

DEPARTMENT OF MEASUREMENT

<http://www.kmer.elf.stuba.sk>

Head of Department

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I. STAFF

Professors	Prof. Ing. Viktor Smieško, PhD., Prof. Ing. Július Bajcsy, PhD., professor emeritus
Associate Professors	Doc. Ing. Karol Kováč, PhD., Doc. Ing. Peter Kukuča, PhD., Doc. Ing. Rudolf Ravas, PhD., Doc. Ing. Livia Syrová, PhD.
Assistant Professors	Ing. Mikuláš Bittera, PhD., Ing. Oľga Čičáková, Miroslav Kamenský, Ing. Eva Králiková, Ing. Iveta Ondrášová, PhD.
Senior Scientists	Mgr. Ján Grman, Ing. Jozef Hallon, Ing. Anton Krammer, Ing. Imrich Szolik, Ing. Rudolf Zubaľ
Technical Staff	Ružena Nagyová (secretary)
PhD. Students	Ing. Lucia Noskovičová

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 500 MHz 2 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 - 1000 MHz (ESVP, ESH3, ESHS10 and ESVS10)
- Measuring Antenna Set (BiConLog, Log. periodic, Biconical, Active Rod and Active Loop)

- Antennas)
- Line Interference Simulator Set - Schaffner NSG 200
 - Schaffner BEST 96 - Burst, Surge and Power Drop-out Simulator
 - EM TEST VCS 500 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
 - RF Power Amplifier 50 W 20 – 1000 MHz
 - Programmable AC Power Supply Chroma 61503 1500 VA Low Distortion
 - Agilent ENA RF Network Analyzer E5071C 9 kHz – 3 GHz
 - 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 and Technical Documentation	(1st sem., 2-2h)	R. Ravas
Measuring Information Systems	(4th sem., 2-2h)	L. Syrová
Measurement	(4th sem., 2-3h)	P. Kukuča
Measurement	(6th sem., 2-2h)	P. Kukuča
Measurement of Electrical Quantities	(6th sem., 2-2h)	L. Syrová
Computer Control of Experiments	(6th sem., 2-2h)	V. Smieško
Automated Instrumentation	(7th sem., 2-3h)	V. Smieško
Microprocessor Engineering	(6th sem., 2-2h)	R. Ravas
Microprocessor Engineering	(8th sem., 3-2h)	R. Ravas
Metrology and Testing	(8th sem., 2-2h)	P. Kukuča
Technical Diagnostics	(6th sem., 3-2h)	K. Kováč
Technical Diagnostics	(8th sem., 3-2h)	K. Kováč
Fundamentals of Visual Systems	(8th sem., 2-2h)	R. Ravas
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	(1st sem., 2-3h)	R. Ravas
Telemetry and Information Transmission	(1st sem., 3-2h)	P. Kukuča

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

III.3 Distance Study (Bc.)

Computer Architecture	(3rd sem.)	R. Ravas
Measurement Technology	(6th sem.)	V. Smieško
Introduction to Measurement	(4th sem.)	L. Syrová
Measuring Information Systems	(6th sem.)	L. Syrová

III.4 Distance Study (Ing.)

Methods and Tools of Artificial Intelligence	(1st sem.)	R. Ravas
Methodology of Measurement	(7th sem.)	L. Syrová
Automated Instrumentation	(9th sem.)	V. Smieško
Metrology and Testing	(10th sem.)	P. Kukuča
Fundamentals of Visual Systems	(10th sem.)	R. Ravas

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

Electrical Measurement	(3rd sem.)	V. Smieško
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
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IV. RESEARCH PROJECTS

- Alternative Methods for Assessment of Electromagnetic Compatibility (EMC) of Electronics Systems. VEGA, 1/3101/06, V. Smieško
- Modern Methods of Technical Diagnostics. VEGA, 1/3099/06, R. Ravas
- 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
- Research and Development of Technical Equipment of Electromagnetic Compatibility (EMC) for Electronic Devices with Semiconductor Converters used in Railway Transport. APVV-99-028105, K. Kováč

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
- Východoslovenská energetika jsc, Košice

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, Geneva, Switzerland
- Institute of Logistics and Warehousing (ILIM), Poznań, Poland
- Austrian Research Centre, Seibersdorf, Austria

V.3 Membership in International Organizations and Societies

- V. Smieško: The European Academy of Sciences and Arts
- V. Smieško: IEEE - The Institute of Electrical and Electronics Engineers
- V. Smieško: IEE - The Institution of Electrical Engineers, Fellow
- V. Smieško: The International Information Academy
- P. Kukuča: IEE - The Institution of Electrical Engineers
- V. Smieško: URSI – Scientific Commission for Electromagnetic Noise and Interference

