ECCOMAS

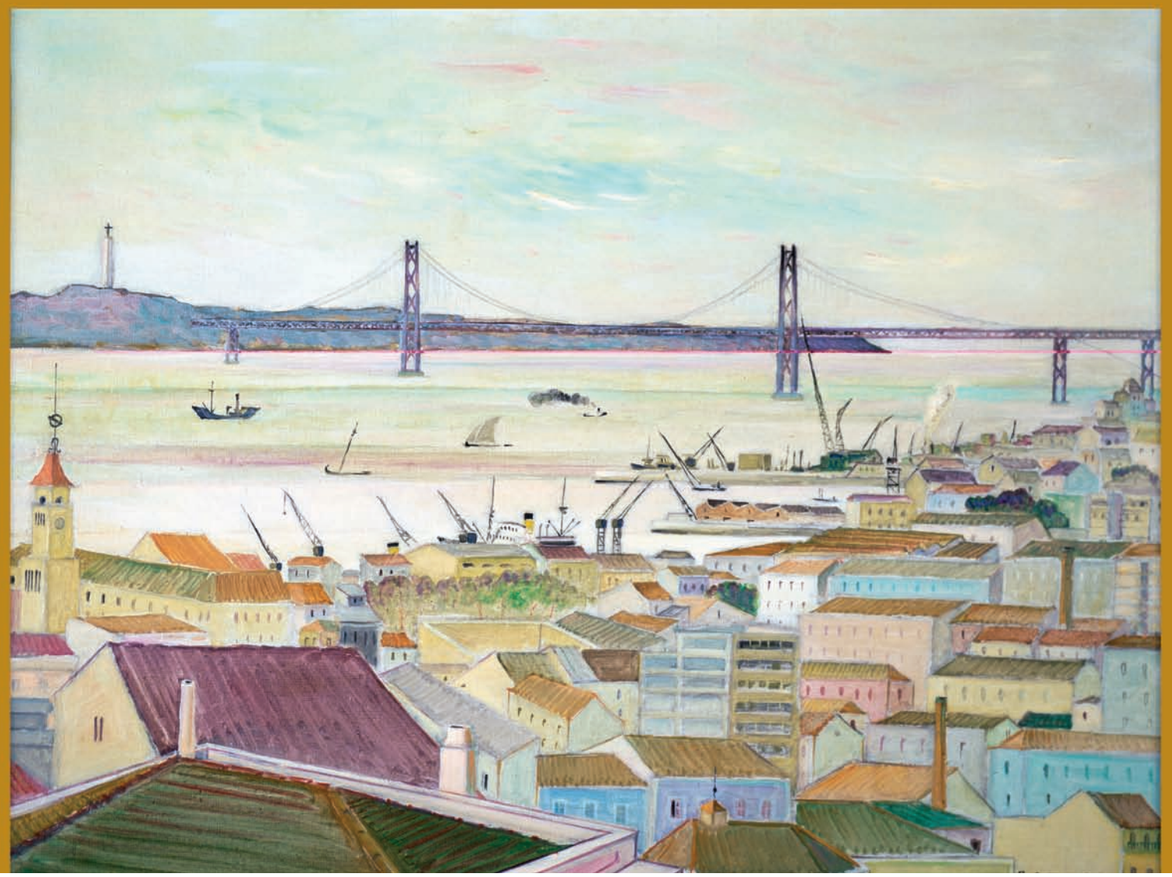
The European Community
on Computational Methods in Applied Sciences

Lisbon,
Portugal
June 14th-17th
2010

CFD 2010

Fifth European
Conference on
Computational Fluid
Dynamics

Programme



Design: Daniel Dias - 2010 Portugal | A sight of Lisbon by Carlos Botelho, courtesy to Fundação Calouste Gulbenkian / Photographs of Lisbon, courtesy to Câmara Municipal de Lisboa

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CFD 2010

5th Conference on Computational Fluid Dynamic

Welcome Message

On behalf of the European Community on Computational Methods in Applied Sciences (ECCOMAS), we are pleased to welcome you to the 5th European Conference on Computational Fluid Dynamics (ECCOMAS CFD 2010) held at the LNEC Conference Centre in Lisboa, Portugal, June 14-17, 2010.

Previous editions of the very successful ECCOMAS CFD conferences were held in Stuttgart (1994), Athens (1998), Swansea (2001) and Egmond aan Zee (2006). Furthermore, computational fluid dynamics, computational mechanics and related fields have been a major topic at the ECCOMAS congresses held in Brussels (1992), Paris (1996), Barcelona (2000), Jyvaskyla (2004) and Venice (2008).

The goal of the ECCOMAS CFD conferences is to periodically bring together researchers, industrialists and students working in the fields of the science of Computational Fluid Dynamics (CFD). The fields of interest are the applications of mathematical and computational methods and the modelling of different areas: CFD, computational acoustics, computational magnetohydrodynamics (MHD), computational mathematics and numerical methods, optimization and control, computational methods in life sciences and industrial applications. Multidisciplinary applications of theses fields to problems encountered in sectors like Aerospace, Car and Ship Industry, Electronics, Energy, Finance, Chemistry, Medicine, Biosciences, and Environmental sciences and Earth sciences are also welcome.

The "Call for Papers" for CFD 2010 produced an excellent response with over 900 submissions including 40 minisymposiums coming from around 60 countries. The abstracts were reviewed by the CFD Programme Committee and eventually 550 papers (including 36 minisymposia) were selected for oral presentation in a conference with 11 parallel sessions. In addition 62 papers were selected for poster presentation.
The programme has also been supplemented with a number of invited plenary lectures on topics of special significance being delivered by internationally renowned experts. We would like to express our sincere appreciation to all members of the various local and international committees involved in this Congress for all their efforts, as well as the contributing authors.

We would like to express our sincere appreciation to all members of the various local and international committees involved in this Congress for all their efforts, and as well as the contributing authors and participants.

I hope that you will find ECCOMAS CFD 2010 to be a stimulating, profitable and memorable event.

Thank you!

Sincerely Yours,

J.C.F. Pereira *(Chairperson),*
IST/Technical University of Lisbon, Portugal
A. Sequeira *(Co-Chairperson)*
IST/Technical University of Lisbon, Portugal
H. Deconinck *(CFD-ECCOMAS Co-Chairperson),*
Von Karman Institute, Belgium
M. Papadrakakis *(President of ECCOMAS)*
C.A. Mota Soares *(President APMTAQ)*
IST/Technical University of Lisbon, Portugal

Organizing Institutions
ECCOMAS

The European Community of Computational Methods in Applied Sciences (ECCOMAS) was created in 1993 with the aim of providing a high level of coordination of scientific conferences and related activities in Europe in the field of computational methods for the applied sciences. The members of ECCOMAS are the European regional or national societies of organizations that are representative of their community in computational modelling, numerical methods and simulation in engineering and the applied sciences.

ECCOMAS is a natural partner of international societies and associations dealing with computer simulation in Engineering and Applied Sciences and is affiliated with the International Association for Computational Mechanics (IACM).

Updated information can be found on the association web site: www.cimne.com/eccomas.

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Germany
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Sweden

Associations represented in ECCOMAS

ACME – Association for Computational Mechanics in Engineering, UK
AIMETA – Associazione Italiana di Meccanica Teorica e Applicata, Italy
APMTAC – Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional, Portugal
SWICCOMAS – Swiss Consortium on Computational Methods in Applied Sciences, Switzerland
BNCM – Belgian National Committee for Theoretical and Applied Mechanics, Belgium
CEACM – Central European Association for Computational Mechanics, Central Europe
CSMA – Computational Structure Mechanics Association, France
ERCOFTAC – European Research Community on Flow Turbulence and Combustion, Belgium
FMS – Finnish Mathematical Society, Finland
GACM – German Association of Computational Mechanics, Germany
GAMM – Gesellschaft für Angewandte Mathematik und Mechanik, Germany
GAMNI/SMAI – Groupe pour l'Avancement des Méthodes Numériques de l'Ingénieur / Société de Mathématiques Appliquées et Industrielles, France
GRACM – Greek Association for Computational Mechanics, Greece
HSTAM – Hellenic Society for Theoretical and Applied Mechanics, Greece
IACMM – Israel Association of Computational Methods in Mechanics, Israel
IMA – Institute of Mathematics and its Applications, UK
ISSEC – Irish Society of Scientific and Engineering Computations, Ireland
NMC – Netherlands Mechanics Committee, The Netherlands
NOACM – Nordic Association for Computational Mechanics, Denmark, Norway, Finland, Estonia, Latvia, Lithuania, Sweden
ONIV – Association for Scientific and Engineering Computations, Russia
PACM – Polish Association for Computational Mechanics, Poland
SEMA – Sociedad Española de Matemática Aplicada, Spain
SEMNI – Sociedad Española de Métodos Numéricos en Ingeniería, Spain
SIMAI – Società Italiana di Matematica Applicata e Industriale, Italy
TNCTAM – Turkish National Committee on Theoretical and Applied Mechanics, Turkey

Conference Local Organizers

Portuguese Association of Theoretical, Applied and Computational Mechanics (APMTAC) in cooperation with Instituto Superior Técnico (IST) of the Technical University of Lisbon (UTL) and National Civil Engineering Laboratory (LNEC).

Organizing Board

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Sponsors

FCT – Fundação para a Ciência e Tecnologia, Portugal
UTL – Universidade Técnica de Lisboa
APMTAC - Associação Portuguesa de Mecânica Teórica, Aplicada e Computacional
LNEC - Laboratório Nacional de Engenharia Civil
FCG - Fundação Calouste Gulbenkian
REN - Redes Energéticas Nacionais
BES - Banco Espírito Santo

Location

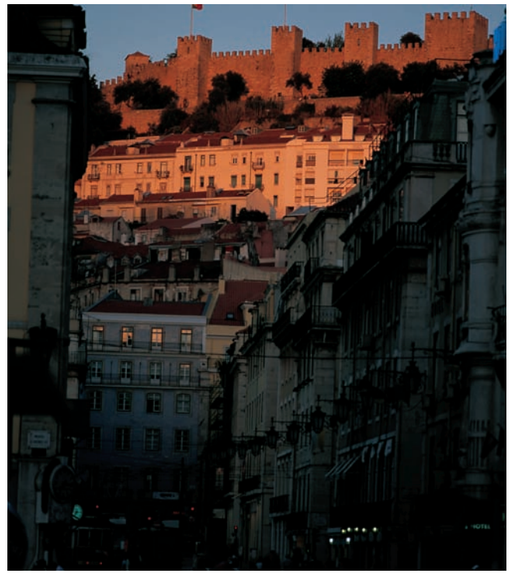
The congress will be held at:

Laboratório Nacional de Engenharia Civil - Congress Centre (LNEC)

Av. do Brasil 101
1700-066 LISBOA - Portugal
Tel: +351 218 443 000 - Fax: +351 218 443 011
Email: lnec@lnec.pt - Web: http://www.lnec.pt

LNEC is located near the city center and close to the Lisbon Airport.
Closest **Metro** Station: Alvalade (Green Line)
Bus: 17, 31, 83, 745, 750

GPS: 38º45'31.18"N – 9º8'27.64"W



Social Programme

Important:
Please do not forget to bring your Reception or Banquet Vouchers

1 **Reception** – Tagus River Boat Trip: June 14th, 18h00-21h30

Location:
All boat trips will start from "Estação Fluvial de Belém"

All buses will leave from LNEC to "Estação Fluvial de Belém" on June 14th, at 17h30.
The Boat tour starts at 18h00.

All buses will leave from "Estação Fluvial de Belém" to the hotels at 20h30:

- Marquês de Pombal
- Campo Pequeno (Hotels Berna, Holiday Inn Lisboa, Villa Rica Lisboa, Zurique)
- Avenida de Roma (Hotel Lutécia)
- Hotel Radisson

2 **Banquet** - Tapada da Ajuda: June 16th, 20h00 -23h30

Location:
ISA – Instituto Superior de Agronomia, Pavilhão de Exposições, Tapada da Ajuda, Lisboa.

Buses will depart from the following locations for the "Pavilhão de Exposições":

Route 1

Hotel Villa Rica Lisboa (19h00)
Hotel Berna (Av. 5 Outubro)
Marquês de Pombal/"Parque Eduardo VII" (19h30)
"Pavilhão de Exposições" (20h00)

Route 2

Hotel Radisson (19h00)
LNEC
Hotel Lutécia
Hotel Holiday Inn
Marquês de Pombal/"Parque Eduardo VII" (19h30)
"Pavilhão de Exposições" (20h00)

All buses will go from "Pavilhão de Exposições" back to LNEC at 23h30, following the same routes

(Pages 10 -11: map of Lisbon)

LNEC - Av. do Brasil, 101 **1** **Hotel Radisson** - Av. Marechal Craveiro Lopes, 390 **2** **Hotel Villa Rica** - Av. 5 de Outubro, 295 **3** **Hotel Lutécia** - R. Frei Miguel Contreiras, 7
4 **Hotel Berna** - Av. António Serpa, 13 **5** **Hotel Zurique** - R. Ivone Silva, 18 **6** **Hotel Holiday Inn** - Av. António José de Almeida, 28 **7** **"Pavilhão de Exposições" (Banquet)** - Tapada da Ajuda

Social program for accompanying persons

HALF DAY TOUR TO LISBON

1. Departure driving through this remarkable city built nearly 2.500 years ago passing buildings dating from the 18th Century and along mosaic paved streets to the historic Lisbon's borough of Belem.
2. Stop by the Monastery of the Jerónimos (Hieronymite Monks) built in 1502 and the finest example of the Gothic-Naturalist (the ambient decoration named "Manueline").
3. The splendid church with chapels and the main-altar in Gothic-Renaissance style will be visited.
4. Then drive along the River Tagus left bank stopping by the Tower of Belem, an 16th Century fortress and by the Monument to the Great Portuguese Era of Discoveries.
5. Last stop will be in Alfama, where clients will have a small walking promenade through the winding streets of the Medieval borough of Alfama, who offers the picturesque flavour of an old popular residential area. An unique sight of narrow streets, friendly residents and 16th Century buildings.

Half day tour to Lisbon:
Minimum 25 people per bus, 38,50 € price per person

Includes:
Transportation on a private coach with air conditioning
English speaking guide
Entrance at the Jerónimos Cloisters

HALF DAY TOUR TO SINTRA

1. Departure to Sintra, a small delightful town about 30 kilometres northwest of Lisbon, located in the forest covered Mountain of Sintra, immortalized as "Glorious Eden" by Lord Byron.
2. There will be a visit to the Royal Palace of Sintra, a fabulous royal residence of many Portuguese Kings, with wings andhalls dating from the 13/14th Centuries. Sintra is excellent for shopping souvenirs and handicraft, and there will be time at leisure
3. Descending the mountain on to Cape Roca, the Westernmost point of continental Europe, a stop will be made by the cliffs over the Atlantic Ocean. 4. Then following the coastline the tour will pass by the Guincho Beach, and Boca do Inferno (Hell's Mouth), an ocean carved spectacle in rock. 5. Arriving at the old fishermen village of Cascais that in the 1940's was chosen as residence by exiled
European Royalty, a stop will be made by the lovely bay filled with fishing boats. 6. Return to Hotel passing by Estoril.

Half day tour to Sintra:
Minimum 25 people per bus, 49,00 € price per person

Includes:
Transportation on a private coach with air conditioning
English speaking guide
Entrance fee at Royal Palace in Sintra

Tourist Information

Getting to Lisbon – By Air

Moving to the city

By taxi:

There are two taxi stands within the perimeter of the Lisbon airport, one at the arrivals and the other at departures. The fare on the taxi meter should read 2.00 € (daytime pick-up) or 2.50 € (nightime). Outside the city limits, city fares are charged per kilometer (km=0,42). 1.60 € is charged for the transportation of luggage or animals. Its good policy to enquire about the fare before taking a taxi.

Taxi Voucher: prepaid taxi fates start at 13.28 euros. Vouchers are on sale at the arrival terminal, on the information desk."

By Bus:

Special bus lines are:
Nº 91 – Aerobus (Aeroport – City Center – Cais do Sodré)
Aeroshutle – (City Center – Aeroport – Parque Nações)
Single Ticket: 3 €
Normal bus lines going through the airport.
The bus route numbers and the names of the "end of the line" terminals are:
Nº 5 – Estação do Oriente / Aeroporto / Areeiro
Nº 22 – Portela / Aeroporto / Marquês de Pombal
Nº 44 – Moscavide / Aeroporto / Cais do Sodré
Nº 45 – Prior Velho / Aeroporto / Cais do Sodré
Nº 83 – Portela / Aeroporto / Amoreiras

On board fare is 1.40 €. Pre-paid fare is 0.81 € (an electronic card "7 colinas" or "Viva" is needed, costing 0.50 €. This card is on sale on metro station machines and some newsstands). For other fare prices please check:

http://www.carris.pt

Arriving to Lisbon by Train

The main train stations in Lisbon are: "Estação de Stª Apolónia" and "Estação do Oriente" with national and international (Lisbon-Madrid-Paris, and Lisbon-Porto-Vigo) connections.

Train schedules and prices are available at:
http://www.cp.pt

Arriving to Lisbon by Car

Traffic drive on the right in Portugal and international traffic signs are used. The minimum age for driving is 18 years old. Speed limits are: 120 km/h (75 miles/h) on highways, 90 km/h (60 miles/h) roads and 50 km/h (30 miles/h) in urban areas.

Main highways: From North peninsula take A1, from East take A6, from South take A2.

Driving time to Lisbon from:

Porto: 3 hours
Faro and Algarve: 3 hours
Seville: 5 hours
Madrid: 8 hours

Moving around Lisbon

The most convenient way to move around Lisbon is the subway (METRO).
Lisbon airport is located about 7 km (5 miles) north of the city center.

METRO fares:

Reusable card: 0.50 € (you need to buy trips in machines in the METRO station)
One Trip: 0.80 € - 1 zone (Lisbon)
1.10 € - 2 zones (Lisbon + surroundings)

CARRIS fares:

Reusable card: 0.50 €
On board fare: 1.40 €

Combined METRO/CARRIS fares:

ZAPPING – add money (2.00 to 15.00 €) to your reusable card and use either METRO (0.79 € - 1 zone trip) or CARRIS buses (0.80 € per trip)
One day ticket: 3.70 €

TAXI Fares:

Inside Lisbon: Meter should read 2.00 € (day time) or 2.50 € (night time). Additional 1.60 € is charged for the transportation of luggage or animals.
Outside the city limits, city fares are charged per kilometer (km=0.45 €).

Main Museums in Lisbon

Centro de Arte Moderna (Modern Art Museum)
Fundação Oriente (Oriente Foundation)
Museu Calouste Gulbenkian (Calouste Gulbenkian Museum)
Museu dos Coches (Coach Museum)
Museu Nacional de Arte Antiga (National Museum for Old Art)
Colecção Berardo (The Berardo Collection)
Museu do Azulejo (Tile Museum)

Walking Tours in Lisbon:

Lisbon Walker (http://www.lisbonwalker.com/)
Portugal walks (http://www.portugalwalks.com/lisbon.htm)

Main Monuments in Lisbon:

Aqueduto das Águas Livres (Free Waters' Aqueduct)
Basílica da Estrela (Estrela Churro)
Castelo de São Jorge (Saint George's Castle)
Mosteiro dos Jerónimos (Jerónimos Monástico)
Sé Patriarcal (Patriarchal Cathedral)
Torre de Belém (Bellém Tower)

Tourism web sites:

http://www.visitlisboa.com/
http://www.lisbon-guide.info/

Useful information

Emergency number: 112

Electricity

Voltage: 220 V, 50 Hz.
Power sockets follow European standards.

