

# Program of the Measurement 2015 Conference

25-28 May 2015, Smolenice Castle, Slovakia

## Monday 25. 5. 2015 Conference Opening

- 9:00 Opening ceremony
- 9:30 **Invited paper:** *I. Frollo*  
Magnetic Resonance Imaging Methods in Material Research
- 10:15 *Coffee Break*

## Monday 25. 5. 2015 Session: Theoretical Problems of Measurement I

**Chairmen:** V. Smieško (Slovakia)  
V. Witkovský (Slovakia)

Time Authors and Title

- 10:30 *M. Cap, P. Fiala, D. Nešpor, P. Drexler*  
A Numerical Model of the Concept of a Graphene Polymer-Based Sensor
- 10:45 *G. Wimmer, V. Witkovský, R. Köning*  
An Algorithm for Demodulation of Correlated Quadrature Interferometer Signals
- 11:00 **(YIA paper)** *K. Valentin, S. Stolc, R. Huber-Mörk*  
Improved Cost Computation with Local Binary Features in a Multi-view Block Matching Framework
- 11:15 *H. Zhengbing, R. Kochan, O. Kochan, H. Klym, S. Jun*  
Integral Nonlinearity Correction of Multi-Range ADC by Iterative Applying of Multi-Resistors Divider
- 11:30 *J. Jakubík*  
Comparison of Methods for Variable Selection in High-dimensional Linear Mixed Models
- 12:00 *Lunch*

## Monday 25. 5. 2015 Session: Measurement in Biomedicine I

**Chairmen:** M. Štork (Czech Republic)  
K. Kozlíková (Slovakia)

Time Authors and Title

- 13:30 **Invited paper:** *A. Liebert*  
Time-Resolved Near-Infrared Spectroscopy for Assessment of Brain Oxygenation and Perfusion
- 14:15 *A. Krakovska, R. Skoviera, G. Dorffner, R. Rosipal*  
Does the Complexity of Sleep EEG Increase or Decrease with Age?
- 14:30 **(YIA paper)** *E. Dražanová, L. Grossová, J. Pistovčáková, A. Khainar, R. Demlová, T. Kašpárek, Z. Starčuk jr.*  
Using ASL Method for Monitoring of Brain Perfusion Changes in a Rat Model of Schizophrenia and after Chronic Administration of Aripiprazole
- 14:45 *R. Tušková, B. Lipták, M. Dubovický, T. Liptaj, S. Kašparová*  
Neurochemical Changes Observed by 1H MRS in Rats with Induced Age-Related Early-Stage Dementia  
(moved to Tuesday, May 26 at 11:30)
- 15:00 *Coffee Break*

**Monday 25. 5. 2015****Session: Measurement in Biomedicine II**

**Chairmen:** **A. Liebert (Poland)**  
**M. Tyšler (Slovakia)**

Time Authors and Title

- 15:15 **(YIA paper)** G. Tuboly, G. Kozmann  
Atrial Fibrillation Detection Based on Poincaré plot of RR Intervals
- 15:30 E. Aidu, V. Trunov, A. Kalinin  
Accuracy of the Body Surface Potential Approximation
- 15:45 K. Kozlíková, M. Trnka, D. Kosnáč  
Ventricular Repolarisation Analysed In Young Adult Men And Women Using Autocorrelation Maps
- 16:00 J. Švehlíková, J. Zelinka, V. Szathmáry, L. Bachárová, M. Tyšler  
Modeling as a Tool for Understanding of Changes in ECG Signals
- 16:15 E. Cocherová  
Analysis of the Activation Propagation Velocity in the Slab Model of the Cardiac Tissue
- 16:30 **(YIA paper)** O. Punshchikova, J. Švehlíková, P. Kneppo, R. Grünes, K. Sedova, B. Senysh, P. Osmančík, J. Žďárská, D. Heřman, M. Tyšler  
Influence of Modeled Heart Cavities on the Noninvasive Localization of Ectopic Ventricular Activity

