Programme

LECTURE SERIES
2011-2012

VKI-LS

- ☐ INTRODUCTION TO MEASUREMENT TECHNIQUES
  October 10-14, 2011
- ☐ UNCERTAINTY QUANTIFICATION IN COMPUTATIONAL FLUID DYNAMICS (RTO-AVT-VKI)
  October 24-28, 2011
- ☐ ENGINE INTAKE AEROTHERMAL DESIGN : SUBSONIC TO HIGH SPEED APPLICATIONS (RTO-AVT-VKI)
  November 14-16, 2011
- ☐ INTRODUCTION TO CFD
  January 16-20, 2012
- ☐ STRUCTURAL DESIGN OF AIRCRAFT ENGINES (RTO-AVT-VKI)
  January 23-27, 2012
- ☑ LARGE EDDY SIMULATION AND RELATED TECHNIQUES: THEORY AND APPLICATIONS
  February 6-10, 2012
- ☐ AIRCRAFT NOISE
  March 12-16, 2012
- ☐ FLUID DYNAMICS ASSOCIATED TO LAUNCHER DEVELOPERS (RTO-AVT-VKI)
  April 2-6, 2012
- ☐ INTRODUCTION TO OPTIMIZATION AND MULTIDISCIPLINARY DESIGN IN AERONAUTICS AND TURBOMACHINERY
  May 7-11, 2012
- ☐ COMBUSTION IN AERO ENGINES
  June 4-8, 2012
- ☐ ACCURATE TEMPERATURE MEASUREMENTS
  September 2012

OTHER EVENTS

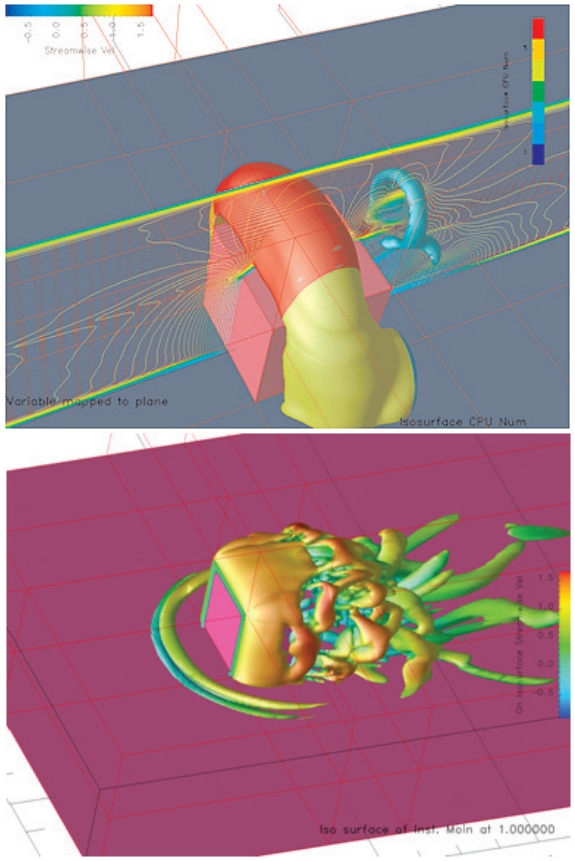
- ☐ SHORT COURSE ON RADIAL COMPRESSOR
  February 6-10, 2012
- ☐ SYMPOSIUM OF VKI PHD RESEARCH 2012
  March 5-7, 2012

(Please correct your address if necessary)

Lecture Series Secretary
von Karman Institute for Fluid Dynamics
72 Chaussée de Waterloo
B-1640 Rhode-St-Genèse
Belgium

von KARMAN INSTITUTE
FOR FLUID DYNAMICS

LARGE EDDY SIMULATION AND RELATED TECHNIQUES THEORY AND APPLICATIONS



February 6-10, 2012

von Karman Institute for Fluid Dynamics
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INTRODUCTION

The purpose of this Lecture Series is to offer a full overview of the present development and the potential of the Large Eddy Simulation (LES) of turbulent flows. The first part of the course will introduce and discuss fundamental principles, present state-of-the-art applications and possible developments of LES and Detached Eddy Simulation (DES) which represents the most promising technique to extend the usefulness of LES for high Reynolds-number flows. A real-time demonstration showing how to set up, execute and assess an LES of a wall-bounded flow will be carried out.

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The second part will present applications of these approaches to various engineering fields of wide interest. The course will be delivered by internationally recognized experts. Its content is addressed both to researchers interested in the fundamental simulation of turbulence and engineers wanting to apply the LES technique or LES solvers to the accurate simulations of turbulent flows.

The Lecture Series Directors are Prof. U. Piomelli, Queen's University, Canada, and Prof. Benocci and Prof. Van Beeck from the von Karman Institute.