V.4 International Scientific Projects

- JPD BA Goal 3-2004-SORO-4, MERTECH, ESF, 2005-2008, V. Smieško

V.5 Contracts

- K. Kováč, V. Smieško, M. Bittera: Development of Fundamental Analysis of Database Creation of Constructive Materials from the Point of View of Shielding Effectiveness. Contract with National Security Authority, Bratislava
- V. Smieško et al.: Development of Power Industry Company Standard „Protection against the Accident Caused by the Current in Transfer and Distributive System“. Contract with ZSE, jsc, Bratislava, SEPS, jsc., Bratislava
- K. Kováč et al.: EMC Testing and Consultancy. Contracts for Small and Medium Enterprises.

VI. THESES

VI.1 Masters Theses

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

- [1] S. Behúl: Textures and Surfaces. (J. Grman)
- [2] P. Čomaj: Transform of the Raster Images into DFF Format. (L. Syrová)
- [3] M. Földi: Interactive Creation of the 3-d Scene Model. (R. Ravas)
- [4] B. Gaal: Segmentation of the Grayscale Image. (R. Ravas)
- [5] T. Gramblička: System of Testing of the Immunity against Electromagnetic Interferences. (E. Králiková)
- [6] J. Karasz: System Electronic Watt-hour meter. (P. Kukuča)
- [7] P. Kriška: 3-D Reconstruction by the Stereopsis. (R. Ravas)
- [8] M. Poliak: Design of Virtual Sensor. (K. Kováč)
- [9] J. Repák: Reconstruction of the Shape from the Sequence of Images. (R. Ravas)
- [10] J. Sehnal: Digital Measuring of Signal Characteristics. (E. Králiková)
- [11] Š. Slavkovský: Recognition of the Shapes in the Image. (J. Grman)

VI.2 Doctoral Theses

- [1] M. Bittera: Some Aspects of Radiated Emission Measurement. (V. Smieško)
- [2] J. Uhrín: Contribution to Analysis of Time Difference Hyperbolic Method of Coordinates Measurement. (R. Ravas)

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 in the 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)
- Chairman of Scientific and Technology Council of the Council of Universities of Slovak Republic (V. Smieško)
- Membership in the Slovak Electrotechnical Committee (P. Kukuča)
- Membership in the Scientific Council of the Slovak Institute of Metrology (P. Kukuča, V. Smieško)
- Membership in the Slovak National Technical Committees (K. Kováč, P. Kukuča)
- Membership in the Technical Subcommittees of IMEKO (TC1 - J. Bajcsy)
- Participation in the Program Committees of Conferences:
- 6th International Conference supported by IMEKO TC-7 MEASUREMENT 2007 (V. Smieško)
- Electrical Engineering and Information Technology 2007, Trenčín (V. Smieško)
- International Conference Applied Electronics 2007, 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)
 - Acta Electrotechnica et Informatica (V. Smieško)

- Auditor of Slovak National Accreditation Service (J. Bajcsy, K. Kováč, M. Bittera, J. Hallon)
- Courses for Practical Engineers:
- EMC for Electronic Equipment Designers, May 2007

VIII. PUBLICATIONS

VIII.1 Journals

- [1] BITTERA, M., SMIEŠKO, V., KOVÁČ, K.: Effect of Bundled Power Cable on Radiated Emission Measurement. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 7, Section 3, No. 3 (2007), p. 33-36. (in English)
- [2] BITTERA, M., KOVÁČ, K., HALLON, J.: Measurement of Semi-Anechoic Chamber Using Modified VSWR Method above 1GHz. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 7, Section 3, No. 3 (2007), p. 42-46. (in English)
- [3] KAMENSKÝ, M., KOVÁČ, K., KRÁLIKOVÁ, E., KRAMMER, A.: Evaluation of Measurement Performance in Averaging Quantization System with Noise. In: Radioengineering. - ISSN 1210-2512. - Vol. 16, No. 4 (2007), p. 114-119. (in English)
- [4] KAMENSKÝ, M., KOVÁČ, K.: Iterative Method and Averaging for Measurement Error Correction. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 7, Section 3, No. 3 (2007), p. 35-38. (in English)
- [5] KOVÁČ, K., SMIEŠKO, V.: Laboratory of Electromagnetic Compatibility at FEI STU in Bratislava. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 13, No. 5 (2007), p. 23-24. (in Slovak)
- [6] SYROVÁ, L., RAVAS, R., GRMAN, J.: The Use of Schlieren Visualization Method in the Diagnostics of Optically Transparent Polymeric Foils. In: Journal of Electrical Engineering. - ISSN 1335-3632. - Vol. 58, No. 5 (2007), p. 257-263. (in English)

