Czech and Slovak Technical Universities and URSI Committees, Member of Editorial Board (Z. Krajčušková)
- IFMBE, the International Federation for Medical and Biological Engineering (Z. Krajčušková)
- IFMBE, the International Federation for Medical and Biological Engineering (M. Kukučka)
- IEEE, The Institute of Electrical and Electronic Engineers, Member (V. Kudják)
- IET, The Institution of Engineering and Technology, Fellow (P. Kulla)
- IFMBE, the International Federation for Medical and Biological Engineering (O. Ondráček)
- IFMBE, the International Federation for Medical and Biological Engineering (J. Púčik)
- Audio Engineering Society (AES), Member, Contact person of the AES Slovak Section (A. Přibilová)
- COST Action 2102 - Cross-Modal Analysis of Verbal and Non-verbal (A. Přibilová) Communication, Member of the Management Committee
- URSI, Union Radio-Scientifique Internationale, Member (V. Štofaník)
- IEEE, The Institute of Electrical and Electronic Engineers, Member (V. Štofaník)
- IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, Member (V. Štofaník)
- IEEE Communications Society, Member (V. Štofaník)

#### **V.4 Membership in Slovak Organizations and Societies**

- SBIMI, Society for Biomedical Engineering and Medical Informatics, Member of Committee (E. Cocherová)
- SKBS, Slovak Biophysical Society, Member (E. Cocherová)
- Scientific Committee for PhD Study in Electronics, Member (J. Hribík)
- SBIMI SLS, Society for Biomedical Engineering and Medical Informatics, Scientific Secretary of the Section of Medical Informatics, Member of Committee (Z. Krajčušková)
- Association of Alumni and Friends University, Member of Bureau (Z. Krajčušková)
- SBIMI SLS, Society for Biomedical Engineering and Medical Informatics, Scientific Secretary of SBIMI SLS, Member of Committee (M. Kukučka)
- SBIMI, Society for Biomedical Engineering and Medical Informatics, Member (O. Ondráček)
- SBIMI, Society for Biomedical Engineering and Medical Informatics, Member (J. Púčik)

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Radio and Electronics. The names of supervisors are in brackets.

- [1] Béder, M.: Microstrip Antenna with Symmetrical Radiation (P. Hajach)
- [2] Bielik, M.: High-dynamic-range Bioelectric Signal Acquisition (J. Púčik)
- [3] Bezděk, M.: Contactless Identification Systems RFID for LF and UHF Radio Frequency Band (B. Lojko)
- [4] Čanaky, L.: Universal Hadware Developement Kit Based on the Single-chip Microprocessor PIC24FJ256 (V. Štofaník)
- [5] Dávid, S.: Current Source Controlled by Microcontroller (J. Hribík)
- [6] Debnár, T.: Brain-Computer Interface (E. Cocherová)
- [7] Dolezsa, L.: Proposal of Visual Tracing Depiction of CD Optical System (P. Podhoranský)
- [8] Dorkovič, P.: Human Stabilometry with Visual Stimulation (J. Púčik)
- [9] Ďurčo, T.: Time-frequency Analysis of Heart Rate Variability (J. Púčik)
- [10] Fehér, J.: The Use of Matlab Software Environment for Vector Signal Generator Programming (P. Podhoranský)
- [11] Gablovský, J.: Analysis of RFID Antenna Properties
- [12] Gábor, T.: Utilisation of MATLAB Software to Radio Channels Properties Simulation (P. Podhoranský)

- [13] Gogola: Control Unit of System for Measurement of Temperature Dependence of Magnetic Susceptibility (V. Jančárik)
- [14] Govorčín, I.: Digital Single-Phase, Three-Phase Meter with MSP430 (P. Fuchs)
- [15] Grejták, F.: DRM Receivers – State of the Art and their Technical Parameters Comparison (V. Kudják)
- [16] Greksa, Š.: Measurement Stand for Low Frequency Transistor Noise Measurement - Design and Realization (Z. Brezovič)
- [17] Horváth, J.: Experimental Digital Radio System DRM – new Perspective on AM Bands (V. Kudják)
- [18] M.Hočka, M.: Measurement of Impedance of Cardiac Myocytes (E. Cocherová)
- [19] Igaz, D.: Model of Photonic Sensor for Glucose Level Monitoring (F. Uhreck)
- [20] Jakubík, T.: Programmable Synthesizer (P. Podhoranský)
- [21] Koša, M.: Sound Analysis and Synthesis (A. Přibilová)
- [22] Kovačič, P.: Design of Development System of GPS Receiver (V. Jančárik)
- [23] Križan, M.: DDS Generator of the Sinus, Square and Triangle Waveform for Measure and Test Purposes (Z. Brezovič)
- [24] Lovász, M.: Wireless Channel Simulators Properties Comparison
- [25] Miklošík, P.: Rectangular Slot Antenna (P. Podhoranský)
- [26] Olšovský, P.: Comparision of UMTS-HSDPA and WiMAX Networks from the Point of View of Bitrate and Mobility (J. Petrek)
- [27] Ondík, V.: Three Phase Electric Metter PEM6711 (P. Fuchs)
- [28] Ondreiov, M., I.: Experimental Impedance Chart Meter of Skin (M. Kukučka)
- [29] Oršula, V.: An Advertisement Spots Detection in TV Broadcasting (P. Kubinec)
- [30] Slama, M.: Sound Effect Chorus Based on DSP (P. Kubinec)
- [31] Vanko, M.: Subpixel Edge Detection in 1D Images (M. Hagara)
- [32] Zvalo, A.: Emotion Recognition from Video Using Facial Expressions (M. Hagara)

## **VI.2 PhD Theses**

- [1] Kubinec, P.: Digital Reverberators (O. Ondráček)
- [2] Lojko, B.: Contribution to Phase Noise Modeling of Voltage Controlled Oscillators in Digital Frequency Locked Loops (P. Fuchs)

## **VII. OTHER ACTIVITIES**

- Small Testing Equipment for Meters Checking STE (PPS 111). Conference and Exhibition ELO SYS 2010, 5 – 8 October, 2010, Trenčín, Slovakia. In the stand of the participant: Applied Meters, Inc., Prešov – Osaki Electric Co. Ltd., Japan (P. Fuchs, M. Hruškovic, J. Hribik)
- Organizing of the 33rd International Meeting of Institutes of Radio and Electronics, Velký Meder, 4 - 6 May 2010

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] BILÍK, V. - BEZEK, J.: High Power Limits of Waveguide Stub Tuners. In: Journal of Microwave Power and Electromagnetic Energy. - Vol. 44, No. 4 (2010), p. 178-186. (in English)
- [2] COCHEROVÁ, E. - KUPEC, P. - PATSCH, M. - JENDRUCH, M. - ŠTOFANIK, V.: Modeling of RF Radiation Absorption in Human Body. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 160-164. (in Slovak)
- [3] ČERNÝ, M. - LOJKO, B. - PODHORANSKÝ, P. - FUCHS, P.: Application of MSP 430 Microcontrollers in Intelligent Electricity Meters. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 58-62. (in Slovak)

- [4] HAGARA, M. - KULLA, P.: Edge Detection in Digital Images. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 71-75. (in Slovak)
- [5] HAGARA, M. - KULLA, P.: Slow Motion Detection Based on Edge Shift. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 67-70. (in English)
- [6] KOLENIČ, F. - KOVÁČ, L. - SEKERKA, R. - BORIŠ, M. - KUNŠTEK, D.: Circuit Solution of Generating an Electron Beam with 30 kW Power. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 222-225. (in Slovak)
- [7] KRAJČUŠKOVÁ, Z.: We said farewell to Dr. h. c. prof.Ing. Ján Chmúrny, DrSc..In: Spektrum. - ISSN 1336-2593. – Vol..16, č.6 (2010), p. 14. (in English)
- [8] KUPEČ, P. - HAJACH, P. - COCHEROVÁ, E. - PÚČIK, J. - GONŠOROVÁ, M.: Radio-Frequency Field Absorption in the Model of Human Head. In: Lékař a technika. - ISSN 0301-5491. - Vol. 40, No. 2 (2010), p. 25-28. (in English)
- [9] LAVOR, T. - PETREK, J.: GSM Network Design and Capacity Dimensioning. In: Posterus.sk. - ISSN 1338-0087. - April (2010), <http://www.posterus.sk/?p=7111>. (in Slovak)
- [10] PATSCH, M.: Circular Polarized Single Feed Microstrip Antennas. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 98-101. (in English)
- [11] PŘIBIL, J. - PŘIBILOVÁ, A.: An Experiment with Evaluation of Emotional Speech Conversion by Spectrograms. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 10, No. 3 (2010), p. 72-77. (in English)
- [12] PÚČIK, J. - ONDRÁČEK, O. - GAŠPARÍK, I. - JENDRUCH, M. - SULTAN, A.M.: Biomedical Digital Signal Processing – a Way to Uncover Information. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 171-175. (in Slovak)
- [13] VLK, L. - KULLA, P.: 2D Images Filtration in Quasi Real Time within System with Frame Grabber KAPA LAB and Platform Borland C++ Builder. In: Posterus.sk. - ISSN 1338-0087. - May (2010), <http://www.posterus.sk/?m=201005>. (in Slovak)