**Monday 25. 5. 2015 17:00 Posters: Measurement of Physical Quantities**

Poster Authors and Title

- P01 **(YIA paper)** M. Cap, P. Fiala, M. Kaska, L. Kocis  
UHF System for Detection and Spatial Localization of Partial Discharge in High Voltage Power Transformers
- P02 **(YIA paper)** J. Slížik, R. Hartánský, V. Smieško  
Proposal of Power Supply Module for the Electromagnetic Field Probe
- P03 J. Volf, V. Ryzhenko  
Effect of Conductive Ink on Properties of Tactile Sensors
- P04 J. Hallon, R. Hartansky, M. Bittera  
Testing of EMC Properties of Electrical Devices Equipped with Wireless Communication
- P05 L. Marsalka, R. Hartansky, V. Smiesko  
Comprehensive Numerical Analysis of Designed Force Sensor Based on Changes of Electromagnetic Field Properties
- P06 P. Mikuš, R. Hartánský, V. Smieško  
Influence of the Environment on the Accuracy of Measurement with Radar Level Gauges
- P07 N.K. Andreev, A.M. Hakimov  
Some Features of Dedicated T1-Filters
- P08 P. Andris, I. Frollo  
Ringing Down Time Measurement of a Receive Coil for NMR Tomography
- P09 I. Frollo, A. Krafcík, P. Andris, J. Přibíl, T. Dermek  
Soft Magnetic Objects in Homogeneous Magnetic Field of an NMR Imager, Mathematical Modelling and Experimental Evaluation
- P10 M. Majerová, A. Dvurečenskij, A. Cigáň, I. Van Driessche, M. Škrátek, J. Maňka, E. Bruneel, R. Bystrický  
Study of Effect of Sn doping of EuBa<sub>2</sub>Cu<sub>3-x</sub>O<sub>7-δ</sub> Compound on Superconducting Properties by Contactless Methods
- P11 B. Korenko, J. Jasenek, J. Červeňová  
Data Processing Techniques for Fiber Bragg Grating (FBG) Reflectivity Characteristics Measurements

- P12 *P. Drexler, J. Seginak, J. Mikulka, D. Nešpor, M. Friedl, P. Marcoň, P. Fiala*  
Experimental Noise Spectroscopy and the Measurement of Periodic Material Structures
- P13 *M. Majerová, A. Prnová, M. Škrátek, R. Klement, M. Michálková, D. Galusek, E. Bruneel, I. Van Driessche*  
Magnetic Properties of Yttrium Iron Garnet Polycrystalline Material Prepared by Spray-Drying Synthesis
- P14 **(YIA paper)** *M. Kubiš, D. Šišmišová, J. Pastierová*  
Influence of Pitting Corrosion on Burst Pressure Value
- P15 *P. Klouček, Z. Braier*  
Method of Indirect Measurement of Motor Output Torque
- P16 **(YIA paper)** *M. Bujalski, A. Rachalski, P. Ligęza, E. Poleszczyk*  
The Use of Multifrequency Binary Sequences MBS Signal in the Anemometer with Thermal Wave
- P17 *S. Jun, O. Kochan, R. Kochan*  
Evaluation of Error of Method of Thermocouple with Controlled Profile of Temperature Field
- P18 *Z. Ďurišová, S. Ďuriš, R. Palenčár*  
Gravimetric Preparation of Primary Gas Mixtures with Liquid Component in Air Matrix
- P19 *N.K. Andreev, A.S. Malatsion*  
Software for Sonic Well-logging Control Apparatus with Single-sided Access
- P20 *P. Galajda, M. Drutarovsky, J. Saliga, M. Ziga, L. Macekova, S. Marchevsky, D. Kocur*  
Sensor Node for the Remote River Water Quality Monitoring
- P21 *N. Pomp, K. Adámek, P. Škop*  
Method and Device for Yarn Packages Classification
- P22 *J. Pacheco de Carvalho, C. Pacheco, A. Reis*  
Applications of MeV Ion Beams, Nuclear Techniques and Computer Simulation to Surface Analysis of Materials

**Tuesday 26. 5. 2015      Session: Measurement in Biomedicine III**

**Chairmen:**      **Z. Starčuk (Czech Republic)**  
                         **I. Frollo (Slovakia)**

Time    Authors and Title

- 9:00    *D. Gogola, O. Štrbák, A. Krafcík, M. Masárová, I. Antal, M. Kubovcikova, M. Koneracka, V. Zavisova, P. Kopcansky, I. Frollo*  
Magnetic Resonance Imaging of PEG Magnetite Nanoparticles with and without BSA Protein
- 9:15    *O. Strbak, D. Gogola, L. Baciak, A. Krafcik, M. Masarova, I. Antal, M. Kubovcikova, M. Koneracka, V. Zavisova, P. Kopcansky, I. Frollo*  
Measurement of the Magnetite Nanoparticles Relaxivity During Encapsulation into PLA Carriers
- 9:30    *A. Malá, A. Bakandritsos, O. Maciček, E. Rousalis, E. Dražanová, R. Jiřík, L. Dvořáková, L. Grossová, Z. Starčuk jr.*  
Evaluation of a Novel Maghemite Hybrid Nanocarrier for MR Imaging (Pilot Study)
- 9:45    **(YIA paper)** *A. Krafcík, P. Babinec, I. Frollo*  
Physical Model of Deposition of Magnetic Particles in Lung Alveolus
- 10:00    *Coffee Break*

