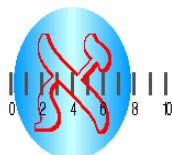


## FINAL ANNOUNCEMENT AND PROGRAMME

### International Conference on Advanced Mathematical and Computational Tools in Metrology and Testing (AMCTM 2008)



Paris (ENS, Cachan), France



23-25 June, 2008

*supported by*  
**IMEKO TC21 “Mathematical Tools for Measurements”\***

*supported and organised by*  
**CFM “Collège Français de Métrologie”**



See AMCTM 2008 :

<http://www.cfmetrologie.com/amctm08.php>



*The VIII AMCTM Conference will be held in Paris organised by the Collège Français de Métrologie ([www.cfmetrologie.com](http://www.cfmetrologie.com)) jointly with IMEKO TC21 ([www.imeko-tc21.org](http://www.imeko-tc21.org)). Following the first workshop held in Torino (1993), the previous AMCTM conferences were held in Oxford (1995, 1999), Berlin (1996) and Lisboa (2000) (supported by the European Union EuroConferences Programme) and in Torino (2003) and Lisboa (2005) (supported by the EU Network SofTools\_Metronet), and led to seven volumes on Advanced Mathematical and Computational Tools in Metrology published by World Scientific [www.wspc.com](http://www.wspc.com). Volumes past content tables can be found at [www.amctm.org](http://www.amctm.org).*

**Chairpersons:** Franco Pavese (chairperson TC21, INRIM, Italy), Jean-Marc Linares (CFM representative with TC21, Université Aix-Marseille II, France),

**International Scientific Programme Committee:**

**European Chapter:** Franco Pavese, Alistair Forbes (scientific secretary IMEKO TC21, NPL, UK), Jean-Marc Linares, Markus Bär (PTB, Germany), Eric Benoit (scientific secretary IMEKO TC7 and Université de Savoie, France), Pierre Bourdet (Université ENS Cachan), Wolfram Bremser (BAM, Germany), Patrizia Ciarlini (CNR-IAC, Italy), Eduarda Filipe (IPQ, Portugal), Nicolas Fischer (LNE, France), Leslie Pendrill (SP, Sweden), Christophe Perruchet (UTAC, France and chairperson ISO TC69), Carlo Ferrero (chairperson IMEKO TC8, INRIM, Italy).

**International Chapter:** Isao Kishimoto (NMIJ-AIST, Japan), Alan Steele (NRC-CNRC, Canada), Nien Fan Zhang (NIST, USA).

**Organising Committee:** Pierre Bourdet, Claire Lartigue (Université ENS Cachan), Jean-Marc Linares, Nicolas Fischer, Franco Pavese, Marc Priel (vice-président CFM, LNE, France).

**Scientific Secretary:** Jean-Marc Linares.

**Conference Secretariat:** Sandrine Gazal (Collège Français de Métrologie, France).

**For information:** [sandrine.gazal@wanadoo.fr](mailto:sandrine.gazal@wanadoo.fr), [jean-marc.linares@univmed.fr](mailto:jean-marc.linares@univmed.fr), [f.pavese@inrim.it](mailto:f.pavese@inrim.it)

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Sponsor list: CFM, LNE, IMEKO TC21, INRIM, Université ENS Cachan, IMEKO TC7, IMEKO TC8, EUROMET/ EURAMET; ENBIS, SIMAI. The evitherm Society.

### Conference aims

- To present and promote reliable and effective mathematical and computational tools in metrology;
- To understand better the modelling, statistical and computational requirements in metrology;
- To provide a forum for metrologists, mathematicians and software engineers that will encourage a more effective synthesis of skills, capabilities and resources;
- To promote collaboration in the context of EU and International Programmes;
- To support young researchers in metrology and related fields, also through training;
- To address industrial requirements;
- To cover both fields of calibration and testing



### Topics for the 2008 Conference

The main theme of the conference, reinforced by the establishment of IMEKO TC21, is to provide a central opportunity for the metrology and testing community worldwide to engage with applied mathematicians, statisticians and the software engineers working in the relevant fields.

