

2009 IEEE International Workshop on Advanced Methods for Uncertainty Estimation in Measurement

(AMUEM 2009)

**Bucharest, Romania
06-07 July 2009**



**IEEE Catalog Number: CFP09AMU-PRT
ISBN: 978-1-4244-3592-0**

**Copyright © 2009 by the Institute of Electrical and Electronic Engineers, Inc
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

******This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP09AMU-PRT
ISBN 13:	978-1-4244-3592-0
Library of Congress No.:	2008911557

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com

TABLE OF CONTENTS

MESSAGE FROM THE CHAIRMAN

AMUEM 2009 COMMITTEE

AMUEM 2009 TECHNICAL SESSIONS

Monday, July 6

8:45 AM - 9:00 AM

W: Opening Session

Alessandro Ferrero (Politecnico di Milano, Italy)

Dario Petri (University of Trento, Italy)

9:00 AM - 10:30 AM

M1: Uncertainty Expression I

Chair: Alessandro Ferrero (Politecnico di Milano, Italy)

On the Need to Estimate the Adequacy of Measurement Results 1

Radu Leca (Biosign Technologies Inc., Canada)

Voicu Groza (University of Ottawa, Canada)

The principle of possibility maximum specificity as a basis for measurement uncertainty expression 5

Gilles Mauris (Université de Savoie, France)

Dynamic uncertainty and digital inverse model synthesis 10

Antonello Monti (RWTH Aachen University, Germany)

Ferdinanda Ponci (RWTH Aachen University, Germany)

11:00 AM - 12:30 PM

M2: Methods for Uncertainty Expression

Chair: Dario Petri (University of Trento, Italy)

Description and application of a new method for uncertainty evaluation in two-dimensional indirect measurement 16

Marco Pertile (University of Padova, Italy)

Mariolino De Cecco (University of Trento, Italy)

Luca Baglivo (University of Trento, Italy)

Uncertainty analysis for multi-stereo 3d shape estimation 22

Mariolino De Cecco (University of Trento, Italy)

Luca Baglivo (University of Trento, Italy)

Giorgio Parzianello (University of Trento, Italy)

Massimo Lunardelli (University of Trento, Italy)

Francesco Setti (University of Trento, Italy)

Marco Pertile (University of Padova, Italy)

Graphical Modelling of Measurement Uncertainties in Vision-Based Metrology 28

Markus Brandner (Graz University of Technology, Austria)

2:00 PM - 3:30 PM

M3: Uncertainty Evaluation I

Chair: Gilles Mauris (Université de Savoie, France)

Uncertainty Analysis of the Normalized Frequency Estimation by Multipoint Interpolated DFT

Approach 34

Daniel Belega (University of Timisoara, Romania)
Dominique Dallet (IMS Laboratory - University Bordeaux, France)
Dario Petri (University of Trento, Italy)

Uncertainty propagation for the assessment of tumoral masses segmentation 39

Arianna Mencattini (University of Rome Tor Vergata, Italy)
Giulia Rabottino (University of Rome Tor Vergata, Italy)
Marcello Salmeri (University of Rome Tor Vergata, Italy)
Simona Salicone (Politecnico di Milano, Italy)

A Measurement Procedure of Technology-related Model Parameters for Enhanced RF-MEMS Design 44

Jacopo Iannacci (Fondazione Bruno Kessler - FBK, Italy)
Alena Repchankova (University of Trento, Italy)
David Macii (University of Trento, Italy)
Martin Niessner (Munich University of Technology, Germany)

4:30 PM - 5:30 PM

M4: Uncertainty Evaluation II

Chair: Mihaela Albu (Politehnica University of Bucharest, Romania)

Calibration of the Pressure Transducers 50

Ion Sandu (National Institute of Metrology, Romania)

Case Study about the Effect of Measurement Parameters Values on the Microhardness Results 54

