

DEPARTMENT OF MECHANICS
<http://aladin.elf.stuba.sk/Katedry/KMECH/>

Head of Department

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I. STAFF

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

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
- Hewlett-Packard PC Workstations Kayak
- Advantech PC-LabCard PCI 1710 with equipment
- Digital Oscilloscope RIGOL DS1052E
- Waveform generator RIGOL DG1012
- 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 A. Kalaš
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. Kutiš A. Beláň
Structural Elements and Systems	(5th sem., 2-2h)	M. Vereš
Design of Vehicles	(6 th 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. Kutiš A. Beláň

III.2 Graduate Study (Ing.)

Nuclear Power Facilities	(1st sem., 2-2h)	V. Kutiš
CAE of Mechatronic Systems	(1st sem., 3-2h)	V. Kutiš
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

Distance study

CAE of Mechatronic Systems	(1st sem.)	V. Kutiš
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 1/4122/07, 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
- EGU Bratislava
- 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
- Technical University Vienna, 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

V.3 Membership in Slovak Organizations and Societies

- Co-chairman in Slovak Society for Mechanics (J. Murín)
- Slovak Society for Mechanics (V. Kutiš)

V.4 Membership in International Organizations and Societies

- J. Murín: Chair of Slovak branch of Central European Association for Computational Mechanics
- V. Kutiš: Central European Association for Computational Mechanics
- J. Murín: Institute for Mechanics of Materials and Structures, TU Vienna, Austria

VI. THESES

VI.1 Master Theses

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

- [1] Stančík, S.: Electro – Thermal and Fluid – Thermal analysis of cable joint. (V. Kutiš)

- [2] Bot'anský, P.: Electro – Thermo – Sctructural analysis of cable joint by Finite Element Method (J. Murín)

VI.2 Doctoral Theses

- [1] Goga, V.: Modelling of Mechanical Properties of the Cellular Materials. (B. Hučko).

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)
- Chairman of the Scientific Board of the International Scientific Conference CMAS2009 (J. Murín)
- Chairman of the Organizing Committee of the International Scientific Conference CMAS2009 (V. Kutiš)
- Member of the Organizing Committee of the International Scientific Conference CMAS2009 (V. Goga)
- Member of the Organizing Committee of the International Scientific Conference CMAS2009 (R. Fric)

VIII. PUBLICATIONS

VIII.1 Journals

- [1] BELÁK, R.: Electromagnetism in Finite Element Method. In: Posterus.sk. - ISSN 1338-0087. - September (2009), <http://www.posterus.sk/?p=2130>. (in English)
- [2] MATEJ, J.: Fuel Consumption Optimalization in Parallel Hybrid Vehicle. In: Posterus.sk. - ISSN 1338-0087. - September (2009), <http://www.posterus.sk/?p=1988>. (in English)
- [3] MATEJ, J.: Hybrid Vehicle Power Control. In: Strojárstvo - Strojirenství. - ISSN 1335-2938. - Vol. 13, No. 9 (2009), p. 2. (in Slovak)
- [4] MATEJ, J.: Operation Regimes of Combustion Engine. In: Strojárstvo - Strojirenství. - ISSN 1335-2938. - Vol. 13, No. 10 (2009), p. 62. (in Slovak)
- [5] MURÍN, J., KUTIŠ, V.: An Effective Multilayered Sandwich Beam-Link Finite Element for Solution of the Electro-Thermo-Structural Problems. In: Computers and Structures. - ISSN 0045-7949. - Vol. 87 (2009), p. 1496-1507. (in English)

VIII.2 Conference Proceedings

- [1] BELÁK, R.: Electromagnetism in Finite Element Method. In: ELITECH '09: 11th Conference of Doctoral Students. Bratislava, Slovak Republic, 25.5.2009. - Bratislava: FEI STU, 2009. - ISBN 978-80-227-3091-4. - CD-Rom. (in English)
- [2] DRAHOŠ, P., ŠTURCEL, J., KUTIŠ, V.: Electro-Thermal Analysis of SMA Actuator with CRIMPS. In: CMAS 2009. Computational Modelling and Advanced Simulations: International Conference. Bratislava, Slovak Republic, 30.6.- 3.7.2009. - Bratislava: STU, 2009. - ISBN 978-80-227-3067-9. - CD-Rom. (in English)