### VIII.2 Conference Proceedings

- [1] BALÁŽ, I. - PICHNA, M. - ŠTOFANIK, V. - MINÁRIK, M. - COCHEROVÁ, E.: Nominal-Phase Feedback Circuits in Oscillators. In: Radioelektronika 2010. - Brno: VUT, 2010. - ISBN 978-1-4244-6319-0. - p. 209-211. (in English)
- [2] BEŇADIK, V. - BREZOVIČ, Z.: Development and Design of Periphery Module for Evolutional Board with Microcontroller Atmel. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [3] BILÍK, V. - KRAJČOVIČ, F.: Tuning Element of High Power 2.45-GHz Coaxial Impedance Transformer. In: Radioelektronika 2010. - Brno: VUT, 2010. - ISBN 978-1-4244-6319-0. - p. 69-72. (in English)

- [4] BORIŠ, M. - KUNŠTEK, D. - KOLENÍČ, F. - SEKERKA, R. - KOVÁČ, L.: The Concept of a New Generation of Electron Beam Welding Equipment with Power up to 30kW. In: Welding Technology 2010 – Technology of Industry Development in European Union: Scientific Seminar within the Scope of “The Week of Science and Technology in Slovakia 2010”. Bratislava, Slovak Republic, 9.11.2010. - Trnava: AlumniPress, 2010. - ISBN 978-80-8096-130-5. - p. 1-8. (in Slovak)
- [5] BREZOVIČ, Z. - KUDJÁK, V.: Active RC Notch for Phase-Locked Loop. In: Radioelektronika 2010. - Brno: VUT, 2010. - ISBN 978-1-4244-6319-0. - p. 225-228. (in English)
- [6] BÚRY, J. - BREZOVIČ, Z.: Design and Control of Stepper Drive. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [7] ČERNÝ, M. - KRAJČOVIČ, F. - LOJKO, B. - PODHORANSKÝ, P. - FUCHS, P.: Experimental Verification of Influence of HF Amplifiers Paramters in Digital Communication Systems. In: New Trends in Signal Processing. 10th International Scientific Conference. Tatranské Zruby, Slovak Republic, 26.-28.5.2010 - Liptovský Mikuláš: Armed Forces Academy, 2010. - ISBN 978-80-8040-399-7. - CD-Rom. (in Slovak)
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- [10] HRIBIK, J. - HRUŠKOVIC, M. - FUCHS, P.: Portable AC Current and Voltage Source for Electricity Meters Testing. In: Power Engineering 2010. Control of Power Systems: 9th International Scientific Conference. Tatranské Matliare, Slovak Republic, 18.-20.5. 2010. - Bratislava: STU, 2010. - ISBN 978-80-89402-25-0, CD-Rom. (in English)
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**VIII.3 Parts of Books**

- [1] HAJACH, P. – HRIBIK, J. – KULLA, P. – MAKÁŇ, F.: Subject Words. In: Encyclopaedia Beliana. Part 6. – Bratislava: Encyclopaedic Institute Slovak Academy of Sciences, 2010. – ISBN 978-80-9790350-0-6. (in Slovak)
- [2] PŘIBIL, J. - PŘIBILOVÁ, A.: Microintonation Analysis of Emotional Speech. In: Lecture Notes in Computer Science. - ISSN 0302-9743. - Vol. 5967 Development of Multimodal Interfaces: Active Listening and Synchrony. - Berlin: Springer-Verlag, 2010, p. 268-279. (in English)

**VIII.4 Books**

- [1] COCHEROVÁ, E. - ŠTOFANIK, V.: Numerical Methods for Solution of Bioelectromagnetic Fields. - Bratislava: STU, 2010. - 66 p. - ISBN 978-80-227-3272-7. (in Slovak)
- [2] HRIBIK, J.: Digital Measurement of Low-Frequency Electric Power and Energy. - Bratislava: STU, 2010. - 82 p. - ISBN 978-80-227-3263-5. (in Slovak)

## **DEPARTMENT OF TELECOMMUNICATIONS**

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## **I. STAFF**

Professors	Prof. Ing. Ivan Baroňák, PhD., Prof. Ing. Peter Farkaš, DrSc., Prof. Ing. Pavol Podhradský, PhD., Prof. Ing. Jaroslav Polec, PhD.
Associate Professors	Doc. RNDr. Ing. Ivan Bajla, PhD., Doc. Ing. Ján Čuchran, PhD., Doc. Ing. Martin Medvecký, PhD., Doc. Ing. Miloš Orgoň, PhD., Doc. Ing. Jarmila Pavlovičová, PhD., Doc. Ing. Rastislav Róka, PhD., Doc. Ing. Gregor Rozinaj, PhD., Doc. Ing. Ján Zodl, PhD.
Assistant Professors	Ing. Jozef Čepko, PhD., Bc. Zuzana Dedíková, Ing. Jana Filanová, PhD., JUDr. Štefan Gyorgy, PhD., Ing. Michal Halás, PhD., Ing. Ján Hodál, Ing. Richard Chomist, PhD., Ing. Erik Chromý, PhD., Ing. Tomáš Janvars, Ing. Juraj Kačur, PhD., Ing. Matej Kavacký, PhD., Ing. Ján Körösi, Ing. Kvetoslava Kotuliaková, PhD., Ing. Juraj Mačica, PhD., Ing. Stanislav Majchrák, Ing. Tomáš Páleník, PhD., Ing. Michal Poňško, PhD., Ing. Martin Rakús, PhD., Ing. Eva Samuhelová, Ing. Matúš Turcsány, PhD., Ing. Radoslav Vargic, PhD., Ing. Juraj Vojtko, Ing. Ján Vrabec
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## **II. EQUIPMENT**

### **II.1 Teaching and Research Laboratories**

- E-learning Multimedia Laboratory
- Laboratory of Data Transmission
- Laboratory of Digital Signal Processing
- Laboratory of Next Generation Networks
- Laboratory of Multimedia Communication
- Laboratory of Telecommunications Management Network
- Laboratory of Telecommunications Technology (Optical SDH, ATM, RWS)
- NGN Lab
- Audioacoustical Laboratory

## II.2 Special Measuring Instruments and Computers

- Optical Network (SDH – STM, 155 Mbit/s)
- Optical Network (ATM – 155 Mbit/s)
- Multiplexor NORTEL S/DMS 1X (16 x 2,048 Mbit/s)
- IMS platforma ALCATEL – LUCENT (Center of Excellence)
- Laboratory NGN PABX OXO Communication Server
- Private Telecommunication System ALCATEL OXE
- Testing System for Delay in IP Networks: CISCO routers 1800 and SW iX Chariot
- FWA System (26 GHz) - VoIP via GTS Slovakia
- FWA System (3,5 GHz) - VoIP and High Speed Internet via GTS Slovakia
- NGN platform for Testbeds and Interconnects (Fokus IMS including HSS, Sitronics HSS, Mobicents AS, PACTOLUS AS, ŽU Žilina, TU Košice)
- Telecommunications Videoconference Systems for ISDN (3 x PictureTel, 2 x I VIEW)
- Measuring set Wandel and Goltermann IBT 10 (for ISDN interface S0 and U)
- Siemens Node Integrator – Software for Simulation of TMN
- COSSAP (Software for simulation of telecommunication systems)
- Measuring set Siemens - Carrier Frequency Level Test (Set W2008-K/D2008-K)
- Logic Analyzer Philips PM 3570
- Cluster Composed of 6 PC, aggregate 10,6 GHz
- Telecommunications Instructional Teaching Modelling System TIMS-301
- Spectral analyzer HP 3589A
- CAN Analyzer CANLAB
- IQ Kiosk
- NVIDIA GTX480s

## III. TEACHING

### III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Telecommunication Technologies	(3rd sem., 3-2h)	M. Orgoň
Telecommunication Technologies	(4th sem., 3-2h)	M. Orgoň
Communication and Information Networks	(4th sem., 3-2h)	M. Halás
Communication Systems	(4th sem., 3-1h)	M. Rakús
Digital Communications	(4th sem., 3-2h)	P. Farkaš
Analog and Digital Signal Processing I	(5th sem., 3-2h)	R. Vargic
Communication Protocols	(5th sem., 3-2h)	M. Poľaško
Communication Systems (for FIIT SUT)	(5th sem., 3-2h)	P. Farkaš
Mobile and Satellite Communications I	(5th sem., 3-2h)	P. Farkaš, M. Turcsány
Telecommunications Lines	(5th sem., 3-2h)	J. Čuchran, R. Róka
Analog and Digital Signal Processing II	(6th sem., 3-2h)	J. Pavlovičová
Digital Transmission Systems and Networks	(6th sem., 3-2h)	J. Čuchran, R. Róka
Switching Systems I	(6th sem., 3-2h)	I. Baroňák

**III.2 Graduate Study (Ing.)**

Digital Signal Processing	(1st sem., 3-2h)	G. Rozinaj
Mobile and Satellite Communications II	(1st sem., 3-2h)	P. Farkaš, M. Turcsány
Mobile and Satellite Communications III	(4th sem., 3-2h)	P. Farkaš M. Turcsány
Image Compression	(1st sem., 3-2h)	J. Polec
Switching Systems II	(1st sem., 3-2h)	I. Baroňák
Security of Communication Networks and Services	(1st sem., 3-2h)	M. Orgoň
Communications Theory (for FIIT SUT)	(2nd sem., 2-1h)	P. Farkaš
Architecture of Mobile and Satellite Systems (for FIIT SUT)	(2nd sem., 2-1h)	P. Farkaš
Integration and Convergence of Digital Networks and Services	(2nd sem., 3-2h)	E. Chromý
Probabilistic Models in Telecommunications	(2nd sem., 3-2h)	J. Polec
Broadband Switching Systems	(3rd sem., 3-2h)	M. Medvecký
Digital Image Processing	(3rd sem., 3-2h)	J. Pavlovičová
Digital Speech Processing	(3rd sem., 3-2h)	G. Rozinaj
Intelligent Networks and Services	(3rd sem., 3-2h)	P. Podhradský
Optical Communication Systems and Networks	(3rd sem., 3-2h)	J. Čuchran, R. Róka
Private Telecommunication Networks and Services	(3rd sem., 2-3h)	I. Baroňák
Telecommunication Legislative	(3rd sem., 2-3h)	I. Baroňák
Telecommunication Systems Management	(3rd sem., 3-2h)	M. Medvecký
Wavelets and Filter Banks	(3rd sem., 3-2h)	R. Vargic

