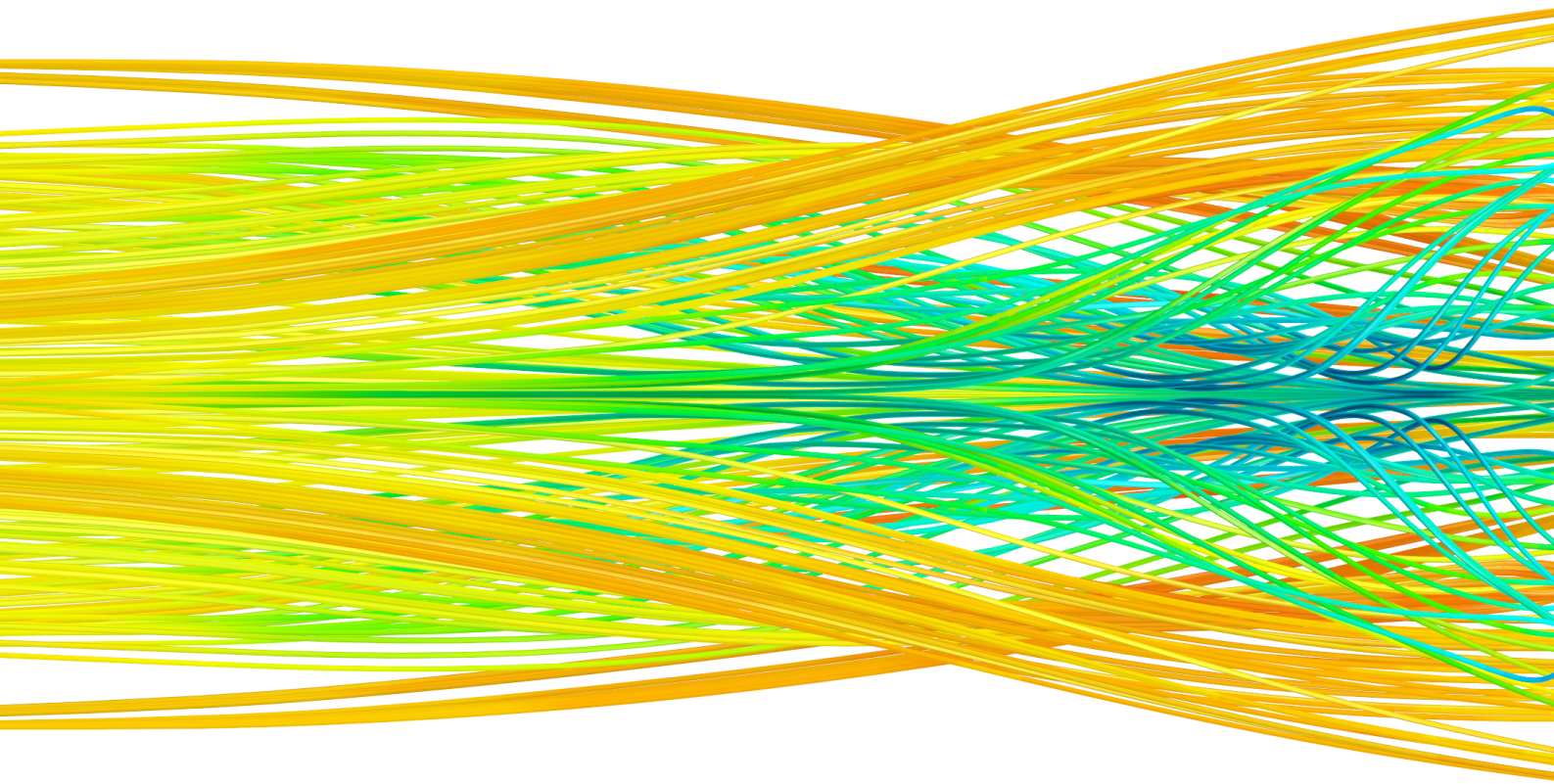
UNIVERSITY OF OXFORD

BSC Barcelona Supercomputing Center
Centro Nacional de Supercomputación

ICCFD10

THE 10TH INTERNATIONAL CONFERENCE ON COMPUTATIONAL FLUID DYNAMICS



9–13 JULY 2018 BARCELONA

Welcome to Barcelona and the 10th International Conference on Computational Fluid Dynamics (ICCFD10). ICCFD is a leading international conference devoted to all innovative aspects of CFD, fundamental and applied. This biennial event began in the year 2000 with the merger of two important CFD conferences: the International Conference on Numerical Methods in Fluid Dynamics (ICNMFD), and the International Symposium on Computational Fluid Dynamics (ISCFD).

This year's conference is hosted in the beautiful city of Barcelona and will include a combination of five inspiring plenary talks, four keynotes and four parallel sessions of the latest fundamental and applied CFD research. In addition there will be a chance to meet new and old colleagues at a number of social events. With 230 accepted papers, this is the largest technical program in ICCFD history.

We would like to thank each of you for attending this year's conference and bringing your expertise to our gathering. As CFD experts, you have the vision, the knowledge, and the experience to help pave our way into the future. We encourage you to network with your international colleagues both during and after the technical sessions and at our social events.

Our personal thanks to all of you for attending.

CONFERENCE CO-CHAIRS

Dr. Neil Ashton
University of Oxford

Dr. Daniel Mira
Barcelona Supercomputing center

Dr. Mariano Vazquez
Barcelona Supercomputing center

Dr. Guillaume Houzeaux
Barcelona Supercomputing center

ICCFD10 Invited Speakers

Dr Jaiwon Shin (NASA HQ) – Special Guest Speaker

Aviation in the 21st Century

Dr. Jaiwon Shin is the NASA Associate Administrator for the Aeronautics Research Mission Directorate. In this position, he manages the agency's aeronautics research portfolio and guides its strategic direction. This portfolio includes research in the fundamental aeronautics of flight, aviation safety and the nation's airspace system. Shin co-chairs the National Science & Technology Council's Aeronautics Science & Technology Subcommittee. Comprised of federal departments and agencies that fund aeronautics-related research, the subcommittee wrote the nation's first presidential policy for aeronautics research and development (R&D). Prior to coming to work at NASA Headquarters, Shin served as chief of the Aeronautics Projects Office at NASA's Glenn Research Center. In this position he had management responsibility for all of the center's aeronautics projects. Prior to this he was Glenn's deputy director of aeronautics, where he provided executive leadership for the planning and implementation of Glenn's aeronautics program, and interfaced with NASA Headquarters, other NASA centers, and external customers to explore and develop technologies in aeropropulsion, aviation safety and security, and airspace systems.

Dr. Shin received his doctorate in mechanical engineering from the Virginia Polytechnic Institute and State University, Blacksburg, Virginia. His bachelor's degree is from Yonsei University in Korea and his master's degree is in mechanical engineering from the California State University, Long Beach. His honors include NASA's Outstanding Leadership Medal, NASA's Exceptional Service Medal, a NASA Group Achievement Award, Lewis Superior Accomplishment Award, three Lewis Group Achievement Awards, and an Air Force Team Award. He is a graduate of the Senior Executive Fellowship Program at the Kennedy School of Government at Harvard University. He has extensive experience in high speed research and icing, and has authored or co-authored more than 20 technical and journal papers.

Dr Mujeeb Malik (NASA Langley Research Centre) – Plenary Speaker

NASA's Revolutionary Computational Aerosciences and CFD Vision 2030

Dr. Mujeeb Malik is Senior Aerodynamicist at NASA Langley Research Center and Technical Lead for the Revolutionary Computational Aerosciences under NASA's Transformational Tools and Technologies Project. He has served as Head of Computational AeroSciences Branch at Langley where he led research in the development of advanced CFD methods over a wide speed regime, from subsonic to hypersonic. Malik is well-known for his work on boundary layer stability and laminar-turbulent transition, in particular for his pioneering research in hypersonic boundary layer transition. Before joining NASA, he was President of High Technology Corporation, a R&D firm that he founded. He received his PhD from Iowa State University in 1978. During his PhD studies, he was also an academic visitor to Imperial College London for 6 months. He is a Fellow of AIAA, ASME and American Physical Society. He also received NASA's Exceptional Service Medal.

Prof. Michael Leschziner (Imperial College London) – Plenary Speaker

DNS-derived large-scale/small-scale interactions in near-wall turbulence at elevated Reynolds numbers

Michael Leschziner is Professor of Computational Aerodynamics in the Aeronautics Department of Imperial College, London. He was previously Head of the Aerospace programme at Queen Mary University of London and Head of Thermofluids and then Head of the Mechanical Engineering Department at the University of Manchester Institute of Science and Technology. He has 43 years of research experience in modelling and simulation of turbulent flows in Mechanical, Aeronautical and Civil Engineering. His research has focused on the study of complex 2D and 3D separated incompressible and compressible flows, the latter especially featuring shock/boundary-layer interaction, with second-moment closure, non-linear eddy-viscosity models, LES, hybrid LES-RANS and DNS methods. His current research focuses on near-wall turbulence mechanisms in the context of friction-drag reduction by spanwise wall oscillation. Professor Leschziner is the author of a text book on statistical turbulence modelling, and has published around 320 journal and refereed conference papers on modelling and simulation of turbulent flows. He is Editor-in-Chief of the Springer journal Flow, Turbulence and Combustion. He has organized and chaired several major international conferences on turbulent flows, notably TSFP2, ETMM7, 8 and 10, and he was a founder member of the International Symposium on Turbulence and Shear Flows Phenomena (TSFP), which started in 1999. He was Chairman of ERCOFTAC's Scientific Programme Committee for 5 years. He is Fellow of the UK Royal Academy of Engineering, the Royal Aeronautical Society and the Institution of Mechanical Engineers.

Professor Chongam Kim (Seoul National University) – Plenary Speaker

Shock-Capturing Strategies for High-Order CFD Methods: Progresses and Issues

Chongam Kim is a Professor of Aerospace Engineering at the Seoul National University, Korea (R.O.K.), where he has been a faculty member since 2008. He lectures CFD, numerical analysis and aerodynamics, and also directs research groups for the study of Aerodynamic Simulation & Design with leading works in CFD methods for aerospace applications. Prior to joining the position, he spent some time at Supercomputing Center of KISTI, Korea, and at CTR (Center for Turbulence Research) of NASA Ames Research Center & Stanford University in the USA as a research fellow. After undergraduate and master degree in Aerospace Engineering from the Seoul National University, he completed his master and Ph.D. in Mechanical and Aerospace Engineering at the Princeton University, USA. His research interests include numerical methods for conservation laws & high-order methods, compressible multiphase flows, multi-physics computations of liquid and solid rockets, bio-mimetic aerodynamics and fluid-structure interaction, aerodynamic shape optimization & flow control, and computational code development for HPC. He has published over 65 international SCI journal articles and over 200 international conference papers. He has been an associate fellow of the AIAA (American Institute of Aeronautics and Astronautics) and an academic board member of the KSASS (Korean Society of Aeronautical and Space Sciences).