Currency:
Euro

Working hours:

Banks: 8:30 – 15:00 h (Monday to Friday)
Buses: 6:30 – 24:00 h (every day, some buses run all night)
Metro: 6:30 – 01:00 h (everyday)
Pharmacies: 9:00 – 13:00 h, 15:00 – 19:00 h (Monday to Friday, some are open 24:00h a day)
Shops: 9:00 – 13:00 h, 15:00 – 19:00 h (Monday to Friday), 9:00 – 13:00 h (Saturdays)
Shopping Malls: 10:00 24:00 h everyday
Embassies: 9:00 – 15:00 h Monday to Friday

Congress location:

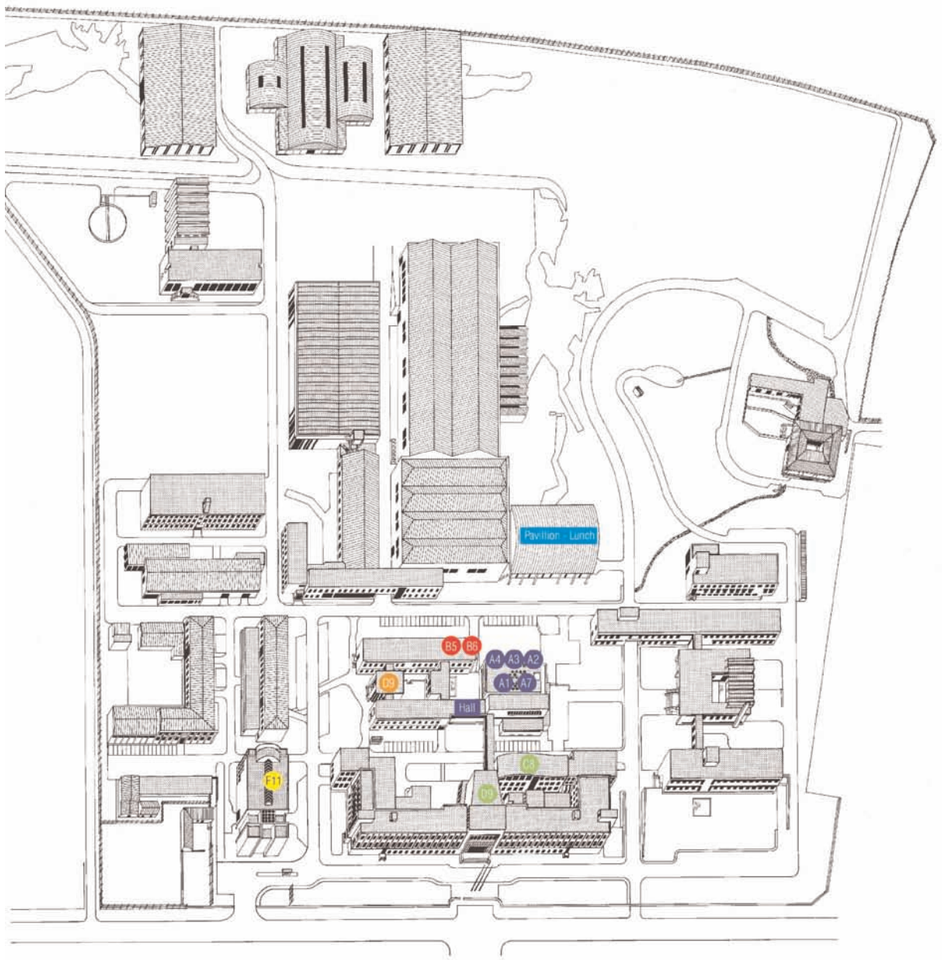
LNEC
Laboratório Nacional de Engenharia Civil

Avenida do Brasil 101,
1700-066 Lisboa, Portugal

GPS: 38º45'31.19"N, 9º8'27.96"W

Time Zone
GMT/UTC +1 in Summer

LNEC Plan

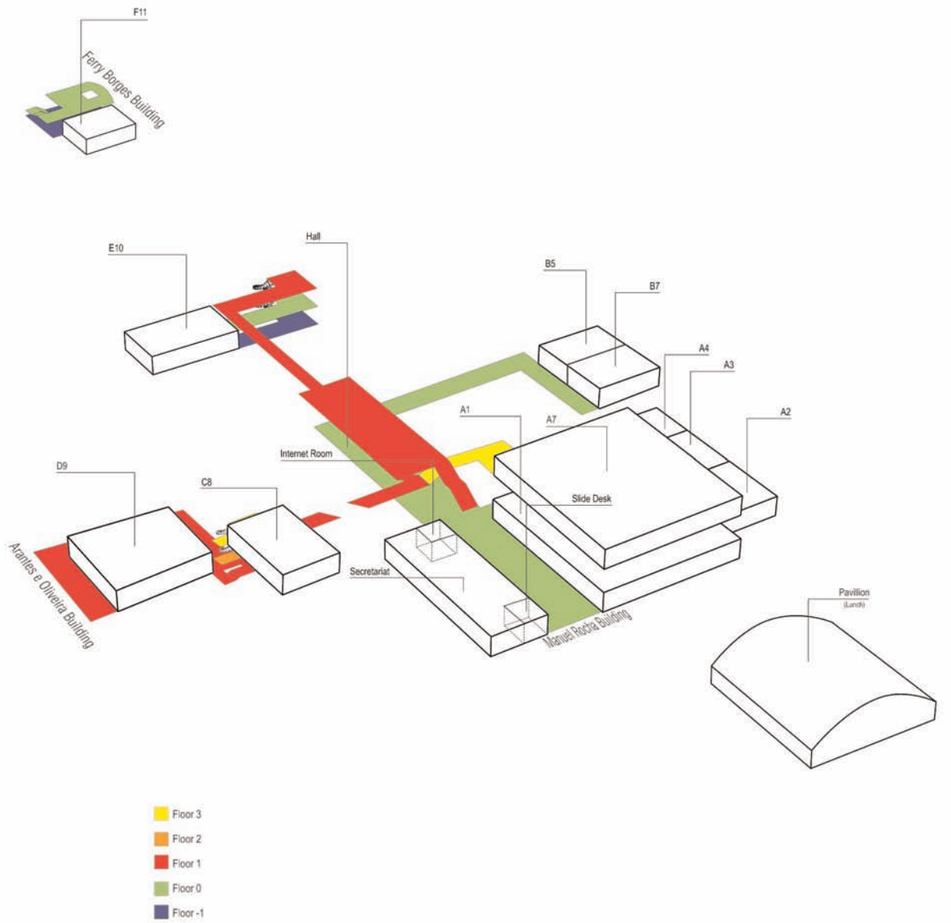


Arantes e Oliveira Building
C8
D9

Manuel Rocha Building
A1
A2
A3
A4
B5
B6
A7
E10

Ferry Borges Building
F11
Pavilion - Lunch

Conference Rooms Plan



The European Community
on Computational Methods in Applied Sciences

Lisbon,
Portugal
June 14th-17th
2010

CFD 2010

Fifth European
Conference on
Computational Fluid
Dynamics

http://www.eccomas-cfd2010.org

Detailed Programme

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Room A3	3.1 MS12 Numerical Modelling of Waves Interacting with Coastal Structures	3.2 MS23 Modelling of Contact Line Dynamics	3.3 Flows with Heat Transfer I	3.4 Flows with HeatTransfer II	3.5 Flows with Heat Transfer III	3.6 Fluid-Structure Interaction	3.7 MS27 Monolithic Models and Solvers for Fluid-Structure Interaction Problems	3.8 MS20 Stratified Flows Modelling for Environmental Problems	3.9 CFD for Marine Applications I	3.10 CFD for Marine Applications II
Room A4	4.1 MS18 Reliable Numerical Methods for Atmosphere and Ocean Models: Part I	4.2 MS18 Reliable Numerical Methods for Atmosphere and Ocean Models: Part II	4.3 MS22 Regularization Models of Incompressible Flows	4.4 MS32 New Trends on Diffusion Phenomena	4.5 Computational Problems in Microfluidics	4.6 MS24 Computational Atmosphere and Ocean Dynamics	4.7 MS07 Computational Wind-Farm-Wake Aerodynamics	4.8 MS25 Recent Development in Turbomachinery CFD for Industrial Applications: TRACE	4.9 Turbomachines I	4.10 Turbomachines II
Room B5	5.1 Gas-Liquid Interfaces	5.2 Multiphase Flows I	5.3 Multiphase Flows II	5.4 Gas Particle Flows I	5.5 Gas Particles Flows II	5.6 Moving Boundary Problems I	5.7 Moving Boundary Problems II	5.8 Adaptive Grids II	5.9 MS28 Aerodynamic Analysis of Flapping Wings: Part I	5.10 MS28 Aerodynamic Analysis of Flapping Wings: Part II
Room B6	6.1 MS17 Combustion	6.2 Combustion and Reactive Flows I	6.3 Combustion and Reactive Flows II	6.4 MS13 Non-Deterministic Simulation in CFD: Part I	6.5 MS13 Non-Deterministic Simulation in CFD: Part II	6.6 MS01 Adjoint Methods in Industrial CFD Optimisation: Part I	6.7 MS01 Adjoint Methods in Industrial CFD Optimisation: Part II	6.8 Flow in Porous Media	6.9 Vehicles and Traffic I	6.10 Vehicles and Traffic II
Room A7	7.1 MS06 Model Order Reduction in Complex Systems in CFD: Part I	7.2 MS06 Model Order Reduction in Complex Systems in CFD: Part II	7.3 Numerical Methods I	7.4 Numerical Methods II	7.5 Numerical Methods III	7.6 Hybrid RANS/LES I	7.7 MS15 Verification and Validation	7.8 Immersed Boundary Methods	7.9 MS05 Inverse Techniques in CFD: Part I	7.10 MS05 Inverse Techniques in CFD: Part II
Room C8	8.1 Computational Acoustics I	8.2 Computational Acoustics II	8.3 MS36 Implicit Solution Methods for MHD Systems	8.4 Shallow Water Flows	8.5 Free Surface Flows	8.6 MS04 Computational Fluid Dynamics with OpenFOAM: Part I	8.7 MS04 Computational Fluid Dynamics with OpenFOAM: Part II	8.8 Parallel Computing	8.9 MS19 Shallow Water Models for Environmental Flows: Part I	8.10 MS19 Shallow Water Models for Environmental Flows: Part II
Room D9	9.1 MS35 Discontinuous Galerkin Methods: Part I	9.2 MS35 Discontinuous Galerkin Methods: Part II	9.3 MS09 Current Trends in Modelling and Simulation of Turbulent Flows: Part I	9.4 MS09 Current Trends in Modelling and Simulation of Turbulent Flows: Part II	9.5 MS09 Current Trends in Modelling and Simulation of Turbulent Flows: Part III	9.6 DNS/LES I	9.7 DNS/LES II	9.8 DNS/LES III	9.9 DNS/LES IV	9.10 Hybrid RANS/LES II
Room E10	10.1 Physiological Flows I	10.2 MS14 Bioflows in the Airways	10.3 MS33 Computational Methods Applied to Aneurysms and their Treatment: Part I	10.4 MS33 Computational Methods Applied to Aneurysms and their Treatment: Part II	10.5 MS31 Numerical Methods for Viscoelastic Fluids	10.6 Physiological Flows II	10.7 Physiological Flows III	10.8 MS16 Lattice Boltzmann, Particle Methods and Experiments of Complex Physiological Flows: Part I	10.9 MS16 Lattice Boltzmann, Particle Methods and Experiments of Complex Physiological Flows: Part II	10.10 MS16 Lattice Boltzmann, Particle Methods and Experiments of Complex Physiological Flows: Part III
Room F11	11.1 MS30 Modern Programming Techniques for Numerical Analysis Software	11.2 MS10 Image Processing and Visualization	11.3 MS34 Mathematical and Numerical Aspects of the Motion of Viscous Fluids	11.4 RANS Models for Turbulent Flows I	11.5 RANS Models for Turbulent Flows II	11.6 Non-Newtonian Flows	11.7 MS26 Iterative Methods for ncompressible Flows	11.8 MS08 CFD in Fire and Fire Safety Research	11.9 MS21 Ventilation and Smoke Control in Underground Space: Part I	11.10 MS21 Ventilation and Smoke Control in Underground Space: Part II

POSTERS SESSIONS

MONDAY

A Numerical Method for the Computation of Hopf Bifurcation Points in Fluid Mechanics
AUTHORS: A. Brezillon; G. Girault; Jean-Marc Cadou

Prediction of Shock Structure by Bimodal Distribution Function Method
AUTHORS: Maxim A. Solovchuk; Tony W. H. Sheu

On the Stability of Locally One-Dimensional Method for Two-Dimensional Parabolic Equation with Nonlocal Integral Conditions
AUTHORS: Svajunas Sajavicius

Uncertainty Quantification of Wildland Fire Propagation
AUTHORS: Rita Ervilha; José M. C. Pereira; José C. F. Pereira

Determination of Model Order for Inverse Scattering Applications
AUTHORS: Livia Cerullo; Thomas Rylander; Mats Viberg

Fast and Stable Treatment of Non-Watertight Geometry for Incompressible Flow Simulation on Cartesian Grid
AUTHORS: Kei Akasaka; Kenji Ono

High Order Finite Element Method for Transport Process in the Convection-Diffusion Combined Porous Media
AUTHORS: Quanji Cai; R. Mundani; S. Kollmannsberger; E. Rank

Sommerfeld Radiation Condition for Incompressible Viscous Flows
AUTHORS: Takashi Yoshida; Takashi Watanabe

Numerical Treatment of Cylindrical Coordinate Singularity
AUTHORS: Noele Peres; Sébastien Poncet; E. Serre

Numerical Simulation of One-Dimensional Pulsatile Flows with a Combined Fourier-Adomian Method
AUTHORS: Paulo Rebelo; Amilcar Miranda

CFD Numerical Simulation of Water Hammer in Pipeline Based on the Navier-Stokes Equation
AUTHORS: Jinping Li; Peng Wu; Yang Jiandong

Numerical Tests of a New Pressure Correction Scheme for the Drift-Flux Model
AUTHORS: Walid Kherij; R. Herbin; J.-C. Latché

Optimization of Spillway Shape and Analysis of Jet Flow Characteristics Based on the VOF Model
AUTHORS: Jinping Li; Fei Liu; Yang Jiandong

A Characteristic-Based Split Finite Volume Algorithm for the Solution of Incompressible Flow Problems
AUTHORS: Masoud Nickaeen; Ali Ashrafizadeh

Evaluation of an Induced Magnetohydrdynamic Velocity Potential using Dual Recirocity Boundary Element Method
AUTHORS: Mojtaba Barjasteh; Hamid Zeraatgar

A Pressure-Based Algorithm for the Numerical Solution of the Incompressible Navier-Stokes Equations and its Experimental Validation
AUTHORS: Salman Okhovat; Ali Ashrafizadeh

An Immersed Boundary Method Embedded in a Pseudospectral Scheme
AUTHORS: Aggelos S. Dimakopoulos; Carlos B. da Silva; Rui M. L. Ferreira

ALE Method for Unsteady Transonic Flow Simulations
AUTHORS: Petr Furmánek; Jiri Fürst; Karel Kozel

A Simple NVD/TVD-Based Upwinding Scheme for Convection Term Discretization
AUTHORS: Giseli A. B. Lima; Laís Corrêa; Miguel A. C. Candezano; Patrícia Sartori; Valdemir G. Ferreira

Numerical Simulation of a Dry Low NOx – LPP Combustor Operating with LPG Fuel
AUTHORS: José L. Pinheiro; Carlos A. G. Veras

Combined Injection of Plastic Particles and Heavy Fuel Oil into a Blast Furnace Raceway – Detailed CFD Analysis
AUTHORS: Christian Jordan; Michael Harasek; Amal El-Gohari; Christoph Feilmayr; Stefan Schuster

CFD Simulation of the Biomass Syngas Combustion
AUTHORS: Kamil Kwiatkowski; Konrad Bajer

Considering Thermoelectric Power Generation Device Efficiency using Microchannel Heat Sink
AUTHORS: L. A. Rosendahl; Alireza Rezaniakolaei; M. Chen

A Shape Optimisation of Cooling Fins in Electrical Transformer Tank using GA Algorithm
AUTHORS: Jacek Smolka; Andrzej J. Nowak

Direct Numerical Simulation of Quasi-Static Magnetohydrodynamic Annular Duct Flow
AUTHORS: Stijn Vantieghem; B. Knaepen; Vincent Moureau

Effect of Initial Conditions in the Far Field of Spatially Developing Turbulent Planar Jets
AUTHORS: Diogo C. Lopes; Ricardo J. N. dos Reis; Carlos B. da Silva; José C. F. Pereira

Large Eddy Simulation of Sydney Swirl Non-Reaction Jets
AUTHORS: Yang Yang; Søren Knudsen Kær; Chungen Yin

FFOWCS Williams-Hawkings Acoustic Analogy for Simulation of NASA SR2 Propeller Noise in Transonic Cruise Condition
AUTHORS: Domenico Caridi; Michele De Gennaro; Mohamed Pourkashanian

On a Subgrid Approach for Simulating Industrial Filtration Processes
AUTHORS: Aivars Zemitis; Oleg Iliev; Z. Lakdawala; V. Starikovicius

DNS Simulation of a Planar Jet using a Hybrid MPI-CUDA Strategy
AUTHORS: Gil Brandão; Ricardo J. N. dos Reis; Carlos B. da Silva; José C. F. Pereira

A 3D Finite Element Model for the Determination of Vibration Reduction Index for Joints with Floating Floors
AUTHORS: Jaime Ramis; E. Segovia; J. Alba; J. Carbajo

RANS Based Numerical Study of Hydrogen Mild Combustion
AUTHORS: Enrico Mollica; E. Giacomazzi; Alessandro Di Marco

WEDNESDAY

A Numerical Study of the Flow in a Cyclone Separator using the k-epsilon Realizable Turbulence Model
AUTHORS: Mauricio Carmona; Cristbal Cortes; Antonio Ramirez

Optimization of Diffuser with CFX Technology
AUTHORS: Ferenc Szlivka; Gergely Éder

Development of 1D Performance Analysis Tool for a Microturbine Radial Compressor using CFD
AUTHORS: Adeel Javed; M. Olivero; J. P. van Buijtenen

Flow Field Simulation of Wind Turbine with More Impellers
AUTHORS: Ferenc Szlivka; Péter Kajtár; Ildikó Molnár

Resistance of a Series 60 Vessel Determined by CFD Software
AUTHORS: José M. A. Fonfach; C. G. Soares

Extended Finite Element Method applied to Aero-Elastic Problems
AUTHORS: Henrique C. Gomes; P. M. Pimenta