**IV. RESEARCH PROJECTS**

- Operating Program Research and Development. Center of Excellence – SMART Technologies, Networks and Services I. (IMS Platform for NGN), OPVaV - 2008/4.1/01–SORO, 2009-2011, (I. Baroňák)
- Operating Program Research and Development. Center of Excellence – SMART Technologies, Networks and Services II. (IMS Platform for NGN), OPVaV - 2008/4.1/01–SORO, 2010-2013, (I. Baroňák)
- Modelling of Traffic Parameters in NGN Telecommunication Systems and Networks, VEGA - 1/0565/09, 2009-2011 (I. Baroňák)
- Advancement of Coding Technologies, VEGA 1/0376/09, 2009-1012 (P. Farkaš)
- Prosody and Modification of Speech, APVV LPP-078-06, 2007-2010 (G. Rozinaj)
- Algorithms and Methods of Multimedia Signal Processing for Human Machine Interface, VEGA 1/0718/09, 2009-2011 (G. Rozinaj)
- Audio-Speech Interface for Mobile Devices, DAAD, 2010- 2011 (G. Rozinaj)
- Multimedia Services and Applications in the Environment of New Generation Converged Network Infrastructure, VEGA 1/0720/09, 2009-2011 (P. Podhradský)

- Intelligent Error Correction in Image Information Transmission Through Wireless Channels, VEGA 1/0883/08, 2008-2010 (J. Polec)
- Analysis and Design of Applications for Extended Access Networks in the NGN Infrastructure Utilized Fixed Metallic Transmission Media for Supporting of Multimedia Services and Mutual Interconnections of Various Technologies and Networks, VEGA 1/0396/08, 2008-2010 (R. Róka)
- Utilization of GPU Computing for Speedup of Communication Systems Simulation, Program of Support for Young Researchers, 2010 (T. Páleník)

## **V. COOPERATION**

### **V.1 Cooperation in Slovakia**

- Agrogenofond in Nitra
- Alcasys
- Alcatel Lucent Slovakia
- ALISON Slovakia
- API
- Comenius University in Bratislava
- Council for Broadcasting and Retransmission
- Ericsson Slovakia, Bratislava
- GTS Slovakia
- ITM
- Methodical Pedagogical Centers
- Ministry of Agriculture of Slovak Republic
- Ministry of Economy of Slovak Republic
- Ministry of Interior of Slovak Republic
- Ministry of Transport, Posts and Telecommunications of Slovak Republic
- NextiraOne
- Nokia Siemens networks
- NVIDIA, USA
- Orange Slovakia
- PROFiber Networking, Trnava
- PTT Research Institute, Banská Bystrica
- Siemens PSE Slovakia
- Slovak Agricultural University in Nitra
- Slovak Association of Electrotechnical Companies
- Slovak Statistical Office of Slovak Republic
- Slovak Telecom
- Society of Lifelong Learning in Bratislava
- Technical University in Košice
- Telecommunication Office of Slovak Republic
- Telecommunication Users Group Slovakia
- Tesla, Liptovský Hrádok
- T-Mobile Slovakia
- University of Trnava
- University of Žilina
- Constantine the Philosopher University, Nitra
- WiMAX Slovakia

**V.2 International Cooperation**

- Aalborg University Center for Person Kommunikation, Denmark
- Alcatel Stuttgart, Germany
- ARC Seibersdorf Research GmbH, Austria
- Budapest Polytechnic, Hungary
- CELN Prague, CzR
- Croatian Academy of Engineering, Zagreb, HR
- ČVUT in Prague, CzR
- Deutsche Telecom Laboratory in Berlin
- Deutsche Telecom University in Leipzig
- Ericsson, Sweden
- École Nationale des Télécommunications de Bretagne (ENST)
- EMMERCE EEIG, Linköping, Sweden
- Fachhochschule Heilbronn, Germany
- Fachhochschule Oldenburg, Ostfriesland, Wilhelmshaven, University of Applied Sciences, Germany
- Economic Chamber, CzR
- Institut National des Télécommunications (INT), Evry, France
- ISEP Paris, France
- Kingston University, Faculty of Technology, the UK
- Lancaster University, the UK
- The Charta 77 Foundation, CzR
- Nortel, Vienna, Austria
- Polish Academy of Sciences Gliwice, Poland
- Politechnica Poznań, Poland
- Politecnico di Milano
- Portugal Telecom Inovacao (PT Inovacao)
- Rechenzentrum der RWTH Aachen, Germany
- Siemens Vienna, Austria
- T-Mobile, CzR
- Telenor, Norway
- The National and Kapodistrian University of Athens, Greece
- TU Budapest, Hungary
- TU Graz, Austria
- TU Ljubljana, Slovenia
- TU Maribor, Slovenia
- TU Wien, Austria
- TU Zagreb, Croatia
- TU Tampere
- University of Central Lancashire, the UK
- University of Strathclyde, Glasgow, the UK
- University of Versailles, France
- University of West Bohemia in Pilsen, CzR
- University of Hradec Kralove, CzR
- UPC Barcelona, Spain
- VŠB TU in Ostrava, CzR
- VUT in Brno, CzR

**V.3 Membership in International Organizations and Societies**

- IEEE (P. Farkaš, T. Páleník, M. Pořáško, M. Rakús, R. Róka)
- Correspondent Member of the Croatian Academy of Engineering (P. Podhradský)
- IET (G. Rozinaj)
- Executive Committee Member - CTF in Slovak Republic (I. Baroňák)

- CTF in Slovak Republic (I. Baroňák, M. Medvecký, R. Róka)
- ETSI (I. Baroňák)
- URSI – Official Member in Scientific Commission C - Signals and Systems (P. Farkaš)
- IEEE CAS/COM/SP joint Czechoslovakia Chapter- Executive Committee member (P. Farkaš)
- European Polytechnical University, Pernik, Bulgaria, Scientific Board member (P. Farkaš)

## **VI. THESES**

### **VI.1 Masters Theses**

Masters theses supervised at the Department of Tele-communications. The names of supervisors are in brackets.

- [1] Arbeit, V.: Software VoIP PBX and its Collaboration with Other Telecommunication Networks (M. Halás)
- [2] Babic, D.: Security of Networks and Services - Proposal for a Secure Network (M. Orgoň)
- [3] Balko, M: Dynamic Bandwidth Allocation WDM (R. Róka)
- [4] Bartová, A.: Draft Convergent Communication Solutions (voice + data) for a Small Office with Offices (M. Kukovič)
- [5] Belačič, M.: Encoding and Decoding 2-Dimensional Constrained Binary Codes (P. Farkaš)
- [6] Bundil, T.: 'Consensus Propagation' Algorithm in WSN (P. Farkaš)
- [7] Butko, J.: Approximation and Interpolation of Objects Shape (J. Polec)
- [8] Cingel, P.: Draft Convergent Communication Solutions (data + voice) for a Large Corporation with Offices (M. Kukovič)
- [9] Divičan, M.: Speaker Verification Based on Voice Characteristics Using SVM (J. Vojtko)
- [10] Dovičič, J.: Technical Solution Design for IPTV Service (E. Chromý)
- [11] Duda, P.: The Optimization Routing Connections in the Multipoint Telecommunication Network (J. Filanová)
- [12] Ferenczyová, I.: Implementation of Contact Center in School Sector (I. Baroňák)
- [13] Figura, M.: Robustness Parameterization of Speech Signal in ASR Systems (J. Kačur)
- [14] Filipko, T.: Application Server Pactolus - Analysis and Modification Back-to-Back User Agent (B2BUA) (J. Matejka)
- [15] Fister, M.: Multimedia Animation Talking Head (G. Rozinaj)
- [16] Gajancová, M.: Implementation of VoIP Technologies in an Environment of Private Networks (M. Talanda)
- [17] Gonšor, J.: Methodology of Correction of Incorrect Speech Synthesis (G. Rozinaj)
- [18] Grmanová, J.: Use of Technology Carrier Ethernet Transport in NGN Transport Networks (M. Medvecký)
- [19] Halčin, F.: Wireless Sensor Networks (P. Farkaš)
- [20] Hradská, J.: Evaluation of the Ways of Providing QoS in the Metropolitan and Transport Networks Based on Ethernet Technology (M. Medvecký)
- [21] Hricko, L.: Detection of the Characteristic Facial Features (G. Rozinaj)
- [22] Hvišč, P.: Modeling of Speech Signals Using STN Model and their Compression (M. Turi Nagy)
- [23] Chmara, M.: Presence Service in the IPTV Environment (P. Podhradský)
- [24] Chochelinski, R.: Proposal of NGN Network (I. Baroňák)
- [25] Jakubov, P.: New Technologies for Testing Telecommunications Services (E. Molnár)
- [26] Janata, J.: Providing of QoS for Multimedia Streams in MPLS Networks (M. Halás)
- [27] Jancura, F.: Face Points Detection on Mobile Phone (R. Rybárová)
- [28] Janecký, T.: WiFi IEEE 802.11n (M. Halás)
- [29] Jánoš, P.: Building NGN by Concepts of ALCATEL-LUCENT (I. Baroňák)
- [30] Jonis, M.: Routing of Unicast and Multicast Traffic in MPLS Networks (M. Medvecký)
- [31] Kahan, P.: Analysis and Comparison of the Use of Multimedia Services in Slovakia (J. Čuchran)