Professor Arnaud Mura (CNRS PPrime Institute of Poitiers) – Plenary Speaker

High-fidelity numerical simulation of reactive high-speed flows

Arnaud Mura is a Senior Researcher in the Fluids, Thermal Science and Combustion Department of the PPRIME Institute (Poitiers, France). He was previously the Head of the Turbulent Combustion team of the Laboratory and he is currently the deputy Director of the whole Research Department (approx. 250 people). He is a member of the Board of the French section of the Combustion Institute and an active member of several educational and scientific societies. After getting an Engineering Diploma in Energy and Propulsion, he obtained a Ph.D. Thesis in Fluid Mechanics from ESM2 (now Ecole Centrale Marseille). He has been a visiting Professor (Researcher) in several Universities (Nagoya, Uberlandia, etc.). His teaching activities have been mainly devoted to turbulence, explosion, high-speed flows, turbulent combustion, and combustion in two-phase flows. His research is dedicated to the analysis of complex fluid media (i.e., featuring shock, multicomponent, multiphase, and/or reactive) with a broad range of technical issues encountered in practical systems, spanning from combustion in boilers to rocket propulsion. He uses mathematical modelling and asymptotics in conjunction with DNS to understand complex flows. Arnaud Mura has published more than 100 journal and refereed conference papers on the analysis, modelling and simulation of turbulent flows. He has participated to the organization of major conferences including the 21st ICDERS and 8th TSFP in Poitiers. He has been also involved in several international Summer Schools devoted to compressible flows, turbulence, and combustion.

Professor Kai Schneider (Aix-Marseille Université) – Plenary Speaker

Massively parallel simulations of insect flight in turbulence

Dr. Kai Schneider is a Professor of Mechanics and Applied Mathematics at Aix Marseille University, Marseille, France, since 2000. He obtained his Master degree in Applied Mathematics in 1993 and his Ph.D. degree in 1996, both from the University of Kaiserslautern, Germany. In 2001 he obtained his habilitation from the University Louis Pasteur, Strasbourg, France. His current research activities are focused on the development of multiscale techniques and wavelets for scientific computing and their application for modeling and computing turbulent flows, including fluid-structure interaction.

Dr. Cetin Kiris (NASA Ames Research Centre) – Keynote Speaker

Progress on Scale Resolving Simulations for Noise Prediction

As Chief of the Computational Aerosciences Branch, Cetin Kiris serves as both technical and managerial lead. He is responsible for orchestrating all aspects of branch operations, including overseeing projects, providing technical direction, coordinating activities and resources, and laying strategic groundwork to support branch objectives. Kiris also led computational fluid dynamics (CFD) support for development of the Ares V Cargo Launch Vehicle, coordinating this effort with multiple teams across NASA. Kiris's field of expertise is CFD for aerospace applications. He initiated and orchestrated the development of LAVA, a computational framework for Launch, Ascent, and Vehicle Aerodynamics. Some of his most notable work includes: aerodynamic database generation for launch vehicle development; analysis of accident scenarios and launch pad ignition conditions for ground operations; turbopump flow simulations; numerical models of human circulatory systems under altered gravity; and application of CFD to analysis and design of artificial heart devices. He has published over 100 technical papers, and co-authored a book on numerical simulations of incompressible flows. Kiris received his master's degree and Ph.D. in Aeronautics and Astronautics from Stanford University. Since then he has worked as a research scientist, first at MCAT, Inc. and then joined the NAS Division in 2000. He has received numerous honors and awards, including a NASA Exceptional Achievement Medal; NASA Ames Honor Awards in several categories; NASA Commercial Invention of the Year Award for co-developing the NASA-DeBakey Ventricular Assist Device; NASA Software of the Year Award for co-developing the INS3D code; and several NASA Space Act Awards.

Prof. Rainald Löhner (George Mason University) – Keynote Speaker

Towards Overcoming the LES Crisis

Rainald Löhner is the head of the CFD center at the department of computational and data sciences of George Mason University. He received a MSc in Mechanical Engineering from the Technische Universität at Braunschweig, Germany, as well as a PhD and DSc in Civil Engineering from the University College of Swansea, Wales. His areas of interest include numerical methods, solvers, grid generation, parallel computing, visualization, pre-processing, fluid-structure interaction as well as shape and process optimization. His codes and methods have been applied in many fields, including aerodynamics of airplanes, cars and trains, hydrodynamics of ships, submarines and UAVs, shock-structure interaction, dispersion analysis in urban areas and hemodynamics of vascular diseases. He is the author of more than 650 articles covering the fields enumerated above, as well as a textbook on applied CFD techniques.

Professor Roel Verstappen (University of Groningen) – Keynote Speaker

Minimum-dissipation models for LES

In 1989, Roel Verstappen received his Ph.D. degree in Applied Mathematics at the University of Twente (The Netherlands). After that he joined the Institute for Mathematics of the University of Groningen, where he was appointed as assistant professor in Engineering Mathematics with emphasis on Computational Fluid Dynamics. In 2006, he became an associate professor. He has long working visits to the Universitat Polytecnica de Catalunya (Barcelona), Imperial College London, TU Muenchen and Stanford University.

Professor Istvan Reguly (PPCU, Budapest) – Keynote Speaker

Productivity, Performance, and Portability for CFD codes with Domain Specific Languages

Istvan Reguly is an assistant professor at PPCU in Budapest, Hungary, where he also got his PhD in computer science in 2014. His research targets the development of programming approaches that provide a domain-specific abstraction to application programmers, hiding the complexity of parallelism and data movement. He worked with Prof Mike Giles at the University of Oxford on the design and development of the OP2 and OPS domain specific languages for structured and unstructured mesh computations, and has been one of their main developers since. Istvan previously worked on the AmgX sparse linear solver library with NVIDIA.

Social Activities

Wine-Tasting

Wednesday, July 11, 2018 — *from 4:30 PM to 8:00 PM*

Alta Alella is a family business project that started in the early 1990's. The property has been declared and certified organic from the very beginning. The estate is just two kilometres away from the Mediterranean Sea and the vineyards are planted on slopes and terraces between 100 and 250m above sea level.

Alta Alella is a highly mature vineyard and a prestigious brand. The newly-built Visitor Center where wine lovers have a chance to discover Alta Alella's privileged location while tasting the still and sparkling wines – the result of an artisan elaboration of maximum expression. This beautiful site is overlooking the magnificent view of the Mediterranean Sea. There will be a guided tour to the winery and cellars, and a wine/cava tasting.

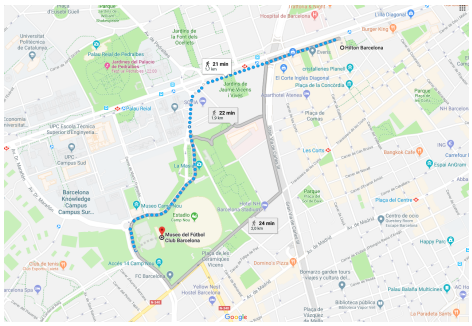
Logistics: Buses will wait at 4:30PM at the door of the Hilton Hotel to bring you to the cellar.

Barcelona Stadium Tour

Wednesday, July 11, 2018 — *from 5:00 PM to 6:30 PM*

Camp Nou is the home stadium of the Barcelona Football club since its completion in 1957. With a seating capacity of 99,354, it is the largest stadium in Spain and Europe, and the second largest football stadium in the world.

Logistics: We will walk together from Hilton Hotel to the football stadium (address: Calle Aristides Maillol, 08028 Barcelona). Meeting point is at the door of the hotel at 4:30PM. The visit starts at 5:00PM.

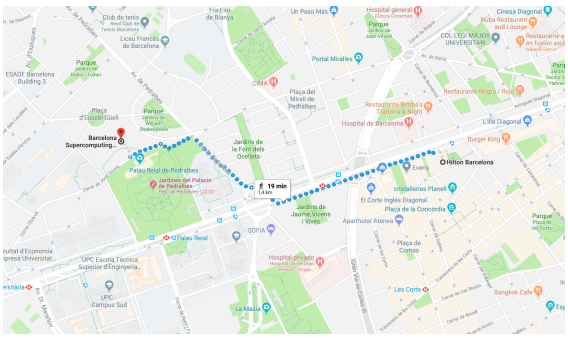


Discover BSC's MareNostrum Supercomputer

Wednesday, July 11, 2018— *from 4:30 PM to 5:30 PM*

MareNostrum ranks #16 in Top500 and one of the most powerful supercomputers in Europe. It has been dubbed the most diverse and likely the most interesting supercomputer in the world thanks to the heterogeneity of the architecture it includes. Its total speed is 13.7 petaflops. It has five storage racks with the capacity to store 14 petabytes of data. A high-speed Omnipath network connects all the components in the supercomputer to one another. MareNostrum 4 is built inside of a chapel and has been chosen as the most beautiful data centre in the world.

Logistics: We will walk together from Hilton Hotel to the Barcelona Supercomputing Center (address: Calle Jordi Girona 31, 08034 Barcelona). Meeting point is at the door of the hotel at 4:30PM. The visit starts at 5:00PM.

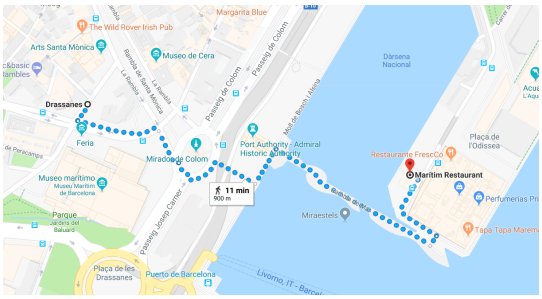


Banquet

Thursday, July 12, 2018 — from 8:00 PM to 10:00 PM

Our banquet will be at the Maritim Restaurant. To get to the restaurant from the Hilton Hotel, take the metro from Maria Cristina station to Drassanes station. It is a ride of about 20 minutes in the green line, called L3. From Drassanes station, walk to the Columbus monument (at the end of Las Ramblas) and then to the Maremagnum building. You will find the restaurant surrounding the Maremagnum in the direction of Paseo de Itaca street.
We will meet at the door of the restaurant for 8:00 PM.

