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SLOVENSKÁ TECHNICKÁ  
UNIVERZITA V BRATISLAVE  
FAKULTA ELEKTROTECHNIKY  
A INFORMATIKY

# 2011



## INSTITUTE OF NUCLEAR AND PHYSICAL ENGINEERING

ANNUAL REPORT  
SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA

# INSTITUTE OF NUCLEAR AND PHYSICAL ENGINEERING

<http://www.ujfi.fe.i.stuba.sk/>



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## GENERAL INFORMATION

Institute of Nuclear and Physical Engineering was formed on May 1, 2011 by the merger of former Department of Physics with Department of Nuclear Physics and Technology. The Institute is a teaching and research unit of the Faculty of Electrical Engineering and Information Technology (FEI). The main mission of the Institute is the integration and creative development of diverse related scientific, research, as well as other technical activities. The institute acts as a special guarantor of the study subjects which are also provided by the institute in the frame of accredited study programmes offered by the Slovak University of Technology. Through its own teaching, scientific, research and development activities, the Institute is responsible in particular for development in the following areas: General Physics and Mathematical Physics, Physics of Condensed Matter and Acoustics, Nuclear and Subnuclear Physics, Material science, Environmental Engineering, Electrotechnology and Materials, Nuclear Power Engineering and Technology, Biomedical Engineering, Physical Engineering and Biomaterial Engineering.

## SECTIONS OF THE INSTITUTION:

Department of Physics

Department of Nuclear Power Engineering and Radioecology

Department of Nuclear Technology and Nuclear Methods

Department of Biomedical Engineering



## I. STAFF

### Professors:

prof. Ing. Peter Ballo, PhD., prof. Ing. Július Círák, PhD., prof. Ing. Rudolf Durný, DrSc., prof. RNDr. Július Krempaský, DrSc., prof. Ing. Jozef Lipka, DrSc., prof. Ing. Marcel Miglierini, DrSc., prof. Ing. Vladimír Nečas, PhD., prof. Ing. Mária Pavlovič, PhD., prof. Ing. Jozef Sitek, DrSc., prof. Ing. Vladimír Slugeň, DrSc.

### Associate Professors:

doc. Ing. Peter Bokes, PhD., doc. Ing. Peter Dieška, PhD., doc. RNDr. Edmund Dobročka, PhD., doc. Ing. Ján Haščik, PhD., doc. RNDr. Peter Markoš, DrSc., doc. Ing. Andrea Šagátová, PhD., doc. Ing. Ján Vajda, PhD., doc. RNDr. Pavol Valko, PhD.

### Assistant Professors:

Ing. Ondrej Foltin, PhD., Ing. Róbert Hinca, PhD., RNDr. Juraj Chlpík, PhD., Ing. Tatiana Šrámková, RNDr. Mária Valková, Mgr. Marek Vančo, PhD., Ing. Klement Vítáček, PhD., Ing. Ivan Zelenay, PhD., Ing. Miroslava Zemanová

### Research Workers:

Ing. Jarmila Degmová, PhD., Ing. Július Dekan, PhD., Ing. Gabriel Farkas, PhD., Ing. Ľubomír Keleši, Mgr. Martin Konôpka, PhD., Ing. Vlasta Macková, PhD., RNDr. Martin Moško, PhD., Ing. Milan Pavúk, PhD., Ing. Martin Petriska, Ing. Katarína Sedlačková, PhD., Ing. Stanislav Sojak, PhD., Ing. Michal Sokolský, Ing. Matúš Stacho, Ing. Stanislav Stanček, Ing. Jaroslav Tóbiš, PhD., Ing. Tomáš Váry, Ing. Alfred Vlnieška, Ing. Martin Weis, PhD.