- [32] Kántor, T.: Attenuation of Optical Fibers (L. Peťko)
- [33] Kondelová, A.: Analysis of Prosody Features in Slovak (G. Rozinaj)
- [34] Kováč, A.: Assurance of QoS in VoIP Networks (M. Halás)
- [35] Kováč, Ľ.: Parametrization of Speech Signals in Speech Recognition Process (J. Kačur)
- [36] Kovačović, M.: Implementation of VoIP Technology in Private Networks (B. Kyrbashov)
- [37] Krajč, O.: Project of Metropolitan Optical Network (B. Graňák)
- [38] Kramarič, T.: Migration to NGN (I. Baroňák)
- [39] Kubeková, K.: Solution of Connection of Village into Access Network of Telecommunication Provider (E. Chromý)
- [40] Kužma, B.: Masking Errors in Classified Textures (J. Polec)
- [41] Labuda, I.: Securing of Database Systems (G. Csomós)
- [42] Lukáč, I.: Measurement of Traffic in IP Telephony (M. Halás)
- [43] Lukáč, M.: VoIP and Co-operation with Public Switch Telephone Network (M. Halás)
- [44] Lupták, A.: Web Portal for the Department of the Slovak Language of the Faculty of Philosophy of the Comenius University in Bratislava (M. Orgoň)
- [45] Melas, T.: Data Networks in Power Engineering (R. Róka)
- [46] Michalka, T.: Quality of Service in Wideband Networks (M. Kavacký)
- [47] Moravčík, F.: Model Realizations of Digital Subscriber Line on a Symmetrical Telecommunication Lines (R. Róka)
- [48] Mordelová, A.: Testing the Intelligibility of the Slovak Sign Language at Videoconferences (J. Filanová)
- [49] Muráň, J.: Teaching Software for Analysis Convolution Codes (M. Rakús)
- [50] Olos, M.: Web Applications for IPTV (P. Podhradský)
- [51] Pápay, M.: Using MPLS-TP Technology in NGN Transport Networks (M. Medvecký)
- [52] Parcová, M.: VoIP Technology and its Application (M. Talanda)
- [53] Petro, R.: Link Budget Calculator for Geostationary Satellites (Ľ. Znášik)
- [54] Pichová, P.: Automatic Segmentation of Speech Signals (J. Kačur)
- [55] Pintér, A.: Image Enhancement Using Morphological Operations (J. Pavlovičová)
- [56] Pomoty, M.: Ensuring of QoS VoIP Communication in WiFi Networks (M. Halás)
- [57] Pösinger, M.: Methodology of Implementation of Private NGN Networks for SME (M. Kavacký)
- [58] Radošovský, M.: Wireless Sensor Networks - Interference in ISM Band (T. Páleník)
- [59] Repová, M.: Construction of Linear Block Codes (P. Farkaš)
- [60] Ruman, J.: Binary Morphological Operations in Image Processing (J. Pavlovičová)
- [61] Sabo, R.: XML Applications for Alcatel IP Touch (P. Šelc)
- [62] Sabol, T.: Texture Classification Using Hartley Transform (J. Polec)
- [63] Simonides, J.: Data Dependent Triangulation (J. Polec)
- [64] Solčanský, M.: Ensuring QoS in IMS Networks (B. Kyrbashov)
- [65] Synak, D.: Speech Synthesis via Internet (A. Páleník)
- [66] Szóke, D.: Traffic Routing of Multipoint Connections in Telecommunication Network (J. Filanová)
- [67] Šághy, T.: Diphone Synthesizer of Slovak Language in PHP (G. Rozinaj)
- [68] Šajti, I.: Traffic Protection Using Optical Media for Information Transmission (R. Róka)
- [69] Šimlaštíková, D.: Analysis of ARQ Methods (K. Kotuliaková)
- [70] Škorvánek, J.: Error Concealment for H.264 (J. Polec)
- [71] Šmahovský, R.: Macrobends for Different Types of Single-mode Optical Fibres (L. Peťko)
- [72] Šötét, M.: Data Networks in Power Engineering (R. Róka)
- [73] Špilková, A.: The Creation of the Speech Database (woman voice) for Diphone Speech Synthesis (G. Rozinaj)
- [74] Štulajter, M.: Texture Classification via Slant Transform (J. Polec)
- [75] Šulgan, M.: Usage of Multimedial Digital Advertisement Network (J. Filanová)
- [76] Šuráň, J.: Usage of Erlang's Equations in The IP Networks (E. Chromý)
- [77] Tóth, J.: Phonetic Transcription of Abbreviation for Speech Synthesis (G. Rozinaj)
- [78] Tóth, P.: Practical Measurement of Optical Fibres (R. Róka)
- [79] Tuba, Z.: QoS Mechanisms in MPLS Networks (M. Medvecký)

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- [80] Urmínský, F.: Harmonic Model Analysis of the Speech Signals (R. Rybárová)  
 [81] Vacho, I.: System Architecture of Slovak Synthesizer (R. Rybárová)  
 [82] Valent, M.: Automatic Detection Parts of Speech in the Slovak Sentence (G. Rozinaj)  
 [83] Valentin, M.: Wireless Sensor Networks - Application of Directive Antenna (T. Páleník)  
 [84] Vaško, J.: Evaluation of Concatenative Distortion at Speech Synthesis (J. Čepko)  
 [85] Vavrín, M.: Segmentation of Texture Images (J. Pavlovičová)  
 [86] Vido, P.: Security of Mobile Communications (M. Orgoň)  
 [87] Violová, M.: Selected Services of NGN (I. Baroňák)  
 [88] Vnučák, P.: Simulations on Error Rate of DVB-T System in Environment of Fading Channels (M. Rakús)  
 [89] Voleník, M.: Security and Protection of Computer Networks (M. Orgoň)  
 [90] Weiss, P.: Coding of Facial Images by Triangulation (J. Polec)  
 [91] Zat'ko, M.: Design Technical Solution Service Video on Demand (E. Chromý)  
 [92] Zolnay, A.: Utilization IP Videoconferencing in the Educational Process (M. Kavacký)

## VI.2 PhD Theses

- [1] Karlubíková, T.: Special Algorithms of Interpolation and Extrapolation of Pictures (J. Polec)  
 [2] Mačica, J.: Twodimensional Translation Codes (P. Farkaš)  
 [3] Tóthová, Ž.: Error Concealment in Texture Images Using ALBP Classifier (J. Polec)  
 [4] Mikóczy, E.: Advanced Multimedia Architecture for Next Generation of Internet Protocol Television Systems (P. Podhradský)  
 [5] Páleník, T.: Communication System Design Based on SDR Platform: Exploiting the Redundancy of an OFDM System (P. Farkaš)

## **VII. OTHER ACTIVITIES**

### VII.1 Conferences and Seminars Organized by the Department

- ELOSYS 2010, October 2010 Trenčín, Slovak Republic, (cooperation with FEI STU Bratislava)
- 4th International Workshop on Speech and Signal Processing Redžúr 2010, May 2010 Bratislava, Slovak Republic, (cooperation with FEI STU Bratislava)
- NoTeS 2010, June 2010, Banská Bystrica, Slovak Republic, (cooperation with FEI STU Bratislava)
- Slovak VoIP, September 2010, Banská Bystrica, Slovak Republic, (cooperation with FEI STU Bratislava)

### VII.2 Expertise, tenders, international and national commission members

- ETS norms, member of National Committee TNK No. 41 for Telecommunications, Transformation of ETS Norms in National Environment (I. Baroňák)
- Award of J. Murgaš 2010: member of Committee MDPT SR a SES, Selection Candidate of Award of J. Murgaš for Year 2010 (I. Baroňák)
- Member of Grant Committee of MDPT SR for Post, Telecommunication and Information Technologies. Bratislava, 2010 (I. Baroňák)
- Conference: NoTeS 2010, June 2010, Banská Bystrica, Slovak Republic, member of Program Committee (I. Baroňák)
- Conference: Slovak VoIP, September 2010, Banská Bystrica, Slovak Republic, member of Program Committee (I. Baroňák)
- Conference with International Participation: ELOSYS 2010, October 2010, Trenčín, Slovak Republic, member of Program Committee (I. Baroňák)
- International Conference - RTT 2010 – Research Telecommunication Technology 2010, Ostrava, Czech Republic, September 2010, member of Program Committee (I. Baroňák)
- 3rd International Conference - NIMT 2010 – New Information and Multimedia Technologies,