Restaurant Maritim http://maritimrestaurant.com/en/
Address: Muelle de España 4, 08039 Barcelona
Metro stop: Drassanes (L3 - green line)



ICCFD10 Program - Monday, July 9th, 2018

08:00 am - 08:15 am	Opening Remarks by Chair	Ramblas A
08:15 am - 09:00 am	Special Introductory Talk	Ramblas A

01 | Aviation in the 21st Century

Dr Jaiwon Shin

NASA HQ

09:00 am - 10:00 am	Plenary Talk	Ramblas A

02 | NASA's Revolutionary Computational Aerosciences and CFD Vision 2030

Dr Mujeeb Malik

NASA Langley Research Centre

10.00 am - 10.15 am	Break

03 | Chairs : Cetin KIRIS & Rainald LOHNER — Numerical Methods - I — Ramblas A

10:15 am - 12.45 pm

10:15 am	10:45 am	11:15 am	11:45 am	12:15 pm
ICCFD10-003	ICCFD10-069	ICCFD10-022	ICCFD10-114	ICCFD10-186
Adaptive Time Steps for Compressible Flows Based on Dual-Time Stepping and RK/Implicit Smoother Scheme	Parallel Preconditioners for Pressure-Velocity Matrix Systems for Incompressible Flows	A Boundary Condition Stability Analysis of Finite-Volume Methods on Unstructured Meshes	Solving Three-Dimensional Turbulent Compressible Flows Using High-Order One Step Monotony Preserving Scheme	Explicit Local Time Stepping Scheme for the Simulation of Turbulent Flows
Oren Peles, Eli Turkel	Krishna Chandran	Reza Zangeneh, Carl F. Ollivier-Gooch	Ismael Ben Hassan Saodi, Christian Tenaud, Guillaume Fournier	Guillaume Jeanmasson, Ivan Mary, Luc Mieussens
Tel-Aviv University	Indian Institute of Technology Kanpur	University of British Columbia	Limsi Cnrs, University Paris-sud, University Paris Saclay	ONERA

04 | Chairs : Mariano VAZQUEZ & Charles MOULINEC — Design Optimization - I — Gran Via B

10:15 am - 12.45 pm

10:15 am	10:45 am	11:15am	11:45 am	12:15 pm
ICCFD10-063	ICCFD10-289	ICCFD10-348	ICCFD10-059	ICCFD10-352
Toward Shape Optimization for Flow Induced Noise	Flow Structure Oriented Optimization Aided by Deep Neural Network	Optimising the Flow within a Stirling Pulse Tube Cryocooler	An New Multi-objective EGO Algorithm and Its Applications to Aerodynamic Shape Optimizations	Redesign of Industrial Apparatus using Multi-Objective Bayesian Optimisation
Wagner Jose Goncalves da Silva Pinto, Florent Margnat	Kaiwen Deng, Haixin Chen, Yufei Zhang	Mohammad Amin Abolghasemi, Richard Stone, Mike Dadd, Paul Bailey	Feng Deng, Ning Qin	Steven Daniels, Alma Rahat, Gavin Tabor, Jonathan Fieldsend, Richard Everson
Université de Poitiers	School Of Aerospace, Tsinghua University	University of Oxford	Nanjing University of Aeronautics and Astronautics	University of Exeter

05 | Chairs : Michael BARAD & Christoph BREHM		Lattice Boltzmann, Immersed Boundary and Cartesian Methods		Ramblas B
10:15 am	10:45 am	11:15 am	11:45 am	12:15 pm
ICCFD10-101	ICCFD10-305	ICCFD10-047	ICCFD10-099	ICCFD10-165
Performance Enhancements for the Lattice-Boltzmann Solver in the LAVA Framework	Fractional Step Lattice Boltzmann Methods for Large-Eddy Simulation on GPUs	ALE Seamless Immersed Boundary Method with Overset Grid System for Multiple Moving Objects	Using High Order Finite Difference Schemes on Nested Cartesian Grids for Large-Scale Separated Flows	Coupled Simulation of Flow-Particle-Structure Interaction of Shot Peening Process by Immersed Boundary Method and Finite Element Method
Michael Barad, Joseph Kocheemoolayil, Gerrit Stich, Cetin Kiris	Alpar Matyas	Kyohei Tajiri, Hidetoshi Nishida, Mitsuru Tanaka	Alejandro Figueroa, Rainald Lohner	Yusuke Mizuno, Takayoshi Kubota, Shun Takahashi, Kota Fukuda
NASA Ames Research Center	Continental AG	Kyoto Institute of Technology	George Mason University	Tokai University

06 | Chairs : Neil ASHTON & Herbert OWEN		Transition		Gran Via C
10:15 am	10:45 am	11:15 am	11:45 am	
ICCFD10-012	ICCFD10-175	ICCFD10-153	ICCFD10-107	
Direct Numerical Simulation of Hypersonic Boundary-layer Transition of Blunt cones: Bluntness Effects	Turbulent Transition Prediction Using Large-Eddy Simulation with the Stability Theory	DNS of Laminar to Turbulent Transition on NACA 0012 Airfoil with Sand Grain Roughness	Preliminary Conception and Test of Global Stability Decomposition for Flow Stability Analysis	
Xinliang Li	Minwoo Kim, Jiseop Lim, Solkeun Jee, Jaeyoung Park, Donghun Park	Andre F. P. Ribeiro, Ehab Fares, Meelan Choudhari	Guohua Tu, Qiang Yang, Jianqiang Chen, Xianxu Yuan	
LHD, Institute of Mechanics, Chinese Academy of Sciences	Gwangju Institute of Science and Technology	Exa GmbH	China Aerodynamics Research and Development Center	

12.45 pm - 2.00 pm	Lunch	
02:00 pm - 02:45 pm	Keynote Talk	Ramblas A

07 \|

Towards Overcoming the LES Crisis
Prof. Rainald Löhner
George Mason University

08 | Chairs : Nobuyuki SATOFUKA & Rustem ASLAN		Numerical Methods - II
02:45pm	03:15pm	03:45pm
ICCFD10-100	ICCFD10-371	ICCFD10-148
A High-Order Kinetic Energy Conserving Scheme for Compressible Large-Eddy Simulation	AUSM Ride from Nearly-Incompressible Variable-Density Flows to Shock Dynamics: High-Order Fully-Implicit All-Speed Fluid Solver	Application of Adaptive Time-Stepping for Steady/Unsteady Flows
Francois Cadieux, Michael Barad, Cetin Kiris	Robert Nourgaliev	Nikhil Kalkote, Ashwani Assam, Vinayak Eswaran
Science & Technology Corporation	LLNL	Indian Institute of Technology Hyderabad

09 | Chairs : Daniel MIRA & Xavi TRIAS			Design Optimization - II	Gran Via B
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm	
	ICCFD10-105	ICCFD10-056	ICCFD10-302	
	Aerothermodynamic Shape Optimization of Reentry Capsules Using DSMC and POD Methods	Rapid Aerodynamic Design of Prop-Rotor Blade with Optimization	Refinement of Design Variables for Aerodynamic Shape Optimization	
	Halit Kutkan, Sinan Eyi	Yincheang Ng, Haixin Chen	Haoge Li	
	Middle East Technical University	Tsinghua University	Zhejiang University	

10 | Chairs : Sanjin SARIC & Neil ASHTON			RANS & Hybrid RANS-LES	Ramblas B
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm	
	ICCFD10-014	ICCFD10-349	ICCFD10-328	
	Development of Turbulence Models Based on kL Formulation	DNS of a Backward-Facing Step at high Reynolds number. Towards a better understanding of RANS-LES transition in DES models.	Partially Averaged Navier-Stokes Simulation of Transonic Flow over a Deep Cavity	
	Khaled Abdol-hamid	Arnau Pont Vilchez, Francesc Xavier Trias Miquel, Assensi Oliva Llena	Dahai Luo, Diangui Huang, Hongwei Qin	
	Nasa Langley Research Center	Universitat Politecnica de Catalunya	University of Shanghai for Science and Technology	

11 | Chairs : Guillaume HOUZEAUX & Juan C CAJAS			Fluid-Structure Interaction	Gran Via C
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm	
	ICCFD10-310	ICCFD10-361	ICCFD10-377	
	A Higher-Order Space-Time Finite-Element Method for Moving-Body and Fluid-Structure Interaction Problems	An Efficient and Stable Method for Fluid-Rigid Body Interactions with Free Surface	Stability properties of a Fluid-Structure Interaction problem: towards Physics-based Stabilization	
	Laslo Diosady, Scott Murman	Gwangsoo Go, Hyung Taek Ahn	Guillaume Houzeaux, Juan Carlos Cajas, M. Vazquez , C. Treviño	
	NASA Ames Research Center	University of Ulsan	Barcelona Supercomputing Center	

04.15 pm - 04.30 pm	Break & Posters

12 | Chairs : Nobuyuki SATOFUKA & Rustem ASLAN			Numerical Methods & Design Optimization	Ramblas A
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	
	ICCFD10-166	ICCFD10-021	ICCFD10-195	
	Conceptual Design of Reusable Unmanned Space Vehicle Using MDO with MOGA	Aerodynamic Shape Optimization of the Common Research Model based on Improved BFGS Algorithm	An artificial viscosity model for 3D simulations with Vortex Methods	
	Jongho Jung, Kangkuk You, Kitae Park, Kwanjung Yee, Shinkyu Jeong	Jing Yu, Jiangtao Huang, Zhu Zhou, Dong Hao	Chloe Mimeau, Iraj Mortazav, Georges-Henri Cottet	
	Seoul National University	China Aerodynamics Research and Development Center	Conservatoire National Des Arts et MÚtiers (CNAM)	

13 | Chairs : Christoph BREHM & Gary PAGE			Adjoint Methods		Gran Via B
4.30pm -6.30pm	04:30pm	05:00pm			
	ICCFD10-287	ICCFD10-322			
	Research and Application of Discrete Adjoint Optimization based on Unstructured Grid	Adjoint based Pareto Front Tracing in Aerodynamic Shape Optimization			
	Bin Li, Jing Tang, Hong Yin Jia, Yao Bing Zhang, You Qi Deng	Konstantinos Gkaragkounis, Evangelos Papoutsis-Kiachagias, Varvara Asouti, Kyriakos Giannakoglou			
	CARDC	National Technical University of Athens			

14 | Chairs : Sanjin SARIC & Neil ASHTON			RANS & Hybrid RANS-LES		Ramblas B
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	06:00pm	
	ICCFD10-229	ICCFD10-281	ICCFD10-072	ICCFD10-168	
	A Near-Wall Model for Heat Transfer at high Prandtl Numbers	Separated Flow Prediction-based on Modified IDDES Coupled with Different Adaptive Dissipation Techniques	A Scalable Detached Eddy Simulation Method and its Validation	Investigation Of Turbulent Mixing Layer With Compressibility Corrections For RANS Models	
	Sanjin Saric, Branislav Basara	Maochao Xiao, Yufei ZHANG, Haixin CHEN	Bing Zhu, Dahai Luo	Vatsalya Sharma, Ashwani Assam, Vinayak Eswaran	
	AVL List GmbH	Tsinghua University	University of Shanghai for Science and Technology	Indian Institute of Technology Hyderabad	