VIII.2 Conference Proceedings

- [1] BITTERA, M.: Connecting Cable in EMI Measurements. In: Mechatronics 2007: 10th International Symposium. Trenčianske Teplice, Slovak Republic, 6.-8.6.2007. - Trenčín: Univerzita Alexandra Dubčeka, 2007. - ISBN 978-80-8075-210-1. - p. 117-120. (in English)
- [2] BITTERA, M., KOVÁČ, K., SMIEŠKO, V.: Factors Influence the Quality of EMI Test Sites. In: ISEF'2007: International Symposium on Electromagnetic Fields in Mechatronics, Electrical and Electronic Engineering. Prague, Czech Republic, 13.-15.9.2007. - Prague: Czech Technical University, 2007. - CD-Rom. (in English)
- [3] BITTERA, M., SMIEŠKO, V., KOVÁČ, K.: Influence of Power Cable Arrangement to EMI Measurement. In: Measurement 2007. 6th International Conference. Smolenice, Slovak Republic, 20.-24.5.2007. - Bratislava: Institute of Measurement Science Slovak Academy of Sciences, 2007. - ISBN 978-80-969672-0-9. - p. 221-224. (in English)
- [4] BITTERA, M., SMIEŠKO, V., KOVÁČ, K.: Interference Cable Effect to EMI Measurement Results. In: Mediterranean Microwave Symposium: Proceedings Book. Budapest, Hungary, 14.-16.5.2007. - Budapest: Diamond Congress Ltd., 2007. - ISBN 978-963-87244-4-1. - p. 159-162. (in English)
- [5] BITTERA, M., KOVÁČ, K., HALLON, J.: Verification Measurement of Ferrite-Lined Chamber above 1 GHz. In: Measurement 2007. 6th International Conference. Smolenice, Slovak Republic, 20.-24.5.2007. - Bratislava: Institute of Measurement Science Slovak Academy of Sciences, 2007. - ISBN 978-80-969672-0-9. - p. 185-188. (in English)

- [6] ČIČÁKOVÁ, O., KUBÍK, M., ONDRÁŠOVÁ, I.: Remote Communication with Measurement Workplaces. In: ICETA 2007: 5th International Conference on Emerging e-Learning Technologies and Applications. Stará Lesná, Slovak Republic, 6.-8.9.2007. - Košice: Elfa, 2007. - ISBN 978-80-8086-061-5. - p. 213-216. (in English)
- [7] ČOMAJ, P., SYROVÁ, L.: Vectorization of Raster Images. In: ŠVOČ 2007. Bratislava, Slovak Republic, 25.4.2007. - Bratislava: STU, 2007. - ISBN 978-80-227-2650-4. - CD-Rom. (in Slovak)
- [8] FÖLDI, M., RAVAS, R.: Modelling of 3D Scene. In: ŠVOČ 2007. Bratislava, Slovak Republic, 25.4.2007. - Bratislava: STU, 2007. - ISBN 978-80-227-2650-4. - CD-Rom. (in Slovak)
- [9] GRMAN, J., RAVAS, R., SYROVÁ, L.: Contribution to the Classification Algorithm in the Defectoscopy by Eddy-Currents. In: Measurement 2007. 6th International Conference. Smolenice, Slovak Republic, 20.-24.5.2007. - Bratislava: Institute of Measurement Science Slovak Academy of Sciences, 2007. - ISBN 978-80-969672-0-9. - p. 229-232. (in English)
- [10] GRMAN, J., RAVAS, R., SYROVÁ, L.: Selected Problems of Localization Algorithm Using Wavelets in the Multifrequency Defectoscopy by Eddy-Current. In: Annals of DAAAM for 2007 & Proceedings: 18th International DAAAM Symposium "Intelligent Manufacturing & Automation" Zadar, Croatia, 24.-27.10.2007. - Vienna: DAAAM International, 2007. - ISBN 3-901509-58-5. - p. 305-306. (in English)
- [11] GRMAN, J., RAVAS, R., SYROVÁ, L.: The Role of Wavelet Analysis in the Nondestructive Defectoscopy by Eddy-Current. In: Radioelectronics 2007: 17th International Conference. Brno, Czech Republic, 24.-25.4.2007. - Brno: VUT, 2007. - ISBN 978-80-214-3390-8. - p. 471-473. (in English)
- [12] HALLON, J., KOVÁČ, K., BITTERA, M.: Alternative Method of Immunity Measurements against Electromagnetic Field of Large Systems in Term of EMC. In: Mechatronics 2007: 10th International Symposium. Trenčianske Teplice, Slovakia, 6.-8.6.2007. - Trenčín: Univerzita Alexandra Dubčeka, 2007. - ISBN 978-80-8075-210-1. - p. 123-126. (in English)
- [13] HALLON, J., KOVÁČ, K., BITTERA, M.: Reproducibility of Immunity EMC Measurements. In: Measurement 2007. 6th International Conference. Smolenice, Slovak Republic, 20.-24.5.2007. - Bratislava: Institute of Measurement Science Slovak Academy of Sciences, 2007. - ISBN 978-80-969672-0-9. - p. 233-236. (in English)
- [14] KAMENSKÝ, M., KOVÁČ, K., ŠTURCEL, J.: Iterative Method for Sensor Error Correction. In: Mechatronics 2007: 10th International Symposium. Trenčianske Teplice, Slovakia, 6.-8.6.2007. - Trenčín: Univerzita Alexandra Dubčeka, 2007. - ISBN 978-80-8075-210-1. - p. 213-217. (in English)
- [15] KAMENSKÝ, M., KOVÁČ, K.: Measurement Error Correction Using Iterative Method and Oversampling. In: Measurement 2007. 6th International Conference. Smolenice, Slovak Republic, 20.-24.5.2007. - Bratislava: Institute of Measurement Science Slovak Academy of Sciences, 2007. - ISBN 978-80-969672-0-9. - p. 38-41. (in English)
- [16] KARASZ, J., KUKUČA, P.: Design of the Measurement Module MM485U2. In: ŠVOČ 2007. Bratislava, Slovak Republic, 25.4.2007. - Bratislava: STU, 2007. - ISBN 978-80-227-2650-4. - CD-Rom. (in English)
- [17] KRÁLIKOVÁ, E., KAMENSKÝ, M., ONDRÁŠOVÁ, I.: Interactive www Course "Measurements in Informatics". In: Virtual University VU '07: 8th International Conference.