- Brno University of Technology, September 2010, Brno, member of Scientific Committee (I. Baroňák)
- ICETA 2010 – International Conference on Emerging Telecommunications Technologies and Applications, Košice, Slovak Republic, November 2010, member of Program Committee (I. Baroňák)
  - Journal: Elektrorevue, member of Editorial Board (I. Baroňák)
  - Journal: AEEE (Advances in Electrical and Electronic Engineering), member of Editorial Board (I. Baroňák)
  - VEGA, projects reviewer (I. Baroňák)
  - APVV (Slovak Research and Development Agency), projects reviewer (I. Baroňák)
  - GAČR (Grant Agency of Czech Republic), projects reviewer (I. Baroňák)
  - Journal of Electrical Engineering, reviewer (I. Baroňák)
  - Journal: Acta Electrotechnica et Informatica, reviewer (I. Baroňák)
  - Journal: AEEE (Advances in Electrical and Electronic Engineering), reviewer (I. Baroňák)
  - Journal: Radioengineering, reviewer (I. Baroňák)
  - Journal: Integrated Computer-Aided Engineering, reviewer (I. Baroňák)
  - Workshop Redžúr 2010, reviewer (J. Čepko)
  - Workshop Redžúr 2010, member of Organizing Committee (Z. Dedíková)
  - Accreditations Committee of Slovak Government - working group for information sciences, information and communication technologies with responsibility also for the area of automation and telecommunications (P. Farkaš)
  - IEEE Communications Letters and IEEE Transactions on Signal Processing, reviewer (P. Farkaš)
  - 9th annual Wireless Telecommunication Symposium, Embassy Suites USF Busch Gardens, Tampa, USA WTS 2010, Vienna , Austria, 21 - 23 April, 2010, TPC member (P. Farkaš)
  - The 3rd IET International Conference on Wireless, Mobile & Multimedia Networks, ICWMMN 2010, 26- 29 September. Beijing Jiaotong University, 2010 Beijing, China, TPC member (P. Farkaš)
  - Int. Symposium on Broadband Communications, ISBC 2010, Melaka, Malaysia, 11 -14 July 2010, TPC member (P. Farkaš)
  - Software Defined Radio, SDR 2010, Washington D. C., USA, Nov.30-Dec. 4-th 2010, TPC member, track chair and reviewer (P. Farkaš)
  - Wireless Personal Mobile Communications WPMC 2010, Precife, Brazil, S23: ICT Innovations for a Green Society III (Special Session) Chaire (P. Farkaš)
  - 4th International Conference on Signal Processing and Communication Systems, ICSPCS 2010, Golden Coast, Australia, 13-15 December, 2010, TPC member, track chair and reviewer (P. Farkaš)
  - 19th International Electrotechnical and Computer Science Conference. Portorož, Slovenia, September 20-22, TPC member (P. Farkaš)
  - Journal of Electrical Engineering, reviewer (P. Farkaš)
  - GAČR (Grant Agency of Czech Republic), project reviewer (P. Farkaš)
  - Radioengineering, reviewer (P. Farkaš)
  - Slaboproudý obzor , member of Editorial Board of the journal (P. Farkaš)
  - Conference KTTO 2010, Ostrava, Czech Republic, member of Scientific and Programme Committee (E. Chromý)
  - Conference NoTes 2010, Banská Bystrica, Slovak Republic, member of Programme Committee (E. Chromý)
  - Conference TSP 2010, Baden, Austria, reviewer (E. Chromý)
  - Conference RTT 2010, Velké Losiny, Czech Republic, reviewer (E. Chromý)
  - Journal - Advances in Electrical and Electronic Engineering, member of International Scientific Editorial Board (E. Chromý)
  - Journal - Advanced in Electrical and Electronic Engineering, reviewer (E. Chromý)
  - JEEEC, reviewer (J. Kačur)

- EURASIP Journal on Advances in Signal Processing, reviewer (J. Kačur)
- Workshop Redžür 2010, member of Program and Reviewers Committees (J. Kačur)
- Conference KTTO 2010, Ostrava, reviewer (M. Kavacký)
- Journal Advances in Electrical and Electronic Engineering, member of Scientific Editorial Board, reviewer (M. Kavacký)
- Workshop Redžür 2010, member of Organizing Committee (A. Kondelová)
- Conference RTT2010, member of Program and Reviewers Committees (K. Kotuliaková)
- Journal of Electrical Engineering, reviewer (K. Kotuliaková)
- Conference TSP2010, reviewer (K. Kotuliaková)
- Workshop Redžür 2010, member of Reviewers and Organizing Committees (J. Körösi)
- International Conference on Computer Vision and Graphics (ICCVG 2010), chairman of the section 'Low & Middle-level Vision 1' (L. Krulikovská)
- Conference RTT 2010, Velké Losiny, Czech Republic, reviewer (B. Kyrbashov)
- Journal - Advanced in Electrical and Electronic Engineering, reviewer (B. Kyrbashov)
- Conference KTTO 2010, Ostrava, Czech Republic, reviewer (B. Kyrbashov)
- Conference KTTO 2010, Ostrava, Czech Republic, reviewer (M. Orgoň)
- Journal - Advances in Electrical and Electronic Engineering, 2010, Ostrava, Czech Republic, reviewer (M. Orgoň)
- International Journal of Electronics, 2010, Leeds, United Kingdom, reviewer (M. Orgoň)
- Conference TSP, 2010, Vienna, Austria, reviewer (M. Orgoň)
- Conference RTT, 2010, Ostrava, Czech Republic, reviewer (M. Orgoň)
- Conference ELOSYS 2010, member of Program and Reviewers Committees (M. Orgoň)
- Conference ELOSYS 2010, chairman of the section (M. Orgoň)
- Journal of Electrical Engineering, reviewer (J. Pavlovičová)
- Conference ISABEL 2010, Reviewers Committee (J. Pavlovičová)
- ELITECH`10, organizing committee (J. Pavlovičová)
- Workshop Redžür 2010, reviewer (J. Pavlovičová)
- Journal of Electrical Engineering, member of Editorial Board and reviewer (P. Podhradský)
- International Journal of Signal and Imaging Systems Engineering (IJSISE), member of Editorial Board (P. Podhradský)
- Conference IWSSIP 2010, member of Program and Reviewers Committees (P. Podhradský)
- Conference ELMAR 2010, member of Program and Reviewers Committees (P. Podhradský)
- Radioengineering, member of Editorial Board and reviewer (J. Polec)
- GAČR (Grant Agency of Czech Republic), projects reviewer (J. Polec)
- VEGA, projects reviewer (J. Polec)
- Acta Electrotechnica et Informatica, reviewer (J. Polec)
- Foundation of SPP, projects reviewer (J. Polec)
- Workshop Redžür 2010, reviewer (J. Polec)
- International Journal of Communication Networks and Information Security, Area Editor (R. Róka)
- International Journal of Communication Networks and Information Security, member of Editorial Board and reviewer (R. Róka)
- International Journal of Research and Reviews in Computer Science, member of Editorial Board and reviewer (R. Róka)
- Radioengineering Journal, reviewer (R. Róka)
- APVV (Slovak Research and Development Agency), projects reviewer (R. Róka)
- KEGA, projects reviewer (R. Róka)
- Conference ELITECH 2010, chairman of the section (R. Róka)
- Conference ELOSYS 2010, chairman of the section (R. Róka)
- Conference RTT 2010, reviewer (R. Róka)
- Conference TSP 2010, chairman of the section and reviewer (R. Róka)
- International Journal of Signal and Imaging Systems Engineering (IJSISE), member of Editorial board (G. Rozinaj)

- Conference IWSSIP 2010, member of Program and Reviewers Committees (G. Rozinaj)
- Journal of Electrical Engineering, reviewer (G. Rozinaj)
- Acta Electrotechnica et Informatica, member of Editorial Board (G. Rozinaj)
- EURASIP Journal on Advances in Signal Processing, member of Editorial Board (G. Rozinaj)
- Conference ELMAR 2010, member of Program and Reviewers Committees, invited lecturer, chairman of the session (G. Rozinaj)
- Workshop Redžúr 2010, member of Program and Reviewers Committees (G. Rozinaj)
- Workshop Redžúr 2010, member of Program and Reviewers Committees (M. Turi Nagy)
- Radioengineering, reviewer (R. Vargic)
- Workshop Redžúr 2010, reviewer (R. Vargic)
- Workshop Redžúr 2010, member of Reviewers and Organizing Committees (J. Vojtko)

### **VIII. PUBLICATIONS**

#### **VIII.1 Journals**

- [1] BALOGH, T. - MEDVECKÝ, M.: Comparison of Priority Queueing Based Scheduling Algorithms. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, date: 16.11. (2010), Art. no. 93. (in English)
- [2] CHROMÝ, E. - KAVACKÝ, M.: Asynchronous Networks and Erlang Formulas. In: International Journal of Communication Networks and Information Security. - ISSN 2073-607X. - Vo. 2, No. 2 (2010), p. 85-89. (in English)
- [3] ČUCHRAN, J. - RÓKA, R.: Effective Utilization of Metallic Symmetric Lines by Means of xDSL Technologies in the Access Networks. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, date: 16.11. (2010), Art. no. 91. (in English)
- [4] FILANOVÁ, J. - MARDIAK, M.: Measuring Quality of Video Signal. In: Elektrorevue. - ISSN 1213-1539. - Vol.15, 19.5. (2010), Art. no. 32. (in Slovak)
- [5] FRIESSE, L. - MEDVECKÝ, M.: The Influence of Traffic Engineering on Routing in Connection-Oriented Packet Networks. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 63-66. (in Slovak)
- [6] KENYERES, J. - KENYERES, M.: Simple Routing Metric for WSNs. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 76-80. (in Slovak)
- [7] KLÚČIK, S. - TISOVSKÝ, A.: NGN Technology Overview of IP Based Networks for Supplying IPTV and VoIP Services. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 81-85. (in Slovak)
- [8] KLÚČIK, S. - TISOVSKÝ, A.: Queueing Systems in Multimedia Networks. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11. (2010), Art. no. 99. (in English)
- [9] KOVÁČ, A. - HALÁS, M.: Analysis of Effects of QoS Parameters in Packet Transport Network on VoIP Call Quality. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 86-90. (in Slovak)
- [10] KRULIKOVSKÁ, L. - FILANOVÁ, J. - PAVLOVIČ, J.: Evolution Strategies in the Multipoint Connections Routing. In: Radioengineering. - ISSN 1210-2512. - Vol. 19, No. 3 (2010), p. 408-414. (in English)