### Technical Staff:

Eva Mániková (secretary), Štefan Kučera, Peter Mikula, Bc. Andrea Podhájska, Zuzana Váciová

### PhD. Students:

Ing. Alica Bajusová, Mgr. Katarína Bombarová, Ing. Štefan Čerba, Ing. Pavol Čudrnák, Ing. Peter Čudrnák, Ing. Tomáš Hatala, Ing. Tomáš Hrnčíř, Mgr. Gergely Kajtár, Ing. Jakub Lüley, Ing. Štefan Motyčák, Ing. Michal Pánik, Ing. Veronika Sabelová, Ing. Jana Veterníková, Ing. Branislav Vrban

## 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 AFM/MFM Microscopy
- Laboratory of Thermophysical Properties
- Laboratory of Macrostructure of Composites
- Laboratory of Material Simulation
- Laboratory of Optical Spectroscopy
- Laboratory of Spectroscopy
- Center for Computational Materials Science

### Nuclear Technologies Centre:

- Computer Laboratory
- Ion Beam Laboratory
- Laboratory of Low Level Radioactivity Measurements
- Laboratory of Mössbauer Spectroscopy
- Laboratory of Neutron Physics
- 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 - 2 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 (124 CORE) + 7PC Cluster (24 CORE)
- Amptek Experiment's XRF Kit
- KETEK SDD and AXAS-D Systems
- Supercomputer (48 core)
- Refrigerator Cooled Cryostat NOK-10-3D
- Langmuir Blodgett Deposition Device, Nima, U.K.
- Modular LB Technology for Deposition of Organic Layers.
- Spectroscopic Ellipsometer Horiba MM-16
- Measuring microscope CZJ
- Brewster Angle Microscope
- Atomic Force Microscope VEECO EDGE
- Schott UV Line 9100 Spectrophotometer
- 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

### II. 3 Special Software

- article Beam Optics Laboratory PBO Lab™ 2. 1

- Transport
- Trace-3D
- Electrostatic Palette
- WinAGILE
- MATLAB R2006A
- SRIM
- MCNP-4C2, MCNP 5, MCNP x 2.7.0
- VISED
- SCALE 4.4a, SCALE 6
- GENIE 2000, LABSOCS 4.2.1
- GoldSim
- CONFIT
- Field Precision - STATIC FIELD ANALYSIS TOOLKIT (TK 0300)
- Visiplan Suite 4.0 3D ALARA planning tool
- CASINO



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

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

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

- Nuclear Physics and Technology  
(1st sem., 2-2 h) J. Lipka, A. Šagátová
- Team Project (EE)  
(1st sem., 0-4 h) V. Slugeň, G. Farkas
- Team Project 1 (AI)  
(1st sem., 0-3 h) K. Vitázek
- Team Project 2 (TLK)  
(2nd sem. 0-4 h) K. Vitázek
- Theory of Nuclear Reactors  
(2nd sem., 2-2 h) J. Haščík
- Material of Nuclear Power Plants  
(2nd sem., 2-2 h) V. Nečas
- Atomic and Molecular Spectroscopy  
(2nd sem., 2-2 h) M. Miglierini
- Experimental Reactor Techniques

(2nd sem., 2-2 h) J. Haščík  
 Dosimetry and Radiation Protection  
 (2nd sem., 2-2 h) R. Hinca  
 Methods of Nuclear Physics  
 (3rd sem., 2-2 h) J. Sitek  
 Accelerator Physics and Technology 1  
 (2nd sem., 2-2 h) M. Pavlovič  
 Accelerator Physics and Technology 2  
 (3rd sem., 2-2 h) M. Pavlovič  
 Operation of Nuclear Power Plants  
 (3rd sem., 2-2 h) V. Slugeň  
 Decommissioning of Nuclear Power Plants  
 (3rd sem., 2-2 h) V. Nečas  
 Safety and Reliability of Power Engineering Installations  
 (4th sem., 2-2 h) V. Slugeň  
 Nuclear electronics  
 (1st sem., 2-1 h) J. Sitek  
 Physics of Processes  
 (1st sem., 3-2 h) P. Bokes  
 Superconductivity and Low Temperature Physics  
 (1st sem., 2-2 h) P. Valko  
 Bioelectronics  
 (1st sem., 2-1 h) J. Círák  
 Principles of Applied Optics  
 (1st sem., 2-2 h) J. Vajda  
 Non-equilibrium Systems and Chaos  
 (1st sem., 3-2 h) P. Ballo  
 Nanotechnology  
 (2nd sem., 2-2) J. Círák  
 Applied Optics  
 (2nd sem., 2-2 h) J. Vajda  
 Computer Physics  
 (2nd sem., 2-2 h) P. Markoš  
 Biomaterials and Biosystems  
 (2nd sem., 2-2 h) J. Círák  
 Physics of Materials I  
 (3rd sem., 3-2 h) P. Dieška, R. Durný

