

Program of the Measurement 2011 Conference

27-30 April 2011, Smolenice Castle, Slovakia

Wednesday 27.4.2011 9:00 Opening Ceremony

Wednesday 27.4.2011 Session: Measurement of Physical Quantities I

Chairmen: V. Havlíček (Czech Republic)
I. Frollo (Slovakia)

Time Authors and Title

9:30 *R. Köning et al.*
Dimensional Micro- and Nanometrology at PTB (**Invited lecture**)

10:00 Coffee break

- 10:15 *A. J. Moses, P. I. Anderson, N. Chukwuchekwa, J. P. Hall, I. P. I. Williams and I. X. T. Xu*
Analysis of Magnetic Fields on the Surface of Grain Oriented Electrical Steel
- 10:30 *J. Kempainen, H. Mainaud Durand, F. Lackner*
Validation of CLIC Re-Adjustment System Based on Eccentric Cam Movers – One Degree of Freedom Mock-Up
- 10:45 *O. Štrbák, D. Gogola, I. Frollo*
Cube Model Approach in Simulating of Magnetite Nanoparticles Behaviour in External Magnetic Fields
- 11:00 *V. Štrbík, Š. Beňačka, V. Šmatko, Š. Gaži, Š. Chromik, A. Dujavová, I. Vávra, P. Vrabček*
SFS Heterostructures Prepared by Focused-Ion-Beam Technique
- 11:15 *M. Hain, M. Nosko, F. Simančík, T. Dvorák, R. Florek*
X-Ray Microtomography and Its Use for Non-destructive Characterisation of Materials
- 11:30 *K. Kovářová, R. Ševčík, M. Chmelíková, M. Bednarik, R. Holzer*
Comparison and Use of Hg Porosimetry and X-ray Computed Microtomography in Durability Tests of Sandstone on the Charles bridge in Prague (**for award**)
- 11:45 *R. Kořínek, K. Bartušek, J. Vondrák, M. Musil*
Measurement and Calculation of Relaxation Time T₂ and diffusion of Gel Electrolytes Based on the NaClO₄ Inorganic Salt During Polymerization by NMR Method with Focusing on ²³Na and ¹H Nuclei

12:00 – 13:00 Lunch break

Wednesday 27.4.2011 Session: Measurement in Biomedicine I

Chairmen: G. Kozmann (Hungary)
M. Tyšler (Slovakia)

Time Authors and Title

- 13:30 *G. Kozmann*
Recent Topics in Non-Invasive Cardiac Electroimaging (**Invited lecture**)
- 14:00 *R. Stojanovic, M. Mirkovic and D. Karadaglic*
An FPGA System for QRS Complex Detection Based on Integer Wavelet Transform (**for award**)
- 14:15 *M. Štork, J. Novak, V. Zeman*
Cardiac Output Estimation Based on Oxygen Consumption During Exercise Test on Bicycle Ergometer
- 14:30 *G. Tuboly*
Body Surface Potential Mapping Data Conversion Method
- 14:45 *J. Švehlíková, J. Lenková, A. Drkošová, M. Foltin, M. Tyšler*
Assessment of Heart Position in a Torso Model Using an Inverse Solution
- 15:00 *E. A. Aidu, V. G. Trunov, L. I. Titomir, T. A. Sakhnova, E. V. Blinova*
Computer Atlas of the Dipole Electrocardiotopography
- 15:15 *J. Lenková, J. Švehlíková, M. Tyšler*
Individual vs. Adjusted Standard Torso Model in the Solution of the Inverse Problem in Electrocardiology

15:30 Coffee break

Wednesday 27.4.2011 Session: Theoretical Problems of Measurement I

Chairmen: J. Zakrzewski (Poland)
L. Michaeli (Slovakia)

