

Registration

www.ercoftac.org

Location

Onera
BP72 - 29 avenue de la Division Leclerc
FR-92322
CHATILLON CEDEX



Courtesy: Onera



Course Fees

€640 ERCOFTAC-members

€995 Non-members

Please note fee covers refreshments, lunch, course material and course dinner.
Accommodation is not part of the fee.

Registration

Please contact Dr. Richard Seoud at the earliest opportunity to reserve a place:

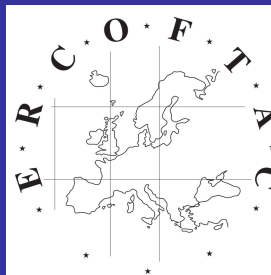
Dr. Richard E. SEOUD

ERCOFTAC Industry Engagement Officer

Tel: +44 (0)207 559 1430

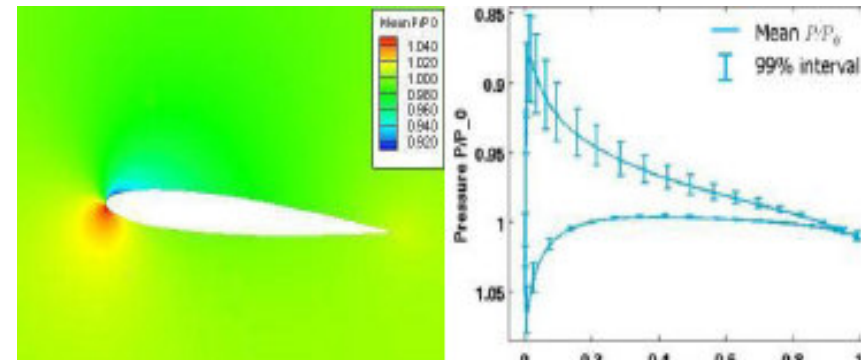
Email: richard.seoud-ieo@ercoftac.org

For further information : www.ercoftac.org



Mathematical Methods and Tools
in Uncertainty Management and Quantification

www.ercoftac.org



Course Coordinator: Prof. Charles Hirsch

24-25 October 2013

ONERA, Chatillon
Paris - France

Information

The ERCOFTAC Association, is a global leader in the field of applied fluid dynamics. Through the guidance of its Knowledge Network Committee, it is proud to announce a two day course on :

Mathematical Methods and Tools in Uncertainty Management and Quantification

Uncertainty quantification is a new paradigm in industrial analysis and design as it aims at taking into account the presence of numerous uncertainties affecting the behavior of physical systems. Dominating uncertainties can be either be operational (such as boundary conditions) and / or geometrical resulting from unknown properties, such as tip clearances of rotating fan blades or from manufacturing tolerances. Other uncertainties are related to models, such as turbulence or combustion should also be considered, or to numerical related errors. Whether bringing a new product from conception into production or operating complex plant and production processes, commercial success rests on careful management and control of risk in the face of many interacting uncertainties.

Historically, chief engineers and project managers have estimated and managed risk using mostly human judgment founded upon years of experience and heritage. As the 21st century begins to unfold, the design and engineering of products as well as the control of plant and process are increasingly relying on computer models and simulation.

This era of virtual design and prototyping opens the opportunity to deal with uncertainty in a systematic formal way by which sensitivities to various uncertainties can be quantified and understood, and designs and processes optimized so as to be robust against such uncertainties.

After several successful Courses on the applications of UQ, ERCOFTAC decided, based on requests from many participants, to focus the present Course on the mathematical methodologies of UQ, enabling the participants to develop an in-depth understanding of the main methods such as: spectral, including polynomial chaos methods; methods of moments and Monte Carlo methodologies.

The lectures will be given by worldwide recognised experts in these fields, who will cover the basics as well as representative applications.

Lecturers

Olivier Le Maître
• Visiting Professor, Duke University
Department of Mechanical Engineering and Materials Science, Durham, NC
• Directeur de Recherche, CNRS
Laboratoire d'Informatique pour la Mécanique et les Sciences de l'Ingénieur, Orsay, France

Gilbert Rogé: Dassault Aviation, Paris, France

Mike Giles
Professor of Scientific Computing at Oxford University
Professorial Fellow in Mathematical Finance at St Hugh's College

Charles Hirsch
Prof. Em. Vrije Universiteit Brussel
President, Numeca Int.

Programme

Thursday 24 October 2013

09:00	General Introduction to Uncertainty Management and Risk Analysis	Prof. C. Hirsch
10:00	Foundations and applications of spectral methods for uncertainty quantification I	Prof. O Le Maître
11:00	Refreshments	
11:30	Foundations and applications of spectral methods for uncertainty quantification II	Prof. O Le Maître
12:30	Lunch	
13:30	Foundations and applications of spectral methods for uncertainty quantification III	Prof. O Le Maître
14:30	Foundations and applications of Methods of Moments for uncertainty I	Dr. G. Roge
15:30	Refreshments	
16:00	Foundations and applications of Methods of Moments for uncertainty II	Dr. G. Roge
17:00	Q&A	
	Course Dinner	

Friday 25 October 2013

09:00	Foundations and applications of Methods of Moments for uncertainty III	Dr. G. Roge
10:00	Foundations and applications of Monte-Carlo methods for uncertainty quantification I	Prof. M. Giles
11:00	Refreshments	
11:30	Foundations and applications of Monte-Carlo methods for uncertainty quantification II	Prof. M. Giles
12:30	Lunch	
13:30	Foundations and applications of Monte-Carlo methods for uncertainty quantification III	Prof. M. Giles
14:30	Q&A	
15:30	Close	