15 | Chairs : Guillaume HOUZEAUX & Juan C CAJAS			Fluid Structure Interaction and Aeroelastics	Gran Via C
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	
	ICCFD10-125	ICCFD10-142	ICCFD10-149	
	A Turbulent Wall-Pressure Fluctuation Model for Fluid-Structure Interaction	Convergence Analyses for Fluid-Structure Interaction Simulation in a Thin Hyper-elastic Pipe	Simulating the Explosive Shear and Friction Ignition Problem by Thermo-Mechanical Coupling Technique with Unstructured Polygon Meshs	
	Man Zhang, Kader Frendi	Qiyue Lu, Erman Guleryuz, Madhu Vellakal, Ahmed Taha, Seid Koric	Wenzhou Lin, Xuezhe Liu, Zhong Lin, Ruili Wang	
	University of Alabama in Huntsville	University of Illinois at Urbana-Champaign	Institute of Applied Physics and Computational Mathematics	

07.00 pm - 08.30 pm	Welcome Reception	Hilton Reception

Tuesday, July 10th, 2018

8:30 am - 9:30 am	Plenary Talk	Ramblas A

16 | DNS-derived large-scale/small-scale interactions in near-wall turbulence at elevated Reynolds numbers

Prof. Michael Leschziner

Imperial College London

17 |	Chairs : Neil ASHTON & Ivette RODRIGUEZ		DNS & LES - I	Ramblas A
09:30 am - 11.00 am	9:30 am	10:00 am	10:30 am	
	ICCFD10-373	ICCFD10-075	ICCFD10-341	
	Developing 2-D Stretching in a High Order DNS Code: Application to Turbulent Flow in a Square Duct	Multiblock Structured Grids for Direct Numerical Simulations of Transonic Wing Sections	Large Eddy Simulation for Automotive Aerodynamics with Alya	
	Charles Moulinec, Sylvain Laizet, David R. Emerson	Markus Zauner, Neil Sandham	Oriol Lehmkuhl, Herbert Owen, Georgios Chrysokentis, Samuel Gomez	
	STFC Daresbury Laboratory	University of Southampton	Barcelona Supercomputing Center	

18 |	Chairs : Daniel MIRA & Arnaud MURA		Multi-Phase Flows - I	Gran Via B
09:30 am - 11.00 am	9:30 am	10:00 am	10:30 am	
	ICCFD10-120	ICCFD10-013	ICCFD10-236	
	Influence of Evaporation Models on a Lift-Off Height of a Spray Jet Flame	Interface Reconstruction Method for Multiphase Flows in Under-Resolved Regions	Investigation of Gravity-Driven Inertial Particles Clusters and their Locations in Turbulence Structure Using Kinematic Simulation	
	Jakub Stempka, Lukasz Kuban, Artur Tyliszczak	Anirudh Asuri Mukundan, Thibaut Ménard, Alain Berlemont, Jorge César	Muhammad Farhan, Franck Nicolleau, Muhammad Farooq	
	Czestochowa University of Technology	CNRS UMR 6614-CORIA	University of Engineering and Technology Lahore	

19 |	Chairs : Shishir PANDYA & Mariano VAZQUEZ		Meshing - I	Ramblas B
09:30 am - 11.00 am	9.30am	10:00 am		
	ICCFD10-219	ICCFD10-102		
	Prismatic Mesh Generation Using Minimum Distance Fields	Numerical Simulation of Dynamic Stall Using Near-Body Adaptive Mesh Refinement		
	Beatrice Roget, Jayanarayanan Sitaraman, Vinod Lakshminarayanan	Neal Chaderjian		
	Science and Technology Corporation	NASA Ames Research Center		

20 | Chairs : Paola CINNELLA & Fernando GISBERT			Numerical Methods - III	Gran Via C
09:30 am - 11.00 am	9:30 am	10:00 am	10:30 am	
	ICCFD10-241	ICCFD10-111	ICCFD10-201	
	High Order Generalized Finite Difference Schemes with Compact Support for Compressible Flows	Numerical Optimization of High-Order Diagonally-Implicit Multistep Runge-Kutta Methods	A Wall Treatment Strategy for Multiple Correction k-exact Schemes	
	Xue-Li Li, Yu-Xin Ren	Pieter Boom, David Zingg	Amandine Menasria, Pierre Brenner, Paola Cinnella	
	Tsinghua University	University of Toronto Institute for Aerospace Studies	Ariane Group	
11.00 am - 11.15 am			Break & Posters	
21 | Chairs : Pieter BOOM & Herbert OWEN			Large Eddy Simulation - I	Ramblas A
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-313	ICCFD10-156	ICCFD10-295	
	On a Physically-Consistent Nonlinear Subgrid-Scale Heat Flux Model for LES of Buoyancy Driven Flows	Large-Eddy Simulation of Controlled and Uncontrolled Turbulent Boundary Layers	Large Eddy Simulation on Development and Evolution of Subsonic-Supersonic Shear Mixing Layer	
	F. Xavier Trias, Firas Dabbagh, Andrey Gorobets, Assensi Oliva	Pieter Boom, Stephen Rolston, David Zingg	Liu Yang, Zhang Chen-xi, Fu Ben-Shuai	
	Technical University of Catalonia	University of Toronto, Institute for Aerospace Studies	Northwestern Polytechnical University	
22 | Chairs : Andrew GARMORY & Paul CIZMAS			Multi-Phase Flows - I	Gran Via B
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-157	ICCFD10-338	ICCFD10-033	
	Numerical Simulation of Atmospheric Pollutants Dispersion in an Urban Environment	Development of an Inlet Boundary Condition to Introduce Resolved Droplets Distribution into a Multiphase Simulation	Simulating Three Dimensional Multi-material Fluid Dynamics with MMALE method	
	Gonzalo Fernandez, Mariana Mendina, Nicolas Rezzano, Mauro D'Angelo, Gabriel Usera	Maciej Skarysz, Andrew Garmor	Shudao Zhang, Zupeng Jia, Jun Liu, Jun Xiong, Haibing Zhou	
	UdelaR	Loughborough University	Institute of Applied Physics and Computational Mathematics	

23 | Chairs : Shishir PANDYA & Mariano VAZQUEZ		Meshing - I	Ramblas B
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-051	ICCFD10-170	ICCFD10-097
	Parallel Implicit Hole-Cutting Method for Unstructured Chimera Grid	High-order Mesh Generation using RBFs based on Geometrical Similarity	An Automated Marching Scheme for Overset Structured Surface mesh Generation
	Rong Ma, Xinhua Chang, Sheng Zhang, Laiping Zhang	Zi-Hao Zhao, Wen-Ping Song, Ke Song	Shishir Pandya, William Chan, Robert Haimes
	China Aerodynamics Research and Development Center	Northwestern Polytechnical University	NASA Ames Research Center

24 | Chairs : Paola CINNELLA & Fernando GISBERT		Numerical Methods - III	Gran Via C
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-164	ICCFD10-039	ICCFD10-257
	An Improved Barth-Jesperson Limiter for Flux-Reconstruction Method and its Applications	Vertex-Weighted-Least-Squares Gradient Reconstruction for Cell-Centered Finite Volume Method	Supressing the Shock Instability of Godunov-Type Schemes by an Entropy Control
	Zhiqiang He, Zhongzhou Guo, Wenwen Zhao, Weifang Chen	Zedong Chen, Dongyang Zou, Fan Zhang, Jun Liu	Wenjia Xie, Ran Zhang, Jianqi Lai, Hua Li
	Zhejiang University	Sun Yat-sen University	National University of Defense Technology

12.45 pm - 02.00 pm	Lunch	
02:00 pm - 02:45 pm	Panel Discussion	Ramblas A
25 |	2030 vision for CFD in the Aeronautics Sector Dr J. Shin (NASA HQ), Dr D. Emerson (STFC), Prof. R. Lohner (George Mason), Dr. N Ashton (Oxford)	

26 | Chairs : Pieter BOOM & Herbert OWEN		Large Eddy Simulation - II	Ramblas A
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm
	ICCFD10-311	ICCFD10-355	ICCFD10-204
	LES of Turbomachinery Flows Using a High-Order Implicit Residual Smoothing Scheme	Validation of WMLES on a Periodic Channel Flow Featuring Adverse/Favorable Pressure Gradients	Wake Instabilities and Flow State Analysis of the Flow Past a Prolate Spheroid
	Jean-Christophe Hoarau, Paola Cinnella, Xavier Goerfelt	Corentin Carton de Wiart, Johan Larsson, Scott Murman	Zhiguo Zhang
	Dynfluid ENSAM	USRA/NASA ARC	Huazhong University of Science and Technology

27 | Chairs : Andrew GARMORY & Paul CIZMAS		Multi-Phase Flows - II	Gran Via B
02.45pm - 04.15pm	02:45pm	03:15pm	3:45 PM
	ICCFD10-284	ICCFD10-251	ICCFD10-043
	Flow Simulations Through Gradually Varying Porous Media	The Comparison of Discrete Element Method and Multi-Phase Particle in Cell Approach for Modelling of a Particle Cloud..	A Validated CFD Model for Simulation of Cryogenic Fluid Leakage
	Pradeep Kumar, Rolf Radespiel	Sergei Strijhak, Konstantin Koshelev, Jose Manuel Redondo, Jackson Tellez-Alvarez	B. Yerly, R. Marcer, C. Audiffren, M. Rivot, B. Lequime
	TU Braunschweig	Russian Academy of Science	Principia

28 | Chairs : Shishir PANDYA & Mariano VAZQUEZ		Meshing - II	Ramblas B
02.45pm - 04.15pm	2:45 pm	03:15pm	03:45pm
	ICCFD10-203	ICCFD10-376	ICCFD10-312
	An Algorithm for Unsteady Incompressible Flows on an Adapatively Refined Quadtree Grid	Dynamic and Implicit Coupling of Non-Matching Meshes	Development of WCNS for Structured Adaptive Meshes
	Kshitiz Subed, Matthew Fischels, Ganesh Rajagopalan	Guillaume Houzeau, Mariano Vazquez, Ricard Borrell, Juan Carlos Cajas	Zhenguo Yan, Huayong Liu, Meiliang Mao, Xiaogang Den
	Iowa State University	Barcelona Supercomputing Center	China Aerodynamics Research and Development Center

29 | Chairs : Jian FANG & Michael BARAD		Numerical Methods - IV	Gran Via C
02.45pm - 04.15pm	02:45pm	3:15 pm	03:45pm
	ICCFD10-054	ICCFD10-041	ICCFD10-109
	Developments of Linear Unstable Modes in Supersonic Streamwise Vortices Using a Weighted Essentially Non-Oscillatory Scheme	Transition Prediction for Hypersonic Inlet	Implicit High-Order Gas Kinetic Scheme for Turbulence Simulation
	Toshihiko Hiejima	Huiyong Zhao, Miaorong Yi	Guiyu Cao, Kun Xu
	Osaka Prefecture University	China Aerodynamics Research and Development Center	Hong Kong University of Science and Technology