Time Authors and Title

- 15:45 *P. Otomański, P. Fotowicz*
Coverage Interval as a Measure of Uncertainty of Measurement
- 16:00 *M. Kamenský, K. Kováč, G. Valky*
Analyses of Quantization Noise Spectrum for Multiresolution Quantization of Harmonic Signal
- 16:15 *A. Horníková, E. Güclü, G. Bas, N. M. Durakbasa*
Data Mining – Novel Statistical Method for the Measurement Confirmation System
- 16:30 *M. Chvosteková*
A Comparison of Simultaneous Tolerance Intervals in a Simple Linear Regression Model (**for award**)

Date: 27.-28.4.2011 Posters I: Measurement of Physical Quantities

Presentation by authors: Wednesday, 27.4.2011 at 17:00 - 18:00

Poster Authors and Title

- P1 *D. Hofmann, P.-G. Dittrich, E. Düntsch*
Smartphones, Cloud Computing and Apps - Green Game Changers for Measurement Science and Education
- P2 *P. Marcon, K. Bartusek, M. Cap*
Modeling and Measuring of the Changes of the Magnetic Field Next to Non-Ferromagnetic Substances for Magnetic Susceptibility Calculation
- P3 *K. Bartusek, D. Nespor, P. Drexler, P. Fiala*
Properties of Magnetoinductive Resonator Array for MRI Application
- P4 *N.K. Andreev, A.S. Malatsion*
Dependence of NMR Spin Echo Form on Liquid Flow Structures
- P5 *A. Krammer, R. Hartánský*
Generation of Homogeneous EM Field for EMC Test Purposes
- P6 *J. Hallon, M. Bittera, R. Hartánský, K. Kováč, V. Smieško*
Reproducibility of Long Cable Test-Setup of EMC Measurements
- P7 *R. Ravas, L. Syrová, J. Grman*
The Iterative Method of Parameters and Centre of Radial Distortion Estimation
- P8 *M. Kwacz, M. Mrowka, J. Wysocki*
Round Window Membrane Vibration Measured by Laser Doppler Vibrometer
- P9 *L. Maršalka, R. Hartánský*
Analysis of Possible Short Length Measurement Using Energy Sucking of Electromagnetic Field
- P10 *M. Novák, L. Slavík, M. Košek, M. Truhlář*
Precise Measurement of Low Magnetic Field
- P11 *M. Okrouhlý, J. Novák*
Model of Electromechanical Valve in the Anti-lock Braking System
- P12 *M. Vogel, K. Weissensee, G. Linss*
New Approaches to the Improvement in Efficiency of Dimensional Measurements on Multi-Sensor Coordinate Measuring Machines **(for award)**
- P13 *E.S. Senchenko, V.V. Atuchin, T. Khasanov, V.A. Kochubey, L.D. Pokrovsky*
Measurements of Optical Parameters of γ -Mo₂N/Si(100) Thin Films **(for award)**
- P14 *A. Göpfert, R. Fütterer, M. Rückwardt, M. Rosenberger, M. Schellhorn, G. Linß*
Prospects of a Fully Scalable Stabilized LED-Source for Illumination of Measuring Systems

- P15 *V. Štofanič, M. Minarik, I. Balaz, E. Cocherová,, V. Boháč*
Enhanced Method of the Quartz Resonator Self-Temperature-Sensing
- P16 *A. Prnová, D. Galusek, M. Škrátek, R. Karell, R. Klement, J. Kraxner*
Preparation and Characterization of $\text{Yb}_2\text{O}_3 - \text{Al}_2\text{O}_3$ Glass Microspheres with High Alumina Content (**for award**)
- P17 *M. Godla, L. Michaeli, J. Šaliga, M. Sekerák*
The Measuring Workplace for Studying Basic Characteristic of Operational Amplifiers with Remote Access Across the Internet (**for award**)
- P18 *M. Štork*
Frequency Synthesizer Based on Flying Adder Architecture and Phase Locked Loop

Thursday 28. 4.2011 Session: Measurement of Physical Quantities II

Chairmen: D. Hofmann (Germany)
V. Smieško (Slovakia)