- [3] ĎURIŠ, R., MURÍN, J.: A Geometric and Physically Nonlinear Thermo-Structural Analysis of Plane Bar Structure. In: Computational Mechanics 2009: 25th Conference with International Participation. Czech Republic, Nečtiny, 9.-11.11.2009. - Plzeň: University of West Bohemia, 2009. - ISBN 978-80-7043-824-4. (in English)
- [4] FERENCEY, V.: Drivetrain of an Electric Vehicle. In: Armament and Technics of Land Forces 2009: 15th International Scientific Conference. Liptovský Mikuláš, Slovak Republic, 11.-12.11.2009. - Liptovský Mikuláš: Armed Forces Academy of General Milan Rastislav Štefánik, 2009. - ISBN 978-80-8040-379-9. - p. 82-86. (in English)
- [5] FERENCEY, V., KALUS, J.: Fuel Cells as Electricity Source for Motor Vehicles. In: Greencar 2009. Alternative Propellants. Nitra, 5.10.2009. - Bratislava: Ministerstvo dopravy, pošt a telekomunikácií Slovenskej republiky, 2009. - CD-Rom. (in English)
- [6] GOGA, V.: Measurement of the Energy Absorption Capability of Polyurethane Foam. In: ELITECH '09: 11th Conference of Doctoral Students. Bratislava, Slovak Republic, 25.5.2009. - Bratislava: FEI STU, 2009. - ISBN 978-80-227-3091-4. - CD-Rom. (in English)
- [7] GOGA, V.: New Phenomenological Model for Solid Foams. In: CMAS 2009. Computational Modelling and Advanced Simulations: International Conference. Bratislava, Slovak Republic, 30.6.- 3.7.2009. - Bratislava: STU, 2009. - ISBN 978-80-227-3067-9. - CD-Rom. (in English)
- [8] GOGA, V.: Testing and Application of New Phenomenological Material Model for Foam Materials. In: ELITECH '09: 11th Conference of Doctoral Students. Bratislava, Slovak Republic, 25.5.2009. - Bratislava: FEI STU, 2009. - ISBN 978-80-227-3091-4. - CD-Rom. (in English)
- [9] KEÚČIK, M., SEDLÁR, T.: Mechatronical Device for Training of the Service Dogs II. In: Modelling of the Mechanics and Mechatronics Systems MMaMS '2009: 3rd International Conference. Zemplínska Šírava, Slovak Republic, 22.-24.9.2009. - Košice: TU, 2009. - ISBN 978-80-553-0288-1. - p. 255-259. (in English)
- [10] KUGLER, S., FOTIU, P.A., MURÍN, J.: A New Quadrilateral Membrane Finite Element with Drilling Degrees of Freedom. In: CMAS 2009. Computational Modelling and Advanced Simulations: International Conference. Bratislava, Slovak Republic, 30.6.- 3.7.2009. - Bratislava: STU, 2009. - ISBN 978-80-227-3067-9. - CD-Rom. (in English)
- [11] LALINSKÝ, T., KUTIŠ, V., JAKOVENKO, J., IVANOVA, M., VANKO, G., MURÍN, J., HUSÁK, M.: GaN Micro-Hotplates for High Temperature MEMS Gas Sensor Applications. In: Micromechanics Europe 2009: 20th Workshop on Micromachining, Micromechanics and Microsystems. Toulouse, France, 20.-22.9.2009. - Toulouse: LAAS-CNRS, 2009. - Paper ID 158. (in English)
- [12] MATEJ, J.: Fuel Consumption Optimalization in Parallel Hybrid Vehicle. In: ELITECH '09: 11th Conference of Doctoral Students. Bratislava, Slovak Republic, 25.5.2009. - Bratislava: FEI STU, 2009. - ISBN 978-80-227-3091-4. - CD-Rom. (in English)
- [13] MATEJ, J.: Hybrid Vehicle Power-Flow Control. In: Europe in the Second Century of Auto-Mobility: 12th EAEC European Automotive Congress. Bratislava, Slovak Republic, 29.6.-1.7.2009. - Vienna: EAEC, 2009. - ISBN 978-80-969243-8-7. - CD-Rom. (in English)
- [14] MATEJ, J.: Optimization of Hybrid Electric Truck. In: Europe in the Second Century of Auto-Mobility: 12th EAEC European Automotive Congress. Bratislava, Slovak Republic, 29.6.-1.7.2009. - Vienna: EAEC, 2009. - ISBN 978-80-969243-8-7. - CD-Rom. (in English)

