

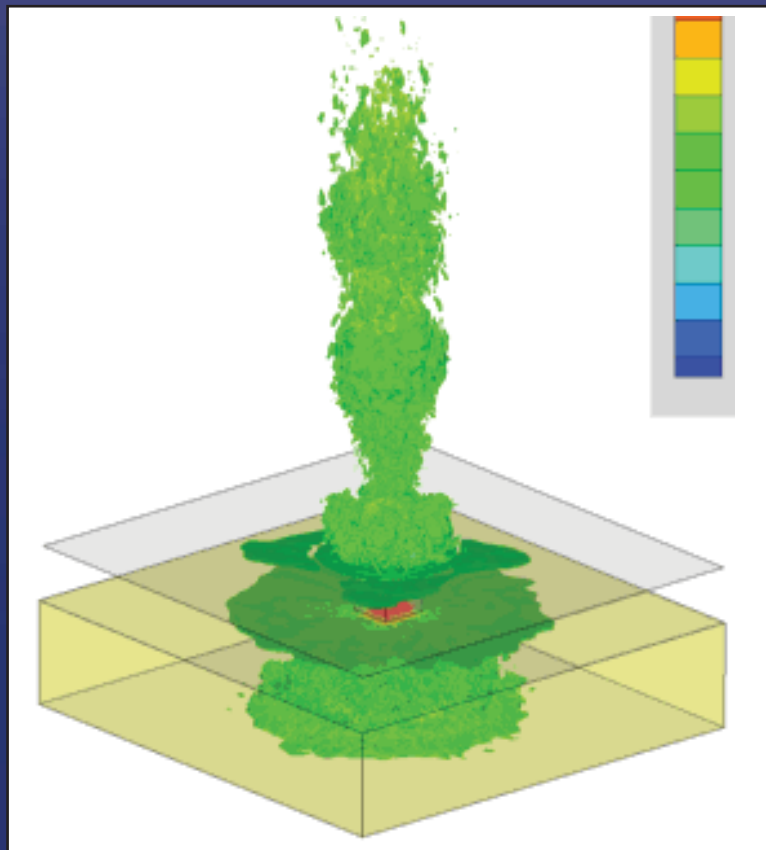


European **R**esearch **C**ollaboration
on **F**low **T**urbulence and **C**ombustion

Programme

7th International Symposium on
Engineering Turbulence Modelling
and Measurements - ETMM7

Limassol, Cyprus
4-6 June 2008



Welcome

A warm welcome to all participants of ETMM-7 from all members of the Organising and Local Executive Committees. We hope that you will find ETMM-7 informative, and will also enjoy the delights offered by the beautiful Mediterranean shore of Amathus, the city of Limassol and the surrounding countryside.

ETMM-7 continues the tradition set by previous ETMM symposia in being held at attractive locations on the Mediterranean coast. The hope is that the relaxed and congenial atmosphere of the venue will enhance the scholarly experience offered by the symposium itself. In contrast to previous ETMM symposia, ETMM-7 is organised entirely under the auspices of ERCOFTAC (European Research Community on Flow Turbulence and Combustion), which also acts as one of the principal sponsors of the Symposium. This association is a natural outcome of the close thematic alignment of ETMM with the technical focal points of ERCOFTAC, represented by its many Special Interest Groups on a variety of engineering fluid-flow topics (<http://www.ercoftac.org>). This close association is likely to continue in future ETMM meetings.

The technical programme of ETMM-7 consists of 24 oral sessions, divided into three parallel strands, two poster sessions and six plenary lectures presented by leading international experts in their respective fields. In total, the programme contains 141 papers, reflecting the current state of the art in turbulence modelling, simulation and measurement, in the context of fluids-engineering applications and related topics. The papers are collected in three bound volumes of Proceedings and a CDROM. The Proceedings are intentionally not archival in nature, giving authors complete freedom to publish material presented at ETMM-7 in journals of their choice.

The Organising Committee are very grateful to the many sponsors who have provided generous financial support to the Symposium. These sponsors are identifying on the back cover of this Programme. The Sponsors' support has allowed the Symposium fee to be kept relatively low, and ten bursaries to be awarded to PhD students and young researchers who would, otherwise, not have been able to attend the Symposium.