Application of Optimization Methods in 2D Hydrofoil Design
AUTHORS: I. N. Egorov; Ivan N. Klochkov; Y. I. Babiy

Viscous Flow around Two Bodies in Relative Motion
AUTHORS: Fatemeh M. Zafarghandi; S. M. H. Karimian; S. Noori

Unsteady Solution of a 2D Stator-Rotor Interaction
AUTHORS: Petr Straka

Numerical Simulation of Helium Jet Injection into Supersonic Flow
AUTHORS: Natalya N. Fedorova; Irina A. Fedorchenko

Turbulent Flowstructure Computation Inside a Pump-Pat using an Industrial Benchmark Test Case
AUTHORS: Fábio A. Silva; José C. Páscoa; João S. Pinheiro; Daniel J. Martins

A Method for Measuring the Thermal Heat Transfer from a Cylinder in Axial Turbulent Flows for the Best Seven He-Based Binary Gas Mixtures
AUTHORS: Mohammad R. Mobinipouya; Mohammad M. Papari; Antonio Campo

The Problem of Boundary Condition on the Outflow for an Incompressible Flow through a Cascade of Profiles
AUTHORS: Tomás Neustupa

Thermodynamically Compatible Rate Type Fluid Models for Asphalt
AUTHORS: Karel Tuma

Assessment of Performance of Low Reynolds Turbulence Models in Predicting Natural Convection in Cavities
AUTHORS: Mohamed Aksouh; A. Mataoui; N. Seghouani

Equilibrium Model of Two-Phase Transonic Compressible CO2 Flow through Heat Pump Ejector
AUTHORS: Jacek Smolka; Zbigniew P. Bulinski; Adam Fic; Krzysztof Banasiak; Andrzej J. Nowak

Simulation of Impaction Filtration of Aerosol Droplets in Porous Media
AUTHORS: Lilya Ghazaryan; David J. L. Penha; Bernard J. Geurts; S. Stolz; C. Winkelmann

Simulation of Free Surface Flow in a Spillway with the Rigid Lid and Volume of Fluid Methods and Validation in a Scale Model
AUTHORS: Anders G. Andersson; Kristoffer Lundström; Patrik Andreasson; T. S. Lundström

Structured and Unstructured Grid Validation of a Bubble Column Reactor CFD Multiphase Model by ANSYS® Workbench V10.0.
AUTHORS: Monica Martinez; R. Miró; S. C. Cardona; J. Navarro-Laboulais; Sergio Chiva

Study of the Droplet-Wire System by using a VOF Technique
AUTHORS: Jorge M. Marchetti; P. Skjetne; H. F. Svendsen

Monotone Nonlinear Scheme for Variable Density Groundwater Flow
AUTHORS: Dragan Vidovic; Milenko Pusic

Modelling of Particle Size Segregation and its Applications to Geophysical Problems
AUTHORS: Anthony R. Thornton

Multiscale Modelling of Granular Chute Flows
AUTHORS: Thomas Weinhart; Onno Bokhove; Stefan Luding

Consistency of SIMPLEC Scheme in Collocated Grids
AUTHORS: Antonio Pascau; Nelson Garcia

Numerical Solution of 2D and 3D Stratified Flows in Atmospheric Boundary Layer
AUTHORS: Jiri Simonek; Karel Kozel

A 3D Human Carotid Artery Simulation using Realistic Geometry with Two-Level Bifurcation and Experimental Inlet Velocity Profile
AUTHORS: Senol Piskin; Erke Aribas; M. Serdar Celebi

Modelling Haemodynamics in Patient-Specific Carotid Bifurcations using the Locally Conse rvative Galerkin (LCG) Method
AUTHORS: Rhodri L. T. Bevan; Perumal Nithiarasu; Raoul Van Loon; Igor Sazonov; Heyman Luckraz

Non-Newtonian Blood Flow Simulation in a Realistic Artery Domain
AUTHORS: Hasret Turkeri; Senol Piskin; M. Serdar Celebi

Numerical Solution of Incompressible Generalized Newtonian Fluids Flow
AUTHORS: Radka Keslerová; V. Prokop; K. Kozel

Performance Analysis of Flow in a Impeller-Diffuser Centrifugal Pumps using CFD :Simulation and Experimental Data Comparisons
AUTHORS: J. Perez; Sergio Chiva; W. Segala; R. Morales; C. Negrao; E. Julia; L. Hernandez

Two Dimensional Modelling with CFD of the Behavior of a Ventilated Ceramic Façades
AUTHORS: C. Mesado Sergio Chiva E. Julia L. Hernandez

Validation of CFD Codes for Slamming and Sloshing
AUTHORS: Richard Marcer; C. Berhault; C. de Jouëtte; Nicolas Moirod; L. Shen

Development of a Cactus CFD Toolkit and its Utilisation on Large-Scale Multi-Block Simulations
AUTHORS: Soon-Heum Ko; Prasad Kalghatgi; Erik Schnetter; Sumanta Acharya; Gabrielle Allen; Shantenu Jha; Mayank Tyagi

Monday, June 14th

From 08:00 **REGISTRATION**

08:30 – 09:10 **OPENING SESSION (Room A1)**

09:10 – 09:50 **PLENARY LECTURE: Isogeometric and Variational Multiscale Methods in Computational Fluid Dynamics. Thomas J. R. Hughes, University of Texas, USA.**

09:50 – 10:30 **PLENARY LECTURE: Higher Order Discontinuous Galerkin methods with emphasis on Aeronautical applications. Francesco Bassi, University of Bergamo.**

10:30 – 10:50 **Coffee Break**

Room A1

1.1 Numerical Methods for High Speed Flows I

10:50 – 11:20

11:00 – 11:20 New Limiter and Gradient Reconstruction Method for HLLC-Finite Volume Scheme to Solve Navier-Stokes Equations
AUTHORS: Lakhdar Remaki; O. Hassan; Kenneth Morgan

11:20 – 11:40 Spectral Volume Method : Application to Euler Equations and Performance Appraisal
AUTHORS: Oussama Chikhaoui; J. Gressier; G. Grondin

11:40 – 12:00 An Implicit Spectral Finite Volume Method for Unstructured Grid Aerodynamic Simulations
AUTHORS: Carlos Breviglieri; João L. F. Azevedo; Edson Basso

12:00 – 12:20 Entropy Viscosity for Conservation Equations
AUTHORS: J. L. Guermond; Richard Pasquetti; B. Popov

12:20 – 12:40 Improvements of Simple Low-Dissipation AUSM against Shock Instabilities in Consideration of Interfacial Speed of Sound
AUTHORS: Keiichi Kitamura; Eiji Shima

12:40 – 13:00

Room A2

2.1 Computational Electromagnetics I

A 3D Finite Element Method for the Coupled Numerical Simulation of Electrochemical Systems and Fluid Flow: Ion Transport in Electrodeposition
AUTHORS: Georg Bauer; Volker Gravemeier; Wolfgang A. Wall

Hybridization of Numerical Schemes in Time Domain to Solve the Vlasov-Maxwell Equations
AUTHORS: Laura Pebernet; X. Ferrieres; F. Rogier; P. Degond

Coherent Vorticity and Current Extraction in Three-Dimensional Homogeneneical Magnetohydrodynamic Turbulence: Comparison Between Wavelet and Fourier Filtering
AUTHORS: Naoya Okamoto; K. Yoshimatsu; Y. Kondo; K. Schneider; M. Farge

Approximation of the Thermally Coupled MHD Problem using a Stabilized Finite Element Method
AUTHORS: Ramon Codina; Noel Hernández-Silva

High Order Discontinuous Galerkin Solution of 1D Ideal Magnetohydrodynamic Equations
AUTHORS: Alessandra Nigro; C. De Bartolo; F. Bassi

Room A3

3.1 MS12 Numerical Modelling of Waves Interacting with Coastal Structures

Organizers: E. Didier, M. G. Neves

A Lagrangian Smoothed Particle Hydrodynamics – SPH – Method for Modelling Waves-Coastal Structure Interaction
AUTHORS: Eric Didier; Maria G. Neves

Comparisons of Wave Overtopping at Coastal Structures Calculated with AMAZON, COBRAS-UC and SPHYSICS
AUTHORS: Maria G. Neves; M. T. Reis; E. Didier

Comparison of Three Nonlinear Models to Analyze Wave Propagation over Submerged Trapezoidal Breakwaters
AUTHORS: Paulo R. F. Teixeira; Liliana V. Pinheiro; C. M. J. Fortes

Bottom Friction and Wave Breaking Implementation in the BOUSS3W Nonlinear Wave Propagation Model
AUTHORS: Liliana V. Pinheiro; C. J. Fortes; Paulo R. F. Teixeira; M. A. Walkley

Numerical Modelling of Wave-Structure Interaction with a Three Dimensional Navier-Stokes Model
AUTHORS: Javier L. Lara; I. J. Losada; Manuel del Jesus; G. Barajas; R. Guanche

Numerical Analysis of Coastal Structures at Prototype Scale using IH-2VOF
AUTHORS: Inigo J. Losada; R. Guanche; Manuel del Jesus; Javier L. Lara ; C. Vidal

Room A4

4.1 MS18 Reliable Numerical Methods for Atmosphere and Ocean Models: Part I

Organizers: A. Mahalov, P. Neittaanmaki, S. Repin

Wind Power Energy Activity in Finland?
AUTHORS: Pekka Neittaanmäki

Indeterminant Data in Problems of Continuum Mechanics
AUTHORS: Olli J. Mali
Pekka J. Neittaanmäki; Sergey I. Repin

Stability of the Ekman Boundary Layer
AUTHORS: Juergen Saal

Fast Singular Oscillating Limits of Hydrodynamic PDEs: Application to 3D Rotating Navier-Stokes, Boussinesq and MHD Equations
AUTHORS: Alex Mahalov

Correction on Cooper and Haines Method with the Relationship Between Sea-Level and Bottom Pressure Variability
AUTHORS: João R. P. Nogueira; Aires J. P. dos Santos; M. M. F. Juliano

Room B5

5.1 Gas-Liquid Interfaces

An Optimal Approach for Velocity Interpolation in Multilevel VOF Method
AUTHORS: Antonio Cervone; S. Manservisi; R. Scardovelli

Segment Patching of the Higher Order Interface Reconstruction for the Volume of Fluid Method
AUTHORS: Joris C. G. Verschaeve

A PLIC-VOF Implementation on Parallel 3D Unstructured Meshes
AUTHORS: Lluis Jofre; Oriol Lehmkuhl; J. Castro; A. Oliva

Numerical Treatment of Contact Line Motion Near a Sharp Corner
AUTHORS: Poorya A. Ferdowsi; M. Bussmann

Modification and Extension of a Standard Volume-Of-Fluid Solver for Simulating Boiling Heat Transfer
AUTHORS: Christian Kunkelmann; Peter Stephan

Simulation of Interfacial Gas-Liquid Annular Flows using an Interfacial Function
AUTHORS: Galileu H. Oliveira; Luis M. Portela

Room B6

6.1 MS17 Combustion

Organizer: Wolfgang Schröder

Predicting Complex Turbulent Flames using Large Eddy Simulation and Flamelet-Based Tabulated Chemistry
AUTHORS: C. Olbricht; F. Hahn; Anja Ketelheun; Johannes Janicka

Modeling Preferential Diffusion Effects in Premixed Methane-Hydrogen-Air Flames by using Flamelet-Generated Manifolds
AUTHORS: Jeroen van Oijen; Rob Bastiaans; Philip de Goey

LES Modeling of Kinetics-Controlled Combustion Regimes: Autoignition and Low-Temperature Combustion
AUTHORS: Matthias Ihme

Recent Advances In Flame Response Prediction for Combustion Instability Modelling
AUTHORS: Santosh Hemchandra

Assessment of the Performance of Several Turbulence and Combustion Models in the Numerical Simulation of Mild Combustion in a Laboratory Combustor
AUTHORS: Amândio Rebola; Pedro J. Coelho; Mário Costa

Room A7

7.1 MS06 Model Order Reduction in Complex Systems in CFD: Part I

Organizers: G. Rozza, B. Haasdonk, M. Ohlberger

Model Order Reduction by Reduced Basis Methods for Shape Optimization in Computational Fluid Dynamics
AUTHORS: Gianluigi Rozza; Andrea Manzoni

A Certified Reduced Basis Method for the Parametrized Unsteady Boussinesq Equations
AUTHORS: David J. Knezevic

Reduced-Basis Approximation and a Posteriori Error Estimation for the Parametrized Incompressible Navier-Stokes Equations
AUTHORS: Karen Veroy; David J. Knezevic; Anthony T. Patera

A Posteriori Error Bounds for Reduced Basis Approximations of Nonlinear Parabolic Partial Differential Equations
AUTHORS: Martin A. Grepl

Model Reduction for Reacting Flow Applications
AUTHORS: Marcelo Buffoni; V. B. Nguyen; K. Willcox

Room C8

8.1 Computational Acoustics I

Sixth-Order Compact Finite Volume Scheme for Aeroacoustics with Complex Geometries
AUTHORS: Arnaud F. Pouangué; H. Deniau; N. Lamarque; J-F. Boussuge

Boundary Algorithms for High-Accuracy Aeroacoustic Schemes
AUTHORS: Ludwig W. Dorodnicyn

Efficiency Investigation of a Parallel Hierarchical Grid Based Aeroacoustic Code for Low Mach Numbers and Complex Geometries
AUTHORS: Michael Kornhaas; Dörte C. Sternel; Michael Schäfer

Fluid–Structure–Acoustic Interaction, Algorithms and Implementations using the Finite Element Method
AUTHORS: Stefan Zörner; M. Kaltenbacher

Simulation of Automotive Injector Nozzle Noise with Fully Coupled CFD/CAA Solver
AUTHORS: Harald Klimach; Sabine P.Roller; Jens Utzmann; Claus-Dieter Munz

Effect of Distance on Aeroacoustic Waves from Double Cavities in Tandem Arrangements
AUTHORS: T. Shimizu; Taku Nonomura; K. Fujii; M. Yamamoto

Room D9

9.1 MS35 Discontinuous Galerkin Methods: Part I

Organizers: M. Feistauer, V. Dolejsi

DGFEM for the Numerical Solution of Compressible Flow in Time-Dependent Domains and Applications to Fluid-Structure Interaction
AUTHORS: Miloslav Feistauer; Jaromír Horáček; Václav Kucera; Jaroslava Prokopová

Hamiltonian Discontinuous Galerkin FEM for Linear Incompressible Fluid
AUTHORS: Shavarsh Nurijanyan; O. Bokhove

Development of an Unstructured High Order Incompressible Discontinuous Galerkin Finite Element Method
AUTHORS: Esteban Ferrer; R. H. J. Willden; G. T. Houlsby

Discontinuous Galerkin Implementation with hpGEM
AUTHORS: Mochamad T. Julianto; V. R. Ambati; O. Bokhove; J. J. W. van der Vegt; Thomas Weinhart; Anthony R. Thornton

Space-Time Discontinuous Galerkin Method for Nonlinear Water Waves: Variational vs. Weak Formulation
AUTHORS: Vijaya R. Ambati; Onno Bokhove; J. J. W. van der Vegt

Room E10

10.1 Physiological Flows I

Vessels' Compliance Estimation Based on a Control Approach applied to Medical Images and FSI Problems
AUTHORS: Mauro Perego; Alessandro Veneziani; Christian Vergara

A Data Assimilation Technique for including Noisy Measurements of the Velocity Field into Navier-Stokes Simulations
AUTHORS: Marta D'Elia; A. Veneziani

Deposition of Non-Spherical Particles (Fibres) in a Channel with Subsequent Bifurcations
AUTHORS: Matěj Forman; Jaroslav Volavý

CFD Study of the Volumatic® Spacer: a Realistic Approach
AUTHORS: Ricardo F. Oliveira; Senhorinha Teixeira; Luís F. Silva; José Carlos Teixeira; Henedina Antunes

Simulation of the Breathing Cycle in the Extrathoracic Region using an Immersed Boundary Approach
AUTHORS: Laura Nicolaou; Tamer Zaki

Room F11

11.1 MS30 Modern Programming Techniques for Numerical Analysis Software

Organizers: C. Engwer, T. Richter

Benefits of Generic Software: Convenient Parallelization of Micro-Scale DG-CFD Simulations
AUTHORS: Christian Engwer

Generic Programming for Flexible, High Performance Numerical Software
AUTHORS: Bard Skaflestad; Atgeirr F. Rasmussen

H5Fed - a HDF5 Based Finite Element Data Library
AUTHORS: Achim Gsell; Benedikt Oswald; Andreas Adelmann; Edward W. Bethel; Mark Howison; Prabhat; John M. Shalf

Generic Finite Element Programming for Massively Parallel Flow Simulations
AUTHORS: Timo Heister; Martin Kronbichler; Wolfgang Bangerth

Generic and Efficient Implementation Techniques for High Order Finite Elements
AUTHORS: Joachim Schöberl

13:00 – 14:00 **Lunch Break**

13:30 – 15:30 **POSTER SESSION 1**

1.2 Numerical Methods for High Speed Flows II

15:00 – 15:30

15:10 – 15:30 Derivation of a Symmetrizing Variables Formulation for Hypersonic Thermo-Chemical Non-Equilibrium Flows, with Application to Residual Distribution Schemes
AUTHORS: Jesus G. Mena; Andrea Lani; Gérard Degrez; Herman Deconinck

15:30 – 15:50 Investigation of Slip Boundary Conditions of Hypersonic Flow over Microporous Surfaces
AUTHORS: Viola Wartemann; Heinrich Lüdeke

15:50 – 16:10 Discrete Kinetic Finite Volume Schemes on Unstructured Non Cartesian Grid
AUTHORS: Denise Aregba-Driollet; Frédéric Krantz

16:10 – 16:30 Numerical Study of the Influence of Dissipative Effects on the Propagation of Detonation Waves in Narrow Shock Tubes
AUTHORS: Davy Ngomo; Ashwin Chinnayya; Abdellah Hadiadi

16:30 – 16:50 A Zonal Euler/Viscous Solver for Compressible Flows
AUTHORS: Cristian Biotto; J. Peiró

16:50 – 17:10 NURBS-Enhanced Finite Volume Method (NEFVM))
AUTHORS: Ruben Sevilla; Oubay Hassan; Kenneth Morgan

2.2 Computational Electromagnetics II

Derivation of a Symmetrizing Variables Formulation for Hypersonic Thermo-Chemical Non-Equilibrium Flows, with Application to Residual Distribution Schemes
AUTHORS: Jesus G. Mena; Andrea Lani; Gérard Degrez; Herman Deconinck

A Contribution on the Numerical Simulation of ICP Torchs.
AUTHORS: S. Clain D. Rochette R. Touzani Mário L. da Silva; D. Vacher; P. André

Flow Analysis of the HCLL-TBM(ITER) Channels including MHD and Heat Transfer
AUTHORS: Elisabet M. de les Valls; J. Fradera; L. Batet

Numerical Simulations of the Lorentz Force Flowmeter
AUTHORS: Axelle Viré; B. Knaepen; A. Thess