Adrian Catalin Pavalache (University Politehnica of Bucharest, Romania)
Ion Mihai Vasile (University Politehnica of Bucharest, Romania)
Elena-Manuela Stanciu (University Politehnica of Bucharest, Romania)
Ionelia Voiculescu (University Politehnica of Bucharest, Romania)

Tuesday, July 7

9:00 AM - 10:30 AM

T1: Uncertainty: Statistical Properties

Chair: Dario Petri (University of Trento, Italy)

The Use of Student, Chi-square and F Distributions to Quantify the Uncertainty Coverage Interval

in the Case of Different Observed Values 58

Andrea Zanobini (Università di Firenze, Italy)

The Mean Estimation of the Combined Quantities by the Asymptotic Minimax Optimization 63

Wen-Hui Lo (National Chiao Tung University, Taiwan)
Sin-Horng Chen (National Chiao Tung University, Taiwan)

Statistical Properties of Voltage Dip Detectors 69

Gianluca Guerrieri (University of Perugia, Italy)
Antonio Moschitta (University of Perugia, Italy)
Paolo Carbone (University of Perugia, Italy)
Carlo Muscas (University of Cagliari, Italy)

11:00 AM - 12:30 PM

T2: Uncertainty Evaluation III

Chair: Mihaela Albu (Politehnica University of Bucharest, Romania)

An Algorithm for WSN Clock Synchronization: Uncertainty and Convergence Rate Trade Off 74

Daniele Fontanelli (University of Trento, Italy)

Dario Petri (University of Trento, Italy)

ADC Based Measurements: Identification of the Parameters for the Uncertainty Evaluation 80

Ciro Spataro (Università di Palermo, Italy)

A novel theoretical analysis of fault detection for atomic clock 85

Emilia Nunzi (University of Perugia, Italy)

Daniela D'Ippolito (University of Perugia, Italy)

2:00 PM - 3:30 PM

T3: Applications - Case studies I

Chair: Carlo Muscas (University of Cagliari, Italy)

Interactive Design of Electrical Machines Taking Into Account the Measurement Uncertainties 89

Aurel Chirila (Politehnica University of Bucharest, Romania)

Dragos Deaconu (Politehnica University of Bucharest, Romania)

Valentin Navrapescu (Politehnica University of Bucharest, Romania)

Mihaela Albu (Politehnica University of Bucharest, Romania)

Aspects Regarding the Uncertainty of Energy Measurement in the Low Voltage Distribution Network 93

Ioana-Izabela Odor (National Institute of Metrology, Romania)

Dorin Flaminzeanu (National Institute of Metrology, Romania)

Carmen Ionescu (Politehnica University of Bucharest, Romania)

Voltage Estimation in Power Distribution Networks. A Case Study on Data Aggregation and Measurement Uncertainty. 98

Dan Apetrei (SC Electrica SA, Romania)

Ioan Silvas (SC Electrica SA, Romania)

Mihaela Albu (Politehnica University of Bucharest, Romania)

Petru Postolache (Politehnica University of Bucharest, Romania)

Ralf Neurohr (Politehnica University of Bucharest, Romania)

4:00 PM - 5:00 PM

T4: Applications - Case studies II

Chair: Alessandro Ferrero (Politecnico di Milano, Italy)

A Study of the Measurement Chain in the Power Active Filters. Uncertainty and Control Performances. 103

Melania Naumof (Politehnica University of Bucharest, Romania)

Ana Maria Dumitrescu (Politehnica University of Bucharest, Romania)

Mihaela Albu (Politehnica University of Bucharest, Romania)

Razvan Magureanu (Politehnica University of Bucharest, Romania)

Doru Flamanzeanu (National Institute of Metrology, Romania)

Ioana-Izabela Odor (National Institute of Metrology, Romania)

Methods and tools for frequency jump detection 109

Umberto Bartoccini (University for Foreigners, Italy)

Grazia Barchi (University of Perugia, Italy)

Emilia Nunzi (University of Perugia, Italy)

AUTHOR INDEX