



255. PTB-Seminar

MATHMET2010

“Emerging Topics in Mathematics for Metrology – From Measurement Uncertainty to Metrology of Complex Systems”

June, 21-22, 2010

Lecture Hall, Hermann-von-Helmholtz Bau
Physikalisch-Technische Bundesanstalt (PTB), Berlin

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| June 21 | |
| 9:00 | Registration |
| 9:30 | Opening address: L Pendrill (SP, Sweden, Chairman EURAMET) |
| 9:45 | Introduction: M Bär (PTB, Germany) |
| Session 1: | Measurement Uncertainty (Chair: C Elster) |
| 10:00 | A Possolo (NIST, USA) Copulas for Uncertainty Analysis |
| 10:30 | I Lira (Santiago University, Chile) Uncertainty of Measurement based on Calibration Functions: Uninformative Priors, Bayes' Theorem and GUM Supplement 1 |
| 11:00 | E v Collani (Würzburg, Germany) Uncertainty as a Universal Aspect and an Advanced Approach for its Mathematical Handling |
| 11:30-12:00 | Coffee break |
| Session 1: | Measurement Uncertainty (Chair: A Forbes) |
| 13:00 | C Elster (PTB, Germany) Supplement 1 to the GUM and Bayesian Inference |
| 12:00 | F Pavese (Torino, Italy) Development of Methods for Detection of Systematic Effects in Measurements of Quantities realised by SI Standards |

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| 12:30 | A Possolo (NIST, USA) Calibration and Uncertainty Assessment for Certified Reference Gas Mixtures |
| 13:30-15:00 | Lunch |
| Session 2: | Measurement Uncertainty – Applications (Chair: W Wöger) |
| 15:00 | A Forbes*, B Hughes, W Sun (NPL, UK) Weighting Observations from Multi-Sensor Coordinate Measuring Systems |
| 15:30 | S Demeyer (LNE, France) Bayesian Approach to assign Consensus Value in PT Comparisons |
| 16:00 | K Klauenberg*, B Ebert, J Voigt, C Elster (PTB, Germany) Bayesian Concentration Estimation from ELISA Measurements |
| 16:30-17:00 | Coffee break |
| | Discussion & Closing Day 1 |
| 17:00-17:30 | Possibilities and Perspective for International Collaboration in Mathematics in Metrology (F Pavese (IMEKO TC 21), M Bär (EURAMET Focus Group Mathematics & IT)) |
| 18:00 | Workshop dinner (location to be announced) |
| June 22 | |
| 9:00 | Registration |
| Session 2: | Measurement Uncertainty – Applications (Chair: A Possolo) |
| 9:30 | N Fischer (LNE, France) Statistical Tools to perform Sensitivity Analysis in the context of the Evaluation of Measurement Uncertainty |
| 10:00 | J P Hessling (SP, Sweden) Unscented Propagation of Measurement Uncertainty |
| 10:30 | G Wübbeler* (PTB, Germany) , P M Harris, M G Cox (NPL, UK), C Elster (PTB, Germany) Evaluation of Measurement Uncertainty using Adaptive Monte Carlo Methods |
| 11:00-11:30 | Coffee break |

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| Session 3: | Modelling (Chair: L Pendrill) |
| 11:30 | M Bär (PTB, Germany) Modelling with Partial Differential Equations in Metrology |
| 12:00 | L Chapman, C Matthews, S Roberts, L Wright* (NPL, UK) Inverse Modelling for Determination of Thermal Conductivity of Layered Samples |
| 12:30 | M A Henn (PTB, Germany) A Statistical Approach to the Inverse Problem in Scatterometry |
| 13:00-14:00 | Lunch |
| Session 3: | Modelling (Chair: N Fischer) |
| 14:00 | R Emardson (SP, Sweden) Measurement Uncertainty in Sensor Fusion through Nonlinear Kalman Filtering |
| 14:30 | A Chunovkina (VNIIM, Russia) Modelling in Measuring Devices Calibration Procedures |
| 15:00 | H Rabus* and H Nettelbeck (PTB, Germany) Mathematical Challenges Linking Simulations of Nanodosimetric Track Structures and Radiation Transport |
| 15:30-16:00 | Coffee break |
| Session 3: | Modelling (Chair: M Bär) |
| 16:00 | K D Sommer*, M Krystek (PTB, Germany), U D Hanebeck (Karlsruhe University, Germany) Modelling of Measurements for Uncertainty Analysis |
| 16:30 | T Eward (NPL, UK) Metrology of Sensor Networks: Uncertainty Evaluation, Self-Validation, Timing and Data Fusion |
| 17:00 | Closing workshop |
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