TIMETABLE

Monday 6 February 2012

08:45 Registration
09.00 Welcome address
Mr. J. Muylaert, Director, von Karman Institute for Fluid Dynamics, Belgium
09.30 Large-Eddy and Direct Simulation of Turbulent Flows
Pr. U. Piomelli, Queen's University, Ontario, Canada
10:45 Coffee break
11:00 Large-Eddy and Direct Simulation of Turbulent Flows (Cont'd)
Pr. U. Piomelli
12:30 Lunch break
14:00 Large-Eddy and Direct Simulation of Turbulent Flows (Cont'd)
Pr. U. Piomelli
15:15 Coffee break
15:45 Large-Eddy and Direct Simulation of Turbulent Flows (Cont'd)
Pr. U. Piomelli
17:00 Reception

Tuesday 7 February 2012

09:00 Large-Eddy and Direct Simulation of Turbulent Flows (Cont'd)
Pr. U. Piomelli
10:30 Coffee break
11:00 Large-Eddy and Direct Simulation of Turbulent Flows (Cont'd)
Pr. U. Piomelli
12:30 Lunch break
14:00 Numerical Implementation of Large-Eddy Simulation (Cont'd)
Pr. P. Sagaut Université Pierre et Marie Curie-Paris 6, France
15:15 Coffee break
15:45 Numerical Implementation of Large-Eddy Simulation (Cont'd)
Pr. P. Sagaut

Wednesday 8 February 2012

09:00 Detached Eddy Simulation
Pr. K. Squires, Arizona State University, USA
10:30 Coffee break
11:00 Detached Eddy Simulation (Cont'd)
Pr. K. Squires
12:30 Lunch break
14:00 Detached Eddy Simulation (Cont'd)
Pr. K. Squires
15:15 Coffee break
15:45 Detached Eddy Simulation (Cont'd)
Pr. K. Squires

Thursday 9 February 2012

09:00 Applications of Large-Eddy Simulation and Direct Simulation to Biological Flows
Pr. E. Balaras, The George Washington University, USA
10:30 Coffee break
11:00 Applications of Large-Eddy Simulation and Direct Simulation to Biological Flows (Cont'd)
Pr. E. Balaras
12:30 Lunch break
14:00 Immersed Boundary Technique for Large-Eddy Simulation
Pr. R. Verzicco, Università di Roma Tor Vergata, Italy
15:15 Coffee break
15:45 Immersed Boundary Technique for Large-Eddy Simulation (Cont'd)
Pr. R. Verzicco

Friday 10 February 2012

09:00 Applications of Large-Eddy Simulation to Atmospheric Flows
Pr. F. Porté-Agel, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland
10:30 Coffee break
11:00 Applications of Large-Eddy Simulation to Atmospheric Flows (Cont'd)
Pr. F. Porté-Agel
12:30 Lunch break
14:00 Closing

Practical Information

Lunch will be taken from 12.30 to 14.00. Coffee breaks are scheduled each morning and afternoon. The afternoon sessions will normally finish at about 17h00.

ONLINE REGISTRATION AVAILABLE

http://www.vki.ac.be/registration

It is highly recommended that the registration is sent at the latest 15 days before the beginning of the course. A letter of acceptance and additional information will be sent on receipt of the application form.

COURSE FEE

The fee for the lecture series is 1350 euro, applicable to citizens of NATO countries contributing to the financing of the VKI (Belgium, Czech Republic, France, Germany, Hungary, Iceland, Italy, Luxemburg, Norway, Portugal, Spain and Turkey). For citizens of other NATO countries and of NATO partner countries, the fee is 1760 euro. For non-NATO citizens the fee is 1920 euro. These prices include 21% VAT. The fee includes printed notes, lunches, beverages, and administrative costs. Lectures will be given in English and printed notes will be distributed during registration.

FELLOWSHIPS

To encourage greater participation in our Lecture Series programme by university members, the Institute has established a limited number of VKI Lecture Series fellowships for citizens of NATO countries contributing to the financing of the VKI, as well as for citizens of other NATO countries and NATO partner countries coming from a university in a VKI financing country. The recipient of such fellowship is entitled to attend the Lecture Series at a reduced fee, which will be 675 euro (VAT included) for assistants not having a Ph.D. degree and for Ph.D. candidates, and 300 euro (VAT included) for undergraduate students. For non-NATO citizens coming from a university in a VKI financing country, the fee is 960 euro (VAT included) for assistants not having a Ph.D. degree and for Ph.D. candidates, and 400 euro (VAT included) for undergraduate students.

The request to be considered for an award must accompany the application to attend the Lecture Series, and the applicant must provide a recommendation letter from his or her professor; if not done so, the request will not be taken into consideration. All possible alternative sources of funding should be investigated before aid is requested under this scheme, so that those most in need will benefit.

METHODS OF PAYMENT

Payment 2 weeks prior to the beginning of the course (name and course title clearly indicated) by bank transfer to our account Nr 210-0315330-35 at BNP Paribas Fortis Bank, avenue de la Forêt de Soignes 322, 1640 Rhode-Saint-Genèse, Belgium, IBAN BE57 2100 3153 3035 (strongly recommended). SWIFT BIC GEBABEBB. *Late registration can be paid in cash (euro), or by VISA or Eurocard at the beginning of the course.*