

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. Oľga Čičáková, Miroslav Kamenský, Ing. Eva Králiková, Ing. Iveta Ondrášová, PhD.
Senior Scientists	Ing. Mikuláš Bittera, PhD., Mgr. Ján Grman, Ing. Jozef Hallon, Ing. Anton Krammer, Ing. Imrich Szolík
Technical Staff	Ružena Nagyová (secretary)
PhD. Students	Ing. Peter Čomaj, Ing. Miroslav Földi, 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 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 - 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
- Automotive EMC Testing System UCS200N, LD200N, VDS 200N and PFS200
- High Voltage Divider HTS6-1
- Reference Noise Generator CGE 01 up to 18 GHz
- F Network/Spectrum/Impedance Analyzer Agilent 4396B
- MicroWave Switch & Attenuator Agilent L4445A
- Calibration Set for RF Attenuators Agilent
- HF Power Amplifier MILMEGA AS0840 0.8 – 4 GHz 30/17W
- 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
- 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 the lecturer:

Introduction to Engineering	(1st sem., 2-2h)	R. Ravas
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
Diagnostics and Testinng of Automobiles	(6th sem., 2-2h)	K. Kováč
Microprocessor Engineering	(6th sem., 2-2h)	R. Ravas
Microprocessor Engineering	(8th sem., 3-2h)	R. Ravas
Technical Diagnostics	(6th sem., 3-2h)	K. Kováč
Fundamentals of Visual Systems	(8th sem., 2-2h)	R. Ravas
Measurement Technology	(3th 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
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Electromagnetic Compatibility	(1st sem., 3-2h)	K. Kováč
Visual Systems	(1st sem., 2-3h)	R. Ravas
Telemetry and Information Transmission	(3st 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	(3st. sem, 2-3h)	V. Smieško
Digital Image Processing	(1st. sem., 2-3h)	R. Ravas
Diagnostic Systems	(1st. sem., 3-2h)	K. Kováč
Methods and Tools of Artificial Intelligence	(2nd sem, 2-3h)	R. Ravas
Methods and Tools of Artificial Intelligence	(3nd 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	(6th sem.)	L. Syrová
Technical Diagnostics	(8th sem.)	K. Kováč
Metrology and Testing	(8th sem.)	P. Kukuča
Fundamentals of Visual System	(10th sem.)	R. Ravas
III.4 Distance Study (Ing.)		
Methods and Tools of Artificial Intelligence	(2nd sem)	R. Ravas
Electromagnetic Compatibility	(2nd sem.)	K. Kováč
III.5 Undergraduate Study for Foreign Students (in English Language)		
Measurement Technology	(3rd sem.)	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

- 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
- Elektrovod Holding jsc, Bratislava
- LIV ELEKTRA jsc, Bratislava

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

- 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, SSE jsc, Žilina, Elektrovod Holding jsc, Bratislava, LIV ELEKTRA jsc, Bratislava
- V. Smieško, P. Kukuča.: The Analysis of Factors Influencing the Amount of Losses of Transmission System. Contract with 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] Čaprnka, M.: Implementation of the Frame-Relay at the Data Transfer and Remote Measurement. (P. Kukuča)
- [2] Klvač, M.: Image Recognition. (R. Ravas)
- [3] Kukuča, P.: Communication Interfaces of Windows CE Based Device. (P. Kukuča)
- [4] Mojžiš, J.: Presentation Library of Modelling of Real Motion. (J. Grman)
- [5] Sýkora, M.: Design and Realization of the Communication Protokol of USB/CAN Converter. (I. Szolik)
- [6] Šoučík, I.: Detection of Significant Points and Object Reconstruction from the Sequence of Images. (J. Grman)
- [7] Štrba, M.: Recognition of the Shape in the Image. (L. Syrová)
- [8] Vidoman, J.: Colors Detection, Calibration of Devices and Testing of Their Output Quality. (J. Grman)

VI.2 Doctoral Theses

none

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)
- 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:
 - Electrical Engineering and Information Technology 2008, Trenčín (V. Smieško)
 - International Conference Applied Electronics 2008, 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, June 2008

VIII. PUBLICATIONS

VIII.1 Journals

- [1] BENČÍKOVÁ, E., JAMBRICH, M., BALOGHOVÁ, J., RAVAS, R., VNENČÁKOVÁ, J.: Eco-polymer materials froms PP, poly(lactic ACTD) and bamboo fibres. Chemické listy. – ISSN 0009-2770. – Vol. 102 (2008), p. 648. (in English)
- [2] ĎURAČKOVÁ, D., KOVÁČ, K., SMIEŠKO, V.: Comparison of an Analog Behavioral and