04.15 pm - 04.30 pm	Break & Posters

30 | Chairs : Markus RUMPFKEIL & Mohamed HAFEZ			Aeroacoustics	Ramblas A
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	06:00pm
	ICCFD10-237	ICCFD10-248	ICCFD10-197	ICCFD10-146
	Jet Noise Prediction for Chevron Nozzles using a Fully Coupled Hybrid CFD/CAA Method	An Efficient LES-Acoustic Coupling Method for Sound Generation and High Order Propagation from Jets	Noise Radiated by an Open Cavity at Low Mach Number	Computational Aeroacoustics of High Speed Transitional and Turbulent Boundary Layers
	Ansgar Niemöller, Michael Schlottke-Lakemper, Matthias Meinke, Wolfgang Schröder	Miguel A. Moratilla-Vega, Kilian Lackhove, Johannes Janicka, Hao Xia, Gary J. Page	Rocio Martin, Manel Soria, Oriol Lehmkuhl, Andrey Gorobets, Juan Carlos Cante, Pere Vidal	Konstantinos Ritos, Dimitris Drikakis
	RWTH Aachen University	Loughborough University	Universitat Politecnica de Catalunya	University of Strathclyde

31 | Chairs : Andrew GARMORY & Paul CIZMAS			Multi-Phase Flows - II	Gran Via B
4.30pm -6.30pm	04:30pm	05:00pm		
	ICCFD10-061	ICCFD10-280		
	An Arbitrary Lagrangian Eulerian Formulation with Exact Mass Conservation for the Numerical Simulation of a Rising Bubble in a Viscoelastic Fluid	Extension of Surface Roughness Model for Navier-Stokes Equation Based Aircraft Icing Code		
	Cagatay Guventurk, Mehmet Sahin	Seungin Min, Chankyu Son, Kwanjung Yee		
	Istanbul Technical University	Seoul National University		

32 | Chairs : Shishir PANDYA & Mariano VAZQUEZ			Meshing, Adaption & Numerical Methods	Ramblas B
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	06:00pm
	ICCFD10-048	ICCFD10-052	ICCFD10-225	ICCFD10-116
	Efficient Coupled Time Integration Method for Transonic Aeroelastic Analysis based on Detached Eddy Simulation	Design of Dynamic Inversion Control Law based on Numerical Virtual Flight for a Supermaneuverable Missile Model	Compact High Order Finite Volume Method on Unstructured grids IV: Multi-Step Reconstructions and p-Adaptation	A Monolithic Fluid-Structure Algorithm Applied to Buckling of Red Blood Cell Membrane
	Min-gi Chae, Soo Hyung Park, Ju Yeon, Jaesung Bae	Xinhua Chang, Rong Ma, Nianhua Wang, Laiping Zhang	Yusi Zhang, Yuxin Ren, Qian Wang	Ayse Cetin, Mehmet Sahin
	Konkuk University	China Aerodynamics Research And Development Center	Tsinghua University	Istanbul Technical University

33 | Chairs : Jian FANG & Michael BARAD			Numerical Methods - IV	Gran Via C
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	
	ICCFD10-366	ICCFD10-031	ICCFD10-002	
	A Cell-Centered Finite Volume Based Hyperbolic Method for Incompressible Navier-Stokes Equations on Unstructured Grids	A Hybrid Kinetic WENO Scheme for Compressible Flow Simulations	A New Mapped-WENO Method for Hyperbolic Problems	
	Deokhun Kim, Hyung Taek Ahn	Hongwei Liu, Changping Yu, Xinliang Li	U S Vevek, Zang B., New T. H.	
	University of Ulsan	Chinese Academy of Sciences	Nanyang Technological University of Singapore	

Wednesday, July 11th, 2018

08:30 am - 9:30 am	Plenary Talk	Ramblas A

34 |

Shock-Capturing Strategies for High-Order CFD Methods: Progresses and Issues

Professor Chongam Kim

Seoul National University

35 |	Chairs : Mariano VAZQUEZ & Istvan REGULY	High Performance Computing - I	Ramblas A

09:30 am - 11.00 am

9:30 am	10:00 am	10:30 am
ICCFD10-123	ICCFD10-136	ICCFD10-079
Compact Interface Quasi-Newton Algorithm for Biomechanical Applications in Massively Parallel Computers	A Massively Parallel CFD Framework for the Fluid-Structure Interaction Problems and its Industrial Applications	Employing Multiple Levels of Parallelism for CFD at Large Scales on Next Generation High-Performance Computing Platforms
Alfonso Santiago, Jazmin Aguado-Sierra, Eva Casoni, Guillaume Houzeaux, Mariano Vazquez	Makoto Tsubokura, Keiji Onishi, Rahul Bale, Wei-Hshiang Wang, Koji Nishiguchi, Chung-Gang Li	Micah Howard, Travis Fisher, Mark Hoemmen
Barcelona Supercomputing Center	Kobe University	Sandia National Laboratories

36 |	Chairs : Guillaume HOUZEAUX & Juan C CAJAS	Multi-physics I	Gran Via B

09:30 am - 11.00 am

9:30 am	10:00 am	10:30 am
ICCFD10-379	ICCFD10-050	ICCFD10-230
Simulation of Floating Platforms for Marine Energy	Comparisons between Direct Simulation and Penalization Methods for Flow in a Porous-Fluid System	Data-Driven CFD Simulation of an Industrial Semi-Batch Mixing Process
M. Moragues, N.C. Degirmenci, D. Castañon, M. Leoni, J. Jansson, V. Nava, E. Krishnasamy, J. Hoffman	Charles-Henri Bruneau	Carmen Alfaro, Ismael Viejo, Salvador Izquierdo
BCAM Basque Center for Applied Mathematics	University of Bordeaux	Instituto Tecnológico De Aragón

37 |	Chairs : Jack EDWARDS & May-Fun LIOU	Liou Special Session I	Ramblas B

09:30 am - 11.00 am

9:30 am	10:00 am	10:30 am
ICCFD10-112	ICCFD10-141	ICCFD10-067
Multi-objective Aerodynamic Optimization Using Hybrid Evolutionary-Adaptive Local Search Strategy	A Robust and Efficient Finite Volume Method Based on a AUSM Type Scheme for Compressible Two-Phase Flows	High-Fidelity Compressor Blade Design Optimization using Evolutionary Algorithm
Hyeonwook Lim, Hyoungjin Kim	Aditya Pandare, Hong Luo	Akira Oyama, Youngsheng Lian
Kyung Hee University	North Carolina State University	Japan Aerospace Exploration Agency

38 | Chairs : Serena VANGELATOS & Ismail BEN HASSAN		Discontinuous Galerkin Methods - I	Gran Via C
09:30 am -11.00 am	9:30 am	10:00 am	10:30 am
	ICCFD10-140	ICCFD10-360	ICCFD10-011
	A Reconstructed Discontinuous Galerkin Method Based on a Variational Reconstruction for Compressible Flows	A Discontinuous-Galerkin-Hancock Method for ViscousCFD and Multiphase Flows using First-Order PDEs	A projection way for constructing the WENO limiter for discontinuous Galerkin spectral element method
	Lingquan Li, Hong Luo	Seyedalireza Miri, James McDonald	Wanai Li, Yu-Xin Ren
	North Carolina State University	University of Ottawa	Sun Yat-sen University
11.00 am - 11.15 am		Break & Posters	
39 | Chairs : Stan POSEY & Charles MOULINEC		High Performance Computing - I	Ramblas A
11:15 am -12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-364	ICCFD10-155	ICCFD10-353
	GPU Parallel Solver Libraries for Applied CFD	A Domain-Decoupled Compact Scheme for Parallel Simulation of Turbulence	Implementation of a flux limiter into a fully-portable, algebra-based framework for heterogeneous computing
	Stan Posey, Joe Eaton, Nikolay Sakharnykh	Jian Fang, Feng Gao, Charles Moulinec, David Emerson	Xavier Alvarez Farre, Nicolas Valle, Andrey Gorobets, Xavier Trias
	Nvidia Corporation	Science and Technology Facilities Council Daresbury Laboratory	Heat and Mass Transfer Technological Center UPC
40 | Chairs : Guillaume HOUZEAUX & Juan C CAJAS		Multi-physics - I	Gran Via B
11:15 am -12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-206	ICCFD10-253	ICCFD10-268
	Multi-Physics Approach for Nuclear Reactor Analysis using Thermal-Hydraulics and Neutron Kinetics Coupling Methodology	Transient Blade Row Applications for Single Stage Axial Compressor	Sensitivity Analysis of Non-linear Steep Waves using VOF Method
	Jae Ryong Lee, Han Young Yoon	Firat Kiyici, Orcun Kor, Koray Sevinc, Ercan Arican	Alok Khaware, Vinay Kumar Gupta, KVSS Srikanth, Patrick Sharkey
	Korea Atomic Energy Research Institute	Tusas Engine Industries Inc.	Ansys Inc.
41 | Chairs : Jack EDWARDS & May-Fun LIOU		Liou Special session - I	Ramblas B
11:15 am -12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-167	ICCFD10-337	ICCFD10-124
	Simulations of Shallow Water Surface Waves and Comparison with Water Table Experiments	On the Development of "All Speed" Flux Formulae based on the AUSM Framework	Coordinate Transformations and High-Order Meshes with Mathematica
	Mohamed Hafez, Andrew Chuen, Aaron Burkhead	Jack Edwards	H.T. Huynh
	University of California Davis	North Carolina State University	NASA Glenn Research Center

42 | Chairs : Margarida MORAGUES & Mariano VAZQUEZ		Discontinuous Galerkin Methods - I	Gran Via C
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-319	ICCFD10-363	ICCFD10-207
	A Study on the Performance of Implicit Time Integration for the Navier-Stokes Equations using the Discontinuous Galerkin Spectral Element Method	High-Order Computation of Incompressible Flow on Arbitrarily Moving Unstructured Meshes using Direct Discontinuous Galerkin Formulation	Stability of Split-Form Flux-Reconstruction Schemes for Airfoil Flow Simulation with High-Order Mesh
	Serena Vangelatos, Claus-Dieter Munz	Euntaek Lee, Hyung Taek Ahn, Hong Luo	Takara Watanabe, Yoshiaki Abe, Takanori Haga, Ryoji Takaki, Akira Oyama, Taku Nonomura, Koji Miyaji
	University of Stuttgart	University of Ulsan	Yokohama National University
12.45 pm - 2.00 pm	Lunch		
02:00 pm - 02:45 pm	Keynote Talk		Ramblas A
43 |	Minimum-dissipation models for LES Professor Roel Verstappen University of Groningen		
44 | Chairs : Micah HOWARD & Charles MOULINEC		High Performance Computing - II	Ramblas A
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm
	ICCFD10-344	ICCFD10-145	ICCFD10-380
	Towards Real-Time CFD Simulation of Indoor Environment	Unified Geometries for Dynamic HPC Modeling	SFC Based Multi-Partitioning for Accurate Load Balancing
	Nina Morozova, Roser Capdevila, Francesc Xavier Trias, Asensio Oliva	Graham Orr	Ricard Borrell
	Heat and Mass Transfer Technological Center UPC	Xplicit Computing, Inc	BSC
45 | Chairs : Charles BRUNEAU & Ricard BORRELL		Numerical Methods - V	Gran Via B
02.45pm - 04.15pm	02:45pm	3:15 pm	3:45pm
	ICCFD10-232	ICCFD10-152	ICCFD10-074
	A New Approximation to Modulation Effect Analysis Based on Empirical Mode Decomposition	Numerical Simulation of the Noise from a Supersonic Hot Jet with High Order Finite Difference Scheme	An Efficient Implicit Scheme for the Simulation of Turbulent Combustion An Efficient Implicit Scheme for the Simulation of Turbulent Combustion
	Atilla Altintas, Lars Davidson, Shia-Hui Peng	Junhui Gao, Xiaodong Li	Mark Wasserman
	Chalmers University Of Technology	Beihang University	Israeli CFD Center