**The 2008 conference will deliver the following topics in thematic sessions:**

**Note: Uncertainty evaluation underpins all themes**

- **Fundamentals in measurement**
- **Written standards for metrology and testing**
- **Industrial statistic and Metrological traceability**
- **Health, Chemical and environmental metrology and testing**
- **Dynamic measurements**
- **Modelling and inverse problems in metrology**
- **Measurement software and internet metrology**
- **Key comparisons**
- **Metrology, calibration and testing**

### Conference format

AMCTM VIII will have plenary sessions and two parallel sessions. Oral presentations can add a poster augmenting the oral presentation. A dedicated poster session and a Round Table discussion are completing the programme.

**Poster presentations, displayed since the morning of the first day, remain in show for the rest of the Conference, so they can be discussed during all the Conference breaks.**

**The provisional Conference Programme is reported at the end of this Announcement.**

An open meeting of IMEKO Technical committee TC21 will take place on Wednesday afternoon.



**Submission of abstract of papers (still open for poster presentation only): closing 10 May 2008**

Authors intending to contribute are invited to submit a one to two **A4 page abstract** to the Conference Scientific Secretary, in the MS Word or LaTeX style that can be found for the 9.00”x6.00” book format under [http://www.worldscientific.com/style/proceedings\\_style.shtml](http://www.worldscientific.com/style/proceedings_style.shtml), for review by the International Programme Committee.

**Send mandatory by e-mail to:** [info@cfmetrologie.com](mailto:info@cfmetrologie.com) with subject “AMCTM2008 abstract” (optional: additional postal shipment to the address below) Reception and acceptance of the abstracts will be confirmed by e-mail.

**Manuscript submission**

Authors of accepted papers are asked to submit the full manuscript (invited 12 pages, oral 6 pages, poster 4 pages) at the Conference within its end. Manuscripts should be prepared in MS Word or LaTeX, without exception according to the style that can be found for the 9.00”x6.00” book format under [http://www.worldscientific.com/style/proceedings\\_style.shtml](http://www.worldscientific.com/style/proceedings_style.shtml). Following peer review, the selected submitted papers will be published in the book “Advanced Mathematical and Computational Tools in Metrology VIII” (World Scientific, Singapore). An accompanying CD-ROM will in addition include all submitted papers.

**Poster dimensions: width 1 m, height 2 m.**

**Venue**

The AMCTM 2008 Conference will be held in Paris, Université de ENS in Cachan (Paris Suburb). For more information about the venue visit the website <http://www.cfmetrologie.com/amctm08.php> and <http://www.ens-cachan.fr>.

**Registration cost**

The normal registration fee for the three-day Conference is € 360 (discounts are available to IMEKO TC21 members/friends –max 2 persons per member Institution and 1 per friend Institution).

It includes taxes, coffee breaks, lunch (Monday and Tuesday), Abstract Booklet and one copy of the book AMCTM VIII with the accompanying CD-ROM.

**For more information and payment information see the Registration Form attached to this Announcement.**

**Accommodation**

A list of hotels closer to the venue can be found on <http://www.cfmetrologie.com/amctm08.php>.

Each participant is asked to arrange his/her own hotel accommodation.

*For further information visit the Conference webpage or contact the Conference Secretariat.*

**AMCTM 2008 Organisation:**

**Scientific Secretary:**

J-M. Linares, Université Aix-Marseille II  
[jean-marc.linares@univmed.fr](mailto:jean-marc.linares@univmed.fr)

**AMCTM 2008 Chairpersons:**

F. Pavese, INRIM, Torino, Italy  
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**Conference Administration:**

Sandrine Gazal  
**Tel:** 33 4 67 06 20 36  
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[info@cfmetrologie.com](mailto:info@cfmetrologie.com)

**Conference address:**

Collège Français de Métrologie  
AMCTM 2008  
1 Rue Gaston Boissier  
75724 Paris Cedex 15, France