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- Transistor Level Model of Operational Amplifier. In: Advances in Electrical and Electronic Engineering. - ISSN 1336-1376. - Vol. 7, No. 1-2 (2008), p. 114-116. (in English)
- [3] FÖLDI, M., RAVAS, R.: Interactive Creation of 3D Model Scene. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 14, Special Issue (2008), p. 165-169. (in Slovak)
- [4] HALLON, J., BITTERA, M., SMIEŠKO, V., KOVÁČ, K.: Cabling Arrangement Influence on Repeatability of Immunity EMC Measurements. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 8, Section 3, No. 4 (2008), p. 98-103. (in English)
- [5] KALUŠ, E., KUKUČA, P.: Measurement of Basic Electrical Quantities - Active Power. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 14, No. 2 (2008), p. 41-44. (in Slovak)
- [6] KALUŠ, E., KUKUČA, P.: Measurement of Basic Electrical Quantities - Voltage and Current. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 14, No. 1 (2008), p. 15-18. (in Slovak)
- [7] KAMENSKÝ, M., KOVÁČ, K.: Iterative Correction of Measurement with Averaging of Dithered Samples. In: Advances in Electrical and Electronic Engineering. - ISSN 1336-1376. - Vol. 7, No. 1-2 (2008), p. 358-361. (in English)
- [8] KAMENSKÝ, M., KOVÁČ, K., KRÁLIKOVÁ, E.: Evaluation of Noise Effect on Averaging Result of ADC. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 14, Special Issue (2008), p. 184-187. (in Slovak)
- [9] KAMENSKÝ, M., KOVÁČ, K.: Accuracy Improvement in Microcomputer Based Measurements. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 14, No. 1 (2008), p. 13-15. (in Slovak)
- [10] ŠUPLATA, M., RAVAS, R.: Human Faces Recognition. In: EE časopis pre elektrotechniku a energetiku. - ISSN 1335-2547. - Vol. 14, Special Issue (2008), p. 176-180. (in Slovak)

VIII.2 Conference Proceedings

- [1] BITTERA, M., KOVÁČ, K., HALLON, J.: Disadvantage of Short Measuring Distance at Radiated EMI Measurement. In: Mechatronika 2008: Proceedings of 11th International Conference on Mechatronics. Trenčianske Teplice, Slovak Republic, 4.-6.6.2008. - Trenčín: Trenčianska univerzita A.Dubčeka, 2008. - ISBN 978-80-8075-305-4. - p. 109-112. (in English)
- [2] BITTERA, M., KOVÁČ, K., SMIEŠKO, V., HALLON, J.: Influence of Directivity Pattern of Bilog Antenna to Radiated EMI Measurement Uncertainty. In: COMITE 2008. 14th Conference on Microwave Techniques: Prague, Czech Republic, 23.-24.4.2008. - Prague: Czechoslovak Section of IEEE, 2008. - ISBN 978-1-4244-2137-4. - p. 199-202. (in English)
- [3] BITTERA, M., SMIEŠKO, V., KOVÁČ, K., HALLON, J.: Interference between Ground Plane and Bilog Antenna and Its Effect on EMI Measurement Uncertainty. In: Proceedings of 2008 Asia Pacific Microwave Conference: Hong Kong, China, 16.-20.12.2008. - Piscataway: IEEE, 2008. - ISBN 978-1-4244-2642-3. - CD-Rom. (in English)
- [4] GRMAN, J., RAVAS, R., SYROVÁ, L.: Advanced Pilgram Noise Elimination Using Wavelets in Defectoscopy by Eddy Current. In: Control of Power Systems '08: 8th International Conference. Štrbské Pleso, Slovak Republic, 11.-13.6.2008. - Bratislava: STU, 2008. - ISBN 978-80-227-2883-6. - CD-Rom. (in English)
- [5] GRMAN, J., SYROVÁ, L.: Alternative Localization of Defects Using Wavelets in the Defectoscopy by Eddy-Current. In: 19th International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Next Generation of Intelligent Systems and Solutions: Trnava, Slovak Republic, 22.-25.10.2008. - Vienna: DAAAM International

