

DEPARTMENT OF ELECTROMAGNETIC THEORY

<http://iris.elf.stuba.sk>

Head of Department

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I. STAFF

Professors	Prof. Ing. Jozef Jasenek, PhD., Prof. Ing. Jozef Sláma, PhD.
Associate Professors	Doc. Ing. Ivan Bojina, PhD., Doc. Ing. Jan Bydžovský, 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. Rastislav Dosoudil, PhD., Ing. Jaroslav Franek, PhD., Ing. Mojmír Kollár, PhD., Ing. Pavol Krivošík, PhD.
Senior Scientists	Doc. Ing. Pavel Kaboš, DrSc., Ing. Marian Štofka, PhD.
Research Workers	Ing. Vladimír Olah, Ing. Marianna Ušáková, Ing. Jozef Paľa
Technical Staff	Marta Jančovičová (secretary), Mária Brunovská, Milan Brunovský, Alojz Vďačný
PhD Students	Ing. Marek Hlaváč

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 analyzer 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 μ T - 10 T at DC, up to 1 kHz AC

- Lock-in-amplifier DSP SR 850 2nV to 1V
- VHS Video-Cassette Drop-Out Measuring Apparatus
- High Coercivity Measuring Apparatus
- PC Controlled AC Permeameter
- Automated System for Magnetic Susceptibility Temperature Dependence Measurement
- Universal Counter HP53132A up to 12.4 GHz
- Vibrator DERRITRON SC-3000 – mechanical resistency testing equipment
- RF Impedance/Material Analyzer HP4191 A 1 MHz-1 GHz, 1 mOhm - 100 kOhm, APC-7 coaxial (50 Ohm) input, GP-IB standard; spot, linear and logarithmic frequency sweep.
- HP4192A LF Gain Phase - Impedance Analyser, 5 Hz - 13 MHz, 0.1 mOhm - 1 MOhm, GPIB.

III. TEACHING

III.1 Undergraduate Study (Bc.)

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

Electric Circuits I	(2nd+3rd sem., 3-2h)	V. Jančárik, I. Bojna
Electrotechnology I	(2nd+3rd sem., 3-2h)	E. Šumichrast, M. Kollár
Electrotechnology	(2nd+3rd sem., 3-2h)	J. Jasenek
Electrotechnology	(FIIT 2nd sem., 3-2h)	V. Jančárik
Theory of Electricity I	(2nd+3rd sem., 3-2h)	P. Jahn
Electric Circuits II	(3rd+4th sem., 3-3h)	J. Bydžovský, E. Ušák
Electrotechnology II	(2nd+3rd sem., 3-2h)	E. Šumichrast
Theory of Electricity II	(2nd+3rd sem., 3-2h)	P. Jahn
Theory of Electricity III	(2nd+3rd sem., 3-2h)	I. Bojna
Electromagnetic Field	(4th+5th sem., 3-2h)	J. Sláma
Electromagnetic Field and Waves	(4th+5th sem., 3-2h)	E. Šumichrast, J. Červeňová
Electronics	(FIIT 3rd sem., 3-2h)	V. Jančárik
Safety of Electric Equipment	(8th sem., 2-1h)	I. Bojna

III.2 Graduate Study (Ing.)

Magnetism	(1st sem., 2-2h)	E. Ušák
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III.3 Undergraduate and Graduate Study for Foreign Students (in English Language)

Electric Circuits I	(2nd sem., 2-2h)	E. Ušák
Electric Circuits II	(3rd sem., 4-2h)	V. Jančárik
Electromagnetic Fields	(4th sem., 3-1h)	E. Šumichrast

IV. RESEARCH PROJECTS

- Optical polarization reflectometry and optical fibre sensors. 1/3097/06, J. Jasenek, E. Šumichrast
- Methods and algorithms for computer simulation of high-frequency electromagnetic fields. G/1056/04, E. Šumichrast, M. Kollár
- Research of magnetic materials for electrotechnology, electronics, recording media and applications connected with electromagnetic compatibility. G 1/3096/06, J. Sláma, A. Grusková
- Magneto-structural properties of metallic materials, development of new analysis methods with aim of their utilisation in non-invasive testing, G 1/3116/06, J. Bydžovský, E. Ušák
- Superconductors in environment of power electrical equipment. APVV-51-45605-1 (project in co-operation with Slovak Academy of Sciences), E. Šumichrast
- Novel multiphase nanostructured materials with extraordinary physical properties. APVT-54-052702 (project in co-operation with Slovak Academy of Sciences), J. Bydžovský
- Research and development of electrical application of nanocrystalline and amorphous materials. APVT - 99 - 017904 (project in co-operation with EVPU a.s. Nová Dubnica), J. Bydžovský
- Universal Network for Magnetic Non-destructive Evaluation. International project, J. Bydžovský