**Tuesday 26. 5. 2015      Session: Measurement in Biomedicine IV**

**Chairmen:**      **P. Szomolanyi (Austria)**  
                         **O. Štrbák (Slovakia)**

Time    Authors and Title

- 10:30    **(YIA paper)** *L. Dvořáková, R. Jiřík, M. Burian, A. Hejčl, Z. Starčuk*  
In Vivo Diffusion Tensor Imaging of the Rat Spinal Cord – Pilot Study
- 10:45    *R. Korinek, K. Bartusek, Z. Starcuk*  
Water-Fat Separation in Rat by MRI at High Field (9.4T)
- 11:00    **(YIA paper)** *V. Juras, Y. Winhofer, P. Szomolanyi, J. Vosschenrich, B. Hager, P. Wolf, M. Weber, A. Luger, S. Trattnig*  
Sodium MRI Predicts the Macromolecular Changes in Achilles Tendon after Ciprofloxacin Administration
- 11:15    **(YIA paper)** *L. Valkovič, M. Meyerspeer, W. Bogner, I. Frollo, E. Moser, S. Trattnig, A. I. Schmid*  
Simultaneous Dynamic PCr and Pi Imaging of the Calf Muscle During Exercise and Recovery using 31P Gradient-echo MRI at 7 T
- 11:30    *R. Tušková, B. Lipták, M. Dubovický, T. Liptaj, S. Kašparová*  
Neurochemical Changes Observed by 1H MRS in Rats with Induced Age-Related Early-Stage Dementia
- 12:00    *Lunch*

**Tuesday 26. 5. 2015 13:30 Guided Excursion**

**Wednesday 27. 5. 2015**

**Session: Measurement of Physical Quantities I**

**Chairmen: H. Bosse (Germany)  
M. Hain (Slovakia)**

Time Authors and Title

- 9:00 *R. Köning, P. Köchert, J. Flügge*  
The New Position Control and Data Acquisition Concept of the Nanometer Comparator
- 9:15 *R. Kumar, A. Kumar*  
Fusion of Microphone and Accelerometer Sensing for the Identification and Measurement of Inner Race Defect
- 9:30 *M. El Morsy, G. Achtenová*  
Envelope Detection and Cepstrum Analysis for Gear Fault Diagnosis - A Comparative Study
- 9:45 **(YIA paper)** *I. Glebus, S. Makarov*  
Noncontact Vibrometer Based on the Fibre Optical Michelson Interferometer
- 10:00 *Coffee Break*

**Wednesday 27. 5. 2015**

**Session: Measurement of Physical Quantities II**

**Chairmen: A. Odon (Poland)  
V. Smieško (Slovakia)**

Time Authors and Title

- 10:30 **(YIA paper)** *P.-G. Dittrich, D. Hofmann*  
Photonic Micro Sensors for Mobile Color and Spectral Characterization of Colored Liquids in Laboratories and in Field
- 10:45 *M. Bittera, M. Mician, V. Smiesko*  
Selection of Antenna Factor for EMI Measurements
- 11:00 *D. Matousek, O. Subrt, J. Hospodka*  
Charge Pump Design for Use in NVM Device Test and Measurement
- 11:15 *Z. Janoska, M. Carna, M. Havranek, M. Hejtmanek, V. Kafka, M. Marcisovsky, G. Neue, L. Tomasek, V. Vrba*  
The PH32 Readout Integrated Circuit
- 12:00 *Lunch*

**Wednesday 27. 5. 2015**

**Session: Measurement of Physical Quantities III**

**Chairmen: M. Košek (Czech Republic)  
J. Maňka (Slovakia)**

Time Authors and Title

- 13:30 **Invited paper:** *H. Bosse*  
The Envisaged New SI: Challenges for Precision Engineering
- 14:15 *D. Nespor, P. Drexler, P. Fiala, P. Marcoň*  
RF Resonator Array for MR Measurement System
- 14:30 *J. Eichler, M. Košek, M. Novák*  
Application of Preisach Model to Low Loss Ferromagnetic Materials
- 14:45 *Coffee Break*