46 | Chairs : Jack EDWARDS & May-Fun LIOU		Liou special session - II	Ramblas B
02.45pm - 04.15pm	02:45pm	03:15pm	
	ICCFD10-016	ICCFD10-091	
	Extension of AUSM-type Schemes: From Single-Phase Gas Dynamics to Multi-Phase Cryogenic Flows	Discrete Adjoint Approach and Aerodynamic Shape Optimization of Fan and Compressor Stages	
	Chongam Kim, Hyunji Kim	Byung Joon Lee	
	Seoul National University	NASA Genn Research Center	

47 | Chairs : Guillaume HOUZEAUX & Ismail BEN HASSAN			Discontinuous Galerkin Methods & High-Order	Gran Via C
02.45pm - 04.15pm	02:45pm	03:15pm	3.45pm	
	ICCFD10-110	ICCFD10-119	ICCFD10-137	
	A New Shock Capturing Approach Based on the Jump of Conservation Variables for Discontinuous Galerkin Methods	A Robust Implicit Super High Order Discontinuous Galerkin Method for Simulating the Compressible Turbulent Flows	A Monolithic Approach for the Solution of the Incompressible Magnetohydrodynamics Equations in Two- and Three-Dimensions	
	Zhao Hui, Chen Jiangtao, Liu Wei, Li Bin	Xiaoquan Yang, Qijun Zhao, Bo Wang	Kayhan Ata, Mehmet Sahin	
	China Aerodynamics Research and Development Center (CARDC)	National Key Laboratory of Rotorcraft Aeromechanics	Istanbul Technical University	

Social Activities

Thursday, July 12th, 2018

08:30 am - 9:30 am	Plenary Talk	Ramblas A

48 |

High-fidelity numerical simulation of reactive high-speed flows

Professor Arnaud Mura

CNRS PPrime Institute of Poitiers

**49	** Chairs : Daniel MIRA & Jose M. GARCIA-OLIVER	Combustion - I	Ramblas A

09:30 am - 11.00 am

9:30 am	10:00 am	10:30am
ICCFD10-199	ICCFD10-44	ICCFD10-086
Rule-Based Compressible Solver for Supercritical and Subcritical Combustion in Rocket Injectors Using Flamelet Models	A New Global Sensitivity Scheme and Application to a Plasma-coupled Combustion Prediction with Independent and/or	On the Role of Bulk Viscosity in Compressible Reactive Shear Layer Developments
Siddharth Thakur, Jeffrey Wright, Matthias Ihme	Kunkun Tang, Jonathan Freund	Radouan Boukharfane, Arnaud Mura, Pedro J. Martinez Ferrer, Vincent Giovangigli
University of Florida	University of Illinois at Urbana-Champaign	Institut Pprime

**50	** Chairs : Ivette RODRIGUEZ & Herbert OWEN	Turbulent Flow - I	Gran Via B

09:30 am - 11.00 am

9:30 am	10:00 am	10:30 am
ICCFD10-247	ICCFD10-271	ICCFD10-065
On the Boundary Layer Development and Heat Transfer from a Sphere at Moderate Reynolds Numbers	Multifractal Analysis of Turbulent Wakes for Model Wind Turbines using Large Eddy Simulation Results	A Large Eddy Simulation Model for the Study of Wind Turbine Interactions and its Application
Ivette Rodriguez, Oriol Lehmkuhl, Manel Soria, Samuel Gomez, Manuel Dominguez-Pumar, Lukasz Kowalski	Jackson Tellez-Alvarez, Jose Manuel Redondo, Arina Kryuchkova, Sergei Strijhak	Martin Draper, Andres Guggeri, Mariana Mendina, Gabriel Usera, Filippo Campagnolo
Universitat Politecnica de Catalunya	Universitat Politecnica de Catalunya	UdelaR

51 | Chairs : Neil ASHTON & Solkeun JEE		Flow Control - I	Ramblas B
09:30 am - 11.00 am	9:30 am	10:00 am	10:30 am
	ICCFD10-228	ICCFD10-154	ICCFD10-053
	Control of Flow Across a Vertical Axis Wind Turbine with Automatic Moving Deflectors	Large-eddy Simulation of Flow Separation Control by Spanwise Alternatively Distributed Strips Control	Bayesian Optimisation of Intermittent Wall Blowing for Drag Reduction of a Spatially Evolving Turbulent Boundary Layer
	Hyeongmin Kim, Sehyeong Oh, Haecheon Choi	Weidan Ni, Lipeng Lu, Jian Fang, Charles Moulinec, David Emerson, Yufeng Yao	Omar Mahfoze, Sylvain Laizet, Andrew Wynn
	Seoul National University	STFC Daresbury Laboratory	Imperial College London

52 | Chairs : Pieter BOOM & Patrick SHARKEY		Aircraft Aerodynamics - I	Gran Via C
09:30 am - 11.00 am	9:30 am	10:00 am	
	ICCFD10-269	ICCFD10-212	
	Study of Multiple Wake Vortex System Behind Aircraft in Ground Proximity using Prandtl-Lifting Line Theory	Parametric Study of Crow Instability in Aircraft Wake Vortices Using Large Eddy Simulation	
	Sindhu Paramasivam, Poh Chua L, Schluter Jorg U	Joonmin Park, Junho Cho, Kwanjung Yee	
	Nanyang Technological University	Seoul National University	

11.00 am - 11.15 am	Break

53 | Chairs : Daniel MIRA & Jose M. GARCIA-OLIVER		Combustion - I	Ramblas A
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-196	ICCFD10-365	ICCFD10-249
	Application of a Flamelet-Based CFD Combustion Model to the LES Simulation of a Diesel-Like Reacting Spray	Influence of Flamelet Modelling on the Large-Eddy Simulation of Turbulent Non-Premixed Jet Flames	Numerical Simulation on Hydrogen Behavior in a Small-Scale Cylindrical Container with Simulated Fuel Debris
	Jose Maria Desantes, Jose Maria Garcia-Oliver, Ricardo Novella, Eduardo Javier Perez-Sanchez	Daniel Mira, Enric Mahiques, Oriol Lehmkuhlm Ambrus Both, Xi Jiang, Mariano Vazquez, Guillaume Houzeaux	Kazuyuki Takase, Yoshihisa Hiraki, Gaku Takase, Yusei Tanaka, Yota Suzuki
	Universitat Politecnica de Valencia	Barcelona Supercomputing Center	Nagaoka University of Technology

54 | Chairs : Fernando GRINSTEIN & J.M. REDONDO			Turbulent Flow - I	Gran Via B
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-066	ICCFD10-380	ICCFD10-171	
	Effective Modeling for Coarse Grained Simulations of Shock Driven Turbulent Mixing	Compressible turbulence mixing subject to Rayleigh-Taylor and Richtmyer-Meshkov instabilities	Mixing Volume Model for Molecular Diffusion and Thermal Conduction in Compressible Turbulence	
	Fernando Grinstein, Juan Saenz, Rick Rauenzahn, Marianne Francois	J M Redondo, Krasnopolin, Boutrikova et al	Youming Tai, Tomoaki Watanabe, Koji Nagata	
	Los Alamos National Laboratory	Universidat Politecnica de Catalunya	Nagoya University	

55 | Chairs : Neil ASHTON & Solkeun JEE			Flow Control - I	Ramblas B
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-238	ICCFD10-161	ICCFD10-191	
	Flow Characteristics in a Cross-Flow Fan and its Control using Sinusoidal Protrusions	A Numerical Study on Flow Control around Circular Disk using Coaxial Type DBD Plasma Actuator at Low Reynolds Number	Three Dimensional Analysis of Ahmed Body Aerodynamic Performance Enhancement using Steady Suction and Blowing Flow Control Techniques	
	Wonhyuck Yoon, Keuntae Park, Sehyeong Oh, Haecheon Choi, Myungsung Lee, Joo-han Kim	Hikaru Aono, Shinji Honami, Hitoshi Ishikawa	Bhanu Prakash Reddy Samala, Josep Maria Bergada, Fernando Mellibovsky	
	Seoul National University	Tokyo University Of Science	UPC - Barcelona Tech	

56 | Chairs : Pieter BOOM & Patrick SHARKEY			Aircraft Aerodynamics - I	Gran Via C
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-334	ICCFD10-321	ICCFD10-297	
	Role of Laminar Separation Bubbles on Airfoil at Low Reynolds Number in Martian Atmosphere	An Actuator Line Model Simulation of Two Semi-Aligned Wind Turbine Models Operating above Rated Wind Speed	Investigation into Wake Integration Technique for Airplane Drag Prediction	
	Huiling Zhan, Jian Fang, Alistair Revell, Shan Zhong, Charles Moulinec, David Emerson, Peng Bai	Andres Guggeri, Martin Draper, Gabriel Usera, Filippo Campagnolo	Kisa Matsushima, Ryosuke Shimizu, Yoshinao Takahashi	
	China Academy of Aerospace Aerodynamics	UdelaR	University of Toyama	

