



II Advanced School on Evaluation of Uncertainty in Measurement

Support:



Sponsorship:



Organization:



The focus of the Advanced School will be on the recent evolution of thinking regarding measurement uncertainty, especially in terms of placing the subject on a firmer probabilistic footing, and hence removing some of the perceived inconsistencies. The Advanced School will discuss the principles of uncertainty evaluation and their applications to various areas, such as calibration, key comparison data evaluation, least squares model fitting, and conformance. The lecturers will strive for a balance between principles and applications, and between a simple and an advanced treatment.

The Advanced School will consider the concepts of Bayesian probability theory, as they provide a unique, self-consistent method for quantitative reasoning given incomplete information. The concentration will be on

(a) a measurement model relating input quantities (about which information is known) to one or more output quantities (about which information is required),

(b) the characterization of knowledge of a quantity in terms of a probability distribution,

(c) the best estimate of a quantity, and the associated standard uncertainty, and a coverage interval for a quantity characterized by a probability distribution,

(d) the use of new information to update an input probability distribution Bayes' theorem,

(e) the assignment of a probability distribution to a quantity using the Principle of Maximum Entropy, and

(f) the determination of the distribution for an output quantity (or the joint distribution for several output quantities) using the propagation of distributions.

In addition, consideration will be given to the uncertainty framework of the Guide to the expression of uncertainty in measurement (GUM) (especially the law of propagation of uncertainty) and its extension to implicit models, multivariate models, and complex (-valued) models.

Aspects of the first Supplement to the GUM will also be included, especially relating to (i) the propagation of distributions, (ii) the assignment of input distributions using maximum entropy, (iii) the calculation process using Monte Carlo, and (iv) the determination of summaries of the output quantity distribution. Comparison of the approaches used by the GUM and this Supplement will also be addressed.

Lecturers

The list below includes some members of the Working Group (WG1) of the Joint Committee for Guides in Metrology (JCGM) that has responsibility for maintaining the GUM.

– Dr. Walter Bich

Istituto Nazionale di Ricerca Metrologica (INRIM), Turin, Italy

– Prof. Maurice Cox

National Physical Laboratory (NPL), Teddington, UK

– Dr. Wolfgang Wöger

Formerly with Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany

– Prof. Ignacio Lira

Catholic University of Chile (PUC-Chile), Santiago, Chile.

– Prof. Dani Gamerman

Federal University of Rio de Janeiro (UFRJ), Rio de Janeiro, Brazil

Audience

Scientists, engineers, managers, auditors, consultants and representatives from universities, governmental agencies, industry and commerce, calibration and test laboratories, and national metrology institutes. It is assumed that the attendees are familiarized with the GUM.

Venue and Important Dates

The Advanced School will be held in Rio Othon Palace Hotel, Copacabana, Rio de Janeiro, Brazil, from 10 to 14 December 2007.

Contact information

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