# Conference AMCTM 2008, Paris 23–25 June



## AMCTM2008 delegate Registration Form

23–25 June 2008

ENS, Cachan (Paris), France

One per delegate, photocopies accepted

Name:	
Organisation:	
Address:	
City:	
Region:	
Country:	
Post Code/ZIP:	
Tel:	
Fax:	
Email:	

<u>Registration (euros)</u>	<b>Before 2008-05-23</b>	<b>After 2008-05-23</b>	<b>Quantity</b>	<b>Cost</b>
Workshop - 3 days				
Participants	360	420		
IMEKO TC21 and CFM Members (inquire)	265	305		
Tuesday Conference Dinner	60	85		
Dinner for Accompanying people	60	85		
CFM VAT registered number FR 14442921045			<b>Total*</b>	

\* Prices are in euros and include 19.6% VAT.

The registration fee for the three-day Conference includes lunches (Monday and Tuesday), coffee breaks and one copy of the book AMCTM VIII with CD-ROM. Additional lunch for Wednesday can be locally bought for € 8.

I/my partner have special dietary requirements: .....

I/my partner have special access needs:

.....

### Payment by cheque or by international bank transfer to the following bank account

IBAN FR 76 1820 6004 2636 6888 4200 101 BIC AGRIFRPP882  
Bank CRCA Paris IAA, 26 quai de la Rapée, 75596 Paris Cedex 12 – Fr

- I enclose a cheque for ..... made payable to Collège Français de Métrologie
- I order a bank transfer to the account of the Collège Français de Métrologie
- Please invoice me for..... Company purchase order number:.....  
VAT number.....

Signature .....

Date.....

Return to: Sandrine Gazal,  
Collège Français de Métrologie,  
429 Rue de l'Industrie – CS 70003  
34078 Montpellier Cedex 3 – France  
**Fax: +33 4 67 06 20 35**

Or email to:

[info@cfmetrologie.com](mailto:info@cfmetrologie.com)





**Provisional Conference Programme**

The programme is a digest of the typical activities of IMEKO TC21. It presents a broad range of subject matters of interest for both fields of metrology and of testing, and includes at least one **invited** presentation for each of the Sessions, delivered by a recognised authority in each field coming from world leading Institutions (CIPM CCQM, LNE, NIST, NPL, NRC, PTB, leading Universities, VSL-NMI). Other leading scientists in both fields of metrology and testing are performing outstanding **oral** presentations, together with younger scientists, from a total of more than 20 countries all round the world.

The parallel sessions account for only 1/2 of the presentations, leaving a wide opportunity to fully appreciate the Conference programme from **plenary talks** and, due to schedule restrictions, from a number of **poster** presentations that can be amply discussed in a dedicated Session and during all the conference breaks.

A Round Table is taking place as the core of the Conference, concerning the new GUM and new ISO 5725 in preparation, of interest of both metrology and testing, conducted by a panel of scientists directly and deeply involved in the process, who will make an introduction to the theme to facilitate the debate.

**Monday, June 23**

9:10

**CONFERENCE OPENING**

**Session 1 - Fundamentals in measurement**

Chairs: G.B. Rossi (IT), E.Benoit (FR)

9:30 . Possibility distribution: a useful tool for representing coverage intervals with and without the probability density knowledge. G.P. Mauris (FR)

9:55 . Uncertain complex numbers. B.D. Hall (NZ)

10:20–10:40

*Break*

10:40 . Derivation of an output PDF from Bayes' theorem and the principle of maximum entropy. I. Lira (CI), C. Elster (DE), W. Wöger (DE), M.G. Cox (UK)

11:05 . Transferring Monte Carlo distributions in the analysis of uncertainty. R. Willink (NZ)

11:30 **A.B. Forbes** (NPL, *invited Session 1*): Nonlinear Least Squares, maximum likelihood estimation and Bayesian inference.

12:00 **R. Kenett** (KPA & ENBIS, *invited Session 3*): Quality by design applications to analytical methods in the pharmaceutical Industry.