Numerical Simulation of an Electric Charged Compressible Gas-Flow with Adaptive Mesh Refinement
AUTHORS: Stephan Reichel; Rodion Groll; H. J. Rath

Numerical Simulation of Thermal Convection under the Influence of a Magnetic Field by using Solenoidal Bases
AUTHORS: Durmuş Yarimpabuç; Hakan I. Tarman

The Simulation of the Motion of Solid Particles in the Turbulent Flow of Induction Crucible Furnaces
AUTHORS: Mihails Šščepanskis; Andris Jakovičs; Bernard Nacke

3.2 MS23 Modelling of Contact Line Dynamics

Organizers: Bernhard Müller, Gunilla Kreiss

Modelling Drops on Micropatterned Surfaces
AUTHORS: B. M. Mognetti; Julia M. Yeomans

Sharp-Interface Simulations of Surfactant-Covered Drops in Electric Fields
AUTHORS: Knut E. Teigen; Karl Y. Lervag; Svend T. Munkejord

Simulations of Small Scale Fluid Flows Dominated by Capillarity and Wetting
AUTHORS: Gustav Amberg

A Hybrid Level-Set-Cahn-Hilliard Model for Two-Phase Flow
AUTHORS: Martin Kronbichler; Gunilla Kreiss

A Conservative Level Set Method for Sharp Interface Multiphase Flow Simulation
AUTHORS: Claudio Walker; Bernhard Müller

4.2 MS18 Reliable Numerical Methods for Atmosphere and Ocean Models: Part II

Organizers: A. Mahalov, P. Neittaanmaki, S. Repin

Guaranteed a Posteriori Error Estimates for Viscous Flow Problems in Rotation Frame
AUTHORS: Sergey I. Repin

New Indicators of Approximation Errors for Problems in Continuum Mechanics
AUTHORS: Immanuel B. Anjam; Olli J. Mali; Pekka J. Neittaanmäki; Sergey I. Repin

A Posteriori Error Estimates for Approximate Solutions of Barenblatt-Biot Poroelastic Model
AUTHORS: J. M. Nordbotten; T. Rahman; Sergey I. Repin; Jan Valdman

Computational Studies of Inertia-Gravity Waves Radiated from Upper Tropospheric Jets
AUTHORS: Alex Mahalov; Mohamed Moustaoui

5.2 Multiphase Flows I

Analysis of the Cavitating Flow in Real Size Diesel Injectors with Fixed and Moving Needle Lift Simulations
AUTHORS: Xandra Margot; Antonio Garcia; Pablo Fajardo; Stavroula Patouna

Multicomponent Droplet Evaporation of Heating Oil using a Continuous Thermodynamics Model
AUTHORS: Melanie Grote; K. Lucka; H. Köhne

CFD Modeling of Two-Phase Flow in Vertical Bubbly Flow Condition: Isothermal and Subcooled Boiling Conditions
AUTHORS: F. Pellacani; S. Maturrro; Sergio Chiva; R. Macian

6.2 Combustion and Reactive Flows I

A Computational Framework for Multiscale Modeling in Chemical Vapor Deposition Processes
AUTHORS: Nikolaos Cheimarios; George Kokkoris; Andreas G. Boudouvis

CFD Re-Design of a Gas Turbine Can-Type Combustion Chamber Hydrogen Fired
AUTHORS: Alessandro Marini; Alessandro Cappelletti; Giovanni Riccio; Francesco Martelli

Influence of Radiative Heat Transport on the 3D Unsteady Flow in a Diffusion Furnace
AUTHORS: Roland Kessler; M. Lambert

Simulation of a Button-Type Solid Oxide Fuel Cell
AUTHORS: E. Vakouftsi; G. Marnellos; C. Athanasiou; Frank A. Coutelieris

Hydrogen Combustion of a Double Cavity Trapped Vortex Combustor
AUTHORS: Alessandro Di Marco; R. Camussi; S. Giammartini

Simulation of Gas Exhaustion from a Combustion Chamber of a Reciprocating Engine
AUTHORS: Milan Zaloudek; Jaroslav Fořt; Herman Deconinck

7.2 MS06 Model Order Reduction in Complex Systems in CFD: Part II

Organizers: G. Rozza, B. Haasdonk, M. Ohlberger

Parametrized Discrete Empirical Interpolation of Nonlinear Implicit Evolution Operators
AUTHORS: Martin Drohmann; Bernard Haasdonk; Mario Ohlberger

A New Hierarchical Model Reduction Technique Based on Reduced Basis Methods and Dimensional Splitting
AUTHORS: Mario Ohlberger; Kathrin Smetana

Model Order Reduction of a Continuous Crystallizer
AUTHORS: Mykhaylo Krasnyk; Michael Mangoldy

A 3D CFD Model of a Natural Draft Wet-Cooling Tower
AUTHORS: Adam Klimanek; Ryszard A. Białecki; Ziemowit Ostrowski

8.2 Computational Acoustics II

Numerical Investigation of Flow Features and Acoustic Radiation from Round Cavities
AUTHORS: Olivier Marsden; Christophe Bogey; Christophe Bailly

Computational Analysis of Aeroacoustic Waves Induced by Rotating Tire
AUTHORS: Ittetsu Kaneda; Taku Nonomura; Kozo Fujii; Toshiyuki Ikeda; Masataka Koishi

Applicability of RANS Models for Accurate Computation of Flow over Airfoils with Serrated Trailing Edges
AUTHORS: Gérson C. Fernandes; Markus Weinmann; Richard D. Sandberg

Investigation by Acoustic Resonance of Human Body
AUTHORS: Gheorghe V. Gavriloaia; Mariuca-Roxana G. Gavriloaia

CFD Modelling of the Heat and Acoustic Streaming Induced by a High Power Ultrasonic Horn Reactor
AUTHORS: Francisco Trujillo; Kai Knoerzer

Numerical Study of Thermoacoustic Wave Amplification
AUTHORS: Catherine Weisman; Diana Baltean-Carlès; Patrick Le Quéré; Luc Bauwens

9.2 MS35 Discontinuous Galerkin Methods: Part II

Organizers: M. Feistauer, V. Dolejsi

Semi-Implicit Discontinuous Galerkin Finite Element Method for the Steady State Compressible Flows
AUTHORS: Vit Dolejsi

Time Stepping and Linear Stability of Runge-Kutta Discontinuous Galerkin Methods on Triangular Grids
AUTHORS: Thomas Toulorge; Wim Desmet

Characteristic Boundary Conditions for the Numerical Solution of Euler Equations by the Discontinuous Galerkin Methods
AUTHORS: Ioannis Toulopoulos; John A. Ekaterinaris

10.2 MS14 Bioflows in the Airways

Organizers: C. Lacor, W. Schröder

Numerical Study of Particle Deposition in the Human Upper Airways with Emphasis on Hot Spot Formation and Comparison of LES and RANS Models
AUTHORS: Vivek Agnihotri; Khairy Elsayed; Chris Lacor; S. Verbanck

Analysis of the Temporal Flow Field in Tracheobronchial Model
AUTHORS: Wolfgang Schröder; G. Eitel; T. Soodt; A. Henze

High Order Numerical Simulation of Fluid-Structure Interaction in Human Phonation
AUTHORS: Martin Larsson Bernhard Müller

Impact of Nasal Geometry Inclusion on Numerical Simulation of Flow in Human Upper Airway
AUTHORS: Prihambodo H. Saksono; Raoul van Loon; Igor Sazonov; Perumal Nithiarasu

Flow in Naturally Changing Central Airways
AUTHORS: Eike Hylla; O. Frederich; F. Thiele; X. Wang; I. Wegner; H.-P. Meinzer; M. Puderbach

Numerical Simulation of Airflow through Simplified Vocal Tract Geometries
Relevant to Speech Production
AUTHORS: Annemie Van Hirtum; K. Nozaki

11.2 MS10 Image Processing and Visualization

Organizers: J. M. R. S. Tavares, R. M. N. Jorge

Numerical and Experimental Images of Multiphase Plasma Jet During Plasma Processing of Dispersed Materials
AUTHORS: Viktorja Grigaitienė; R. Kėželis; V. Valinčius; P. Valatkevičius

Reconstructing Experimental Data from Video Records for Film Flow over a Spinning Disk
AUTHORS: Valentina N. Korzhova; Dmitry B. Goldgof; G. M. Sisoev

Towards Artificial Vision and Pattern Recognition Techniques for Application in Liquid Composite Moulding Processes
AUTHORS: Ubaldo Pineda; N. Montés; F. Sánchez

Transient Flow Analysis by Imaging Methods - Voronoi Particle Tracking Velocimetry applied to the Dam Break Flow
AUTHORS: Rui Aleixo; S. Soares-Frazão; Y. Zech

A Subspace Clustering Model for Image Texture Segmentation
AUTHORS: Yan Nei Law; Hwee Kuan Lee; Andy M. Yip

17:10 – 17:30 **BOARDING THE CONFERENCE BUS**

18:00 – 20:00 **BOAT TRIP IN THE TAGUS RIVER**

20:00 **BUS RETURN TO HOTELS**

Tuesday, June 15th

8:30 – 9:10 **PLENARY LECTURE: Bioinspired Flow Optimization. Petros Koumoutsakos, ETH Zurich.**

9:10 – 09:50 **PLENARY LECTURE: Turbulent combustion modeling: new approaches for highly refined simulations. Luc Vervisch, CORIA-CNRS & INSA Rouen, France.**

09:50 – 10:10 **Coffee Break**

Room A1

1.3 MS03 Towards Industrial Application of Higher Order Methods: Part I
Organizers: K. Hillewaert, J.-F. Remacle, B. Helenbrook

10:10 – 10:40 Achievements of the European Research Project Adigma on Adaptive Higher Order Methods for Aerospace Applications
AUTHORS: Norbert Kroll

10:40 – 11:00 High-Order Accurate P-Multigrid Discontinuous Galerkin Solution of the RANS and k-omega Turbulence Model Equations
AUTHORS: F. Bassi; A. Colombo; N. Franchina; A. Ghidoni; Stefano Rebay

11:00 – 11:20 Memory and CPU Efficient Iterative Schemes for Higher Order DGM
AUTHORS: Koen Hillewaert; Jean-Franois Remacle; Brian T. Helenbrook

11:20 – 11:40 High-Order Discontinuous Galerkin Methods for Incompressible Flows
AUTHORS: Adeline de Montlaur; S. Fernández-Méndez; Antonio Huerta

11:40 – 12:00 Anisotropic Adaptation for Viscous Flows
AUTHORS: Jerzy Majewski

12:00 – 12:20

12:20 – 13:30 **Lunch Break**

1.4 MS03 Towards Industrial Application of Higher Order Methods: Part II
Organizers: K. Hillewaert, J.-F. Remacle, B. Helenbrook

13:30 – 14:00 A Reconstructed Discontinuous Galerkin Method for Compressible Flows on Arbitrary Grids
AUTHORS: Hong Luo

14:00 – 14:20 Construction of Very High Order Residual Distribution Schemes for Compressible Flow Problems.
AUTHORS: Rémi Abgrall; Arnaud Krust; Adam Larat; Pascal Jacq; Guillaume Baurin; Mario Ricchiuto

14:20 – 14:40 Recent Developments on High-Order Multidimensional Upwind Residual Distribution for Equations with Viscous Terms
AUTHORS: Tiago Quintino; N. Villedieu; H. Deconinck

14:40 – 15:00 The Discontinuous Galerkin Method with Divergence-Free Elements for Incompressible Flows
AUTHORS: Harald van Brummelen; Kris van der Zee

15:00 – 15:20 Towards High-Fidelity Industrial CFD
AUTHORS: Frédéric Chalot; Pierre-Elie Normand

15:20 – 15:40 Adjoint-Based Error Estimation and Goal-Oriented Mesh Refinement for Aerodynamic Flows
AUTHORS: Ralf Hartmann

15:40 – 16:00 **Coffee Break**

1.5 MS03 Towards Industrial Application of Higher Order Methods: Part III
Organizers: K. Hillewaert, J.-F. Remacle, B. Helenbrook

16:00 – 16:30 From h to p Efficiency: Implementation of Low- and High-Order Spectral/hp Element Discretisations in Two and Three Dimensions.
AUTHORS: Chris D. Cantwell; Peter E. J. Vos; Spencer J. Sherwin; Robert M. Kirby

16:30 – 16:50 An Implicit High-Order Spectral Difference Method for LES
AUTHORS: Matteo Parsani; G. Ghorbaniasl; Chris Lacor

16:50 – 17:10 Iterative Solution of Discontinuous Galerkin Formulations of the Euler Equations
AUTHORS: Brian T. Helenbrook; Brendan S. Mascarenhas; Koen Hillewaert; Jean-Francois Remacle

17:10 – 17:30 An Explicit Space-Time Adaptive Discontinuous Galerkin Scheme
AUTHORS: Christoph Altmann; G. Gassner; Claus-Dieter Munz

17:30 – 17:50 Curvilinear Mesh Generation for CFD
AUTHORS: Jean-François Remacle; Christophe Geuzaine; Bastien Gorissen; Koen Hillewaert

17:50 – 18:10 Unstructured High Order Grids and their Application in Discontinuous Galerkin Methods
AUTHORS: Florian Hindenlang; G. Gassner; Claus-Dieter Munz

Room A2

2.3 Shape Optimization

Active Flow Control Bump Design Using Hybrid Nash-Game Coupled to Evolutionary Algorithms
AUTHORS: D. S. Lee; Jacques Periaux; L. F. Gonzalez; K. Srinivas; Eugenio Oñate

Global and Multidisciplinary Aerodynamical Optimal Shape's Design, including Deformation
AUTHORS: Adriana Nastase

Hadamard Incomplete Sensitivity and Shape Optimization
AUTHORS: Bijan Mohammadi; Olivier Pironneau

One-Shot Shape Optimization using the Exact Hessian
AUTHORS: Dimitrios I. Papadimitriou; Kyriakos C. Giannakoglou

CAD-Based Aerodynamic Optimization of Geometrically Complex Turbine Components
AUTHORS: Marcus Meyer; M. Herm; Z. Schabowski

2.4 Optimization and Control I

Surrogate Models Based on Function and Derivative Values for Aerodynamic Global Optimization
AUTHORS: Manuel Bompard; Jacques Peter; Jean-Antoine Désidéri

Geometry Optimization for Quasi-Uniform Flows from Supersonic Nozzles
AUTHORS: David Pasquale; J. Harinck; A. Guardone; S. Rebay

Model-Reduced Gradient-Based History Matching
AUTHORS: Malgorzata P. Kaleta; R. G. Hanea; A. W. Heemink; J. D. Jansen

Model-Reduced Variational Data Assimilation for Shallow Water Flow Modelling
AUTHORS: Muhammad U. Altaf; A. W. Heemink; M. Verlaan

Dynamic Characterization of an Actuated Bluff Body Wake
AUTHORS: Gregor Gilka; Dirk M. Luchtenburg; Frank Thiele; Marek Morzyński

Adjoint-Based Error Estimation and Goal-Oriented Mesh Refinement for Aerodynamic Flows
AUTHORS: Ralf Hartmann

2.5 Optimization and Control II

Efficiency of Geometric Multigrid Methods for Solving the Sensitivity Equations within Gradient Based Flow Optimization Problems
AUTHORS: Julian Michaelis; J. Siegmann; G. Becker; M. Schäfer

Multi-Stage Design Approach for High Fidelity Aerodynamic Optimization of Multi-Body Geometries by Kriging Based Models and Adjoint Variable Method
AUTHORS: JinWoo Yim; ByungJoon Lee; Chongam Kim

Optimal Control for Incompressible Steady MHD Flows via Constrained Extended Boundary Approach
AUTHORS: Giorgio Bornia; Antonio Cervone; Sandro Manservisi

Assimilation of Meteorological Observations using Large-Scale Optimization
AUTHORS: Yasuyoshi Horibata

Application of Response Surface Methodology for Modeling and Optimization of the Cyclone Separator for Minimum Pressure Drop
AUTHORS: Khairy Elsayed; Chris Lacor

Room A3

3.3 Flows with Heat Transfer I

CFD Analysis of a Density-Dependent Valve within a Hot Water System
AUTHORS: Sally S. Bell; Helen Smith; David Christie; John N. Macbeth; Neil Finlayson

Simulation of the Fouling Layer Evolution in Heat Transfer Surfaces
AUTHORS: E. Suárez; Concepción Paz; J. Porteiro; A. Eiris

Thermal Comfort Evaluation using a CFD Study and a Transient Thermal Model of the Human Body
AUTHORS: Senhorinha Teixeira; Celina Leão; Manuela Neves; Pedro Arezes; Ana Cunha; José Carlos Teixeira

CFD Parametric Study of Ambient Air Velocity Magnitude Influence in Thermal Behaviour of Open Refrigerated Display Cabinets
AUTHORS: Pedro D. Gaspar; L. C. C. Gonçalves; Ge Xiao

Numerical Simulation of Three-Dimensional Convection
AUTHORS: Igor Palymskiy

3.4 Flows with Heat Transfer II

Numerical Simulation of Turbulent Natural Convection and Gas Radiation in Differentially Heated Cavities using FVM, DOM and LES
AUTHORS: Roser Capdevila; C. D. Pérez-Segarra; Oriol Lehmkuhl; G. Colomer

Non-Oberbeck-Boussinesq Natural Convection in a Tall Differentially Heated Cavity
AUTHORS: Deniz Kizildağ; J. Ventosa; Ivette Rodriguez; A. Oliva

Adaptive Two-Step Peer Methods for Thermally Coupled Incompressible Flow
AUTHORS: Bettina Gottermeier; Jens Lang

The Impact of Cylinder Roughness on the Drag Forces and Heat Transfer
AUTHORS: Frank Dierich; P. A. Nikrityuk

Buoyancy Effects on Forced Convection from a Horizontal Cylinder in Parallel and Contra Flow Regimes
AUTHORS: Armando A. Soares; M. D. Naia; N. J. Gonçalves; A. Rouboa

A Direct Numerical Simulation Study on the Mean Velocity and Temperature in Mixed Convection from an Open Cavity
AUTHORS: Gorg Abdelmassih; Youssef Stiriba; A. Vernet; J. A. Ferré; F. X. Grau

3.5 Flows with Heat Transfer III

Numerical Simulation of Cooling Gas Injection using Adaptive Multiscale Techniques
AUTHORS: W. Dahmen; Thomas Gotzen; S. Müller

Heat Transfer on a Hot Surface Impinged by a Cold Circular Liquid Jet
AUTHORS: Jian-Jun Shu

First Industrial Application of the 3D Silicone Molding Simulation Tool
AUTHORS: Lukasz T. Matysiak; Piotr Saj; Robert M. Sekula

Simulation of the Thermal Heat Exchange Near the Phoenix Mars Lander
AUTHORS: J. A. Davis; Carlos F. Lange

Conjugate Problem of Forest Fire Initiation and Spread in Three Dimensional Setting
AUTHORS: A. Perminov

Room A4

4.3 MS22 Regularization Models of Incompressible Flows
Organizer: Carlos D. Perez-Segarra

On the Symmetry-Preserving Regularization Model on Complex Flows using Unstructured Grids
AUTHORS: Oriol Lehmkuhl; R. Borrell; Ivette Rodriguez; C.D. Pérez-Segarra; A. Oliva