- [11] KUBICA, J. - ORGOŇ, M.: The First Steps in a Safe Audit in Information Systems. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 5 (2010), p. 16-20. (in Slovak)
- [12] KYRBASHOV, B. - BAROŇÁK, I. - KOVÁČIK, M. - JANATA, V.: Evaluation of the Delay in VoIP Networks. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 152-159. (in Slovak)
- [13] LUKNÁROVÁ, D. - MEDVECKÝ, M.: Performance Comparison of A-RIO, RB-nRED and WRED Algorithms for QoS Support. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11. (2010), Art. no. 96. (in English)
- [14] MAČICA, J. - FARKAŠ, P. - KRILE, S.: Other Computational Technique for Estimation of Lower Bound on Capacity of Two-Dimensional Diamond-1 Constrained Channel. In: Radioengineering. - ISSN 1210-2512. - Vol. 19, No. 1 (2010), p. 46-51. (in English)
- [15] MIČUCH, J. - BAROŇÁK, I.: Comparison of Two Probability Theories Providing QoS. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11. (2010), Art. no. 102. (in English)
- [16] MIŠUREC, J. - ORGOŇ, M.: Modelling of Power Lines for Analysis of Data Transmission by PLC Technology. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 4 (2010), p. 26-29. (in Czech)
- [17] MIŠUTH, T. - BAROŇÁK, I.: On Queueing Systems Application in IP Networks. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 91-94. (in English)
- [18] MIŠUTH, T. - BAROŇÁK, I.: Performance Forecast of Contact Centre with Differently Experienced Agents. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11. (2010), Art. no. 97. (in English)
- [19] ORGOŇ, M. - MIŠUREC, J. - MEDVECKÝ, M.: The New Aspects of the Design of Services and Applications for Converged Networks and NGN. In: Sdělovací technika. - ISSN 0036-9942. - Vol. 58, No. 5 (2010), p. 5-10. (in Czech)
- [20] ORGOŇ, M. - MIŠUREC, J.: The New Design of Services and Applications for Networks NGN. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 1 (2010), p. 30-35. (in Slovak)
- [21] ORGOŇ, M. - ADAMKO, D. - MIŠUREC, J.: The Process of Creating of New Services/Applications - from Idea to Implementation. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, No. 2 (2010), p. 19-23. (in Slovak)
- [22] OSADSKÝ, M.: Feature Extraction Using Gabor Filter. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 95-97. (in English)
- [23] PAVLOVIČ, J. - POLEC, J. - KRULIKOVSKÁ, L. - POCTAVEK, J. - KOTULIAKOVÁ, K.: Cascade of Gilbert Models for Packet Loss and Subsequent Bit Error Description. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11. (2010), Art. no. 103. (in English)
- [24] RÓKA, R.: The Designing of Passive Optical Networks Using the HPON Network Configurator. In: International Journal of Research and Reviews in Computer Science. - ISSN 2079-2557. - Vol. 1, No. 3 (2010), p. 38-43. (in English)
- [25] RÓKA, R.: The HPON Network Configurator and its Parameters for Designing of Passive Optical Networks. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11. (2010), Art. no. 92. (in English)

- [26] TALANDA, M. - PARCOVÁ, M.: VoIP Technology and their Application. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 121-124. (in Slovak)
- [27] TARABA, J. - ORGOŇ, M.: Safety of Wireless Wi-Fi Networks. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16. No. 4 (2010), p. 17-20. (in Slovak)
- [28] TISOVSKÝ, A. - KLÚČIK, S.: Inspecting the Throughput of Securing Process Handled by Networks Device. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 130-135. (in Slovak)
- [29] TISOVSKÝ, A. - KLÚČIK, S.: Method for Calculation the Packet-Size Dependent Throughput of a Computationally Intensive IPsec Process. In: Elektrorevue. - ISSN 1213-1539. - Vol. 15, 16.11.2010 (2010), Art. no 98. (in English)
- [30] TÓTHOVÁ, Ž. - POLEC, J.: A Novel Technique of Error Concealment Method Selection in Texture Images Using ALBP Classifier. In: Radioengineering. - ISSN 1210-2512. - Vol. 19, No. 2 (2010), p. 331-337. (in English)
- [31] VIDO, P. - ORGOŇ, M.: The Hardware Security of SIM Card. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 136-141. (in Slovak)
- [32] VOLENÍK, M. - ORGOŇ, M.: Principles of Network Security Using Firewalls. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 142-146. (in Slovak)
- [33] ZÁMEČNÍKOVÁ, M. - KOTULIAKOVÁ, K. - POLEC, J.: System Model for Ad-Hoc Networks. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 16, Special Issue (2010), p. 147-151. (in Slovak)

## VIII.2 Conference Proceedings

- [1] ANDRÁŠIK, P. - KAČUR, J.: Automatic Speech Recognition. In: Proceedings Redžúr 2010: 4th International Workshop on Speech and Signal Processing. Bratislava, Slovak Republic, 14.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3296-3. - p. 70-73. (in English)
- [2] BALOGH, T. - MEDVECKÝ, M.: Performance Analysis of Priority Queueing Based Scheduling Algorithms. In: Telecommunications and Signal Processing TSP-2010: 33rd International Conference on Telecommunications and Signal Processing. Baden near Vienna, Austria, 17.-20.8.2010. - Budapest: Asszisztencia Szervező Kft., 2010. - ISBN 978-963-88981-0-4. - p. 228-233. (in English)
- [3] BALOGH, T. - LUKNÁROVÁ, D. - MEDVECKÝ, M.: Performance of Round Robin-Based Queue Scheduling Algorithms. In: CTRQ 2010: 3rd International Conference on Communication Theory, Reliability, and Quality of Service. Athens, Greece, 13.-19.6.2010. - Los Alamitos: IEEE Computer Society, 2010. - ISBN 978-0-7695-4070-2. - p. 156-161. (in English)
- [4] BAROŇÁK, I. - JÁNOŠ, P.: NGN Infrastructure in the Region. In: New Information and Multimedia Technologies. NIMT - 2010: Brno, Czech Republic, 16.-17.9.2010. - Brno: University of Technology, 2010. - ISBN 978-80-214-4126-2. - p. 24-33. (in English)
- [5] BUNČÁK, M. - VARGIC, R.: A Contribution to Analysis of Self Similarity Using ACF. In: Proceedings Redžúr 2010: 4th International Workshop on Speech and Signal Processing. Bratislava, Slovak Republic, 14.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3296-3. - p. 52-55. (in English)

- [6] BUNČÁK, M. - VARGIC, R.: A Contribution to the Analysis of Self Similarity. In: RTT 2010. Research in Telecommunication Technology: 12th International Conference. Velké Losiny, Czech Republic, 8.- 10.9.2009. - Ostrava: Technical University of Ostrava, 2010. - ISBN 978-80-248-2261-7. - CD-Rom. (in English)
- [7] CHROMÝ, E.: Erlang Formulas and Next Generation Networks. In: Knowledge in Telecommunication Technologies and Optics 2010: Czech Republic, Ostrava-Poruba, 2010. - Ostrava: Technical University of Ostrava, 2010. - ISBN 978-80-248-2330-0. - p. 17-21. (in English)
- [8] CHROMÝ, E. - WEBER, A.: The First Erlang Formula for Common Virtual Path in ATM Network. In: RTT 2010. Research in Telecommunication Technology: 12th International Conference. Velké Losiny, Czech Republic, 8.- 10.9.2009. - Ostrava: Technical University of Ostrava, 2010. - ISBN 978-80-248-2261-7. - CD-Rom. (in English)
- [9] ČUCHRAN, J. - RÓKA, R.: Some Limiting Conditions on Metallic Symmetric Lines Utilized by xDSL Technologies for the Expansion of Multimedia Services in the Access Networks. In: Telecommunications and Signal Processing TSP-2010: 33rd International Conference on Telecommunications and Signal Processing. Baden near Vienna, Austria, 17.-20.8.2010. - Budapest: Asszisztencia Szervező Kft., 2010. - ISBN 978-963-88981-0-4. - p. 449-451. (in English)
- [10] ČUCHRAN, J. - RÓKA, R.: The Analysis of Conditions for the Effective Utilization of xDSL Technologies in the Access Network Used Metallic Symmetric Lines. In: RTT 2010. Research in Telecommunication Technology: 12th International Conference. Velké Losiny, Czech Republic, 8.- 10.9.2009. - Ostrava: Technical University of Ostrava, 2010. - ISBN 978-80-248-2261-7. - CD-Rom. (in English)
- [11] DEDÍKOVÁ, Z. - ČEPKO, J.: Modifications in S2 - a Corpus Based Synthesizer. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
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- [91] VIDO, P. - ORGOŇ, M.: Forensic Analysis and its Relationship to the Safety of Mobile Communications. In: RTT 2010. Research in Telecommunication Technology: 12th International Conference. Velké Losiny, Czech Republic, 8.- 10.9.2009. - Ostrava: Technical University of Ostrava, 2010. - ISBN 978-80-248-2261-7. - CD-Rom. (in English)
- [92] VNUČÁK, P. - RAKÚS, M.: Simulation on Error Rate of DVB-T System in Environment of Fading Channels. In: ŠVOČ 2010: Proceedings of Selected Works. - Bratislava: FEI STU, 2010. - ISBN 978-80-227-3286-4. - CD-Rom. (in Slovak)
- [93] YASSINE, A. - FARKAŠ, P.: Broadcasting Scheme for WSN with Reduced Number of NACKs in Feedback Channel. In: Proceedings of the 13th International Symposium on Wireless Personal Multimedia Communications: Racife, Brazil, 11.-14.10.2010. - Paraíba: Iecom, 2010. - CD-Rom. (in English)
- [94] YASSINE, A.: Raptor Codes. In: ELITECH'10: 12th Conference of Doctoral Students. Bratislava, Slovak Republic, 26.5.2010. - Bratislava: STU, 2010. - ISBN 978-80-227-3303-8. - CD-Rom. (in English)
- [95] ZOLNAY, A. - KAVACKÝ, M.: Utilization of IP Videoconference in Education Process and Design of Videoconference System for Department of Telecommunication. In: Innovation Process in e-Learning: Scientific International Conference. Bratislava, Slovak Republic, 11.3.2010. - Bratislava: University of Economy, 2010. - ISBN 978-80-225-2949-5. - CD-Rom. (in Slovak)
- [96] ŽIGO, B. - BAROŇÁK, I.: SMART - Communication Platform for Slovak University of Technology. In: New Technology and Services in Telecommunications: 4th International Conference. Banská Bystrica, Slovak Republic, 10.-11.6.2010. - Bratislava: Slovenská elektrotechnická spoločnosť, 2010. - ISBN 978-80-969325-8-0. - CD-Rom. (in Slovak)