12:30

*Lunch*

13:15

**POSTER SESSION**

14:35

**A. Clément, P. Serré** (LISMMA, *invited Session 2*): Declaration and specification of a geometrical part in the language of Geometric Algebra.

**Session 2**

**Metrology, Calibration and Testing**

Chairs: E.Filipe (PT), J.-M.; Linares (FR)

15:05 . Gear metrology of statistical tolerancing by numerical simulation. J.-P. Vincent, C. Baudouinc, J. Bruyere, J.-Y. Dantan, R. Bigot (FR)

15:30 . The uncertainty in a laboratory furnace temperature measurement, A.D. Papargyris, S.A. Papargyri (GR)

15:55 . Likelihood maximisation against the probability density function shape. S. Aranda, J.-M. Linares, J.-M. Sprauel (FR)

16:20–16:40

*Break*

16:40 . Orthogonal distance fitting of precision free-form surfaces based on L-1 norm. X.C. Zhang, X.Q. Jiang, P.J. Scott (UK)

17:05 . Uncertainty evaluation for pose estimation by multiple camera measurement system. M. Douilly, N. Anwer, P.Bourdet, N. Crevassus, P. Le Vacon (FR)

17:30 **R. Kaarls** (CIPM-CCQM, *invited Session 6*): Considerations and developments in uncertainty evaluations in chemical metrology.

18:00–18:30 **C. Elster, A. Link** (PTB, *invited Session 4*): Analysis of dynamic measurements: compensation of dynamic error and evaluation of uncertainty.

**Session 3**

**Industrial Statistic and Metrological**

**Traceability**

Chairs: R.Kenett (IL), M. Saporta (FR)

. An optimised uncertainty approach to guard-banding in global conformity assessment. L.R. Pendrill (SE)

. Sensitivity analysis in metrology: study and comparison on different indices for measurement uncertainty. A. Allard, N. Fischer (FR)

. Evaluation of uncertainties on datum-system reference. J. Maihle, J.-M. Linares, J.-M. Sprauel (FR)

. Expert programs supporting the form deviations measurement. M. Pawlowski, B. Gapinski, M. Grzelka, M. Rucki (PL)

. Kalman filter type sequential method with stopping rule for calibration of measurement instruments. C. Hajiyev (TR)





**Tuesday, June 24**

**Session 4 - Dynamic Measurements**

Chairs: A.B. Forbes (UK), N. Fischer (FR)

- 9:00 . Impact of correlation on the results of a dynamic calibration. G. Wübbeler, A. Link, T. Bruns, C. Elster (GE)
- 9:25 . Digital filtering for dynamic uncertainty. J.P. Hessling (SE)
- 9:50 . Challenges in practical dynamic calibration. T. Bruns, M. Kobusch, E. Franke (GE)

**Session 5 - Health Metrology and Testing**

Chairs: M.P. Sassi (IT), M.Priel (FR)

- . Lossless compression of computer tomography point clouds. R. Schmitt, S. Fritz (GE)
- . Multivariate and functional clustering applied to measurements of laboratory analysis systems I. Winzenborg, A. Geistanger, U. Stadtmüller (GE)

**Session 6 - Chemistry and Environment Metrology and Testing**

Chairs: K;-D. Sommer (DE), P. Charlet (FR)

- . Implementation of some mathematical approximation methods of functions for study of the factors which influence the ferment activity of beer yeast. M. Milici, R. Rotar, D. Milici (RO)
- . Uncertainties of standard concentrations, calibration line and predictions. C. Yardin (FR)

10:15 **Round Table on  
“Dynamic Measurements”**

10:40

- . Optimal decision rules and limits of detection. J.A. Sousa (PT), A.B. Forbes (UK)

11:05–11:25

Break

- 11:25 . Evaluation of uncertainty of Arrhenius parameter in chemical kinetics fitting. R. Kessel, W.S. McGivern, R. Kacker (GE, USA, Session 6)

11:50 **G.B. Rossi** (DIMEC, *invited Session 5*): Measurement of characteristics related to human perception.

12:20 **N.F. Zhang** (NIST, *invited Session 4*): Allan Variance and the Uncertainty of Autocorrelated Measurements.