**Wednesday 27. 5. 2015 Session: Theoretical Problems of Measurement II**

**Chairmen:** P. Fiala (Czech Republic)  
J. Šaliga (Slovakia)

Time Authors and Title

- 15:15 P. Otomanski, P. Zazula  
Experimental Verification of Metrological Properties of Power Quality Analyser
- 15:30 L. Michaeli, J. Šaliga, J. Lipták  
A New Method for Dielectric Parameters Testing and Model Identification Based on Differential Evolution
- 15:45 M. Stork  
Variable Frequency Pulse Width Modulation
- 16:00 M. Stork  
Asynchronous Sigma-Delta Modulator
- 16:15 M. Kamenský, K. Kováč, L. Makyta  
Stochastic and Deterministic Dithering in Slow Measurements
- 16:30 L. Šroba, R. Ravas, J. Grman  
Comparison of Subpixel Corner Detection Based on Reprojection Error Criterion

**Wednesday 27. 5. 2015 17:00 Posters: Theoretical Problems of Measurement**

Poster Authors and Title

- P31 **(YIA paper)** K. Valentín, I. Bajla, M. Teplan  
Prediction of Intracranial Pressure Values of Traumatic Brain Injured Patients Using Hierarchical Temporal Memory Network
- P32 M. Omachelová, E. Kureková, M. Halaj, I. Martišoviš  
Detailed Uncertainty Analysis of the Tricept Kinematic Structure
- P33 **(YIA paper)** D. Jenčuráková, R. Palenčár, M. Kubiš  
Utilizing of Control Chart in the Management of the Measurement Process
- P34 D. Hofmann, P.-G. Dittrich  
Digital Transformation of Education & Training for Mobile Photonic Sensors 4.0 & Digital Image Processing with Smarts

**Wednesday 27. 5. 2015 17:00 Posters: Measurement in Biomedicine**

Poster Authors and Title

- P41 J. Přibil, T. Dermek, I. Frollo  
Effect of Examined Persons Weight on the Acoustic Noise Produced by an Open-air NMR Imager
- P42 E. Vlachova Hutova, R. Korinek, L. Havel, K. Bartusek  
The Influence of Magnetic Field on Living Matter
- P43 **(YIA paper)** L. Grossová, R. Jiřík, K. Souček, E. Dražanová, Z. Starčuk jr.  
Comparison of ASL and DCE-MRI Perfusion Map in Small Animal Model of Cancer
- P44 **(YIA paper)** M. Masárová, A. Krafcík, M. Teplan, O. Štrbák, D. Gogola, P. Bořuta, I. Frollo  
Comparison of Iron Accumulation in Clinical MRI Data
- P45 J. Urzova, M. Jelinek, J. Remsa, L. Vajner  
Heat Transfer Modelling for Pulse Laser – Assisted Removal of Arrhythmogenic Sources
- P46 M. Potran, B. Štrbac, K. Vicko, T. Puškar  
Dimensional Stability of Addition Silicones -Influence of Setting Time on the Accuracy of Working Casts

- P47 *V. Haverlíková*  
What are the Initial Measurement Skills of Medical Students?
- P48 *M. Hanzelka, J. Dan, P. Fiala, M. Steinbauer, V. Holcner*  
Experiments with Sensing and Evaluation of Ionosphere Changes and their Impact on the Human Organism

**Thursday 28. 5. 2015**

**Session: Measurement of Physical Quantities IV**

**Chairmen: P. Otomanski (Poland)  
V. Boháč (Slovakia)**

Time Authors and Title

- 9:00 *A. Odon*  
A Method for the Determination of Thermal Time Constant of Pyroelectric Sensor from Voltage Response to Step Optical Input Signal
- 9:15 *A. Rachalski, M. Bujalski, P. Ligeza, E. Poleszczyk*  
Absolute Flow Velocity Measurements by Means of the Thermal Waves
- 9:30 *J. Hudec, P. Dieška, M. Vitkovič, L. Kubičár*  
Sensor Based on Hot-ball Method for Measuring Thermophysical Parameters
- 9:45 *V. Boháč, D. Fidriková, V. Vretenár, T. Durmeková, L. Kralovičová, J. Vlčko*  
Moisture Sensor for the Monitoring of Temperature-Moisture Regime in Volcanic Tuffs Located in Brhlavce Village

**Thursday 28. 5. 2015**

**Session: Conference Closing**

10:30 Young Investigator Awards Announcement

Closing ceremony

11:30 *Lunch*