### VIII.3 Parts of Books

- [1] JANATA, V. - BAROŇÁK, I. - KOVÁČIK, M.: Virtual Networks with the MPLS Support. In: Ročenka 2009. Fórum pre komunikačné technológie. - Banská Bystrica: DALI-BB, s.r.o., 2010. - ISBN 978-80-89090-66-2. - p. 42-50. (in Slovak)
- [2] KRULIKOVSKÁ, L. - MARDIAK, M. - PAVLOVIČ, J. - POLEC, J.: Video Analysis Based on Mutual Information. In: Lecture Notes in Computer Science. - ISSN 0302-9743. - Vol. 6375 Computer Vision and Graphics: International Conference, ICCVG 2010 Warsaw, Poland, September 20-22, 2010 Proceedings, Part II. - Berlin: Springer-Verlag, 2010, p. 73-80. (in English)

- [3] MIKÓCZY, E. - PODHRADSKÝ, P.: Evolution of IPVT Architecture and Services towards NGN. In: Studies in Computational Intelligence. - ISSN 1860-949X. - Vol. 231: Recent Advances in Multimedia Signal Processing and Communications. - Berlin/Heidelberg: Springer Verlag, 2010. - ISBN 978-3-642-02899-1, p. 315-339. (in English)
- [4] ORAVEC, M. - MAZANEC, J. - PAVLOVIČOVÁ, J. - EIBEN, P. - LEHOCKI, F.: Face Recognition in Ideal and Noisy Conditions Using Support Vector Machines, PCA and LDA. In: Face Recognition. - Vukovar: In-Tech, 2010. - ISBN 978-953-307-060-5. - p. 125-150. (in English)
- [5] TÓTHOVÁ, Ž. - POLEC, J. - ORGONÍKOVÁ, T. - KRULIKOVSKÁ, L.: Error Concealment Method Selection in Texture Images Using Advanced Local Binary Patterns Classifier. In: Lecture Notes in Computer Science. - ISSN 0302-9743. - Vol. 6375 Computer Vision and Graphics: International Conference, ICCVG 2010 Warsaw, Poland, September 20-22, 2010 Proceedings, Part II. - Berlin: Springer-Verlag, 2010, p. 342-349. (in English)

#### VIII.4 Books

- [1] BAROŇÁK, I.: Call Center. - Bratislava: STU, 2010. - 188 p. - ISBN 978-80-227-3261-1. (in Slovak)
- [2] BOHUŠ, J. - ĎORĎA, M. - ĎURAČKOVÁ, K. - HALÁSOVÁ, Z. - HORSKÝ, R. - HRNČIAR, M. - HRUBÝ, D. - JAKUBÍKOVÁ, D. - KOVÁČ, A. - et al: Green IT - Manager's Handbook. - Bratislava: E International Slovakia, s.r.o., 2010. - ISBN 978-80-969747-4-0. (in Slovak)
- [3] RAKÚS, M.: Communication System Modelling with TIMS: Volume D5-Advanced Spread Spectrum Experiments. - Camperdown: Emona Instruments Pty Ltd, 2010. - ISBN 978-1-921903-01-4. (in English)
- [4] RAKÚS, M.: Communication System Modelling with TIMS: Volume D4-Further Advanced Digital Experiments. - Camperdown: Emona Instruments Pty Ltd, 2010. - ISBN 978-1-921903-00-7. (in English)

**DEPARTMENT OF LANGUAGES**  
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**I. STAFF**

Senior Lecturers	PaedDr. Andrea Ambrózová, PhDr. Jarmila Belasová, PhDr. Gabriela Fojtlová, PhDr. Mária Hujvanová, Mgr. Jana Matiašovská, Mgr. Daniela Ondroušková, Mgr. Jana Päťoprstá, PhDr. Ivan Podpera, PhDr. Ľubica Rovanová, PhD., Mgr. Ľudmila Solenská Mária Čederlová (secretary)
Technical Staff	

**II. EQUIPMENT**

none

**III. TEACHING**

**III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

English	(1st, 2nd, 3rd, 4th sem., 0-2h)	A. Ambrózová, G. Fojtlová, M. Hujvanová, J. Matiašovská, D. Ondroušková, J. Päťoprstá, I. Podpera, Ľ. Rovanová
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Optional courses for beginners in English (1st sem., 0-2h)	G. Fojtlová, J. Matiašovská, M. Hujvanová
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Other optional courses: (2nd - 10th sem., 0-2h):

German (beginners, intermediate and advanced)	J. Belasová, Ľ. Solenská
Russian (beginners, intermediate and advanced)	J. Belasová

**III.2 Graduate Study (Ing.)**

Specific optional courses:

German (beginners, intermediate) (7th - 11th sem., 0-2h)	J. Belasová
German (advanced) (7th - 11th sem., 0-2 or 4h)	Ľ. Solenská
Russian (all levels) (7th - 11th sem., 0-2h)	J. Belasová

**III.3 Distance Study**

English	(0-2h)	A. Ambrózová, D. Ondroušková, J. Pätoprstá
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**III.4 Doctoral Study (PhD.)**

English	(0-2h)	M. Hujvanová, J. Pätoprstá, I. Podpera, L. Rovanová
German	(0-2h)	J. Belasová, L. Solenská

**IV. RESEARCH PROJECTS**

- The Use of Thermal Energy from Renewable Sources in Agricultural Drying Processes with Respect to its Impact on Environment and Technology. VEGA 1/0708/09, Slovak University of Agriculture in Nitra, Faculty of Engineering (I. Podpera)
- Design and Implementation of an e-Learning Portal for Medical Further Education of Doctors of Medicine. OP Education, NFP 2612023000, 2007 – 2013 (L. Rovanová)

**V. COOPERATION****V.1 Cooperation in Slovakia**

- Philosophical Faculty, Comenius University, Bratislava
- Goethe Institut, Bratislava
- Österreichisches Kulturinstitut Bratislava
- Verband der Deutschlehrer und Germanisten der Slowakei
- CercleS (European Confederation of Language Centres in Higher Education), Bratislava
- Canadian Bilingual Institute in Bratislava

**V.2 International Cooperation**

- Salzburg Seminar (USA) in Austria
- Goethe Institut, Krakow, Poland
- Goethe Institut, Nancy, France
- Miklós Zrínyi National Defense University Budapest, Hungary

**V.3 Membership in International Organizations and Societies**

- Salzburg Seminar Alumna (USA) (L.Rovanová)
- CASAJC, (The Czech and Slovak Association of Language Centres in Higher Education), member of CERCLES
- UNICert LUCE (Language Accreditation Unit for Universities in Central Europe)

**VI. THESES**

none

**VII. OTHER ACTIVITIES**

- Teacher-trainer and trainer-trainer for EGP (English for General Purposes) and ESP (English for Specific Purposes) methodology (A. Ambrózová)
- Participation in specific seminars of didactics and methodology as part of lifelong education, Pedagogical Faculty of UK (J. Pätoprstá)

- Working on the new study material 'English for Students of Electrical Engineering' (I. Podpera)
- 'English for Students of Electrical Engineering' - an intermediate level electronic course in Moodle (I. Podpera)
- 'English for Students of D level' - an upper-intermediate level electronic course in Moodle (I. Podpera)
- Conference presentation: 'Moodle at Work' - seminar Foreign Languages in the European Union, Bratislava, 30 March 2010 (I. Podpera)
- Teacher-trainer and trainer-trainer for ESP (English for Specific Purposes) (I. Podpera)
- Expert for lifelong learning programs assessment (Ľ. Rovanová)
- Member of UNICert LUCE committee: Working-out of expert opinions for the accreditation of German Language Courses at Slovak and Czech universities (Ľ. Solenská)
- The expert supervision of final examinations of UNICert at accredited Slovak and Czech universities (Ľ. Solenská)
- Working-out of materials for the first UNICert examinations at the department, testing, marking, diploma design and evaluation (Ľ. Solenská)
- Evaluation of Language programs of accredited universities (Ľ. Solenská)
- Co-organizer of the international conference UNICert, Bratislava, 12 – 13 June 2010 (Ľ. Solenská)
- 'Testing and confirming of students' language competence for the purpose of exchange study stays and traineeships according to European language standards (Ľ. Solenská)

## **VIII. PUBLICATIONS**

### **VIII.1 Journals**

- [1] **PÄTOPRSTÁ, J.**: Distance Material Production Requires Different Learning and Teaching Styles and Techniques. In: Fórum cudzích jazykov. - ISSN 1337-9321. - Vol. 2, No. 3 (2010), p. 47-53. (in Slovak)
- [2] **PODPERA, I.**: Moodle at Work. In: Foreign Languages in the European Union: Scientific Workshop with International Participation. Bratislava, Slovak Republic, 30.3.2010. - Bratislava: Police Academy, 2010. - ISBN 978-80-8054-499-7. - p. 119-122. (in English)