### III. 3 Undergraduate and Graduate Study for Foreign Students in English

Sources of Radiation  
 (6th sem., 2-3 h) M. Miglierini  
 Radiology and Nuclear Medicine  
 (3rd sem., 3-1 h) M. Miglierini

### III. 4 Distance Study

Nuclear Installations  
 (6th sem., 12 h) J. Sitek  
 Safety and Reliability of Power Engineering Installations  
 (4th sem., 12 h) V. Slugeň  
 Physics 1  
 (3rd sem., 24 h) T. Šrámková  
 Physics 2  
 (4th sem., 24 h) T. Šrámková  
 Applied Optics  
 (2nd sem., 12 h) J. Vajda



## IV. RESEARCH PROJECTS

### IV. 1 National Scientific Projects (VEGA, APVV, KEGA)

- 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
- Increase of energy safety in SR, OP Research and Development ITMS: 26220220097, V. Nečas
- Conditional Release of Materials from Decommissioning (CONRELMAT), Incentives MŠ SR N° CD-2009-36909/39460-1:11, V. Nečas
- 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
- Hyperfine Interactions in Fe-Based Amorphous and Nanocrystalline Alloys, VEGA 1/0033/10, M. Miglierini
- Study of Charge Transfer in Ordered Organic Molecular Systems, VEGA 1/0879/11, J. Círák
- Advanced Materials – Processes and Structures of Organic Electronics, APVV-0262-10, J. Círák
- Controlling Spin Polarization in Nanostructures Using Electrical Currents, VEGA 1/0452/09, P. Bokes
- National Centre for Research and Application of Renewable Energy Sources, OP Research: – IMTS 26240120016, J. Círák, R. Durný, IMTS 26240120028, J. Círák, R. Durný, P. Markoš
- Nanostructures for Development of Biosensors, APVV-0362-07, J. Círák, R. Durný
- Organic Materials for Photovoltaics and Sensorics, VEGA 1/15722/10, R. Durný
- Inelastic Transport of Electrons through Nanojunctions with Phonons, VEGA 1/0632/10, M. Konôpka
- Electronic and Electromagnetic Waves in Small Systems: Transport properties, VEGA 0633/09, P. Markoš

- Competence Centre for New Materials, Advanced Technologies and Energetics, ERDF, P. Ballo, J. Cirák, Š. Čerba, J. Dekan, M. Miglierini, V. Nečas, M. Pavlovič, M. Pavúk, S. Sojak, A. Šagátová