Time Authors and Title

- 9:00 *M. N. Durakbasa, P. H. Osanna, B. Sagbas, A. Horníková*
High Precision Production Metrology for Quality Improvement in Biomedical Applications
- 9:15 *Yu. Baksheeva, K. Sapozhnikova, R. Taymanov*
Metrological Self-Check of Platinum Resistance Thermometer
- 9:30 *I. Bačić, K. Malarić*
Measurements of ASTRA Satellite Signal Parameters (**for award**)
- 9:45 *R. Špánek, P. Tyl, M. Hernych, M. Hokr, P. Svoboda, M. Řimnáč, J. Štuller*
Bedřichov Tunnel – Continual Automated Measurement of Physical Quantities (**for award**)
- 10:00 *J. Pacheco de Carvalho, H. Veiga, C. Pacheco, N. Marques, A. Reis*
Performance Measurements of Laboratory IEEE 802.11 b, g WEP Point-to-Point Links

10:15 Coffee break

Thursday 28. 4.2011 Session: Theoretical Problems of Measurement II

Chairmen: P. Regtien (Netherlands)
I. Bajla (Slovakia)

Time Authors and Title

- 10:30 *J. Zakrzewski*
Accuracy in Analytical Measurements
- 10:45 *R. Palenčár, S. Ďuriš*
Influence of Covariances on Uncertainties of Temperature Measurement by Calibrated SPRT.
- 11:00 *M. Godla, L. Michaeli, J. Šaliga, R. Palenčár*
Estimation of ADC Nonlinearities from the Measurement in Input Voltage Intervals
- 11:15 *A. Kowalczyk, R. Hanus, A. Szlachta*
Time Delay Estimation of Stochastic Signals Using Conditional Averaging
- 11:30 *J. Hribik, B. Lojko, P. Fuchs*
Accuracy Verification of Simplified Error Correction Method in Digital Electricity Meters

12:00 – 13:00 Lunch break, then Social program

Friday 29.4.2011 Session: Measurement in Biomedicine II

Chairmen: R. Stojanovič (Montenegro)
J. Holčík (Czech Republic)

Time Authors and Title

- 9:00 *M. Tkáčová, R. Hudák, J. Živčák, J. Švehlík*
Infrared Thermography as a Screening Method for Carpal Tunnel Syndrome Diagnosis
- 9:15 *P. Kačuch, R. Hudák, J. Živčák*
Industrial Computed Tomography in Biomedical Engineering
- 9:30 *I. Frollo, P. Andris, J. Příbil, L. Vojtíšek, T. Dermek, L. Valkovič, D. Gogola, O. Štrbák*
Magnetic Resonance Imaging Methods Used for Weak Magnetic Materials Detection
- 9:45 *P. Szomolányi, E. Pittschieler, V. Juráš, I. Frollo, S. Trattinig*
Development of Dedicated dGEMRIC Protocol for Biochemical Imaging of the Temporomandibular Joint Disc at 3 Tesla: A Feasibility Study
- 10:00 *L. Vojtíšek, I. Frollo, L. Valkovič, D. Gogola, T. Dermek, V. Juráš, P. Szomolányi*
Radiofrequency Coil Array Design and Optimisation for Magnetic Resonance Low Field Imaging

10:15 Coffee break

Friday 29.4.2011 Session: Measurement in Biomedicine III

Chairmen: V. Trunov (Russia)
V. Szathmáry (Slovakia)

Time Authors and Title

- 10:30 *S. Takayama, Y. Matsuda, N. Takahashi, T. Tanaka, K. Kariya*
Dynamic Measurement of Body Inclination in Walking by Body Area Network Sensing System
- 10:45 *F. Hlavačka, D. Bzdúšková, Z. Halická, J. Lobotková, V. Szathmáry*
Assessment of Human Balance During Stance Using Accelerometer Sensors
- 11:00 *M. Kopáni, M. Melník, M. Čaplovičová, J. Ivan, J. Maňka, J. Jakubovský*
Iron Oxides Particles in Globus Pallidus of Human Brain
- 11:15 *M. Teplan, L. Molčan, M. Zeman*
Spectral Analysis of Cardiovascular Parameters of Rats under Irregular Light-Dark Regime

