

Contents

<i>Foreword</i>	v
Full Papers	
Modeling Measurement Processes in Complex Systems with Partial Differential Equations: From Heat Conduction to the Heart <i>M Bär, S Bauer, R Model and R W dos Santos</i>	1
Mereotopological Approach for Measurement Software <i>E Benoit and R Dapoigny</i>	13
Data Evaluation of Key Comparisons Involving Several Artefacts <i>M G Cox, P M Harris and E Woolliams</i>	23
Box-Cox Transformations and Robust Control Charts in SPC <i>M I Gomes and F O Figueiredo</i>	35
Multisensor Data Fusion and Its Application to Decision Making <i>P S Girão, J D Pereira and O Postolache</i>	47
Generic System Design for Measurement Databases – Applied to Calibrations in Vacuum Metrology, Bio-Signals and a Template System <i>H Gross, V Hartmann, K Jousten and G Lindner</i>	60
Evaluation of Repeated Measurements from the Viewpoints of Conventional and Bayesian Statistics <i>I Lira and W Wöger</i>	73
Detection of Outliers in Interlaboratory Testing <i>C Perruchet</i>	85
On Appropriate Methods for the Validation of Metrological Software <i>D Richter, N Greif and H Schrepf</i>	98
Data Analysis – A Dialogue with the Data <i>D S Sivia</i>	108

Contributed Papers

A Virtual Instrument to Evaluate the Uncertainty of Measurement in the Calibration of Sound Calibrators <i>G de Arcas, M Ruiz, J M Lopez, M Recuero and R Fraile</i>	119
Intercomparison Reference Functions and Data Correlation Structure <i>W Bremser</i>	130
Validation of Soft Sensors in Monitoring Ambient Parameters <i>P Ciarlini, U Maniscalco and G Regoliosi</i>	142
Evaluation of Standard Uncertainties in Nested Structures <i>E Filipe</i>	151
Measurement System Analysis and Statistical Process Control <i>A B Forbes</i>	161
A Bayesian Analysis for the Uncertainty Evaluation of a Multivariate Non Linear Measurement Model <i>G Iuculano, G Pellegrini and A Zanobini</i>	171
Method Comparison Studies between Different Standardization Networks <i>A Konnert</i>	179
Convolution and Uncertainty Evaluation <i>M J Korczynski, M G Cox and P Harris</i>	188
Dimensional Metrology of Flexible Parts: Identification of Geometrical Deviations from Optical Measurements <i>C Lartigue, F Thiebaut, P Bourdet and N Anwer</i>	196
Distance Splines Approach to Irregularly Distributed Physical Data from the Brazilian Northeastern Coast <i>S de Barros Melo, E A de Oliveira Lima, M C de Araujo Filho and C Costa Dantas</i>	204
Decision-Making with Uncertainty in Attribute Sampling <i>L R Pendrill and H Källgren</i>	212

Combining Direct Calculation and the Monte Carlo Method for the Probabilistic Expression of Measurement Results <i>G B Rossi, F Crenna, M G Cox and P M Harris</i>	221
IMet – A Secure and Flexible Approach to Internet-Enabled Calibration at Justervesenet <i>Å Sand and H Slinde</i>	229
Monte Carlo Study on Logical and Statistical Correlation <i>B Siebert, P Ciarlini and D Sibold</i>	237
The Middle Ground in Key Comparison Analysis: Revisiting the Median <i>A G Steele, B M Wood and R J Douglas</i>	245
System of Databases for Supporting Co-Ordination of Processes under Responsibility of Metrology Institute of Republic of Slovenia <i>T Tasić, M Urleb and G Grgić</i>	253
Short Communications	
Contribution to Surface Best Fit Enhancement by the Integration of the Real Point Distribution <i>S Aranda, J Mailhe, J M Linares and J M Sprauel</i>	258
Computational Modeling of Seebeck Coefficients of Pt/Pd Thermocouple <i>H S Aytekin, R Ince, A T İnce and S Oğuz</i>	262
Data Evaluation and Uncertainty Analysis in an Interlaboratory Comparison of a Pycnometer Volume <i>E Batista and E Filipe</i>	267
Propagation of Uncertainty in Discretely Sampled Surface Roughness Profiles <i>J K Brennan, A Crampton, X Jiang, R Leach and P M Harris</i>	271
Computer Time (CPU) Comparison of Several Input File Formats Considering Different Versions of MCNPX in Case of Personalised Voxel-Based Dosimetry <i>S Chiavassa, M Bardiès, D Franck, J R Jourdain, J F Chatal and I Aubineau-Lanière</i>	276

A New Approach to Datums Association for the Verification of Geometrical Specifications <i>J Y Choley, A Riviere, P Bourdet and A Clement</i>	280
Measurements of Catalyst Concentration in the Riser of a FCC Cold Model by Gamma Ray Transmission <i>C Costa Dantas, V A dos Santos, E A de Oliveira Lima and S de Barros Melo</i>	284
Software for Data Acquisition and Analysis in Angle Standards Calibration <i>M Dobre and H Piree</i>	289
Calculation of Uncertainties in Analogue Digital Converters – A Case Study <i>M J Korczynski and A Domanska</i>	293
Asymptotic Least Squares and Student- <i>t</i> Sampling Distributions <i>A B Forbes</i>	297
A Statistical Procedure to Quantify the Conformity of New Thermocouples with Respect to a Reference Function <i>D Ichim and M Astrua</i>	301
Non-Parametric Methods to Evaluate Derivative Uncertainty from Small Data Sets <i>D Ichim, P Ciarlini, E Badea and G Della Gatta</i>	306
Algorithms for Scanning Probe Microscopy Data Analysis <i>P Klapetek</i>	310
Error Correction of a Triangulation Vision Machine by Optimization <i>A Meda and A Balsamo</i>	316
Atomic Clock Prediction for the Generation of a Time Scale <i>G Panfilo and P Tavella</i>	320
Some Problems Concerning the Estimate of the Degree of Equivalence in MRA Key Comparisons and of Its Uncertainty <i>F Pavese</i>	325

Validation of Web Application for Testing of Temperature Software <i>A Premuš, T Tasić, U Palmin and J Bojkovski</i>	330
Measurement Uncertainty Evaluation Using Monte Carlo Simulation: Applications with Logarithmic Functions <i>J A Sousa, Á S Ribeiro, C O Costa and M P Castro</i>	335
Realisation of a Process of Real-Time Quality Control of Calibrations by Means of the Statistical Virtual Standard <i>V I Strunov</i>	340
An Approach to Uncertainty Analysis Emphasizing a Natural Expectation of a Client <i>R Willink</i>	344
Special Issue	
Preparing for a European Research Area Network in Metrology: Where are We Now? <i>M Kühne, W Schmid and A Henson</i>	350
<i>Author Index and e-mail addresses</i>	361