## IV. 2 International Scientific Projects

- Depth Profiling Radiation Induced Defect Concentration in DEMO Structural Materials Using Pulsed Low Energy Positron System (PLEPS). 7th Framework Project of the European Atomic Energy Community No FU70-Euratom. CU (2007-2011), V. Slugeň
- Training Schemes on Nuclear Safety Culture for Managers (TRASNUSAFE) 7th Framework Project of the European Atomic Energy Community No249674 (2010-2014), V. Slugeň
- Nondestructive of Microstructural Changes in Ion Implanted Model Alloys (SMORE) IAEA Research Project No14991/RO, V. Slugeň
- Irradiation Tests of Magnetic Alloy and Organic Insulator Materials. Bilateral Agreement STU-GSI Darmstadt, M. Pavlovič
- Structural Modification of Amorphous and Nanocrystalline Fe-Based Alloys. Bilateral Project SK-PL-0013-09, M. Miglierini
- European Union Japan Cooperation, EUJEP 2010-2013, J. Haščík
- ENEN Cooperation with Russian in Nuclear Education, Training and Knowledge Management, J. Haščík
- Proton Implantation for Research Purposes at the JRC-IE, Petten, EC-Project B108510, JRC-IE, Petten, V. Slugeň
- Positron Annihilation Study of Reactor Materials, Project GP01/1011014702 with AREVA
- NP, GmbH, V. Slugeň
- Nanoalloys as Advanced Materials: From Structure to Properties and Applications (Nanoalloy)
- Cost Action MP 0903, M. Miglierini
- Comenius University, Bratislava, School of Medicine
- Comenius University, Bratislava, Faculty of Mathematics, Physics and Informatics
- Comenius University, Bratislava, Faculty of Pharmacy
- Comenius University, Bratislava,
- Comenius University, Bratislava, Faculty of Natural Science
- Slovak Academy of Sciences, Bratislava, Geological Institute,
- Slovak Academy of Sciences, Bratislava, Institute of Electrical Engineering
- Slovak Academy of Sciences, Bratislava, 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 Materials and Machine Mechanics
- Slovak Academy of Sciences, Bratislava, Institute of Polymers
- Slovak Academy of Sciences, Košice, Institute of Experimental Physics
- Institute of Preventive and Clinical Medicine, Bratislava
- International Laser Centre, Bratislava
- University of P. J. Šafarik, Institute of Physical Sciences, Košice
- VUJE a.s., Trnava
- Nuclear Regulatory Authority of the Slovak Republic, Bratislava
- Relko Ltd., Bratislava
- Slovak Electric Ltd., (SE a.s.), Bratislava
- Nuclear Decommissioning Company, plc., (JAVYS), Bratislava
- Slovak Electric Ltd., Mochovce Nuclear Power Plant, SE a.s., Mochovce
- Slovak Electric Ltd., Bohunice Nuclear Power Plant, SE a.s., 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
- Faculty of Chemical and Food Technology, STU, Bratislava
- Faculty of Informatics and Information Technologies, STU, Bratislava
- Faculty of Mechanical Engineering, STU, Bratislava
- University of Trnava, Trnava
- Technical University of Košice, Faculty of Electrical Engineering and Information Technology, Košice
- Slovak Legal Metrology Institute, Banská Bystrica
- University of Žilina, Faculty of Electrical Engineering, Žilina



## V. COOPERATION

### V. 1 Cooperation in Slovakia

- DECOM a.s., Trnava
- DECONTA a.s., Trnava

## V. 2 International Cooperation

- All-Russian Scientific Institute of Experimental Physics, Theoretical Physics Department, Sarov, Russia
- Atominstytut 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, CR
- 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 Werkstofforschung, 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, CR
- Universität der Bundeswehr, München, Germany
- University of Gent, Belgium
- Palacky University, Olomouc, Czech Republic
- Institute of Experimental and Applied Physics, Czech Technical University in Prague, CR
- Institute of Inorganic Chemistry, Academy of Sciences of Czech Republic, Řež, CR
- University of Applied Sciences, Wiener Neustadt, A-2700, Austria
- Aalto University School of Science and Technology, Finland
- Wrocław University of Technology, Wrocław, Poland
- CENTRALSYNC (Inst. Of Physic, AVČR, Prague, CR, Hungarian Academy of Sciences, Budapest, Hungary)
- Tomáš Baťa University, Zlín, CR
- Institute of Macromolecular Chemistry, AVČR, Prague, CR
- Natural Science Faculty, Charles University, Prague, CR
- University of West Bohemia, Plzeň, CR
- VŠB-TU, Ostrava, CR
- FORTH Heraklion, Greece