- Vienna, 2008. - CD-Rom. (in English)
- [6] GRMAN, J., SYROVÁ, L.: Expert System in the Defectoscopy by Eddy-Currents. In: Process Control 2008: Proceedings of 8th International Scientific-Technical Conference. Kouty nad Desnou, Czech Republic, 9.-12.6. 2008. - Pardubice: University of Pardubice, 2008. - ISBN 978-80-7395-077-4. - CD-Rom. (in English)
- [7] HALLON, J., BITTERA, M., KOVÁČ, K.: Influence of Long Cable Arrangement upon Repeatability of EMC Immunity Tests against Electromagnetic Field. In: COMITE 2008. 14th Conference on Microwave Techniques: Prague, Czech Republic, 23.-24.4.2008. - Prague: Czechoslovak Section of IEEE, 2008. - ISBN 978-1-4244-2137-4. - p. 207-210. (in English)
- [8] HALLON, J., BITTERA, M., KOVÁČ, K.: Influence of Shielded Cable Connecting on Immunity against Electromagnetic Field. In: Mechatronika 2008: Proceedings of 11th International Conference on Mechatronics. Trenčianske Teplice, Slovak Republic, 4.-6.6. 2008. - Trenčín: Trenčianska univerzita A.Dubčeka, 2008. - ISBN 978-80-8075-305-4. - p. 113-117. (in English)
- [9] KANKA, L., SYROVÁ, L.: Method of Image Thresholding. In: ŠVOČ 2008: Year-Book of Winning Contributions.Bratislava, Slovak Republic, 23.4.2008. - Bratislava: STU, 2008. - ISBN 978-80-227-2865-2. - CD-Rom. (in Slovak)
- [10] KOVÁČ, K., HALLON, J., BITTERA, M.: Influence of Non-Destructive Shortening of Long Cables upon Repeatability of EMC Immunity Tests. In: Electromagnetic Compatibility 2008: 19th International Symposium and Exhibition. Wroclaw, Poland, 11.-13.6.2008. - Wroclaw: Oficyna Wydawnicza Politechniki Wroclawskiej, 2008. - ISBN 978-83-7493-392-6. - p. 338-341. (in English)
- [11] KUKUČA, P., KARASZ, J.: Electronic Watt-Hour Meter. In: Applied Electronics 2008: International Conference. Pilsen, Czech Republic, 10.-11.9.2008. - Pilsen: University of West Bohemia, 2008. - ISBN 987-80-7043-654-7. - p. 117-120. (in English)
- [12] MOJŽIŠ, J., GRMAN, J.: Real-Time Digital Image Processing Using Graphics Processor. In: ŠVOČ 2008: Year-Book of Winning Contributions. Bratislava, Slovak Republic, 23.4.2008. - Bratislava: STU, 2008. - ISBN 978-80-227-2865-2. - CD-Rom. (in Slovak)
- [13] NOSKOVIČOVÁ, L., RAVAS, R.: Camera Calibration. In: Process Control 2008: Proceedings of the 8th International Scientific-Technical Conference. Kouty nad Desnou, Czech Republic, 9.-12.6.2008. - Pardubice: University of Pardubice, 2008. - ISBN 978-80-7395-077-4. - CD-Rom. (in English)
- [14] NOSKOVIČOVÁ, L.: Camera Calibration Method Based on Direct Linear Transformation. In: ELITECH '08: PhD Students Conference. Bratislava, Slovak Republic, 20.5.2008. - Bratislava: STU, 2008. - ISBN 978-80-227-2878-2. - CD-Rom. (in English)
- [15] NOSKOVIČOVÁ, L.: Camera Calibration Techniques. In: Control & Information Technology: International Workshop. Gliwice, Poland, 18.-19.9.2008. - Gliwice: Politechnika Śląska, 2008. - p. 189-194. (in English)
- [16] NOSKOVIČOVÁ, L., RAVAS, R.: Technique for Camera Calibration. In: 19th International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Next Generation of Intelligent Systems and Solutions: Trnava, Slovak Republic, 22.-25.10.2008. - Vienna: DAAAM International Vienna, 2008. - CD-Rom. (in English)
- [17] RAVAS, R., SYROVÁ, L.: Image Recognition Using Trace Transform. In: Process Control 2008: Proceedings of 8th International Scientific-Technical Conference. Kouty nad Desnou, Czech Republic, 9.-12.6.2008. - Pardubice: University of Pardubice, 2008. - ISBN 978-80-7395-077-4. - CD-Rom. (in English)

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- [18] STUHLÍKOVÁ, L., KRÁLIKOVÁ, E., ČERVEŇOVÁ, J., SAMUHELOVÁ, E., ONDRÁŠOVÁ, I., PECHÁČEK, J.: Teachers as e-Learning Course Creators. In: Innovation Process in e-Learning. - Bratislava: Ekonomická univerzita, 2008. - ISBN 978-80-225-2510-7. - p. 102-106. (in Slovak)
- [19] ŠTURCEL, J., KAMENSKÝ, M.: Digital Linearization in Sensor Systems Using Polynomial Approximation. In: Process Control 2008: Proceedings of the 8th International Scientific-Technical Conference. Kouty nad Desnou, Czech Republic, 9.-12.6.2008. - Pardubice: University of Pardubice, 2008. - ISBN 978-80-7395-077-4. - CD-Rom. (in English)
- [20] ŠUPLATA, M., RAVAS, R.: The Analysis of the Movement by the Optical Flow. In: ŠVOČ 2008: Year-Book of Winning Contributions. Bratislava, Slovak Republic, 23.4.2008. - Bratislava: STU, 2008. - ISBN 978-80-227-2865-2. - CD-Rom. (in Slovak)
- [21] SYROVÁ, L., RAVAS, R.: The Use of Trace Transform for Classification of Visualized Transpatent Polymeric Foils. In: 19th International DAAAM Symposium "Intelligent Manufacturing & Automation: Focus on Next Generation of Intelligent Systems and Solutions: Trnava, Slovak Republic, 22.-25.10.2008. - Vienna: DAAAM International Vienna, 2008. - CD-Rom. (in English)

VIII.3 Patents and Standards

- [1] BOJNA, I., REVÁKOVÁ, D., SMIEŠKO, V., KOŠDY, M., ŠTENCHLÁK, V., BOHINÁKOVÁ, V., PECHO, F., ARNOLD, A.: Protection against Electric Shock in Bulk Electricity System: PNE 33-2000-1. - 2008. - 169 p. (in Slovak)