12:00 – 13:00 Lunch break

Friday 29.4.2011 Session: Measurement of Physical Quantities III

Chairmen: A.J. Moses (United Kingdom)
J. Maňka (Slovakia)

Time Authors and Title

- 13:30 *L. Laurinavičius*
High Magnetic Field Sensing by the help of Semiconductor Resonator
- 13:45 *O. Stupakov*
Advantages of Direct Field Approach in Application to Magnetic Hysteresis Measurements (**for award**)
- 14:00 *P. Andris, I. Frollo*
Static Magnetic Field Instability and Its Inhomogeneity Distribution Mapping in NMR
- 14:15 *M. Truhlář, M. Košek, A. Richter*
Experimental and Theoretical Study of Effects in Power Distribution Net

Friday 29.4.2011 Session: Measurement of Physical Quantities IV

Chairmen: M. Košek (Czech Republic)
E. Kureková (Slovakia)

Time Authors and Title

- 14:45 *P.P.L. Regtien, I.M.P. van Wieringen*
Online Measurement of the Penetration Depth in Arc Welding
- 15:00 *I. Mori, O. Fujiwara, H. Garbe*
A New Circuit Approach to Predict Discharge Currents for Air Discharges of ESD Generators
- 15:15 *V. Boháč, P. Dieška, L. Kubičár, V. Vretenár*
Uncertainty Analysis of Model for Cuboid Shape Samples Applied on Thermophysical Measurement of Stone Porous Material
- 15:30 *M. Pavúk, M. Miglierini*
Synchrotron X-ray Diffraction Study of the Crystallization Process in the As-Prepared Amorphous Fe–Mo–Cu–B System (**for award**)

15:45 Coffee break

Friday 29.4.2011 Session: Measurement of Physical Quantities V

Chairmen: E. Kawate (Japan)
M. Hain (Slovakia)

Time Authors and Title

- 16:00 *E. Kawate, M. Hain*
Development of a Scatterometer for Spatial Distribution Measurements of Reflected and Transmitted Light from Diffuse Surfaces
- 16:15 *Yu.V. Chugui, E.S. Senchenko*
High Precision Algorithms for Shadow Inspection of 3D Objects in Partially Coherent Light (**for award**)
- 16:30 *V.E. Kalikin, A.G. Verkhogliad, S.V. Kalichkin, S.N. Makarov, V.S. Bazin, S.G. Savkov*
Automatic Optoelectronic System for Inspection of Wire Wear using High-Speed Image Analysis (**for award**)
- 16:45 *M. Rückwardt, A. Göpfert, M. Schellhorn, S. Holder, G. Linß, S. Kienast*
Using a Structured LED Linear Light Instead of a Laser Line Generator for High Measurement Tasks (**for award**)

Date: 29.-30.4.2011 Posters II: Theoretical Problems of Measurement

Presentation by authors: Friday, 29.4.2011 at 17:00 - 18:00

Poster Authors and Title

- P1 *V. Švendová, J. Holčík*
Comparison of Time Series Decomposition Methods
- P2 *B. Arendacká*
Bootstrap in Common Mean Estimation – a Case Study
- P3 *K. Hornišová*
Performance of Likelihood Calibration Method by Gruet from the Posterior Point of View. Simulation Study
- P4 *K. Bartošová*
The Influence of Increasing Number of Breath Gas Compounds on Binary Classification of Noisy Data
- P5 *G. Wimmer, K. Karovič, V. Witkovský, R. Köning*
Confidence Interval for the Distance of Two Micro/Nano Structures and Its Applications in Dimensional Metrology
- P6 *M. Kollár, K. Kováč*
Application of Cluster Analysis on Antenna Factor Measurements Data
- P7 *E. Kureková, M. Halaj, R. Palenčár, T. Loebel*
The Positional Deviation in Two Numerically Controlled Axes

- P8 *F. Rublík*
On a Non-Parametric Two-Sample Test of Equality of Location Parameters of Multivariate Populations