- Tokyo Institute of Technology, Tokyo, Japan
- Fukuoka University, Fukuoka, Japan
- University of York, U.K.
- Universitat Politècnica de Catalunya, Barcelona, Spain
- Centro de Física Nuclear, Lisbon, Portugal
- PTB Braunschweig, 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
- UF Gainesville, USA

## V. 3 Contract-based Business Activities

- J. Haščík: 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, R. Hincá, J. Lipka, V. Nečas, V. Slugeň: Post-gradual Requalification Training Course: Safety aspects of nuclear installations operation. Contract with SE, a. s.
- J. Haščík, J. Degmová, R. Hincá, M. Miglierini, V. Nečas, V. Slugeň: Post-gradual Requalification Training Course: Decommissioning of NPP. Contract with JAVYS, a. s.
- M. Pavlovič: Distant Teaching of Radiation and Nuclear Physics at the University of Applied Sciences Wiener Neustadt, Austria
- V. Slugeň, J. Haščík, J. Degmová, K. Vitázek, R. Hincá, G. Farkas, M. Petriska, J. Dekan, M. Stacho, S. Sojak, J. Veterníková: Radiation Degradation Assessment of NPP Materials, Contract with SE a. s.
- M. Pavlovič: Distant Teaching of Accelerator Technology at the University of Applied Sciences, Wiener Neustadt, Austria
- J. Haščík, G. Farkas, R. Hincá, J. Lüleý, M. Petriska, V. Slugeň, B. Vrban: Subcriticality Analyses of Spent Fuel Storage Pool Loading by Fresh and Irradiated Gd 4,87 type Assemblies in SE a.s. EMO
- J. Haščík, G. Farkas, R. Hincá, J. Lüleý, M. Petriska, V. Slugeň, B. Vrban: Verifying the Value of Thermal Reactivity Coefficients in the First Fuel Load into Reactor Core at MO 34 Units Using Calculation Code MCNP 5, SE a.s.

## VI. THESES

### VI. 1 Master theses

Master theses supervised at the Institute of Nuclear and Physical Engineering. The names of supervisors are in brackets.

- [1] F. J. García Melero: Impact of bombardment upon structure and hyperfine parameters of VITROPERM alloys (M. Miglierini)
- [2] P. Fedorek: Design of a CVD-detector system

for monitoring of high-energy charged particle beams ( M. Pavlovič)

- [3] D. Gaži: Determination of spatial weighing factors of chosen ex-core detector for reactors VVER-440 by Monte Carlo method (G. Farkas, J. Haščík)
- [4] M. Pisár: Radiation protection of employees in nuclear power engineering (R. Hinca)
- [5] F. Polakovič: Determination of residual heat in spent nuclear fuel Gd-II (V. Nečas, V. Chrapčiak)
- [6] L. Tóth: Radiation monitoring on nuclear power plants (R. Hinca)
- [7] Š. Motyčák: Numerical simulation of SQUID. (P. Valko)

## VI. 2 PhD. Theses

- [1] S. Sojak: Radiation degradation study of fusion reactor materials (V. Slugeň)
- [2] M. Zachar: Development of methodology improving the effectiveness of calculation assessment of materials management process within the nuclear installation decommissioning (V. Nečas)
- [3] J. Röschlová: Physical properties of nanoparticle systems prepared by LB-deposition. (J. Cirák)