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

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

V.2 International Cooperation

- School of Physics and Electronic Systems Engineering, University of South Australia, Pooraka
- TU Budapest, Hungary
- Doshisa University, Japan
- Nuclear Engineering Research Laboratory, University of Tokyo, Japan
- Department of Physics Colorado State University Fort Collins, USA
- Istituto Elettrotecnico Nazionale Galileo Ferraris, Torino, Italy
- TU Kaiserslautern, Germany
- TU Darmstadt, Institut für Hochfrequenztechnik, Germany
- TU Ilmenau, Germany
- TU Vienna, Austria
- Cardiff University, Wolfson Centre for Magnetic Technology, United Kingdom
- VEV Elektrotechnisch Vakondernus Nijkjerck, The Netherlands
- TU of Czenstochowa, Poland
- Warsaw University of Technology, Poland
- 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

- CINEVESTAV, Saltillo, Mexico
- Research Institute for Technical Physics and Materials Science, Hungarian Academy of Sciences, Budapest, Hungary

V.3 Membership in International Organizations and Societies

- J. Jasenek: 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)
- M. Kollár: IEE Slovak Centre
- J. Sláma: IEE Slovak Centre, SAES, European Physical Society
- L. Šumichrast: IEEE, IEE Slovak Centre, European Physical Society, URSI (President of Slovak National Committee), Optical Society of America, European Physical Society

VI. THESES

VI.1 Masters Theses

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

- [1] M. Šoka: A simple microwave probe for surface nondestructive testing (M. Kollár)
- [2] J. Kertész : Automated system to demagnetize ferromagnetic samples (V. Jančárik)

VII. OTHER ACTIVITIES

- Magnetic Measurement 06, Bratislava, International Program Committee (J. Bydžovský, V. Jančárik, M. Kollár, J. Sláma, E. Ušák), Local Organizing Committee (R. Dosoudil, V. Olah, J. Paľa, M. Ušáková)
- Presidentship of Slovak Committee of URSI and membership of International (L. Šumichrast)
- Membership in Evaluation Commission for Professorship in Electrical Engineering, at Czech Technical University Prague and Technical University Brno, Czech Republic (J. Sláma)
- Membership in Slovak Expertise Commission for Electromagnetic Theory, (I. Bojna, J. Bydžovský, J. Jasenek, J. Sláma, L. Šumichrast)
- Head of Commission for Degree Philosophy Doctor in Electromagnetic Theory (J. Jasenek)
- 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 Science in Electromagnetic Theory (J. Sláma)
- Membership in Slovak Academy of Engineering Sciences and Guarantor for Electrical Engineering (J. Sláma)
- Membership in Headquarters of the Slovak Association of Electrical Engineers, SEZ (I. Bojna)
- Membership in Committee of President of Institute for Standardization Metrology and Testing, for Government Policy and Approximation in Technical Standardization (I. Bojna)
- Expert No. 256 for Branch of Metrology at the Institute of Normalization, Measurement and Standards (ÚNMS) of Slovak Republic (J. Bydžovský)
- Slovak Institute of Technical Normalization (SUTN) of Slovak Republic membership in Technical Committee (I. Bojna)
- Cooperation with Encyclopaedic Institute of Slovak Academy of Sciences - Encyclopaedia Beliana, (J. Sláma, P. Jahn, J. Franek)
- Membership in the Slovak Ministry Working Group for the implementation of the European Qualification Framework in Slovakia

- Head of Editorial Board of Journal: EE - Elektrotechnika a energetika (I. Bojna)
- Executive Editor of Journal of Electrical Engineering - Elektrotechnický časopis (M. Kollár)
- Editorial Board of Special Issue of Journal of Electrical Engineering No 8/S, Vol. 57 (Proceedings of the Magnetic Measurements 06 Conference), R. Dosoudil, V. Olah, J. Pařa, J. Slama, V. Jančarik, E. Uřák.

VIII. PUBLICATIONS

VIII.1 Journals

VIII.2 Conferences

VIII.3 Textbooks