12.45 pm - 2.00 pm	Lunch			
02:00 pm - 02:45 pm	Keynote Talk			Ramblas A
57 |	Progress on Scale Resolving Simulations for Noise Prediction Dr. Cetin Kiris NASA Ames Research Center			
58 |	Chairs : Siddharth THAKUR & Daniel MIRA		Combustion - II	Ramblas A
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm	
	ICCFD10-323	ICCFD10-032	ICCFD10-189	
	Assessment of Low Mach Discretisation Strategies for Turbulent Channel Flows with Large Density Ratios	Numerical Calculations of the Dynamic Behavior of Hydrogen-Air Lean Premixed Flames due to Intrinsic Instability Based on the Detail Chemical Reaction Model	Numerical Study of Combustion Stabilization in a Scramjet Engine Model with Cavity Flameholder	
	Ambrus Both, Oriol Lehmkuhl, Daniel Mira	Satoshi Kadowaki	Eugenio Ribeiro, Radouan Boukharfane, Vincent Robin, Arnaud Mura	
	Barcelona Supercomputing Center	Nagaoka University of Technology	Institut Pprime	
59 |	Chairs : Guillaume Houzeau & Mariano VAZQUEZ		Compressible Flow - I	Gran Via B
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm	
	ICCFD10-242	ICCFD10-169	ICCFD10-088	
	Numerical Investigation of Shock/Film-Cooling Interaction	Hyperbolisation and Discretisation of Governing Equations for Miscible and Viscous Compressible Fluids	Transitional Shock-Wave / Boundary-Layer Interactions in the Automatic Source-Code Generation Framework OpenSBLI	
	Kazuki Ozawa, Simon Loosen, Marian Albers, Pascal Meysonnat, Matthias Meinke, Wolfgang Schroeder, Shigeru Obayashi	Michael Groom, Evgeniy Romenski, Ben Thornber	David Lusher, Satya Jammy, Neil Sandham	
	Tohoku University	University of Sydney	University of Southampton	

60 | Chairs : Neil ASHTON & Solkeun JEE		Flow Control - II	Ramblas B
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm
	ICCFD10-245	ICCFD10-019	ICCFD10-209
	Unsteady Impulsive Jet Applied to a Stalled Airfoil	Design Optimization of Vortex Generator Array to Delay Pitch-up on Tailless Aircraft	Effects of Variable Trailing Edge Flap on Rotor Moment Characteristics
	Taesoon Kim, Junkyu Kim, Seungtae Kim, Junseong Lee, Solkeun Jee	Seonguk Lee, Chongam Kim	Guo-qing Zhao, Wen-Qing Xie, Shao-Hui Liu, Jun-Fu Li
	Gwangju Institute of Science and Technology	Seoul National University	Aviation Industry Corporation of China

61 | Chairs : Pieter BOOM & Patrick SHARKEY		Aircraft Aerodynamics - II	Gran Via C
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm
	ICCFD10-071	ICCFD10-176	ICCFD10-009
	ANSYS CFD Validation for Civil Transport Aircraft in High-Lift Configuration Part-1	Large Eddy Simulation of a Finite Swept Wing Undergoing Plunging Manoeuvre	Multi-Fidelity Surrogate Models for Flutter Database Generation
	Krishna Zore, Shoaib Shah, John Stokes, Patrick Sharkey, Balasubramanyam Sasanapuri	Charles Badoe, Zheng-Tong Xie, Neil Sandham	Markus Rumpfkeil, Philip Beran
	Ansys	University of Southampton	University of Dayton

04.15 pm - 04.30 pm	Break

62 | Chairs : Jose M. GARCIA-OLIVER & Daniel MIRA		Combustion & MHD	Ramblas A
4.30pm - 6.30pm	04:30pm		
	ICCFD10-270		
	Fluid Flow and Heat Transfer Analysis in a Calandria Based Reactor for Different Fuel Channel Configurations		
	Prakash Kulkarni, Rajan N. K. S, Vijish Joshi, Suneel Patil		
	HCL Technologies Ltd		

63 | Chairs : Guillaume Houzeau & Mariano VAZQUEZ		Compressible Flow - I		Gran Via B
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm	06:00pm
	ICCFD10-117	ICCFD10-272	ICCFD10-018	ICCFD10-108
	A Consistent Averaging Procedure for Solving the Navier Stokes Equations Numerically with Applications to Hypersonic Flow Devices	Numerical Investigation on Wave Drag Reduction by Laser Energy Deposition	Numerical Analysis on the Mode-Transition of Second-Throat Exhaust Diffuser with Thrust Optimized Parabolic Nozzle	Two-Stage 4th-Order Gas Kinetic Scheme: Extensionsto Compact Scheme and Three Dimensional Compressible Flow
	Julio Mendez, Michael Atkinson, Mookesh Dhanasar, Frederick Ferguson	Xiaojing Yu, Hong Yan	Changsoo Lee, Kyungjun Choi, Chongam Kim,Sanghoon Han	Xing Ji, Liang Pan, Kun Xu
	North Carolina A&T State University	Northwestern Polytechnical University	Seoul National University	HKUST

64 | Chairs : Oskar SZULC & Ismail BEN HASSAN		Flow Control & Applications	Ramblas B
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm
	ICCFD10-239	ICCFD10-279	ICCFD10-085
	Numerical Simulation on Acceleration Characteristics of a Supersonic Free Jet through a Plasmajet	Numerical Investigations on Rectangular and Circular Synthetic Jet Impingement	Modelling of Shock Wave-Boundary Layer Interaction Control by Wall Ventilation
	Yuka Arai, Yusuke Mizuno, Yu Sumoto, Shun Takahashi, Kota Fukuda, Hideyuki Horisawa	Arnau Miro, Manel Soria, Charles Moulinec, Juan Carlos Cajas, Yvan Fournier	Oskar Szulc, Piotr Doerffer, Pawel Flaszynski, Thanushree Suresh
	Tokai University	Universitat Politecnica de Catalunya	Polish Academy of Sciences

65 | Chairs : Pieter BOOM & Patrick SHARKEY		Aircraft Aerodynamics - II	Gran Via C
4.30pm -6.30pm	04:30pm	05:00pm	05:30pm
	ICCFD10-262	ICCFD10-216	ICCFD10-131
	Numerical Investigation for the Longitudinal Stability of the Quad Tilt Propeller UAV	Computational Wind Engineering for Optimal Path Planning of Unmanned Aerial Vehicles	Simulation of Flow Fields around Complex Rotorcraft Configurations with a Fast, Two Layer Trim Model and Adaptive Embedded Grid
	Cheolwan Kim, Yung-gyo Lee, Jaehun Choi	Imran Ibrahi, Henrik Hesse, Shien Yap Barry Ho	Ye Liang, Yang Shuo, Qi Shuni, Dong Jun
	Korea Aerospace Research Institute	University Of Glasgow	AVIC Aerodynamics Research Institute

08.00 pm - 11.00 pm	Banquet

Friday, July 13th, 2018

08:30 am - 9:30 am	Plenary Talk	Ramblas A

66 |

Massively parallel simulations of insect flight in turbulence

Professor Kai Schneider

Institut de Mathématiques de Marseille, Aix-Marseille Université

67 |	Chairs : Neil ASHTON & Mariano VAZQUEZ	Biological Flows - I	Ramblas A

09:30 am - 11.00 am

	10:00 am	10:30 am
	ICCFD10-227	ICCFD10-017
	Prediction of Total Pressure Drop in Stenotic Coronary Arteries with Their Geometric Parameters	Fluid Structure Interaction Simulation of the Human Eye under the Air Puff Tonometry using Computational Fluid Dynamics
	Jaerim Kim, Dohyun Jin, Haecheon Choi, Jihoon Kweon, Young-Hak Ki, Dong Hyun Yang, Namkug Kim	Osama Maklad, Vassilis Theofilis, Ahmed Elsheikh
	Seoul National University	School of Engineering Liverpool University

68 |	Chairs : Daniel MIRA & Arnaud MURA	Combustion - III	Gran Via B

09:30 am - 11.00 am

9:30 am	10:00 am	10:30 am
ICCFD10-094	ICCFD10-335	ICCFD10-062
Nonlinearly-Corrected Large Eddy Simulation for Accurately Evaluating Both Thermal Efficiency and Pollutant Emissions in Various Types of Engines and Reactors	The Second Law of Thermodynamics and the Numerical Simulation of Transport Phenomena with Chemical Reactions	Influence of Microjets Flow Condition on a Dump Combustor Reacting Flow Characteristics
Remi Konagaya, Ken Naitoh	Paul Cizmas, John Slattery	Madhu Vellaka, Ahmed Taha, Muhammad Sami, Qiyue Lu
Waseda University	Texas A&M University	National Center for Supercomputing Applications

69 |	Chairs : Istvan REGULY & Stan POSEY	GPUs	Ramblas B

09:30 am - 11.00 am

9:30 am	10:00 am	10:30 am
ICCFD10-404	ICCFD10-057	ICCFD10-307
Hyper-Realistic Data Visualization in HPC environments	GPUs Accelerated Three-Dimensional RANS Solver for Aerodynamic Simulations on Multiblock Grids	Efficient Implementation of Flux Reconstruction Schemes for the Simulation of Compressible Viscous Flows on Graphics Processing Units
F. Cucchietti,G. Marín	Minh Tuan Nguyen, Patrice Castonguay, Eric Laurendeau	Fernando Gisbert, Marc Bolinches-Gisbert, Roque Corral, Jesus Pueblas
BSC	Polytechnique Montreal	ITP Aero

70 | Chairs : Manel Soria & Ivette RODRIGUEZ			Flow Control & Numerical Methods	Gran Via C
09:30 am - 11.00 am	9:30 am	10:00 am	10:30 am	
	ICCFD10-265	ICCFD10-331	ICCFD10-351	
	Three Dimensional Structures of Flow through a Square Cylinder with an Upstream Splitter Plate and for several Velocity Ratios	Educing Coherent Flow Structures from Unstructured Meshes	Algebraic Implementation of a Flux Limiter for Heterogeneous Computing	
	Reda El Mansy, Wasim Sarwar, Ivette Rodriguez, Josep M Bergada	Jose Ignacio Cardesa, Oriol Lehmkuhl, Daniel Mira, Guillaume Houzeaux	Nicolas Valle, Xavier Alvarez, Francesc Xavier Trias, Jesus Castro, Assensi Oliva	
	Universitat Politecnica de Catalunya	Universidad Politecnica de Madrid	Universitat Politecnica de Catalunya	
11.00 am - 11.15 am	Break			
72 | Chairs : Charles-Henri BRUNEAU & Guillaume HOUZEAUX			Numerical Methods - VI	Gran Via B
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-202	ICCFD10-259	ICCFD10-304	
	A High-Fidelity Numerical Framework For Wind Farm Simulations	A Fourth-order Gas-Kinetic CPR Method for Navier-Stokes Equations on Unstructured Meshes	Development of a Pressure Based, Unstructured, GPU Accelerated CFD Solver for Compressible Reacting Flows at All Mach Numbers	
	Martin Draper, Andres Gugger, Diego Slamovitz, Paolo Sassi, Gabriel User	Chao Zhang, Qibing Li	Bertan Ozkan, Sitki Uslu	
	UdelaR	Tsinghua University	TOBB University of Economics and Technology	
73 | Chairs : Istvan REGULY & Ricard BORRELL			Acoustics and Numerical Methods	Ramblas B
11:15 am - 12.45 pm	11:15 am	11:45 am	12:15 pm	
	ICCFD10-292	ICCFD10-092	ICCFD10-220	
	Numerical Methodologies for the Prediction of Supersonic Jet Noise	Aeroacoustics Analysis of a Hybrid Control Method for the Flow-Induced Noise Generation of Transonic Cavity Flows	Analytical Multidimensional Integration of Heaviside Function for Interface Tracking	
	Yihong Fang, Shu Meng, Na Guo	Osman Mirza Demircan, Oguzhan Demir, Seyfettin Türk, Kürsad Melih Güleren	Tameo Nakanishi	
	Tianjin University	Anadolu Universitesi	Yamagata University	