Regularization Modeling of Wall-Bounded Turbulent Flows
AUTHORS: F. X. Trias; Andrey V.Gorobets; Roel W. C. P. Verstappen; A. Oliva

On Restraining Convective Subgrid-Scale Production in Burgers' Equation
AUTHORS: Joop Helder; Roel W. C. P. Verstappen

Regularization Modeling of Commutator-Errors in Large-Eddy Simulation of Wall-Bounded Turbulence
AUTHORS: Bernard J. Geurts

Regularizations of Turbulent Flow
AUTHORS: Roel W. C. P. Verstappen

4.4 MS32 New Trends on Diffusion Phenomena
Organizers: J. A. Ferreira, P. Oliveira

Supraconvergent-Superconvergent Methods for Non Fickian Models
AUTHORS: Silvia Barbeiro; José A. Ferreira; Luis Pinto

On a "Flux Tracking" of Drug Release Processes
AUTHORS: José A. Ferreira; P. Oliveira; Pascoal Silva

A Numerical Method for a Non-Fickian Diffusion Problem Based on the Inversion of Laplace Transforms
AUTHORS: Adérito Araújo; Cidália Neves; Ercília Sousa

Convergence Analysis of a Decoupled Scheme for Poro-Elasticity
AUTHORS: Silvia Barbeiro

A Non-Oscillatory Numerical Method for the Advection-Diffusion Equation
AUTHORS: Ercília Sousa

4.5 Computational Problems in Microfluidics

CFD-Based Shape Optimization of Microchannels using Adjoint Variable Method
AUTHORS: Osamu Tonomura; M. Kano; S. Hasebe

Parametric Study of a Multiscale Fluidic System using a Hybrid CFD/MD Approach
AUTHORS: Soon-Heum Ko; Nayong Kim; Dimitris E. Nikitopoulos; Dorel Moldovan; Shantenu Jha

Gas-Plasma Coupling in Miniaturized Spaces
AUTHORS: Ashraf Farahat; Manish Jugroot

Numerical Investigation on the Efficiency of a Passive Micromixer with the Lattice Boltzmann Method
AUTHORS: Ernesto Monaco; Kai H. Luo; Gunther Brenner

A New Approach to Solve Microfluidic Systems
AUTHORS: B. Mohammadi; Jukka Tuomela

CFD Analysis of Creeping Flow around a Spherical Particle in Rectangular Microchannels
AUTHORS: José L.C. Santos; Vítor Geraldes

Room B5

5.3 Multiphase Flows II

Bubble Model for Cavitating Flow Simulation including High Void Fraction Region
AUTHORS: Nobuo Tsurumi; Yoshiaki Tamura; Yoichiro Matsumoto

Simulation of Unsteady Cavitation on a 3D Foil
AUTHORS: Richard Marcer; C. Audiffren

A Numerical Study for the Effect of Bubble Size Distribution on the Flow Behaviour in Bubble Column Reactors
AUTHORS: Evren Bayraktar; Otto Mierka; Stefan Turek

A Coupled Finite Volume Solver for the Simulation of Disperse Multiphase Flows
AUTHORS: Marwan Darwish; Amer Abdel Aziz; F. Moukalled

An Implicit Low-Diffusive HLL Scheme for Cavitating Flow Simulation
AUTHORS: Marco Bilanceri; F. Beux; Maria-Vittoria Salvetti

3D Two-Phase Flow Simulations using XFEM
AUTHORS: Sven Gross

5.4 Gas Particle Flows I

DNS of Particulate flows with Collisions using a Parallel DEM-DLM/FD Method: Peligriff
AUTHORS: Guillaume Vinay; A. Wachs; V. Hergault

An Investigation on Powder Stream in Cold Gas Spray (CGS) Nozzles
AUTHORS: Rocco Lupoi; W. O'Neill

Internal Turbulent Two-Phase Flows Formed by Wall Injection of Fluid and Particles
AUTHORS: Konstantin N. Volkov

5.5 Gas Particles Flows II

Simulation of Turbulent Collision of Cloud Droplets using Optimized Lagrangian Integration Algorithm
AUTHORS: Bogdan Rosa; Hossein Parishani; Orlando Ayala; Lian-Ping Wang; Wojciech Grabowski

Numerical Simulation of a Two-Phase Flow in an Oil Filter by Coupling a LES Approach with a Lagrangian Particle Tracking
AUTHORS: João P. Pinto; Yann Fraigneau ; Luis A. Oliveira; Christian Tenaud

A Diffusion-Inertia Model (DIM) for Predicting Aerosol Transportation and Deposition in Turbulent Flows
AUTHORS: Roman V. Mukin; N.I. Drobyshevsky; A .S. Filippov; V. F. Strizhov; L. I. Zaichik; L. S. Mukina

Finite Element Simulations of Colloidal Aggregates under Shear Flow Conditions
AUTHORS: Eva C. Schlauch; Volker Becker, Marek Behr; Heiko Briesen

Room B6

6.3 Combustion and Reactive Flows II

Large-Eddy Simulation of Forced Ignition in Highly Strained Bluff-Body Burner
AUTHORS: Vallinayagam Subramanian; Pascale Domingo; Luc Vervisch

Investigations of Ignition Probability of a Forced Ignited Turbulent Methane Jet using LES
AUTHORS: Jeremy Weckering; A. Sadiki; Johannes Janicka; E. Mastorakos

Subgrid Combustion Modelling for Large Eddy Simulation (LES) of Turbulent Combustion using Eddy Dissipation Concept (EDC)
AUTHORS: Balram Panjwani; Ivar S. Ertesvåg; Andrea Gruber; Kjell Erik Rian

Studying Swirling Flames using Highly Resolved Simulations of an Industrial Premixed Burner
AUTHORS: Vincent Moureau; P. Domingo; L. Vervisch

Numerical Simulation of Rod Stabilized Turbulent Premixed Flames
AUTHORS: Bhuvaneswaran Manickam; Siva P. R. Muppala; J. Franke; F. Dinkelacker

6.4 MS13 Non-Deterministic Simulation in CFD: Part I
Organizers: C. Lacor, H. Bijl

Comparison of Intrusive and Non-Intrusive Polynomial Chaos Methods for CFD Applications in Aeronautics
AUTHORS: Giuseppe Onorato; G. Ghorbaniasl; G. J. A. Loeven; H. Bijl; Chris Lacor

Coupling Intrusive and Non Intrusive Polynomial Chaos for Solving Stochastic Systems of Conservation Laws
AUTHORS: Gaël Poëtte; Didier Lucor; Bruno Després

Stochastic Quasi Gas Dynamics Equations as a Base for Particle Methods
AUTHORS: Sergey V. Bogomolov

Numerical Methods for Uncertainty Propagation in High Speed Flows
AUTHORS: Gianluca Iaccarino; Per Pettersson; Jan Nordström; Jeroen A. S. Witteveen

A Simple, Flexible and Generic Deterministic Approach to Uncertainty Quantifications in Non Linear Problems: Application to Fluid Flow Problems
AUTHORS: Rémi Abgrall

Effects of Geometric Tolerance in Fluid Dynamics
AUTHORS: Lucia Parussini; Valentino Pediroda; Carlo Poloni

6.5 MS13 Non-Deterministic Simulation in CFD: Part II
Organizers: C. Lacor, H. Bijl

Robust Optimization of Dense Gas Flows under Uncertain Operating Conditions
AUTHORS: Paola Cinnella; Samuel Hercus

Effects of Modeling Uncertainties in Condensing Wet-Steam Flows through Supersonic Nozzles
AUTHORS: Michele Giordano; Samuel Hercus; Paola Cinnella

Non-Intrusive Stochastic Studies for External and Internal Flows using the elsA Software
AUTHORS: Marc Lazareff; Jacques Peter; Antoine Fourmaux

Parametric Uncertainty Quantification in Modeling Methane Thermal Partial Oxidation within Inert Porous Media
AUTHORS: Miguel A. A. Mendes; José M. C. Pereira; José C. F. Pereira

Uncertainty Quantification Based on Forward Sensitivity Analysis in Sisyphe
AUTHORS: Jan Riehme; Rebekka Kopmann; Uwe Nauman

Room A7

7.3 Numerical Methods I

Nonconforming in Time Domain Decomposition Method for Porous Media Applications
AUTHORS: Laurence Halpern; Caroline Japhet; Pascal Omnes

Variational Multiscale Method for Compressible Flows
AUTHORS: Mariano Vázquez; Margarida Moragues; G. Houzeaux; Romain Aubry; S. Marras

High Order Scheme for Compressible Turbulent flows
AUTHORS: Christelle Wervaecke; H. Beaugendre; B. Nkonga

Selective Limiting by a Moving-Least Squares Technique
AUTHORS: Xesús Nogueira; Luis Cueto-Felgueroso; Ignasi Colominas; Fermín Navarrina; Manuel Casteleiro

Equivalence Conditions for Finite Volume / Element Discretizations in Cylindrical Coordinates
AUTHORS: Dante De Santis; Gianluca Geraci; Alberto Guardone

Numerical Simulation of Unsteady Dusty Gas Flow through the Moving and Stationary Cascades of Airfoils
AUTHORS: Denis Romanyuk; Yury Tsirkunov

7.4 Numerical Methods II

An Artificial Compressibility Treatment for Unsteady Incompressible Flows using High Order Discontinuous Galerkin Methods
AUTHORS: Vinh-Tan Nguyen

Stabilized Discontinuous Galerkin Approximations for Fourth-Order Stokes-Like Problems
AUTHORS: Antonio G. B. da Cruz; E. G. D. do Carmo; F. P. Duda

A Consistent Regularization of the Incompressible Navier-Stokes Equations via Computation of the Vorticity
AUTHORS: Mika Malinen

A Stabilized Formulation for the Incompressible Navier–Stokes Equations using Finite Calculus
AUTHORS: Prashanth Nadukandi; Eugenio Oñate; Julio Garcia; Sergio Idelsohn

Stability and Convergence Analysis of an X-FEM Formulation for Incompressible Flow
AUTHORS: E. Sala-Lardies; Sonia Fernández-Méndez; Antonio Huerta

An Edge-Based Finite Element Method for Quasi-Incompressible Viscous Flows
AUTHORS: Milton A. Gonçalves; Jr. R. N. Elias; A. L. G. A. Coutinho; P. A. B. de Sampaio

7.5 Numerical Methods III

A Mimetic Spectral Element Method for Equations of Fluid Dynamics
AUTHORS: Jasper J. Kreeft; Artur Palha; M. I. Gerritsma

NURBS-Enhanced Finite Element Method
AUTHORS: R. Sevilla; Sonia Fernández-Méndez; Antonio Huerta

A C/DG-FEM Solution of an Improved Boussinesq System for Surface Water Waves.
AUTHORS: Nuno D. Lopes; P. J. S. Pereira; L. Trabucho

Solution of the 2D Navier-Stokes Equations with the LBIE Method and RBF Cells
AUTHORS: Jevgenija Pavlova; Selluntos J. Euripides; Adélia Sequeira

Numerical Solution of Convection Diffusion Equations with the Discretization of the Lie Derivative
AUTHORS: Artur Palha; Jasper J. Kreeft; M. Gerritsma

Enhanced Divergence-Free Elements for Efficient Incompressible Flow Simulations in the PDE Framework Peano
AUTHORS: Tobias Neckel; Miriam Mehl; Christoph Zenger

Room C8

8.3 MS36 Implicit Solution Methods for MHD Systems
Organizers: John Shadid, Luis Chacon

Implicit and Semi-Implicit Treatments for MHD Computations
AUTHORS: Rony Keppens; Allard-Jan van Marle; Chun Xia

Scalable, Nonlinear, Implicit Algorithms for Extended Magnetohydrodynamics
AUTHORS: Luis Chacón

HiFi – Implicit Semi-Structured Spectral Element Code for Multi-Fluid Applications.
AUTHORS: Vyacheslav S. Lukin; Alan H. Glasser

An Efficient High-Order Implicit Algorithm for 3D Magnetohydrodynamic Studies of Strongly Magnetized Plasmas using C1 Finite Elements
AUTHORS: Stephen C. Jardin; N. M. Ferraro; J. Breslau; J. Chen

Implicit Schemes in a Multi-Physics and Multi-Application Code: Balancing Efficiency and Flexibility
AUTHORS: Gabor Toth; Bart van der Holst

Initial Performance of Fully-Coupled AMG and Approximate Block Factorization Preconditioners for Solution of Implicit FE Resistive MHD
AUTHORS: John N. Shadid; Eric C. Cyr; Roger P. Pawlowski; Ray S. Tuminaro; Luis Chacon; Paul T. Lin

8.4 Shallow Water Flows

A Regularization Method for the Numerical Solution of Shallow Water Equations
AUTHORS: Tatiana G. Elizarova; Jean-Claude Lengrand

A Finite Difference Technique for Solving the Second Order Constitutive Equation for Three-Dimensional Free Surface Flows
AUTHORS: Murilo F. Tomé; Igor Revoredo

A Parallel Domain Decomposition Approach for the Implicit Solution of Shallow Water Equations on the Cubed-Sphere
AUTHORS: Xiao-Chuan Cai

A Shallow Water Model with Viscosity and Dependence on Depth
AUTHORS: José M. Rodriguez; Raquel Taboada-Vázquez

Three-Dimensional Inertial Thin Film Flow on Planar Substrates Containing Occlusions
AUTHORS: Sergii Veremieiev; Philip H. Gaskell; Yeaw C. Lee; Harvey M. Thompson

Modeling Wetting and Drying of Shallow Water in Estuaries with Tidal Flats
AUTHORS: Maria de L. C. Barros; P. C. C. Rosman; J. C. F. Telles; J. P. S. Azevedo

8.5 Free Surface Flows

Implicit Schemes in a Multi-Physics and Multi-Application Code: Balancing Efficiency and Flexibility
AUTHORS: Gabor Toth; Bart van der Holst

Stabilised Finite Element for High Reynolds Number, LES and Free Surface flow Problems
AUTHORS: Guillaume François; Elie Hachem; T. Coupez

Absorbing Boundary Conditions for Wave Simulations around Offshore Structures
AUTHORS: Roel Luppes Arthur E. P. Veldman; Peter R. Wellens

A Finite Difference Technique for Solving the Second Order Constitutive Equation for Three-Dimensional Free Surface Flows
AUTHORS: Murilo F. Tomé; Igor Revoredo

A Parallel Free-Surface-Modelling Technology for Application to Aircraft Fuel-Sloshing
AUTHORS: Arnaud Malan; Oliver Oxtoby

Numerical Simulation of Wave Overtopping in Externally Excited Tanks
AUTHORS: Ender Demirel; I. Aydm

Room D9

9.3 MS09 Current Trends in Modelling and Simulation of Turbulent Flows: Part I
Organizers: S. Jakirlic, D. von Terzi (ERCOFTAC SIG15)

The ERCOFTAC Knowledge Base Wiki - an Aid for Establishing Quality and Trust in CFD
AUTHORS: Wolfgang Rodi

Lessons Learned from the ERCOFTAC SIG15 Computational Workshops: Flow in a 3D Diffuser as an example
AUTHORS: Suad Jakirlic; Dominic von Terzi; Michael Breuer

Reynolds Stress Modeling for Complex Aerodynamic Flows
AUTHORS: Bernhard Eisfeld

Zonal Detached Eddy Simulation for Technical Aerodynamic Flows
AUTHORS: Sébastien Deck

Computational Uncertainty in Turbulent Flow Simulations: Towards a Numerical Error Bar
AUTHORS: Dimitris Drikakis; Filipe Inok

9.4 MS09 Current Trends in Modelling and Simulation of Turbulent Flows: Part II
Organizers: S. Jakirlic, D. von Terzi (ERCOFTAC SIG15)

Aspects of Simulating Synthetic-Jet Injection into Attached and Separated Boundary Layers
AUTHORS: Michael A. Leschziner; G. M. Fishpool; S. Lardeau

Analysis of Unsteadiness in Transonic Shock/Boundary Layer Interactions
AUTHORS: Matteo Bernardini; Sergio Pirozzoli; Francesco Grasso

Lagrangian Methods for Determining the Turbulent Prandtl Number in DNS of Wall Turbulence
AUTHORS: Dimitrios V. Papavassiliou; Chiranth Srinivasan

Implicit Large Eddy Simulation of Complex Flows
AUTHORS: Stefan Hickel; Nikolaus A. Adams

Reliability of Large-Eddy Simulation of Buoyancy-Driven Turbulent Mixing
AUTHORS: Bernard J. Geurts

9.5 MS09 Current Trends in Modelling and Simulation of Turbulent Flows: Part III
Organizers: S. Jakirlic, D. von Terzi (ERCOFTAC SIG15)

Turbulent Transport Modelling for PANS and other Bridging Closure Approaches
AUTHORS: Sharath S. Girimaji; Branislav Basara; Aditya Murthi; Dasia Reyes

Recent Progress in Hybrid Temporal-LES/RANS Modeling
AUTHORS: Rémi Manceau; Thomas B. Gatski; Atabak Fadai-Ghotbi; Christophe Friess; Jacques Borée

Reconstruction of Turbulence Properties for Stochastical Turbulence Modeling
AUTHORS: Bernhard Stoevesandt; Robert Stresing; Andrei Shishkin; Claus Wagner; Joachim Peinke

Symmetry-Preserving Regularization Models of the Navier-Stokes Equations
AUTHORS: Roel W. C. P. Verstappen

Room E10

10.3 MS33 Computational Methods Applied to Aneurysms and their Treatment: Part I
Organizers: A. Robertson, A. Sequeira

Effects of Aspect Ratio on the Hemodynamics in Elastase Induced Rabbit Aneurysms
AUTHORS: Zijing Zeng; Mike Durka; David F. Kallmes; Anne M. Robertson

Parametric Modeling of Cerebral Aneurysms
AUTHORS: Zijing Zeng; Mike Durka; Howard Yonas; Akira Takahashi; Hasballah Zakaria; Anne M. Robertson

Data Assimilation for Incompressible Navier-Stokes: Merging of Images, Measurements and Numerical Results in Blood Flow Simulations
AUTHORS: Alessandro Veneziani

Coherent Structure and Blood Flow Dynamics in the Normal and Aneurysmatic Aorta
AUTHORS: Jacopo Biasetti; F. Hussain; T. C. Gasser

10.4 MS33 Computational Methods Applied to Aneurysms and their Treatment: Part II
Organizers: A. Robertson, A. Sequeira

Computational Hemodynamics of Intracranial Aneurysms: Modelling and Geometrical Sensitivity
AUTHORS: A. Gambaruto; J. Janela; Alexandra Moura; Adélia Sequeira

The Importance of Computational Methods applied to Aneurysms and their Treatment
AUTHORS: J. G. Campos; Adélia Sequeira

Numerical Modeling of a Multi-Mechanism Damage for Cerebral Arterial Tissue
AUTHORS: Mariarita de Luca

Calibrating Reduced Dimension Models for 3D Patient Specific Fluid-Structure Interaction Simulations
AUTHORS: Mahmoud M. Ismail; Michael W. Gee; Andrew Comerford; Wolfgang A. Wall