12:50

Lunch

14:10 **G. Rietveld** (VSL-NMi, *Invited Session 7*): Quality of measurement software and new opportunities for remote calibration.

**Session 7 - Measurement Software and IT**

Chairs: I. Kishimoto (JP), P. Bourdet (FR)

**Session 8 - Written Standards for Metrology and Testing**

Chairs: L. Pendrill (SE), C. Perruchet (FR)

14:40 . A framework of multivariable-simultaneous measurement by a single device. T. Ishigaki, T. Higuchi, K. Watanabe (JP)

. An approach to uncertainty analysis using nested analysis. M. do Ceu Ferreira, A. Furtado, E. Filipe (PT)

15:05 . A software simulation tool to evaluate the uncertainties for a lock-in amplifier. P. Clarkson, T.J. Eward, P.M. Harris, K.J. Lines, F.O. Onakunle, I.M. Smith (UK)

. A comparison among methods for measuring uncertainty based on the ISO standards. L. Deldossi (IT)

15:30 . A new guide for the development and assessment of measurement software. N. Greif, G. Parkin (GE, UK)

. Current issues in the evaluation of ionising radiation measurements. D. Grientschning (AT)

15:55 . Calculate measurement uncertainty using MUSE. M. Müller, M. Wolf, M. Rösslein (CH)

. To which degree the concepts for the expression of uncertainty are consistent in present international written standards and guides for metrology and testing? F. Pavese (IT)

16:20–16:40

Break

16:40 **M. Priel** (LNE, *Invited Session 8*): From GUM to alternative methods for measurement uncertainty evaluation.

17:10–18:40

**ROUND TABLE**

**The new GUM and the new ISO 5725: similarities and dissimilarities**

Moderator: F.Pavese.

Panel and introductions from:

M.G. Cox (BIPM WG on GUM),  
P. De Bièvre (CIPM WG on VIM),  
C. Perruchet (ISO TC69, Chairman)

20:30

CONFERENCE DINNER





Wednesday, June 25

**Session 9 - Key Comparisons**  
Chairs: R.J. Douglas (CA), G. Geneves (FR)

- 9:00 . Analysis of key comparison data using detailed uncertainty information. A.G. Chunovnika (RU), I. Lira (CI), C. Elster, W. Wöger (GE)
- 9:25 . Proficiency testing for calibration laboratories. E. Filipe (PT)
- 9:50 . Computer experiments for an alternative approach to mass measurement. H.K. Liu (USA)
- 10:15 . Defining an intercomparison reference value: ongoing arguments and new challenges. W. Bremser (DE)
- 10:40 . Modelling of dynamic measurement systems and uncertainty analysis employing discretised state-space. K.-D. Sommer (PTB, Session 10)

**Session 10 - Modelling and Inverse Problems in Metrology**

Chairs: M. Bär (DE), J.-M. Sprauel (FR)

- . Robust line detection for line scale calibration. C. Galvan, J.A. Muñoz-Gomez (MX)
- . Model adequacy in measurements: estimation and improvement. V.A. Granovski, T.N. Siraya (RU)
- . Development of a mathematical procedure for modelling and inspecting complex surfaces for measurement process. S. Boukebbab, H. Bouchenitfa (AL), J.-M. Linares (FR)
- . The propagation of uncertainty related to the calibration functions of platinum resistance thermometers and possible correlation effects. A.S. Ribeiro, J.A. de Sousa, C.O. Costa (PT), M. Cox, P.M. Harris (UK)

11:05–11:25

Break

- 11:25 . Modelling and uncertainty estimates for numerically reconstructed profiles in scatterometry. H. Groß, A. Rathsfeld, M. Bär (PTB, Session 10)

11:50 **R.J. Douglas, A.G. Steele** (NRC, *Invited Session 9*): Methods for aggregating key comparisons.

12:20 **B. Toman** (NIST, *Invited Session 10*): Model based uncertainty analysis in inter-laboratory studies.