- [15] MATEJ, J.: Powerflow Control Application in Parallel Hybrid Vehicle. In: ELITECH '09: 11th Conference of Doctoral Students. Bratislava, Slovak Republic, 25.5.2009. - Bratislava: FEI STU, 2009. - ISBN 978-80-227-3091-4. - CD-Rom. (in English)
- [16] MURÍN, J., AMINBAGHAI, M., KUTIŠ, V.: Exact Solution of the Bending Vibration Problem of FGM Multilayered Sandwich Beam with Variation of Material Properties. In: COMPDYN 2009. 2nd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering: Rhodos. Greece, 22.-24.6.2009. - Athens: National Technical University, 2009. - ISBN 978-960-254-682-6. - CD- Rom. (in English)
- [17] MURÍN, J., AMINBAGHAI, M., KUTIŠ, V.: Free Vibration of the FGM Beams with Effect of Axial Force. In: CMAS 2009. Computational Modelling and Advanced Simulations: International Conference. Bratislava, Slovak Republic, 30.6.- 3.7.2009. - Bratislava: STU, 2009. - ISBN 978-80-227-3067-9. - CD-Rom. (in English)
- [18] MURÍN, J., AMINBAGHAI, M., KUTIŠ, V.: Free Vibration of the FGM-Beams with Transversal Symmetric and Longitudinal Continuous Variation of Material Properties. In: New Trends in Statics and Dynamics of Buildings: 7th International Conference. Bratislava, Slovak Republic, 22.-23.10.2009. - Bratislava: STU, 2009. - ISBN 978-80-227-3170-6. - CD-Rom. (in English)
- [19] MURÍN, J., SEDLÁR, T., KLÚČIK, M., GOGA, V.: Mechatronical Device for Training of the Service Dogs I. In: Modelling of the Mechanics and Mechatronics Systems MMaMS '2009: 3rd International Conference. Zemplínska Šírava, Slovak Republic, 22.-24.9.2009. - Košice: TU, 2009. - ISBN 978-80-553-0288-1. - p. 319-322. (in English)
- [20] SEDLÁR, T., MURÍN, J., KALAŠ, A., KRÁLOVIČ, V.: Application of the Three-Point Micro-Deflectometer for Calculation of the Effective Flexural Young's Modulus of Beam of Composite Materials. In: 50th International Conference of Machine Elements and Mechanisms Departments. Terchová, Slovak Republic. 8.-10.9.2009. - Žilina: University of Žilina, 2009. - CD-Rom. (in English)
- [21] SEEMANN, R., MURÍN, J., PAVLOVIČ, M.: Optimisation of a Gantry Structure for Particle Therapy. In: CMAS 2009. Computational Modelling and Advanced Simulations: International Conference. Bratislava, Slovak Republic, 30.6.- 3.7.2009. - Bratislava: STU, 2009. - ISBN 978-80-227-3067-9. - CD-Rom. (in English)

VIII.3 Patent

- [1] MURÍN, J., SEDLÁR, T., KLÚČIK, M.: Device for Training of the Service Dogs: Patent No: SK 5212. – mediation date: 24.6. 2009. - 5 p. (in Slovak)