



November 2, 2022

SESSION 1 ROOM A

SESSION 2 ROOM B

8:30

WELCOME
Amphiteater

9:00

OPENING OF THE CONFERENCE
Amphiteater

9:30

INVITED SPEAKER: Walter BICH
The Joint Committee for Guides in Metrology: trying to establish some certainty in measurement uncertainty
Amphiteater

10:10

INVITED SPEAKER: Louise WRIGHT
MathDigiMet: How mathematics & statistics will support digital metrology
Amphiteater

10:50

BREAK

11:20

Key comparison
and conformity
assessment

Dark uncertainty in volume key comparisons and satellite EURAMET comparisons
F. Batista, A. M. H. van der Veen, J. A. Sousa
Conformity assessment of a sample of items – an extension of the JCGM 106:2012
F. Penneccchi, I. Kuselman
Dark uncertainty in key comparisons in the gas analysis area
A. M. H. van der Veen

Unscented Transform method to estimate the predictive input uncertainty in neural networks: Application to the characterization of TiO₂ nanoparticles
P. Manchat, I. Coguelin, N. Fischer, F. Le Pennec
A setup to experiment with machine learning systems: Towards an evaluation procedure for model performance and its uncertainty
S. Zauaga, M. Zeier, H. Lehmann
Uncertainty propagation for random forests
T. Adel, A. Thompson

Machine learning
and uncertainty

11:40

12:00

12:20



13:20

INVITED SPEAKER: Sebastian HEIDENREICH
The strategic research agenda of European Metrology Network MATHMET: From artificial intelligence to virtual metrology
Amphiteater

14:00

Round table MATHMET
Amphiteater

14:50

BREAK

15:20

Statistical calibration and
regression problems

Novel boundary rejection step for point cloud registration
L.-F. Lafon, A. Vissiere, C. Mehdi-Souzan, M. I. Bouazizi, N. Anwer, H. Noura
Automation and uncertainty evaluation for self-calibrating thermocouples
S. Bilson, M. McCrorv, A. Thompson, D. Tucker, J. Pearce
Linear Calibration Methods and the Measurement Uncertainty: Comparison of the Empirical Coverage Probabilities
V. Witkovsky, G. Wimmer
Deep Gaussian Processes for Bayesian Calibration of Computer Models
S. Marmin, M. Filippone
Using Gaussian Process regression to evaluate the impact of the COVID-19 pandemic on levels of deep-ocean acoustic noise
P. M. Harris, S. P. Robinson, S.-H. Cheana, L. Wang, V. N. Livina

The "Metrology for Artificial Metrology in Medicine (M4AIM)" Programme of PTB
H. Rabus, S. Haufe
Explainability for deep learning in mammography image quality assessment
N. Amanova, J. Martin, C. Elster
Improving the assessment of kidney transplant variability
X. Loizeau, I. Partarrieu, J.T. Avorinde, M. Romanchikova, S. A. Thomas
Bayesian Machine Learning and variational inference for on-site sensor calibration in Smart Bay Santa Teresa seawater monitoring
Q. Ma, G. Durin, F. Penneccchi, C. Lombardi, C. Petrioli
Variational Approximate Bayesian Computation (V-ABC) and Applications to Thermocouples and ECG
T. Adel, A. Thompson, S. Thomas, D. Tucker, J. Pearce

Machine learning and
applications

17:00

Meeting of the MATHMET EMN Members
*not part of the conference - only for MATHMET EMN members

18:00

November 3, 2022

SESSION 1 ROOM A

SESSION 2 ROOM B

9:00

INVITED SPEAKER: Olaf DÖSSEL
Machine Learning in Medical Systems
Amphiteater

9:40

INVITED SPEAKER: Nicolas BOUSQUET
Auditable Bayesian modeling for quality measurements
Amphiteater

10:20

BREAK

10:50

Multivariate meta-analysis based on generalized random effects model
O. Bodnar, T. Bodnar

Solving inverse scattering problem efficiently using Lorentz reciprocity theorem
Yifeng Shao, Wim M. J. Coene, Paul H. Urbach

11:10

Meta-analysis of key comparison data in radionuclide metrology
R. Coulon, C. Michotte, V. Gressier

Bayesian Target-Vector Optimization for Efficient Parameter Reconstruction
M. Plock, S. Buraer, P.-I. Schneider