Economics, Budapest, Hungary

- Students Practical Exercises at the Training Reactor of the Czech Technical University in Prague, Czech Republic
- Organization of French-Slovak Seminary “Nuclear Safety”, Demänová, 7-10 February 2011
- Organization of French-Slovak Summer School “Fusion and Materials for Nuclear Energy”, Kočovce, 12-16 September 2011
- Contribution to the “8th International Conference Secure Energy Supply 2011”, Bratislava, 22-23 September 2011
- Organization of “Winter School of Synchrotron radiation”, WSSR 2011, Liptovský Ján, 31. 1.- 4 2. 2011
- Public Lesson: Fukushima accident, FEI STU 21.3. 2011 (V. Slugeň)
- Public Lessons for physics popularization (J. Krempaský, V. Slugeň, M. Pavlovič)
- Organisation of Technical Tour “Cernobyl after 25 years”
- Contribution to organisation of technical exposition and measurement of radiation of human body at festival POHODA 2011 in Trenčín
- Organizing and Program Committee. The 17th international conference - Applied Physics of Condensed Matter, APCOM 2011, Nový Smokovec, 22. – 24. June 2011 (P. Ballo, J. Vajda, M. Weis)
- Public Lecture: Ionizing Radiation – Threat or Assistant? (M. Miglierini)
- Organizing the 2nd International scientific conference: Renewable energy sources. Tatranské Matliare, May 2011 (J. Cirák – conference chairman)
- Beamline coordinator in European theoretical spectroscopy facility (P. Bokes)
- Club of physicists (J. Cirák)
- Organizing the conference - Open source software in education, research and IT solutions, 6 – 9 July 2011, University of Žilina (T. Šrámková)
- Co-director: Conf. Metamaterials VI, (SPIE Congress) 20.-21. April 2011, Prague (P. Markoš)

## VII. OTHER ACTIVITIES

- Organization of the Postgraduate Study “Nuclear Installation Operation Safety Aspects” for participants from different organizations. Organised for SE, a. s.
- Organisation of the Postgraduate Study “Decommissioning of Nuclear Power Plants” for participants from different organizations. Organised for JAVYS 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





## VIII. MEMBERSHIP IN INSTITUTIONS/ COMMITTEES

### VIII. 1 Membership in National Institutions/Committees

- Slovak National Nuclear Found (V. Slugeň, vice-chairman)
- Slovak Nuclear Society (V. Slugeň - chairman, J. Degmová, J. Haščík, R. Hinca, G. Farkas, K. Vitázek, J. Lipka, M. Miglierini, V. Nečas, M. Petriska, J. Sitek, A. Šagátová, M. Seberíni, M. Pavlovič, M. Stacho, S. Sojak, J. Veterníková, V. Sabelová)
- State Examination Committee for the Verification of Operating Staff of Nuclear Installations Specific Abilities (J. Haščík, V. Slugeň)
- Scientific Council of SUT (V. Slugeň)
- Scientific Council of FEI SUT (V. Nečas, V. Slugeň, J. Cirák, P. Ballo)
- Board of editors, Journal of Electrical Engineering (P. Ballo)
- 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)
- Coordination Board for Cooperation with JINR Dubna (V. Nečas)
- Scientific Council of Slovak Institute of Metrology (J. Lipka, V. Nečas)
- Slovak Nuclear Forum (J. Lipka – vice-president)
- Slovak Physical Society (M. Miglierini, V. Nečas, J. Sitek, M. Pavlovič)
- Slovak Spectroscopic Society (M. Miglierini - president, J. Sitek, member)
- 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, CR (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)
- European Nuclear Council (V. Slugeň)
- European Human Resources Observatory in Nuclear, member of senior advisory group (V. Slugeň)
- European Nuclear Energy Forum – member of WG Risks (V. Slugeň)
- International Committee of American Nuclear Society - board member (V. Slugeň)
- American Physical Society (J. Cirák)
- Europhysical Society (P. Ballo, P. Bokes, J. Cirák, 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)

### VIII. 2 Membership in International Institutions/Committees

- European Nuclear Society (V. Slugeň, President)
- EC Sustainable Nuclear Energy Technology Platform, board member (V. Slugeň)

## IX. PUBLICATIONS

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### IX. 3 Books

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