74 | Chairs : Manel Soria & Ivette RODRIGUEZ		Numerical Methods - VII	Gran Via C
11:15 am -12.45 pm	11:15 am	11:45 am	12:15 pm
	ICCFD10-144	ICCFD10-288	ICCFD10-015
	A Finite Difference Method for Dispersive Shallow Water Equations	Nonlinear Coupled Constitutive Relations Model and its Applications	A Flow Feature Extraction Method for Shock-Fitting Simulations
	Yurii Shokin, Gayaz Khakimzyanov, Zinaida Fedotova, Oleg Gusev	Zhenyu Yuan, Wenwen Zhao, Zhongzhen Jiang, Weifang Chen	Zedong Chen, Dongyang Zou, Fan Zhang and Jun Liu
	Russian Academy of Sciences	Zhejiang University	Dalian University of Technology
12.45 pm - 2.00 pm	Lunch		
02:00 pm - 02:45 pm	Keynote Talk		Ramblas A
75 |	Productivity, Performance, and Portability for CFD codes with Domain Specific Languages Professor Istvan Reguly PPCU, Budapest		
76 | Chairs : Mohamed HAFEZ & Herbert OWEN		Heat Transfer & Compressible Flow	Ramblas A
02.45pm - 04.45pm	02:45pm	03:15pm	03:45pm
	ICCFD10-290	ICCFD10-045	ICCFD10-080
	A More Direct Computational Fluid Dynamics approachfor Compact Heat Exchanger Analysis	Application of Computational Fluid Dyanmics to the Flow Mixing and Heat Transfer in Rod Bundle	Effect of the Engine Jet Flow on the Rocket Aerodynamic Characteristics
	Evaldas Greiciunas, Duncan Borman, Jon Summers	Wang Kee In	Yipeng Ren, Haibo Dong, Bo Gao, Xuejun Yang, Ping Jiang
	University of Leeds	Korea Atomic Energy Research Institute	Beijing Institute of Astronautical System Engineering
77 | Chairs : Jose M. GARCIA-OLIVER & Daniel MIRA		Uncertainity Quantification	Gran Via B
02.45pm - 04.15pm	02:45pm	03:15pm	03:45pm
	ICCFD10-224	ICCFD10-320	ICCFD10-318
	Sensitivity and Uncertainty Analysis of Airfoil Characteristics at Low Reynolds Numbers	Setting up the Intrusive Polynomial Chaos Method for Uncertainty Quantifcation for Compressible Fluid Flows	Code Verification for 2D Lagrangian Radiation-Hydrodynamics Using the Method of Manufactured Solutions
	Shigetaka Kawai, Akira Oyama	Kyriakos Dimitrios Kantarakias, Michail Chatzimanolakis, Varvara Asouti, Kyriakos Giannakoglou	Xuezhe Liu
	University of Tokyo	National Technical University of Athens	Institute of Applied Physics and Computational Mathematics
Closing comments			

ICCFD10 Program - Monday PM -Wednesday AM	
Poster Session	Break Area
ICCFD10-261	
Prediction of Aerodynamic Performance for Tilt-Wing Multicopter Using Computational Fluid Dynamics Youngmin Park, Jaehoon Choi,Yunggyo Lee KARI (Korea Aerospace Research Institute)	
ICCFD10-243	
Porous endocardial layer in cardiac left ventricular CFD models reproduces the effect of trabeculations on intra-ventricular pressure drop and vortex formation Federica Sacco, Bruno Paun, Oriol Lehmkuhl, Tinen L. Iles, Paul A. Iaizzo, Guillaume Houzeaux, Mariano Vazquez, Constantine Butakoff, Jazmin Aguado-Sierra BSC - Barcelona Supercomputing Center	
ICCFD10-147	
Effects of surface energy and liquid density with surface structures in a nano-channel using multi-scale hybrid method Youngjin Kim, Man Yeong Ha Pusan National University	
ICCFD10-029	
Verification and Validation of Lagrangian Hydrocodes of Multi-material Compressible Flows Ruili Wang, Shudao Zhang, Xiao Liang Institute of Applied Physics and Computational Mathematics	
ICCFD10-273	
A study on the estimation of turbulent wall pressure spectrum using Large Eddy simulations Joemon Jacob, Subrata Kumar Bhattacharyya Indian Institute Of Technology Madras	

ICCFD10-276
Numerical Analysis and Analytic Model Development for Spark Jet Actuator Using Equilibrium Flow Jin Young Shin, Jeongheon Chae, Sangjun Ahn, Hyung-Jin Kim, Kyu Hong Kim Seoul National University
ICCFD10-333
Lab-Scale Hybrid Rocket Motor CFD Simulation for Nanosatellite Applications at LEO Orbit Nazmi Erdi Coskunpinar, Baki Servan Bozkus, Ayse Cetin, Alim Rustem Aslan Istanbul Technical University
ICCFD10-185
Reynolds-Averaged Two-Fluid Model prediction of moderately dilute gas-solid flow over a backward-facing step Matthew Riella, Recep Kahraman, Gavin Tabor University Of Exeter
ICCFD10-368
CFD applied to large marine aquarium: Hydrodynamics simulation and full-scale validation of a dolphinarium in the Valencia Oceanographic Park Antonio Calabuig Belda, Carlos Peoa Monferrer, Sergio Chiva Vicent, Heliodoro Sancho Iranzo, Vicente Javier Maciin Cervera, Emilio Bonet Doming Global Omnium
ICCFD10-226
CFD Simulation of Coolant Mixing in Lower Plenum of APR1400 Reactor Dong-Hyeog Yoon, Ae-Ju Cheong Korea Institute Of Nuclear Safety

ICCFD10-087
Investigation of conjugate heat transfer including phase change phenomena in quenching process Christian Muehlstaetter Light Metals Technologies Ranshofen
ICCFD10-068
Oblique CFD Analysis of Open-wheel Race Car with Circuit-tailoring Wing Optimization Mark Lin, Dr. Periklis Papadopoulos San Jose State University
ICCFD10-252
Preliminary Numerical Simulation of Hypersonic Boundary Layer Crossflow Transition on HIFiRE-5 Configuration Yifeng Zhang, Xinghao Xiang, Kun He, Jianqiang Chen CARDC
ICCFD10-064
Coupled Numerical Scheme for Vascular Fluid-Tube Interaction using Small Deformations Theory :Application to Arterial Aneurysms Hamzah Bakht, Lahcen Azrar, Mahmoud Hammadiche ENSET, Med V University

ICCFD10-188
Further Cooling Improvement By Use Of Chamfers In Front/Top Of Electronic Components Fadila Nemdili, Saliha Nemdili, Abbes Azzi Usto University
ICCFD10-374
Effect of ratio of specific heats of EDAC equation on pressure oscillation suppression Itaru Tanno, Tomohisa Hashimoto, Takahiro Yasuda, Yoshihiro Tanaka, Koji Morinish, Nobuyuki Satofuka Tsukuba University Of Technology
ICCFD10-340
Numerical Analysis of Phase Separation in Curved Ranqueu Hilsch Vortex tube Pouriya Niknam University of Firenze
ICCFD10-073
Combustion Patterns Effects on Growth Properties of Reacting Supersonic Turbulent Mixing Layers Qian Chen, Huiqiang Zhang, Weijiang Zhou, Peng Bai , Yunjun Yang China Academy of Aerospace Aerodynamics
ICCFD10-179
Numerical Simulation of Two-phase Flow around Piston Ring using Sharp Interface Method Yuki Kawamoto, Shun Takahashi, Masayuki Ochiai Tokai University
ICCFD10-078
Numerical Study On The Flow Characteristics Inside Guide Vanes In SCR System Of Coal-fired Power Plants Lee Dong-Hun , Chung Hee-Taeg, Seo Deok-Cheol , Lee Chang-Sik School Of Mechanical Engineering, Gyeongsang National University, South Korea

ICCFD10-173
The Effect of Morphing Vortex Generators on the Control of Transonic Cavity Flows Osman Mirza Demircan, Oguzhan Demir, Seyfettin Turk, Krsad Melih Guleren Anadolu Universitesi
ICCFD10-027
Numerical Solutions of 2-D Incompressible Lid-driven Cavity Flow at High Reynolds Numbers by a High-order Flux Reconstruction Method Yaojie Yu, Feng Liu, Ya Liu, Chao Gao Shool Of Aeronautics, Northwestern Polytechnical University
ICCFD10-267
DNS of Turbulent Boundary Layer over a Shock-eliminating Wavelike Wall at Ma=2.9 Yaojie Yu, Feng Liu, Ya Liu, Chao Gao National University of Defense Technology
ICCFD10-181
An Investigation of Pressure Build-up Effects due to Check Valves Closing Characteristics using Dynamic Mesh Techniques of CFD Nam Seok Kim, Yong Hoon Jeong Korea Institute Of Nuclear Safety
ICCFD10-339
Detached eddy simulation of Phase Separation Process in Multi-Drain RanqueûHilsch Vortex tube Niknam, Pouriya University of Firenze
ICCFD10-027
Analyzing the influence of turbulators on mixing process in a basic Venturi gas mixer using OpenFOAM Mathias Romanczyk Czestochowa University of Technology

ICCFD10-274

A Multi-GPU Parallel Solver for Massively Compressible Flow Computations

Jianqi Lai, Hua Li, Zhengyu Tian

National University of Defense Technology

ICCFD10-394

Numerical Analysis of Fluid Dynamics using Ultra Discretization

H. Shiiba and Y. Ishii

SOKA University

ICCFD10-315

Three-dimensional simulation of particle-laden flow around two tandem cylinders at low Reynolds numbers

Dongjoo Kim

Kumoh National Institute of Technology

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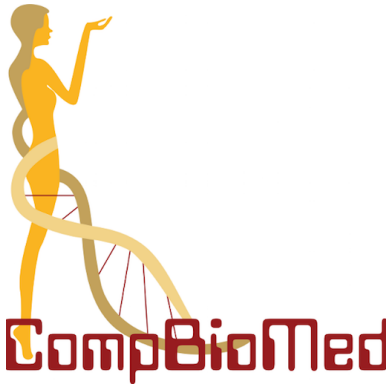

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