11:30

Meta-analysis of Dosimetry Audits for Assessing Radiotherapy
S. A. Thomas, F. Cooke, M. Hussein, C. H. Clark, N. A. S. Smith

Generative models as prior in Bayesian inverse problems
M. Marschall, G. Wübbeler, F. Schmähling, C. Elster

11:50



LUNCH POSTER SESSION

13:20

GUM-compliant propagation of conformance statements and maximum permissible errors
K. Klauenberg, G. Fover

Computational Imaging for Correction of non-isoplanatic Aberrations in Optical Wafer Metrology
W. Coene, S. Konijnenberg, A. Koolen, T. Tukker, M. Van Kraaij, A. Den Baef, R. Buijs, P. Van Schaijk, T. Cromwijk, M. Adhikary, C. Messinis

13:40

Rejection sampling for Bayesian uncertainty evaluation using the Monte Carlo techniques of GUMS1
M. Marschall, G. Wübbeler, C. Elster

Joint regression and compressed sensing for chemical mapping in nano-FTIR
G. Wübbeler, M. Marschall, E. Rühl, B. Kästner, C. Elster

14:00

Explainability and the interpretability of the GUM methodologies
A. B. Forbes

Pixel-wise uncertainty quantification in electric properties tomography
A. Arduino, S. Mandija, F. Pennecchi, C.A.T. van den Berg, L. Zilberti

14:20

Analysis and comparison of Bayesian methods for type A uncertainty evaluation with prior knowledge
Ianacio Lira

Bayesian uncertainty analysis of inversion model applied to thermal measurements
S. Demeyer, V. Le Sant, A. Koenen, N. Fischer, J. Waeytens, R. Bauchié

14:40

BREAK

15:10

KALMAN filtering to extract patterns and metrological data from dynamic flowmeter calibrations
J. Noël, F. Oaheard

Sensitive Hearts: Challenges with Sensitivity Analysis of Cardiac Models
L. Wright, J. Venton

15:30

When $k = 2$ yields at least 95 % coverage
M. G. Cox, L. Nielsen

High-Dimensional Exponentiation with guaranteed Error Control for Bayesian Likelihood Approximation
N. Farchmin, P. Trunschke, M. Eigel, S. Heidenreich

15:50

Matching the parabolic curve to both correlated coordinates of tested points by the linear regression method
J. Puchalski, Z.L. Warsza

Scalable uncertainty quantification for scene completion
M. Dziemian, J. Venton, A. Thompson, F. Bozvari, A. Forbes

16:10

BREAK

16:40

Spatial correction of low-cost sensors observations for fusion of air quality measurements
M. Bobbio, J.-M. Poqui, B. Portier

ENBIS Amphiteater

17:00

A review of maintenance methods based on reinforcement learning
A. Pievatolo

ENBIS Amphiteater

17:20

Errors-in-Variables for deep learning: rethinking aleatoric uncertainty
J. Martin, C. Elster

ENBIS Amphiteater

17:40

19:00

GALA DINNER

November 4, 2022

| | SESSION 1 ROOM A | SESSION 2 ROOM B | |
|-------|---|---|--|
| 9:00 | Measurement uncertainty III | On the linearisation of a measurement model – An objective legitimacy criterion <i>L. Callegaro, F. Pennecchi, W. Bich</i> | Virtual measurements and digital twins |
| 9:20 | | Modernising Receiver Operating Characteristic (ROC) curves <i>L.R. Pendrill, J. Melin, G. Nordin</i> | |
| 9:40 | | Estimation of the effective sample size in multivariate correlated random processes <i>C. Carabbi, B. Serro</i> | |
| 10:00 | | Optimal measurement strategies based on an algorithm of Gu and Eisenstat <i>A. B. Forbes</i> | |
| 10:20 | BREAK | | |
| 10:50 | INVITED SPEAKER: Stephen ELLISON Beyond the dot-and-bar plot: Graphical methods for interlaboratory data analysis Amphiteater | | |
| 11:30 | INVITED SPEAKER: Antonio POSSOLO Measurement science meets the reproducibility challenge Amphiteater | | |
| 12:10 | CLOSING SESSION Amphiteater | | |
| 12:40 |  LUNCH | | |
| 13:30 | Meeting of the MATHMET EMN Members <small>*not part of the conference - only for MATHMET EMN members</small> | | |
| 15:00 | | | |