12:50–13:00

**CONFERENCE CLOSE**

13:00

Lunch (on request)

14:00–16:00

**IMEKO TC 21 MEETING (open meeting)**

POSTER PRESENTATIONS (poster dimensions W 1 x H 2 m)

1) F. Pavese, J.-R. Filtz, J. Fischer, W. Hohenaue, P. Leparlouer, V. Mathot, P. Nesvadba, I Severn: The evitherm Society plc: a renewed vision and new life for the Virtual Institute for Thermal Metrology

**Statistics and uncertainty**

- 2) R. Willink (New Zealand): Mathematical entropy – and a criticism of the usage of the principle of maximum entropy in metrology
- 3) P. Ciarlina, U. Maniscalco, L. Appolonia (Italy): An application of mixture of soft sensors to simulate accurate air ambient measurements
- 4) H. Tanaka, K. Ehara (Japan): Validity of expanded uncertainties evaluated using the Monte Carlo method
- 5) J. Lose, P. Fritz AND R. Schmitt (Germany): Performance evaluation of metamodels
- 6) G.P. D’Errico (Italy): Measurement uncertainty in a non-classical context
- 7) Z.L. Warsza, M. Dorozhovets, J.M. Korczynski (Poland): Equivalent number of autocorrelated measurement observations for uncertainty type A evaluation

**Calibration**

- 8) M.S. Boulahlib, B. Renou, I. Amara et A. Boukhalfa (Algeria): Temperature measurement using a fine wire compensated thermometry technique in lean premixed flame
- 9) I.M. Barbosa, E. Del Moral Hernandez, M.L. Collucci da Costa Reis, O.A. de Faria Mello (Brazil): Multi-determination of aerodynamic loads using calibration curve with a polynomial and MLP neural network combination.
- 10) B. Gapinski, M. Rucki, M. Pawlowski (Poland): Measurement strategy analysis for out-of-roundness measurement with CMM
- 11) E. Batista, E. Filipe, N. Almeida (Portugal): Uncertainty analysis in calibration of standard volume measures
- 12) G. Lito, M.F. Camões, M.J. Nunes (Portugal): Advances on potentiometric pH measurements
- 13) F. Arias, G. Panfilo (BIPM, Sèvres): ALGOS: the time scale algorithm used to calculate UTC
- 14) V.S. Bormashov, A.S. Baturin, A.V. Zablotskiy (Russia): Virtual atomic microscope as a tool for nanometrology
- 15) P. Otal (France): Weighted least-squares method for the calibration of pressure balances
- 16) A.V. Zablotskiy, A.S. Baturin, V.S. Bormashov (Russia): Concept of “Virtual Scanning Electron Microscope” for nanometrology
- 17) T. Barashova (Estonia): Methods for estimation the effect of correlation at the measurement of alternating voltages
- 18) C. Hajiyev (Turkey): Determination of optimum input signals via d-optimality criterion for calibration of measurement instruments





## Conference AMCTM 2008, Paris 23–25 June



### Health, biology, chemistry

- 19) I. Piciorea, S. Liviu, I. Stefanescu, M. Buzoianu (Romania): Heavy water standard
- 20) M. Milici, D. Milici (Romania): Errors computing in using extrapolation functions for forecasting of sportive performances
- 21) K. Grzebyk, P. Hruszowiec, M. Szmyrka-Kaczmarek (Poland): Applications of statistics to medical researches

### Software and IT

- 22) S. Giunta, A. Merlone, P. Marcarino, S. Botta, V. Giovanetti (Italy): Dedicated software package for pressure regulation at 1 ppm level using a Gas Controlled Heat Pipe
- 23) C. Salame, R. Habchi, P. Mialhe (Lebanon, France): Mathematical Software Tools for Silicon Devices parameters extraction at high temperatures
- 24) M.J. Korczynski, Z.L. Warsza (Poland): Instrument with on-line data cleaning and uncertainty evaluation –scope for works.
- 25) P. Castro, M. A. Villamañan, M. J. Martin, D. Del Campo: Modelling high temperature furnace using finite volume software