- Bratislava, Slovak Republic, 13.-14.12.2007. - Bratislava: STU, 2007. - ISBN 978-80-89316-09-0. - p. 150-153. (in English)
- [18] NOSKOVIČOVÁ, L., RAVAS, R.: Image Preprocessing for Image Vectorization. In: IKWCIT 2007: 6th International Ph.D. Student's Workshop on Control and Information Technology. - Ostrava: VŠB - TU, 2007. - p. 151-154. (in English)
- [19] NOSKOVIČOVÁ, L., RAVAS, R.: Vectorization of Binary Images. In: Annals of DAAAM for 2007 & Proceedings: 18th International DAAAM Symposium "Intelligent Manufacturing & Automation" Zadar, Croatia, 24.-27.10.2007. - Vienna: DAAAM International, 2007. - ISBN 3-901509-58-5. - p. 513-514. (in English)
- [20] RAVAS, R., SYROVÁ, L., GRMAN, J.: Scene Reconstruction with Single Camera. In: Measurement 2007. 6th International Conference. Smolenice, Slovak Republic, 20.-24.5.2007. - Bratislava: Institute of Measurement Science Slovak Academy of Sciences, 2007. - ISBN 978-80-969672-0-9. - p. 271-274. (in English)
- [21] SYROVÁ, L., RAVAS, R., GRMAN, J.: Comparison between Statistical and Frequency Approach to Classification of Visualized Transparent Polymeric Foils. In: Radioelectronics 2007: 17th International Conference. Brno, Czech Republic, 24.-25.4.2007. - Brno: VUT, 2007. - ISBN 978-80-214-3390-8. - p. 547-550. (in English)
- [22] SYROVÁ, L., RAVAS, R., GRMAN, J.: The Defectoscopy of Visualized Transparent Polymeric Foils. In: Annals of DAAAM for 2007 & Proceedings: 18th International DAAAM Symposium "Intelligent Manufacturing & Automation" Zadar, Croatia, 24.-27.10.2007. - Vienna: DAAAM International, 2007. - ISBN 3-901509-58-5. - p. 731-732. (in English)

VIII.3 Books

- [1] KUKUČA, P. Telemetry and Information Transmission, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [2] RAVAS, R., CHAMRAZ, Š.: Computer Architecture, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [3] RAVAS, R.: Introduction to Engineering and Technical Documentation, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [4] RAVAS, R., SYROVÁ, L.: Theory of Measuring Systems, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [5] SMIEŠKO, V.: Distributed Measuring Systems, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [6] SMIEŠKO, V.: Measurement Technology, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [7] SYROVÁ, L.: Measuring Information Systems, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)
- [8] SYROVÁ, L.: Methodology of Measurement, Internet-Based Study Materials. - Bratislava: KMER FEI STU, 2007. - www.kmer.elf.stuba.sk. (in Slovak)