Monolithic FEM Techniques for Nonlinear Flow with Temperature/Concentration, Pressure and Shear-Dependent Viscosity
AUTHORS: Jaroslav Hron; Stefan Turek; H. Damanik; A. Ouazzi; P. Pustejovská

10.5 MS31 Numerical Methods for Viscoelastic Fluids
Organizers: R. Becker, D. Capatina

Adaptive Finite Elements for Viscoelastic Flows
AUTHORS: Roland Becker; Daniela Capatina

Robust Multigrid Solution of RANS Equations with Two-Equation Turbulence Models
AUTHORS: Mark Wasserman; Yair Mor-Yossef; Irad Yavneh; J. B. Greenberg

Nonconforming Finite Element Approximation of Polymers Flows for Large Weissenberg Numbers
AUTHORS: R. Becker; Daniela Capatina; Julie Joie

FEM Multigrid Techniques for Viscoelastic Flow
AUTHORS: Stefan Turek

Realistic Constitutive Laws for Polymer Flows
AUTHORS: Didier Graebling

On the Stability of Numerical Schemes Modeling Non-Newtonian Fluids
AUTHORS: J. W. Barrett; Sébastien Boyaval; C. Le Bris; T. Lelièvre; C. Mangoubi

Room F11

11.3 MS34 Mathematical and Numerical Aspects of the Motion of Viscous Fluids
Organizers: T. Bodnar, S. Necasova

Numerical Simulation of Blood Flow using Generalized Oldroyd-B Model
AUTHORS: Lubos Pirkl; Tomás Bodnár

Theoretical Aspects of Motion of Fluid around a Rotating Rigid Body
AUTHORS: R. Farwig; R. B. Guenther; Sarka Necasová; E. A. Thomann

On Drag Computations of Rough Surfaces: Modeling, Simulations and Model Reduction by Applying Homogenization
AUTHORS: Elfriede Friedmann

A Method of Consistent Averages for the Computational Solution to the Fluid Dynamic Equations
AUTHORS: Frederick Ferguson; Gafar Elamin; Mookesh Dhanasar

Local Projection Stabilization for the Numerical Simulation of Convection Dominated Flows
AUTHORS: Petr Knobloch: Lutz Tobiska

Shape Stability of Incompressible Fluids Subject to Navier's Slip
AUTHORS: Jan Stebel

11.4 RANS Models for Turbulent Flows I

An Unstructured Implicit Approach for Numerical Weather Prediction
AUTHORS: Romain Aubry; M. Vázquez; G. Houzeaux

A Hamiltonian Particle Method for Hydrostatic Flow in Isentropic Coordinates
AUTHORS: Bob Peeters; O. Bokhove; J. Frank

Urban Wind-Concentrator Tower for Energy Conversion
AUTHORS: Markus Rütten; Mikhail Konstantinow

Time Domain Buffeting Analysis of a Large-Span Cable-Stayed Bridge
AUTHORS: Shuxian Hong; Álvaro Cunha

Effects of Geometry Modification on the Aerodynamics of a Generic Bridge Deck Section
AUTHORS: Eric Didier; Daniel C. Vaz; António R. J. Borges

Unsteady Viscous Analysis of Low-Re Gust-Airfoil Interaction
AUTHORS: Vladimir Golubev; Miguel Visbal

11.5 RANS Models for Turbulent Flows II

Robust Multigrid Solution of RANS Equations with Two-Equation Turbulence Models
AUTHORS: Mark Wasserman; Yair Mor-Yossef; Irad Yavneh; J. B. Greenberg

3D Numerical Simulations of the Impingement of a Turbulent Swirling Jet against a Solid Wall
AUTHORS: Joaquin Ortega-Casanova; P. Castillo; R. Fernandez-Feria

RANS Modeling of Flow in Rotating Cavity System
AUTHORS: Sébastien Poncet; R. Da Soghe; B. Facchini

Robust Implementation of the Spalart-Allmaras Turbulence Model for Unstructured Grid
AUTHORS: Nikhil Vijay Shende; Yair Mor-Yossef

Mathematical Modelling of Supersonic Flow over Open Cavity with Mass Supply
AUTHORS: Natalya N. Fedorova; M. A. Goldfeld; I. V. Zhitineva

Wednesday, June 16th

8:30 – 9:10 **PLENARY LECTURE: Global dynamics of transitional and turbulent separation bubbles. Neil D. Sandham, University of Southampton, UK.**

9:10 – 9:50 **PLENARY LECTURE: Industrial constraints and requirements for aeronautical flow control applications. Jean-Claude Courty, Dassault-Aviation, France.**

9:50 – 10:10 **Coffee Break**

	Room A1	Room A2	Room A3	Room A4	Room B5	Room B6	Room A7	Room C8	Room D9	Room E10	Room F11
	1.6 STS I: Innovative Digital Optimization and Control Technologies for Greener Multi-physics Aeronautics and Aero-engine Design	**2.6 Adaptive Grids I**	**3.6 Fluid-Structure Interaction**	**4.6 MS24 Computational Atmosphere and Ocean Dynamics**	**5.6 Moving Boundary Problems I**	**6.6 MS01 Adjoint Methods in Industrial CFD Optimisation: Part I**	**7.6 Hybrid RANS/LES I**	**8.6 MS04 Computational Fluid Dynamics with OpenFOAM: Part I**	**9.6 DNS/LES I**	**10.6 Physiological Flows II**	**11.6 Non-Newtonian Flows**
	Organizers: Jacques Periaux and Dietrich Knoerzer			**Organizer: Juha H. Videman**		**Organizers: J.-D. Mueller, F. Duddeck, M. Meyer**		**Organizer: G. Tabor**			
10:10 – 10:40	Challenges for More Effective, Environmentally Friendly Air Transport AUTHORS: Adel Abbas			Climate Prediction: a Multidisciplinary Computational Fluid Dynamics Problem AUTHORS: Joao Teixeira		Adjoint CFD Codes through Automatic Differentiation AUTHORS: Dominic Jones; Faidon Christakopoulos; Jens-D. Müller		OpenFOAM® an Exeter Perspective AUTHORS: Gavin R. Tabor			
10:20 – 10:40		Octree Based Unstructured Grid Coarsening Method for 3D Multigrid Applications AUTHORS: Emel Mahmutyazicioglu; Ismail H. Tuncer; Haluk Aksel	Application of a Discontinuous Characteristic Based Split Scheme for Fluid-Structure Interaction AUTHORS: Ralf Unger; Matthias C. Haupt; Peter Horst		A Novel Multi-D finite-Volume Method for Advection Problems with Embedded Moving-Boundaries AUTHORS: Yunus Hassen; Barry Koren		Delayed Detached Eddy Simulation of Aerodynamics Controls with Synthetic Jets AUTHORS: Sol K. Jee; Omar D. López; Robert D. Moser		Direct Numerical Simulations of the Flow around One and Two Side-By-Side Infinite Cylindres at Subcritical Low Reynolds Numbers AUTHORS: Y. Kahil; Sofiane Benhamadouche; P. Sagaut	Comparison of Body-Fitted and Immersed Boundary Methods for Biomechanical Applications AUTHORS: Bruno Tayllamin; S. Mendez; F. Nicoud	Development of a k-w Turbulence Model for FENE-P Fluids AUTHORS: Pedro M. R. Resende; F. T. Pinho; B. A. Younis; K. Kim; R. Sureshkumar
10:40 – 11:00	Towards concurrent multi-disciplinary design and optimization AUTHORS: Herman Deconinck; T. Verstraete; Tiago Quintino	H- and P- Adaptive Incompressible Flow Solutions on Cartesian Grids using Least Squares Spectral Element Method AUTHORS: Altug Ozcelikkale; Cuneyt Sert	Comparison of Algorithms for Strong Coupled Partitioned Fluid-Structure Interaction - Efficiency versus Simplicity AUTHORS: Thomas Gallinger; Kai-Uwe Blezinger	Island Wake Asymmteries: from Laboratory to Numerical Modelisation AUTHORS: Alexandre Stegner; R. Caldeira; C. Dong	A Mesh Topology Change ALE Framework for Efficient Body Large- Displacement Adaptive Simulations AUTHORS: Geraldine Olivier; Frederic Alauzet	CAD-Based Shape Optimisation using Adjoint Sensitivities AUTHORS: Guangxu Yu; Jeans-D Müller	Hybrid RANS/LES of Low Reynolds Number Round Impinging Jets AUTHORS: Slawomir Kubacki; Erik Dick	CFD Simulation of Bubble Columns using the VOF Model AUTHORS: Michael Harasek; Andras Horvath; Christian Jordan; Christian Kuttner	Direct Numerical Simulation of Turbulent Wakes: Flow Past a Sphere at Re=5000 AUTHORS: Ivette Rodriguez; Oriol Lehmkuhl; R. Borrell; A. Oliva; C. D. Pèrez-Segarra	Analysis of Blood Flow in a Dissected Aorta by Computational Fluid Dynamics AUTHORS: Yi Fan; K. X. Qing; Stephen W. K. Cheng; K. W. Chow	Numerical Simulation of Director Orientation of Tumbling Nematic Liquid Crystals in Channel Flow AUTHORS: Pedro A. Cruz; Murilo F. Tomé; Sean McKee; Iain W. Stewart
11:00 – 11:20	Reduction of environmental effects of civil aircraft through multi objective flight plan optimization AUTHORS: L. F. Gonzalez; D. S. Lee; J. Periaux; R. Walker; E. Oñate	Partitioned Fluid-Structure Interaction Simulations using a Hierarchical Cartesian Flow Solver AUTHORS: Miriam Mehl; Bernhard Gatzhammer; Tobias Neckel	Mechanical and Thermal Fluid Structure Interaction of Non-Contacting Gas Seals in Jet Engines AUTHORS: Yu Du; M. Schäfer	Univariate High Resolution Assimilation of Non-State Parameters into Ocean Models AUTHORS: Emanuel F. Coelho	A Level-Set Based Cut-Cell Method for Flows with Complex Moving Boundaries AUTHORS: Claudia Günther; Daniel Hartmann; Matthias Meinke; Wolfgang Schröder	Anisotropic Grid Adaptation using Adjoint Sensitivities AUTHORS: Armen Jaworski; Jerzy Majewski; L. Laniewski-Wollk; J. Rokicki	Flow Structure Analysis Close to Air Jet Vortex Generator AUTHORS: Pawel Flaszynski	Simulating Cavitating Flows with LES in OpenFOAM AUTHORS: Rickard E. Bensow; Göran Bark; Nai-Xian Lu; Tobias Huuva	Flow Past a Circular Curved Cylinder in Uniform Shear AUTHORS: José P. Gallardo; George K. El Khoury; Bjørnar Pettersen; Helge I. Andersson	Simulation of Blood Flow in Human Aorta including Thirteen Main Arteries AUTHORS: Erke Aribas; Senol Piskin; M.Serdar Celebi	A Primal-Dual Formulation for the Bingham Flow AUTHORS: E. Haber; A. Veneziani; Alexis Aposporidis
11:20 – 11:40	Challenges for CFD-dominant Multi-physics Analysis and Design Systems AUTHORS: Charles Hirsch	Numerical Simulation of the Opening of Aerodynamic Control Surfaces with Two--Dimensional Unstructured Adaptive Meshes AUTHORS: Giuseppe Quaranta; Dario Isola; Alberto Guardone	Fluid-Structure Interaction of Body with Elastic Wall AUTHORS: Esmatullah M. Sharify; Norio Arai; Shun Takahashi	Mountain Wave Drag Amplification by Resonance in Flow with a Vertically Oscillating Scorer Parameter AUTHORS: Miguel A. C. Teixeira; José L. Argain; Pedro M. A. Miranda	Aircraft Control Surface Deflection using Adaptive Radial Basis Functions AUTHORS: Andreas K. Michler; R. Heinrich	A Global Mesh Regularization Approach for Two and Three Dimensional Grids AUTHORS: Electra Stavropoulou; M. Hojjat; R. Wuchner; K.-U.Bletzinger	Detailed Numerical Study of Turbulent Flows in Air Curtains AUTHORS: Julian E. Jaramillo; Carles D. Pèrez-Segarra; Oriol Lehmkuhl; Assensi Oliva	Industrial Optimisation Solutions Based on OpenFOAM® Technology AUTHORS: Stamatina Petropoulou	Direct Numerical Simulations of Impulsively Starting Flows from Cylindrical and Conic Nozzles AUTHORS: Ionut Danaila; Marius-Gabriel Cojocaru; Sterian Danaila	Three-Phase Numerical Simulation of Blood Flow in the Ascending Aorta with Dissection AUTHORS: Guojun Hou; K. Tsagakis; D. Wendt; S. Stühle; H. Jakob; Wojciech Kowalczyk	Immersed Boundary Method applied to Simplified Drilling Problems with Non-Newtonian Fluids AUTHORS: Elie L. M. Padilla; A. L. Martins; A. Silveira-Neto
11:40 – 12:00	Towards Substantial Drag Reduction for Transonic Wings using Aerodynamic Optimisation with Shock Control through Reduced Wing Sweep AUTHORS: Ning Qin	Goal-Oriented Anisotropic Mesh Adaptation for Unsteady Flow AUTHORS: Anca Belme; A. Dervieux; Frederic Alauzet	Fluid-Structure Coupling Simulations using a Virtual Flux Method AUTHORS: Koji Morinishi; Tomohiro Fukui	Numerical Modeling of Vorticity Dynamics in Oceanic Wakes AUTHORS: Dmitri Boutov; Aires J. P. dos Santos; Euclides A. Luis; Juha H. Videman	Numerical Simulation of Moving Boundary Problems with the New Euleran Method AUTHORS: Andrey Minakov; A. Gavrilov; A. Dekterev			OpenFOAM Simulation of Mass Transfer in Spacer-Filled Channels AUTHORS: José L. C. Santos; João G. Crespo; Vitor Geraldes	Parallel DNS Simulation of a Spatially Developing Planar Turbulent Jet AUTHORS: Ricardo J. N. dos Reis; Carlos B. da Silva; José C. F.Pereira	Vortex Dynamics in Thoracic Aortic Aneurysms AUTHORS: Hiroshi Suito; Takuya Ueda; Manami Murakami; Geoffrey D. Rubin	Deterministic Numerical Methods for the Micro–Macro Model of Dilute Polymeric Fluids AUTHORS: David J. Knezevic
12:00 – 12:20		An L^∞ -Lp Space-Time Anisotropic Mesh Adaptation Strategy for Time-Dependent Problems AUTHORS: Frederic Alauzet; Geraldine Olivier	The Influence of the Structural Model on the Stability of Coupling Iterations in Partitioned Fluid-Structure Interaction Simulations AUTHORS: Joris Degroote; Sebastiaan Annerel; Jan Vierendeels	Nesting a Coastal Model into a Large-Scalr Ocean Basin Model: an Intercomparison Exercise in the Bay of Biscay AUTHORS: Guillaume A. F. Riflet	Gust Response of a Typical Section via CFD and Analytical Solution AUTHORS: Marco Berci; S. Mascetti; A. Incognito; V. V.Toropov; R. H.Hewson; P. H.Gaskell			Implementation of a 3D Compressible MHD Solver Able to Model Transonic Flows AUTHORS: Carlos M. Xisto; José C. Páscoa; Paulo J. Oliveira; Davide A. Nicolini	Numerical Simulation of Flow Past a Rectangular Flat Plate at Incidence AUTHORS: Dan Yang; Bjørnar Pettersen; Helge I. Andersson; Vagesh D. Narasimhamurthy	Numerical Study of Pulsatile Flow through Models of Aortic Valve Stenoses and Assessment of Gorlin Equation AUTHORS: Ramesh Agarwal; Robert Rifkin; E. Okpara; J. Daiber	

12:20 – 13:30 **Lunch Break**

13:00 – 15:00 **POSTER SESSION 2**

14:30 – 15:10 **PLENARY LECTURE: Code and Solution Verification in CFD: Examples for RANS solvers. Luís Eça, Technical University of Lisbon, Portugal.**

14:30 – 15:00 **SEMI - PLENARY LECTURE: Stabilized Finite Element Solution to Handle Complex Heat and Turbulent Flows in Industrial Furnaces. Elie Hachem.**