**DEPARTMENT OF PHYSICAL EDUCATION**  
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Mgr. Libor Jurkovič, PhD,  
Mgr. Barbora Kociánová, PhD., Mgr. Pavel Lackovič,  
PaedDr. Jana Lamošová, PhD., Mgr. Martin Májek,  
Mgr. Peter Miklovič, PhD., Mgr. Zvonimír Pompura,  
Mgr. Alena Suttnerová  
Technical Staff Mária Dobrotová (secretary)

**II. EQUIPMENT**

- Fitness Centre
- Gymnasium
- Small Gymnasium
- Swimming pool
- Regeneration Centre
- Laboratory of Sport Sciences
- Climbing wall

**III. TEACHING**

**III.1 Undergraduate Study (Bc.)**

Subject, semester, hours per each semester, name of the lecturer:

Aerobics	(1st-8th sem., 18 hours each sem.)	A. Suttnerová
Badminton	(1st-8th sem., 18hours each sem.)	M. Májek
Badminton	(1st-8th sem., 18hours each sem.)	A. Suttnerová
Basketball	(1st-8th sem., 18 hours each sem.)	Ľ. Ďuračka
Basketball	(1st-8th sem., 18 hours each sem.)	J. Lamošová
Bouldering	(1st-8th sem., 18hours each sem.)	P. Miklovič
Canoeing	(1st-8th sem., 18hours each sem.)	P. Lackovič
Condition Gymnastics	(1st-8th sem., 18 hours each sem.)	Z. Pompura
Sports shooting	(1st-8th sem., 18 hours each sem.)	Z. Pompura
Floorball	(1st-8th sem., 18 hours each sem.)	B. Kociánová
Football	(1st-8th sem., 18hours each sem.)	A. Dunajčík

Joga	(1st-8th sem., 18 hours each sem.)	A. Suttnerová
Self-defence	(1st -8th sem., 18 hours each sem.)	P. Miklovič
Swimming	(1st-8th sem., 18 hours each sem.)	L. Jurkovič
Swimming	(1st-8th sem., 18 hours each sem.)	Z. Chudíková
Table Tennis	(1st-8th sem., 18 hours each sem.)	M. Májek
Table Tennis	(1st-8th sem., 18 hours each sem.)	B. Kociánová
Volleyball	(1st-8th sem., 18 hours each sem.)	M. Májek
Volleyball	(1st-8th sem., 18 hours each sem.)	Z. Dariusová

**III.2 Graduate Study (Ing..)**

Optional Physical Education for the students in Graduate Study the same as in Undergraduate Study.

**IV. RESEARCH PROJECTS**

- External on FTVŠ UK in Bratislava (2010-11). Muscular Power in Resistance Exercises under Unstable Conditions: Application in Sport and Rehabilitation. (APVV), N°. SK-SRB-0023-09 (P. Miklovič)
- External at PF UKF in Nitra. Support of Resilience through Education, supported by grants VEGA 1/0215/08 (J. Lamošová)

**V. COOPERATION****V.1 Cooperation in Slovakia**

- Slovak Union of Physical Culture, Bratislava
- Faculty of Physical Education, Comenius University, Bratislava
- School of Physical Education and Training, Bratislava
- Slovak Association of Academic Sports, Bratislava
- Slovak Volleyball Federation, Bratislava
- Slovak Basketball Association, Bratislava
- Slovak Olympic Committee, Bratislava
- Slovak Handball Union, Bratislava
- Slovak Gojuryu Karatedo Gojukai Association, Bratislava
- Slovak Floorball Association, Bratislava

**V.2 International Cooperation**

- Technical University Delft, The Netherlands
- Technical University Zagreb, Croatia
- Technical University of Budapest, Hungary
- Bournemouth University, UK
- Associazione Sportiva Dillettantistica EuroSportEvents, Milano, Italy

**VI. THESES****VI.1 Masters Theses**

Masters theses supervised at the Department of Physical Education. The names of supervisors are in brackets.

none

**VI.2 PhD Theses**

- [1] Miklovič, P.: The Effect of Special Training Bouts on Parameters of Agility in Karate Athletes (Dissertation). Comenius University in Bratislava, Faculty of Physical Education and Sport, Department of Sport Kinanthropology (Erika Zemková)
- [2] Lamošová, J.: Personality, Performance and Social Relations of the Students in a Sports Class.(Dissertation) Comenius University in Bratislava, Faculty of Physical Education and Sport, Department of Sport Humanistics (Emil Komárik)

**VII. OTHER ACTIVITIES**

- Member of Slovak Rowing national team (P. Lackovič)
- Coach of Slovak Rowing Federation (P. Lackovič )
- Personal coach of best Slovak golf junior player ( P. Lackovič )
- Member of Slovak Ice Hockey national team (A. Dunajčík)
- Personal trainer - HC Slovan Bratislava , hockey club (A. Dunajčík)
- Slovak Asociation of University Sports (SAUŠ)- chairman of the Basketball Committee, (Ľ. Ďuračka)
- Member of Japan Karatedo Federation (P. Miklovič)
- Member of Committee Slovak Gojuryu Karatedo Gojukai Association (P. Miklovič)
- Member of Slovak Floorball Representation, (B. Kociánová)
- Member of the Yoga Sosity (A. Suttnerová)
- Member of Slovak Equestrian Federation ( J. Lamošová)
- Member of Equestrian club Over Žilina ( J. Lamošová)
- Members of Coaches Association Slovak Basket Association ( Ľ. Ďuračka, J. Lamošová)
- Coach of the volleyball club VK STU ( M. Májek )
- Members of University sport club VŠK FEI STU, (P. Miklovič, P. Lackovič, B. Kociánová, A. Dunajčík, A. Suttnerová, Ľ. Ďuračka, J. Lamošová, M. Dobrotová (secretary))
- Aerobics for employees FEI STU (January-December)
- Elementary swimming training for children of FEI STU employees 12.1.-11.2. 2010
- Volleyball College League
- Swimming College League
- Basketball College League
- Futsal College league
- FEI STU Badminton Tournament - 10.3.10
- FEI STU Floorball Championship - 18.3.10
- FEI STU Table Tennis Championship - 26.3.10
- Joga – the way to the health of body and mind (lecture) - 10.4.2010
- FEI STU Climbing Championship - 14.4.10
- Table tennis tournament of employees FEI STU - 17.4.10
- FEI STU Shooting Championship 21. 4.2010
- MIX Volleyball tournament - 21.4.10
- STU Swimming Championship – 27. 4. 10
- STU Volleyball Championship – 28.4.10
- Agility Challenge- 4.5.2010
- Self-defence Prevention (lecture) – 7..5.10
- Bouldering Tournament – 11.-13.5.10
- Badminton Tournament of employees FEI STU – 28..5.10
- Elementary swimming training for children of FEI STU employees 18.5.-17.6. 2010
- Descent of the river Vltava - 15.-18.7. 2010
- Alpine Hiking in Romania – Bihor Fagaraž Retezac- 175-22.8.10
- Octoberfest FEI STU 2009 - 12.10.10
- Basketball Tournament (students vs. employees) – Students' Day - 16.11.10
- Bouldering Tournament – 22.-24.11..10
- Volleyball Tournament (students vs. employees)– Students' Day - 25.11.10

- Badminton Tournament of employees FEI STU - 26.11.10
- FEI STU Floorball Tournament (students vs. employees) - 26.11.10
- FEI STU Powerlifting Championship - 29.11.10
- FEI STU Indoor Rowing Championship - 29.11.10
- St. Nicolaus Basketball Tournament - 9.12.10
- Christmas Carp - 13.12.10
- Christmas Tennis Tournament of employees FEI STU - 16.12.10

### **VIII. PUBLICATIONS**

#### **VIII.1 Conference Proceedings**

- [1] ZEMKOVÁ, E. - TIRPÁKOVÁ, V. - MIKLOVIČ, P.: Differentiation of Simple Stepping Reactions by Increasing of the Task of Difficulty. In: 6th Annual International Conference on Kinesiology&Exercise Sciences: Abstract Book. Athens, Greece, 28.6.-1.7.2010. - Athens: Institute for Education and Research, 2010. - ISBN 978-960-6672-71-2. - CD-Rom. (in English)
- [2] ZEMKOVÁ, E. - TIRPÁKOVÁ, V. - MIKLOVIČ, P. - HAMAR, D.: Reliability and Methodological Issues of the Visually-Triggered Step Initiation Test. In: ISEK 2010: 18th Congress of the International Society of Electrophysiology and Kinesiology. - Aalborg University, 2010. - ISBN 978-87-7094-047-4. - CD-Rom. (in English)

#### **VIII.2 Book**

- [1] KOMÁRIK, E. - JENČOVÁ, A. - KRAJČOVIČOVÁ, K. - LAMOŠOVÁ, J. - REPČÍK, R. - ŠANDOROVÁ, D. - HUČEKOVÁ, D.: Context of Resilience. - Nitra: Constantine the Philosopher University, 2010. - ISBN 978-80-89264-53-7. (in Slovak)

#### **VIII.3 Part of Book**

- [1] LAMOŠOVÁ, J. - KOMÁRIK, E.: Personality, Performance and Social Relations of the Students in a Sports Class. In: Scientific Proceedings of the Faculty of Physical Education and Sport: No. 16. - Bratislava: FTVŠ UK, 2010. - ISBN 978-80-8113-025-0. - p. 63-86. (in Slovak)