Date: 29.-30.4.2011 Posters II: Measurement in Biomedicine

Presentation by authors: Friday, 29.4.2011 at 17:00 - 18:00

Poster Authors and Title

- P11 *R. Jiřík, I. Peterlík, J. Jan, J. Fousek, M. Zapf, N. Ruiter*
3D Ultrasound Transmission Tomography Using Synthetic Aperture Focusing and Regularized Algebraic Reconstruction
- P12 *V. Juráš, S. Zbyn, Ch. Pressl, P. Szomolanyi, I. Frollo, S. Trattinig*
In Vivo Measurement of Fast Transversal Relaxation Times of Achilles Tendon Using Ultra-High Field MRI
- P13 *L. Valkovič, V. Juráš, I. Frollo*
Low-Field BOLD Effect Induced by Alcohol and Caffeine Measured in the Upper Limb: A Feasibility Study (**for award**)
- P14 *D. Gogola, L. Valkovič, T. Dermek, L. Vojtíšek, I. Frollo*
Design and Construction of a Head Probe Coil for Vocal Tract Imaging (**for award**)
- P15 *J. Přibíl, J. Horáček, P. Horák, I. Frollo*
Noise Reduction of Recorded Speech in an NMR Imager during Phonation for 3D Vocal Tract Modeling
- P16 *M. Kwacz, M. Mrowka, J. Wysocki*
The Measurement System for Experimental Investigation of Middle Ear Mechanics
- P17 *D. Janusek, M. Kania, R. Zaczek, H. Zavala-Fernandez, A. Zbieć, G. Opolski, R. Maniewski*
Application of the Wavelet Based Denoising Methods for T-Wave Alternans Analysis in High Resolution ECG Maps
- P18 *J. Schlenker, T. Funda, T. Nedělka*
Evaluation of Heart Rate Variability Using Recurrence Analysis (**for award**)
- P19 *P. Kalavský, V. Rosík, S. Karas, M. Tyšler*
Measuring System with Compound Software Architecture for Measurement and Evaluation of Biosignals from Isolated Animal Hearts
- P20 *V. Uspenskiy*
Information Function of the Heart. A Measurement Model
- P21 *A. Takeda, K. Takata, J. Wang, O. Fujiwara*
Dielectric Characterization of Limited Volume of Human Blood by Open-Ended Coaxial Measurement Probe

- P22 *S. Takayama, T. Tanaka, N. Takahashi, Y. Matsuda, K. Kariya*
Dynamic Measurement to Keep Suitable Physical Strength in Exercise by Body Area Network Sensing System
- P23 *A. Wolf, V. Caithaml, L. Nestával*
Telemonitoring of Blood Glucose and Energy Expenditure of Patients with Diabetes Mellitus to Support Optimization of Insulin Dosing (**for award**)
- P24 *M. Škrátek, I. Šimáček, A. Dvurečenskij, J. Maňka*
Some Aspects of Liver Iron Stores Measurement with the SQUID System
- P25 *R. Kliment, P. Smrčka, J. Jeřábek, M. Vítězník*
Selected Methods for Automatical Classification of Psychophysiological States in Experimentally Controlled Psychological Load (**for award**)
- P26 *M. Tkáčová, J. Živčák, P. Foffová*
A reference for human eye surface temperature measurements in diagnostic process of ophthalmologic diseases

Saturday 30.4.2011 Session: Theoretical Problems of Measurement III

Chairmen: P. Otomański (Poland)
V. Witkovský (Slovakia)

Time Authors and Title

- 9:00 *J. Holčík*
Decomposition of Time Series – from Statistical to Linear System Approach
- 9:15 *A. Krakovská, K. Mezeiová*
Choice of Measurement for Phase-Space Analysis: Review of the Actual Findings
- 9:30 *K. Mezeiová, A. Krakovská*
Choice of Measurement for Phase-Space Reconstruction: Decision Based on False Nearest Neighbors Method
- 9:45 *S. Štolc, I. Bajla, K. Valentín, R. Škoviera*
Temporal Pooling Method for Rapid HTM Learning Applied to Geometric Object Recognition

Saturday 30. 4.2011 10:30 Closing Ceremony