15:10 – 15:20 **Coffee Break**

	1.7 STS II: Multiphysics – Multicomponents Simulations and Optimization Techniques for Propulsion Applications	**2.7 MS29 Transition and Laminar Flow Control**	**3.7 MS27 Monolithic Models and Solvers for Fluid-Structure Interaction Problems**	**4.7 MS07 Computational Wind-Farm-Wake Aerodynamics**	**5.7 Moving Boundary Problems II**	**6.7 MS01 Adjoint Methods in Industrial CFD Optimisation: Part II**	**7.7 MS15 Verification and Validation**	**8.7 MS04 Computational Fluid Dynamics with OpenFOAM: Part II**	**9.7 DNS/LES II**	**10.7 Physiological Flows III**	**11.7 MS26 Iterative Methods for Incompressible Flows**
	Organizer: R. Dénos	**Organizer: J. Melo de Sousa**	**Organizers: Thomas Richter, Stefan Turek**	**Organizer: B. Koren**		**Organizers: J.-D. Mueller, F. Duddeck, M. Meyer**	**Organizer: L. Eça**	**Organizer: G. Tabor**			**Organizer: Kees Vuik**
15:20 – 15:50	Multi-Component and Multi-Physics CFD Simulations for the Prediction of Gas Turbine Flows AUTHORS: L.Y.M. Gicquel; E. Collado; J. Amaya; N. Gourdain; T. Poinsot	May Transient Growth Theory Explain Isolated Roughness Induced Transition? AUTHORS: Olivier Vermeersch; D. Arnal	Monolithic Newton-Multigrid Solver for Fluid-Structure-Interaction Problems AUTHORS: Stefan Turek Jaroslav Hron	Study of Isolated Wakes and their Superposition in Wind Farms, using Different Turbulence Models AUTHORS: Antonio Crespo; E. Migoya; A. Jiménez		Timestepping for Adjoint CFD Codes from Automatic Differentiation AUTHORS: Faidon Christakopoulos; Dominic Jones; Jeans-D Müller	Verification and Validation Exercise for the Flow Over a Backward Facing Step AUTHORS: Luís Eça; G. Vaz; M. Hoekstra	A Coupled Pressure Based Solution Algorithm Based on the Volume-Of-Fluid Approach for Two or More Immiscible Fluids AUTHORS: Kathrin Kissling; Julia Springer; Hrvoje Jasak; Steffen Schütz; Karsten Urban			Preconditioned Krylov Methods for the Incompressible Navier Stokes Equations AUTHORS: C. Vuik M. ur Rehman A. Segal
15:30 – 15:50					A Numerical Method for Moving-Boundary Problems of Compressible Viscous Flow AUTHORS: Daniel Hartmann; Lennart Schneiders; Matthias Meinke; Wolfgang Schröder				A POD-Galerkin Reduced Model with Updated Coefficients for Smagorinsky LES AUTHORS: Sebastian Ullmann; Jens Lang	Numerical Simulation of a 3D Bileaflet Mechanical Heart Valve: FSI Coupling Algorithm AUTHORS: Sebastiaan Annerel; Joris Degroote; Jan Vierendeels	
15:50 – 16:10	Aero-Mechanical Optimization of Contra-Rotating Open Rotor AUTHORS: M. Leborgne; E. Chérière; V. Iliopoulou; I. Lepot	Modelling of Roughness-Induced Transition using Local Variables AUTHORS: Patrick Dassler; Dragan Kožulović; Andreas Fiala	Fluid Structure Interaction with Large Deformation and Free Structure-Movement in a Monolithic Formulation AUTHORS: Thomas Richter	Linearity Analysis of Wake Effects Induced by Complex Terrain and Wind Turbines through CFD Wind Farm Models AUTHORS: Daniel Cabezón; K. Hansen; R. J. Barthelmie	A Fixed Eulerian Mesh-Based Scheme using Level Set Function for Airbag Deployment Simulation including the Effect of Outside Air AUTHORS: Gaku Hashimoto; Kenji Ono	Adjoint RANS for Aftship Design AUTHORS: Arthur Stück; Jörn Kröger; Thomas Rung	Numerical Model of the Electrical Transformer Epoxy Casting Process and its Hierarchical Validation AUTHORS: Zbigniew P. Bulinski; Andrzej J. Nowak	Ship and Propulsor Hydrodynamics AUTHORS: Mattias Liefvendahl; N. Alin; M. Chapuis; C. Fureby; U. Svennberg; C. Troëng	Is the Dynamic Procedure Appropriate for All SGS Models? AUTHORS: Hubert B. Toda; F. Nicoud; K. Truffin	Computational Modelling for Cardiovascular Medicine: Patient-Specific Modelling of Artificial Heart Valve Hemodynamic Performance. AUTHORS: Claire Wood; Antonio J. Gil; O. Hassan; S. S. Ashraf	Scalable Robust Solvers for Unstructured Fe Geodynamic Modeling Applications: Solving the Stokes Equation for Models with Large Localized Viscosity Contrasts. AUTHORS: T. Geenen; M. ur Rehman ; S. P. MacLachlan ; G. Segal; C. Vuik; A. P. van den Berg; W. Spakman
16:10 – 16:30	Multi-objective automated compressor optimization using a coupled CFD-FEM process chain AUTHORS: Christian Voß	Optimals Disturbances and Receptivity in 3D Boundary Layers AUTHORS: David Tempelmann; Ardeshir Hanifi; Dan S. Henningson	Implicit Partitioned Coupling with Global Multigrid in FSI AUTHORS: Stephen Sachs; Dörte Sternel; Michael Schäfer	ACD Modelling of Wake Interactions in Horns Rev Wind Farm AUTHORS: Stefan Ivanell; Robert Mikkelsen; Jens N. Sørensen; Kurt S. Hansen; Dan Henningson	A 3D Finite Element Approach for Mesoscopic Fluid-Structure Interaction AUTHORS: Ursula M. Mayer; Wolfgang W. Wall	Optimal Location of Suction or Blowing Jets using the Continuous Adjoint Approach AUTHORS: Alexandros S. Zymaris; Dimitrios I. Papadimitriou; Kyriakos C. Giannakoglou; Carsten Othmer	V&V II - Verification of a High Order Direct Numerical Simulation Code using the Method of Manufactured Solutions for the V European Conference on Computational Fluid Dynamics (Eccomas CFD 2010) AUTHORS: Homero G. da Silva; Marcello A. F. de Medeiros	Design of a Computational-Fluid-Dynamics Tool for the Simulation of Pre-Specified Fire Scenarios in Enclosures AUTHORS: Aram Amouzandeh; Shankar Shrestha; Matthias Zeiml; Roman Lackner	When Does Eddy Viscosity restrict the Dynamics to Large Eddies? AUTHORS: Roel W. C. P. Verstappen	Numerical Simulation of the Fluid-Structure Interaction in Stented Aneurysms. AUTHORS: Joaquin Mura; Miguel A. Fernández; Jean-Frédéric Gerbeau	Interface Preconditioners for Domain Decomposition Methods for the Stationary Navier-Stokes Equations AUTHORS: Daniel Loghin
16:30 – 16:50	Aeroacustic Optimization of Propeller Blades in a Pusher Configuration AUTHORS: Antonio Pagano; Mattia Barbarino; Damiano Casalino; Luigi Federico	High Reynolds Number Transition Experiments in the ETW Test Facility with the Pathfinder Model AUTHORS: Jean Perraud; Geza Schrauf; Ardeshir Hanifi; Raffaele Donelli; Stefan Hein	On Block Preconditioners for Monolithic Fluid-Structure Interactions AUTHORS: Bärbel Janssen; Thomas Wick	Numerical Study of Influence of Wind Shear on Power Production of Wind Turbines AUTHORS: Niels Troldborg; Frederik Zahle; Helge Aa. Madsen	Vortices Formation for Medusa-Like Objects AUTHORS: Vladimir Lazunin; Vladimir Savchenko	Automotive Applications of Adjoint-Based Topology and Shape Optimization AUTHORS: Carsten Othmer	Verification and Validation of Molecular Dynamic Simulation AUTHORS: Janusz Bytnar; Anna Kucaba-Pietal; Zbigniew Walenta	Dynamic Mesh Handling in OpenFOAM applied to Fluid-Structure Interaction Simulations AUTHORS: Hrvoje Jasak; Zeljko Tuković	DNS and LES of the Turbulent Entrainment in Jets: Physics and Subgrid-Scale Modeling AUTHORS: Carlos B. da Silva; Ricardo J. N. dos Reis; Rodrigo Taveira; José C. F. Pereira	Non-Newtonian Behavior of Blood and Arterial Curvature Influence Variations of Wall Shear Stress in Stented Artery AUTHORS: Wanhua Zhao; Xiaofei Wang; Yongfei Jiang; Jun Zhang	An Iterative Data Assimilation Procedure for including Velocity Measurements into Navier-Stokes Simulations AUTHORS: Marta D'Elia; A. Veneziani
16:50 – 17:10		The Telfona Pathfinder Model, a Second Look AUTHORS: Thomas S. J. Streit; Geza Schrauf; Jean Perraud	Numerical Analysis on the Prediction of Closing Time of the Lift Check Valve using CIP Method AUTHORS: Jung H. Lee; J. H. Kim; C. S. Song; N. Hur	Analysis of Fourth-Order Accurate Symmetry-Preserving Boundary Conditions for the Incompressible Navier-Stokes Equations AUTHORS: Benjamin Sanderse; Barry Koren	Application of Dynamic Mesh in CFD Modeling of Wind Erosion on an Arbitrary Pile Shape AUTHORS: Amir B. Farimani; Almerindo D. Ferreira; Antônio C. M. Sousa	Ingredients for Efficient Aerodynamic One-Shot Shape Optimization AUTHORS: Nicolas R. Gauger; Emre Özkaya; Caslav Ilic	V&V II: Validation and Uncertainty Quantification of Thermochemical Models using Shock Tube Radiation Measurements AUTHORS: Jeremy Jagodzinski; Kenji Miki; Marco Panesi; Ernesto E. Prudencio; Serge Prudhomme	CFD of Convective Cooling of Hydro Power Generators using OpenFOAM AUTHORS: Pirooz Moradnia; Hakan Nilsson	Turbulence Forcing Scheme in Physical Space Based on Ornstein-Uhlenbeck Process AUTHORS: Jaroslav Volavy; Matěj Forman; Miroslav Jicha	Immersed Boundary Method Predictions of Shear Stresses for Different Flow Topologies Occurring in Cerebral Aneurysms AUTHORS: Julia Mikhal; David J. L. Penha; C.H. Slump; Bernard J. Geurts	
17:10 – 17:30		Experimental and Numerical Investigation of the Laminar-Turbulent Transition Mechanisms in the Boundary Layer on 2D and 2.5D Models in the Low-Turbulence Wind Tunnel AUTHORS: S. L. Chernyshev; Alexander I. Ivanov; A. Ph. Kiselev; V. A. Kuzminskiy; D. A. Sboev; S. V. Zhigulev	Added Mass Effects of Compressible and Incompressible Flows and Solution Methods for FSI AUTHORS: Harald van Brummelen		Comparison of Hydrodynamic Parameters of 2D and 3D Models of Monofin through a Model of fluid-Structure Interaction AUTHORS: Nicolas Bideau; L. Monier; F. Razafimahery; L. Rakotomanana			LES Modeling of Combustion for Propulsion Applications using OpenFOAM AUTHORS: Christer Fureby; Ekaterina Fedina; N. Alin; J. Tegnér		Numerical Simulation of the Tissue Ablation in High Intensity Focused Ultrasound Therapy with an Array Transducer AUTHORS: Kohei Okita; Kenji Ono; Shu Takagi; Yoichiro Matsumoto	

19:00 – 19:15 **BOARDING TO THE CONFERENCE BANQUET FROM HOTELS**

20:00 **BANQUET**

Thursday, June 17th

8:30 – 9:10 **PLENARY LECTURE: A fast immersed boundary method with application to low Reynolds number aerodynamics. Tim Colonius, California Institute of Technology, USA.**

9:10 – 9:50 **PLENARY LECTURE: Coupling fields and scales in computational (bio) fluid dynamics – Advanced methods and applications. Wolfgang A. Wall, Technische Universität München, Germany.**

9:50 – 10:10 **Coffee Break**

	Room A1	Room A2	Room A3	Room A4	Room B5	Room B6	Room A7	Room C8	Room D9	Room E10	Room F11
	1.8 MS02 Algorithms for Multi-Scale Low Mach Number Flows **Organizers: P. K. Smolarkiewicz, J. Szmelter**	**2.8 Numerical Methods IV**	**3.8 MS20 Stratified Flows Modelling for Environmental Problems** **Organizer: Philippe Fraunié**	**4.8 MS25 Recent Development in Turbomachinery CFD for Industrial Applications: TRACE** **Organizer: Edmund Kuegeler**	**5.8 Adaptive Grids II**	**6.8 Flow in Porous Media**	**7.8 Immersed Boundary Methods**	**8.8 Parallel Computing**	**9.8 DNS/LES III**	**10.8 MS16 Lattice Boltzmann, Particle Methods and Experiments of Complex Physiological Flows: Part I** **Organizers: A. Gambaruto, G. Pontrelli, S. Succi**	**11.8 MS08 CFD in Fire and Fire Safety Research** **Organizer: B. Merci**
10:10 – 10:40	Modeling Atmospheric Circulations with High-Resolution Methods AUTHORS: Piotr K. Smolarkiewicz		The NEMO High Resolution Coastal Model for Wind Induced Vortices Prediction Fluid Dynamics (Eccomas CFD 2010 Lisbon) AUTHORS: Y. Ourmières; K. Guihou; C. Langlais; B. Zakardjian; Philippe Fraunié; P. Forget	Hybrid Parallelization of a Turbomachinery CFD Code: Peformance Enhancements on Multicore Architectures AUTHORS: Christian Simmendinger; Edmund Kügeler						On the Coupling of Micro and Mesoscopic Models in Hemodynamics AUTHORS: Giorgio Amati; A. M. Gambaruto; G. Pontrelli; S. Succi	Simulation of Upward Flame Spread by Coupling a Pyrolysis Model with a CFD Calculation AUTHORS: Pieter Rauwoens; Joris Degroote; Shivanand Wasan; Jan Vierendeels; Bart Merci
10:20 – 10:40		The German National Joint Project Muna: Management and Minimization of Uncertainties and Errors in Numerical Aerodynamics AUTHORS: Bernhard Eisfeld			Development of Two and Three-Dimensional Euler Solvers for Adaptively Refined Cartesian Grids with Multigrid Applications AUTHORS: Mehtap Çakmak; Mehmet H. Aksel; Cüneyt Sert	Mixed finite Element Schemes for Fluid Flows in Fractured Porous Media with Reduced Order Modeling of Fractures with Non-Matching Grids AUTHORS: C. D'Angelo; A. Fumagalli; Anna Scotti	Direct Numerical Simulation (DNS) of Turbulent Flow over Wavy Surfaces AUTHORS: Bojan Niceno; Simon Kuhn	Robust Workflows for Large-Scale Multiphysics Simulation AUTHORS: Toàn Nguyên; Jean-Antoine Désidéri	The Effect of Phase Transitions on the Droplet Size Distribution in Homogeneous Isotropic Turbulence AUTHORS: Briti S. Deb; Lilya Ghazaryan; Bernard J. Geurts; Hans Kuerten; Cees Van Der Geld; Herman Clercx		
10:40 – 11:00	A Multilevel Method for Finite Volume Discretization of the Two-Dimensional Nonlinear Shallow-Water Equations AUTHORS: K. Adamy; A. Bousquet; S. Faure; J. Laminie; Roger Temam	Comparison and Evaluation of Cell-Centered and Cell-Vertex Discretization in the Unstructured Tau-Code for Turbulent Viscous Flows AUTHORS: Gang Wang; Axel Schwöppe; Ralf Heinrich	Two Numerical Schemes for Simulation of the Stratified Flows Past a Moving Body AUTHORS: Ludek Benes; J. Fürst; Philippe Fraunié	Turbulence Treatment in Steady and Unsteady Turbomachinery Flows AUTHORS: Martin Röber; Edmund Kugeler; Graham Ashcroft	Parallel Performance of Adaptive Algorithms with Dynamic Load Balancing AUTHORS: Stanislaw Gepner; J. Rokicki; Jerzy Majewski	Kinetic Approach to Simulation of Multiphase Porous Media Flows AUTHORS: Boris N. Chetverushkin; Natalia G. Churbanova; Dmitrij N. Morozov; Marina A. Trapeznikova	Mathematical Modeling of Non-Periodic Flows using Fourier Pseudo-Spectral and Immersed Boundary Methods AUTHORS: Felipe P. Mariano; Leonardo Q. Moreira; Aristeu S. Neto	Optimization of the Application Middleware "Sphere" for Blue Gene/L System AUTHORS: Satoshi Ito; Kenji Ono	Implicit Large-Eddy Simulation of Noise Radiated by a Subsonic Jet at High Reynolds Number AUTHORS: Carlos A. S. Moser; Jorge H. Silvestrini; Marcello A. F. Medeiros	Lattice Boltzmann Method in Non-Inertial Reference Frames AUTHORS: Gonçalo Silva; Viriato Semião	SMARTFIRE – the Fire Field Modelling Environment AUTHORS: John Ewer
11:00 – 11:20	Multi-Scale Features of Baroclinic Waves in Sound-Proof, Global Simulations with Eulag AUTHORS: Joseph M. Prusa; William J. Gutowski	3D Two-Phase Flow Simulations with the Extended Finite Element Method (XFEM) AUTHORS: Henning Sauerland; T.-P. Fries	On the use of High Order Compact Schemes for the Simulation of Stably Stratified Fluid Flow AUTHORS: Tomás Bodnár; Philippe Fraunié; Karel Kozel	Predicting Transition on Low-Pressure Turbine Profiles AUTHORS: Vincent Marciniak; Edmund Kuegeler; Matthias Franke	Parallel Grid Generation for Large Eddy Simulation AUTHORS: Gary J. Page	Immersed Boundary Method Computation of Heat and fluid flow in Complex Porous Media AUTHORS: David J. L. Penha; Lilya Ghazaryan; Bernard J. Geurts; S. Stolz; M. Nordlund	Recent Advances on the Immersed Structural Potential Method for Fluid-Structure Interaction Haemodynamic Applications. AUTHORS: Antonio J. Gil; Aurelio Arranz Carreño; J. Bonet; O. Hassan	Efficiency of Large-Scale CFD Simulations on Modern Supercomputers using Thousands of CPUs and Hybrid MPI+OpenMP Parallelization AUTHORS: Andrey V. Gorobets; R. Borrell; F. X. Trias; T. K. Kozubskaya; A. Oliva	Direct Numerical Simulation of the 3D Stratified Viscous Fluid Flows around a Sphere AUTHORS: Pavel V. Matyushin; Valentin A. Gushchin	Particle Methods for Multiscale and Multiphysics Simulations AUTHORS: Petros Koumoutsakos	Simulating Fire & Safety Applications with ANSYS AUTHORS: Ilona Zimmermann; Elmar Schneeloch
11:20 – 11:40	Numerical Modeling of Multiscale Atmospheric Flows: from Cloud Microscale to Climate. AUTHORS: Wojciech W. Grabowski; Lian-Ping Wang	Acceleration of CFD Computations through a Subspace Decomposition Method AUTHORS: George Pashos; Nikolaos Cheimarios; Eleni D. Koronaki; Andreas G. Boudouvis	Direct Numerical Simulation of Internal Waves Formation in Highly Stratified Wake Flow AUTHORS: H. Houcine; Y. Chashechkin; Philippe Fraunié; J.M. Redondo; Adel Gharbi	Recent Progress in a Hybrid-Grid CFD Solver for Turbomachinery Flows AUTHORS: Kai Becker; Kathrin Heitkamp; E. Kügeler	An Adaptive Discontinuous Galerkin Method for Modeling Cumulus Clouds AUTHORS: Andreas Müller; Francis X. Giraldo	Three-Dimensional Pore Scale Fluid Flow Simulation Based on Computed Microtomography Carbonate Rocks' Images AUTHORS: Jan Kaczmarczyk; Marek Dohnalik; Jadwiga Zalewska	Development of an Immersed Boundary Method using Boundary Elements within a Vortex-In-Cell/Parallel Fast Multipole Method AUTHORS: Timothee Lonfils; G. Winckelmans	A Multi-Dimensional Spatial Scheme for Massively Parallel Compressible Turbulent Combustion Simulation AUTHORS: Julien Bohbot; Q. H. Tran; A. Velghe; N. Gillet	Large Eddy Simulation of Jet in Cross-Flow applied to the "Micromix" Hydrogen Combustion Principle AUTHORS: Elmar Recker; W. Bosschaerts	Leveraging Theory from Cosmodynamics for Multi-Scale Cardiovascular Simulation AUTHORS: Amanda Peters; Simone Melchionna; Sauro Succi; Efthimios Kaxiras	Toward FDS6: Complex Geometry, Embedded Meshes, and Quality Assessment AUTHORS: Randall McDermott; Glenn P. Forney; Kevin McGrattan; William E. Mell
11:40 – 12:00	Modelling Flows through Canopies with Immersed Boundary Methods AUTHORS: Andreas Dörnbrack; C. Kühnlein; Piotr K. Smolarkiewicz	Optimization of the Iteration Parameters of the Krylov Subspace Methods for Simulation of Incompressible Flow AUTHORS: Alexander Shklyar; A. Arbel	Oil Spill Detection and Prediction in the NW Mediterranean Sea: New Multifractal Methods for SAR Analysis AUTHORS: Jose M. Redondo; Alexei Platonov	High-Order Accurate Implicit Runge-Kutta Schemes for the Simulation of Unsteady Flow Phenomena in Turbomachinery AUTHORS: Graham Ashcroft; Kathrin Heitkamp; Edmund Kügeler	Anisotropic Adaptive Meshing and Levelset Method for Interface Capturing Problems AUTHORS: Thierry Coupez	A 2D Compact Finite Difference Immersed Boundary Method for Flow in Porous Media AUTHORS: Paulo J. S. A. Ferreira de Sousa; Isabel Malico	An Immersed Boundary Method for Large-Eddy Simulation of Fully Compressible Flows: Application to a Transonic Cavity Flow AUTHORS: Cindy Merlin; P. Domingo; L. Vervisch; G. Lodato	Using Grid Computing to Model Biosensors Acting in Stirred and Non-Stirred Solutions AUTHORS: Vytautas Ašeris; R. Baronas	LES of Aircraft Wake Vortices Evolving in a Stably Stratified and Weakly Turbulent Atmosphere AUTHORS: Ivan De Visscher; G. Winckelmans	Computer Simulation of Tank-Treading and Tumbling Motions of Red Blood Cells under the Influence of the Natural State of an Elastic Cellular Membrane AUTHORS: Ken-ichi Tsubota; Shigeo Wada; Hao Liu	
12:00 – 12:20	An Unstructured Mesh Framework for Simulation of All-Scale Atmospheric Flows AUTHORS: Joanna Szmelter; Piotr K. Smolarkiewicz	Automatic Grid Refinement for the Accurate Computation of Free-Surface Flow around Ships AUTHORS: Jeroen Wackers; Khalid Ait-Said; Michel Visonneau	Multifractal Analysis of SAR of the Ocean Surface, Currents, Eddy Structure, Oil Slicks and Diffusivity Analysis AUTHORS: Jose M. Redondo; J. M. Grau; A. Matulka; A. Platonov	Development of a Generic Surface Mapping Algorithm for Fluid-Structure-Interaction Simulations in Turbomachinery AUTHORS: Christian Voigt; Christian Frey; Hans-Peter Kersken		Calculation of the Microscale Flow through a Packed Bed using Finite Volume CFD AUTHORS: Gavin R. Tabor; M. Baker; P. G. Young	An Immersed-Boundary Method for Solving Conjugate Heat Transfer Problems in Turbomachinery AUTHORS: S. Latorre; M. D. de Tullio; P. De Palma; Michele Napolitano; G. Pascazio	A Robust Parallel ILU Solver with Grid-Independent Convergence for the Coupled Steady Incompressible Navier-Stokes Equations AUTHORS: Friederik Wubs; Jonas Thies	Large-Eddy Simulation of Subsonic Round Jets with Tripped Exit Boundary Layers AUTHORS: Christophe Bogey; Olivier Marsden; Christophe Bailly		
12:20 – 13:30	**Lunch Break**										
	1.9 MS11 GPU Computing in CFD: Part I **Organizers: S. Turek, D. Göddeke**	**2.9 Numerical Methods V**	**3.9 CFD for Marine Applications I**	**4.9 Turbomachines I**	**5.9 MS28 Aerodynamic Analysis of Flapping Wings: Part I** **Organizer: Rolf Radespiel**	**6.9 Vehicles and Traffic I**	**7.9 MS05 Inverse Techniques in CFD: Part I** **Organizers: R. Bialecki, H. Orlande**	**8.9 MS19 Shallow Water Models for Environmental Flows: Part I** **Organizer: Hervé Guillard**	**9.9 DNS/LES IV**	**10.9 MS16 Lattice Boltzmann, Particle Methods and Experiments of Complex Physiological Flows: Part II** **Organizers: A. Gambaruto, G. Pontrelli, S. Succi**	**11.9 MS21 Ventilation and Smoke Control in Underground Space** **Organizer: João Carlos Viegas**
13:30 – 14:00	GPU Cluster Computing for Multigrid-FEM Solvers with Applications in CFD AUTHORS: Dominik Göddeke; Sven H. M. Buijssen; Hilmar Wobker; Stefan Turek				Flow Phenomenon in Flapping Insect Wings AUTHORS: Fritz-Olaf Lehmann		Inverse and Direct Techniques of the Heat Transfer Coefficient Retrieval in Impingement Jet Heat Exchange AUTHORS: Arkadiusz Ryfa; Ryszard Bialecki			Confocal Micro-Flow Visualization of Blood Cells AUTHORS: Rui Lima; Takuji Ishikawa; Yohsuke Imai; Takami Yamaguchi	Smoke Control in an Underground Car Park with Impulse Ventilation Comparison with Test Results AUTHORS: João L. Aveiro; João C. Viegas
13:40 – 14:00		Streamlines of Vortical Flows in 3D Lid-Driven Cavities AUTHORS: Katsuya Ishii; Shizuko Adachi	A High-Performance Parallel Incompressible Navier-Stokes Two-Phase Flow Solver using the Level Set Method for Hydrodynamics Design. AUTHORS: Anne-Cécile Lesage; G. Houzeaux; H. C. Owen; M. Vazquez	The Role of Unsteadiness on a Turbine Vane Wake with Trailing Edge Cooling AUTHORS: Gregory M. Laskowski; Frederic Felten		Large-Eddy Simulation on the Aerodynamic Pitching Stability of Road Vehicle AUTHORS: Makoto Tsubokura; Seeyuan Cheng; Takuji Nakashima; Takahide Nouzawa; Takaki Nakamura		Implicit Simulations of Shallow-Water Equations with Mobile Bed AUTHORS: Marco Bilanceri; I. Elmahi; Hervé Guillard; M. V. Salvetti; F. Beux	A Flow-Controlled Chemistry Tabulation Method for Large-Eddy Simulation of Turbulent Combustion with Detailed Chemistry AUTHORS: Nicolas Enjalbert; Pascale Domingo; Luc Vervisch		
14:00 – 14:20	Large-Scale CFD Applications on Multi-Node GPU Cluster AUTHORS: Takayuki Aoki; Marlon Arce Acuna; Xian Wang; Satoi OGAWA	Characteristic Based Nonreflecting Boundary Conditions in a Simple-Type Characteristic Based Nonreflecting Boundary Conditions in a Simple-Type AUTHORS: Yann Moguen; Tarik Kousksou; Erik Dick; Pascal Bruel	SPH Simulations of Free Surface Waves and the Interaction with Objects AUTHORS: Paul H. L. Groenenboom; Bruce K. Cartwright	Time-Resolved Analysis of the Base Region in Cooled Transonic Turbine Airfoils AUTHORS: Chiara Bernardini; S. Salvadori; Francesco Martelli; G. Paniagua; B. Saracoglu	Influence of the Foil Thickness on the Thrust of Oscillating Foil AUTHORS: Marco La Mantia; Peter Dabnichki	Assessment of Several Turbulence Models in a Supersonic Car AUTHORS: Guillermo Araya; Ben Evans; O. Hassan; Kenneth Morgan	Analysis of the Selected Problems of Heat Convection AUTHORS: Ireneusz Szczygieł	Explicit Runge Kutta Residual Distribution for Shallow Water Flows AUTHORS: Mario Ricchiuto; Rémi Abgrall	Extended Variational Multiscale Methods for Turbulent Variable-Density Flow at Low Mach Number and Premixed Combustion AUTHORS: Volker Gravemeier; Florian Henke; Wolfgang A. Wall	Blood Flows via Suspended Particles and Lattice Boltzmann Methods AUTHORS: Simone Melchionna	Impulse Ventilation in Underground Car Parks the Influence of Parked Cars in Smoke Control AUTHORS: João C. Viegas
14:20 – 14:40	Porting of FEFLO to GPUs AUTHORS: Andrew Corrigan; Fernando Camelli; Rainald Löhner; Fernando Mut	Enhancements of Piso Scheme in Collocated Grids AUTHORS: Antonio Pascau; Nelson Garcia	Numerical and Experimental Analysis of the Wind Forces Acting on LNG Carrier AUTHORS: Anna D. Wnęk; A. Paço; X-Q. Zhou; C. G. Soares	Adaption and use of a Compressible Flow Code for Turbomachinery Design AUTHORS: Carlos Ventura Emilie Sauret Peter A. Jacobs; Paul Petrie-Repar; Rowan J. Gollan; Paul van der Laan	Effect of Vertical Translation on Unsteady Aerodynamics of a Hovering Airfoil AUTHORS: Erkan Günaydinoglu; Dilek F. Kurtulus	Spray Drag Model for Bloodhound SSC AUTHORS: Lakhdar Remaki; B. J. Evans; O. Hassan; Kenneth Morgan	Temperature Inlet-Wall Boundary Condition Identification of Transient Inverse Convective Heat Transfer Problems within Channels/Pipes: Laminar Flow AUTHORS: Aziz Azimi; Mohammad R. Ghamari	A Multilayer System with Mass Exchange for Shallow Water Flows Coupling with Moving Bed Equation AUTHORS: Emmanuel Audusse; F. Benkhaldoun; S. Sari; M. Seaid	Large Eddy Simulation in Generalized Curvilinear Coordinates and its Application to an Axisymmetric Dump Combustor AUTHORS: Balram Panjwani; Ivar S. Ertesvag; Andrea Gruber; Kjell E. Rian	Lattice Boltzmann Modelling Apllied to a Bioreactor for Bone Tissue Engineering AUTHORS: Tim J. Spencer; I. Halliday; C. M. Care; L. A. Hidalgo-Bastida; S. H. Cartmell	Indoor Car Parks – CFD Application AUTHORS: Ricardo Fernandes; D. Henriques
14:40 – 15:00	Assembly of Finite Element Methods on Graphics Processors AUTHORS: Cris Cecka; E. Darve; A. Lew	Element-Based Finite Volume Method for Solid Mechanics Problems AUTHORS: Gerson Filippini; Clovis R. Maliska; Miguel Vaz Jr		A Navier Stokes Solver for Axisymmetric Turbomachinery Analysis AUTHORS: Giulio Croce; Luca Ratto; Antonio Satta	A Novel Energetics Model for Examining Flapping Flight AUTHORS: Hesam Salehipour; David J. Willis	Aerodynamic Optimization Study for Ford Cargo Truck Roof Spoiler & Side Extender Parts using CFD Tools AUTHORS: Cavit Cinar; M. O. Arslan	Base Temperature Estimation of the Non-Fourier Fin with Different Profiles using Inverse Analysis AUTHORS: Aziz Azimi; Hossein Ahmadikia; Keivan Bamdad	Numerical Modeling of Transient Flows Involving Erosion and Deposition of Sediments AUTHORS: Fayssal Benkhaldoun; S. Sari; M. Seaid		Numerical Simulation of Blood Flows in a Vessel with Valves Based on Virtual-Flux Methods AUTHORS: Tomohiro Fukui; Koji Morinishi	Calibration of a Numerical Jet Fan Model for Simulating Smoke Control in Underground Car Park AUTHORS: E. Didier; Bruno Henriques; Ricardo Brás
15:00 – 15:20	**Coffee Break**										
	1.10 MS11 GPU Computing in CFD: Part II **Organizers: S. Turek, D. Göddeke**	**2.10 Numerical Methods VI**	**3.10 CFD for Marine Applications II**	**4.10 Turbomachines II**	**5.10 MS28 Aerodynamic Analysis of Flapping Wings: Part II** **Organizer: Rolf Radespiel**	**6.10 Vehicles and Traffic II**	**7.10 MS05 Inverse Techniques in CFD: Part II** **Organizers: R. Bialecki, H. Orlande**	**8.10 MS19 Shallow Water Models for Environmental Flows: Part II** **Organizer: Hervé Guillard**	**9.10 Hybrid RANS/LES II**	**10.10 MS16 Lattice Boltzmann, Particle Methods and Experiments of Complex Physiological Flows: Part III** **Organizers: A. Gambaruto, G. Pontrelli, S. Succi**	**11.10 MS21 Ventilation and Smoke Control in Underground Space** **Organizer: João Carlos Viegas**
15:20 – 15:50	Towards a Multi-GPU Solver for the Three-Dimensional Two-Phase Incompressible Navier-Stokes Equations AUTHORS: Peter Zaspel; Michael Griebel				A Multi-Fidelity Framework for Designing Compliant Flapping Wings AUTHORS: David J. Willis; Per-Olof Persson; Hesam Salehipour; Jaime Peraire					A Lattice Boltzmann Modeling of Bloodflow in Cerebral Aneurysms AUTHORS: Bastien Chopard; Daniel Lagrava; Jonas Latt; Orestis Malapinas; Rafik Ouared	Natural and Mechanical Ventilation CFD Study for a Subway Station/Tunnel AUTHORS: José L. Šereno; Belén H. Tambo; Álvaro J. Santos
15:30 – 15:50		Finite Element Variational Multiscale Formulation for Low Mach Number Flows Coupled with Radiative Heat Transfer AUTHORS: Matias Avila; Ramon Codina; Javier Principe;	A Three-Dimensional Model for the Dynamics and the Free-Surface Hydrodynamics of Rowing Boats AUTHORS: Luca Formaggia; Andrea Mola; Nicola Parolini	Optimal CFD Analysis for Low Power Systems AUTHORS: Mariana Simão; Helena M. Ramos		CFD Optimization of Small Livestock Trailers AUTHORS: Harvey M. Thompson; C. Gilkeson; V. V. Toropov; P. H. Gaskell; M. C. T. Wilson	Optimal Heating Control to Prevent Solid Deposits in Pipelines AUTHORS: Flavio L. V. Vianna; Helcio R. B. Orlande; G. S. Dulikravich	Solving the Multi-Layer Shallow Water Equations using the Finite Volume Modified Method of Characteristics AUTHORS: Mohammed Seaid; F. Benkhaldoun	A Numerical Investigation of the Turbulent Flows using the Detached-Eddy Simulation AUTHORS: Karel Frana; V. Honzejk		
15:50 – 16:10	A Lattice Boltzmann 3D-GPU-Implementation on Non-Uniform Grids AUTHORS: Martin Schönherr; Martin Geier; Maik Stiebler; Manfred Krafczyk	Time Integration Schemes for Incompressible Two-Phase Flow Problems AUTHORS: Patrick Esser; Arnold Reusken	Numerical Simulation of a Marine Propeller in a Cross Flow AUTHORS: Seth D. Schroeder; Charles M. Dai	Numerical Simulation of Swirling Flow in Complex Hydroturbine Draft Tube using Large Eddy Simulation AUTHORS: Cédric Duprat; Sylvain Tridon; Guillaume Balarac; Stéphane Barre; Olivier Métais; Claire Ségoufin; Pierre Leroy	Investigation of the Low-Reynolds Number Flow around a Flapping Flexible Airfoil AUTHORS: Ralf Unger; Matthias C. Haupt; Peter Horst	2D Micro- and Macroscopic Models for Simulation of Heterogeneous Traffic Flows AUTHORS: Boris N. Chetverushkin: Natalia G. Churbanova; Ilya R. Furmanov; Marina A. Trapeznikova	An Inverse Formulation for Solution of Free-Boundary Problems in Fluid Mechanics AUTHORS: Bartosz Protas; Ramesh Yapalparvi; Oleg Volkov	Dry Granular Flows with Erosion and Deposition AUTHORS: C.-Y. Kuo; Boniface Nkonga; Mario Ricchiuto; Y.-C. Tai; B. Braconnier	Compressibility Effects on the Vortical flow over a 65 Degree Swept Delta Wing. AUTHORS: Jacques Riou; Eric Garnier	Multiscale Coupling of a Lattice Boltzmann Simulation of Blood Flow to Cell- and Tissue-Level Processes: the Case of In-Stent Restenosis AUTHORS: Alfons G. Hoekstra	Importance of CFD's on HVAC AUTHORS: Ricardo Fernandes; D. Henriques
16:10 – 16:30	Performance Modeling and Optimization for 3D Lattice Boltzmann Simulations on Highly Parallel On-Chip Architectures: GPUs Vs. Multi-Core CPUs AUTHORS: Johannes Habich; T. Zeiser; G.Hager; G. Wellein	Efficient Computation of Dynamic Stability Data with a Linearized Frequency Domain Solver AUTHORS: Markus Widhalm; R. P. Dwight; R. Thormann	Propeller-flow Predictions using Turbulent Vorticity-Confinement AUTHORS: Manuel Manzke; Thomas Rung	Time-Accurate Turbomachinery Simulations with Open-Source CFD Flow Analysis of a Single-Channel Pump with OpenFOAM AUTHORS: Mikko Auvinen; Juhaveikko Ala-Juusela; Nicholas Pedersen; Timo Siikonen	Numerical Modeling of Flow Dynamics Induced by Fruit Flies During Free-Flight AUTHORS: Andrei Shishkin; Claus Wagner		A New Viscous Inverse Design Method for Internal and External Flow over Airfoils using CFD Techniques AUTHORS: Raja Ramamurthy; Benedikt Roidl; Wahid Ghaly		Non-Reactive Free Jet Flow: Comparison of Simulations using Different Turbulence Models with Reference Measurements AUTHORS: Regine Model; G. Lindner; D. Markus	A Simplified Particulate Model for Coarse-Grained Hemodynamics Simulations AUTHORS: Florian Janoschek; Jens Harting; Federico Toschi	
16:30 – 16:50		Robust Spectral Reprojection for Discontinuous Galerkin Simulations on Unstructured Grids AUTHORS: Adrian G. Maroni; Klaus A. Hoffmann	Multiphysics SPH for Harbor And Ocean Engineering Hidrodynamics AUTHORS: Christian Ulrich; Thomas Rung		Some Observations on Periodic and Transient Motions as Abstractions of Flapping Wing Aerodynamics AUTHORS: Michael V. OL				Computations of Unsteady Cavitating Flow over a Hydrofoil using Unsteady RANS and Detached Eddy Simulations AUTHORS: Andrey Gavrilov; A. Dekterev; K. Finnikov		
17:00 – 17:20	**CLOSING CEREMONY (Room A1)**										

Connecting to LNEC's Wireless Network at Conferences Center

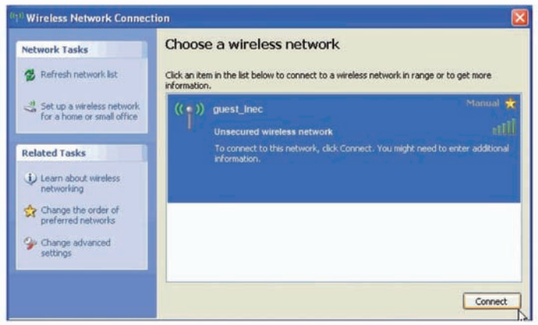
Using Windows XP SP2
(with the integrated Microsoft Wireless client)

Requirements:
Your computer must have a wireless network adapter compatible with IEEE 802.11g, and activated;
This instructions assume that you are using the integrated Windows XP Wireless Client, so the Wireless Zero Configuration Service must be activated. If you are using other clients, like Intel ProSet Wireless Client, the procedure could be significantly different. If you are unable to make the configuration, please ask for support by the Helpdesk;

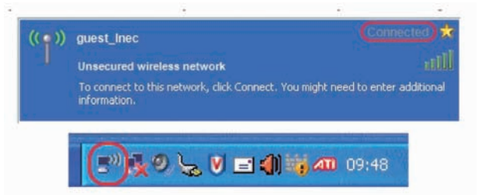
Procedure:

Double click on the Wireless Network Connection icon that appears on the lower right hand side of your screen;

The Wireless Network Connection window will come up (as shown below) with the available networks;



You should see guest_lnec; select it!
Click on Connect;
Once you have a connection, you will be notified by the following indicators:



For help please contact the registration desk

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