Finally, we gratefully acknowledge the efficient handling of the administration of the Symposium by Top Kinisis – in particular, Ms. Christina Distra and Ms. Helen Alexandrou.

Michael Leschziner, Chairman

Stavros Kassinos, Co-chairman and Chairman of the Local Executive Committee

Jean-Paul Bonnet

Dominique Laurence

Florian Menter

Wolfgang Rodi

Ananias Tomboulides

Cameron Tropea

Andreas Alexandrou

Carlos Langer

Panos Papanastasiou

Programme - Overview

Tuesday, 3 June		
17.00-21.00	Registration	(Mezzanine Level, Foyer Area)
19.00-21.00	Welcome Reception	(Amathus Beach Hotel Pool Area)

Wednesday, 4 June		
08.45-09.00	Welcome and orientation	(ROOM: DEMETRA)
09.00-09.45	P. Moin: Large eddy body simulation analysis of turbulent combustion in a gas turbine engine combustor (S. Kassinos)	(ROOM: DEMETRA)
09.45-10.30	E. Longmire: Eddy structure in turbulent boundary layers (C. Tropea)	(ROOM: DEMETRA)
10.30 – 10.50	COFFEE BREAK	
10.50 - 12.30	PARALLEL SESSIONS	
S1: LES Methods, 1 (B.J. Geurts) (ROOM: DEMETRA)	S2: Experiments, 1 (N. Kasagi) (ROOM: ARES)	S3: RANS Modelling (B.E. Launder) (ROOM: HERMES)
12.30 - 14.10	LUNCH (KALYPSO RESTAURANT)	
14.10 - 15.50	PARALLEL SESSIONS	
S4: Flow Control, 1 (B. Aupoix) (ROOM: DEMETRA)	S5: Multiphase Flows, 1 (G. Bergeles) (ROOM: HERMES)	S6: Heat Transfer Fundamentals (K. Hanjalic) (ROOM: ARES)
15.40 – 16.10	COFFEE BREAK	
16.10-17.50	PARALLEL SESSIONS	
S7: LES Methods, 2 (P. Moin) (ROOM: DEMETRA)	S8: Experiments, 2 (S. Obi) (ROOM: ARES)	S9: Heat & Mass Transfer, 1 (H. Kawamura) (ROOM: HERMES)
20.00	Short Concert by 'Terpandros' at Kourion. Dinner at a tavern will follow.	

Thursday, 5 June		
09.00-09.45	U. Piomelli, M. Vanella and E. Balaras: Effects of discontinuous filters in large-eddy simulations (W. Rodi)	(ROOM: DEMETRA)
09.45-10.15	POSTER-PRESENTATION SESSION (M.A. Leschziner)	(ROOM: DEMETRA)
10.15-10.45	COFFEE BREAK AND POSTER-VIEWING SESSION	
10.45 – 12.25 PARALLEL SESSIONS		
S10: LES Applications, 1 (P. Spalart) (ROOM: DEMETRA)	S11: Flow Control, 2 (J-P. Bonnet) (ROOM: HERMES)	S12: Experiments, 3 (E. Longmire) (ROOM: ARES)
12.25 - 14.10	LUNCH (KALYPSO RESTAURANT)	
14.10-14.55	T. Gatski: Models for prediction and simulation of high-speed flows (J-P. Bonnet)	(ROOM: DEMETRA)
14.55-15.35	POSTER-PRESENTATION SESSION 2 (M.A. Leschziner)	(ROOM: DEMETRA)
15.35-16.10	COFFEE BREAK AND POSTER-VIEWING SESSION	
16.10-17.50	PARALLEL SESSIONS	
S13: LES Applications, 2 (S. Drobniak) (ROOM: DEMETRA)	S14: Flow Control, 3 (P. Durbin) (ROOM: ARES)	S15: Multiphase Flows, 2 (J. Janicka) (ROOM: HERMES)
20.30	Limanaki Fish Taverna (Amathus Beach Hotel)	

Analytical Programme

Wednesday, 4 June

08.45-09.00			Welcome and orientation	(ROOM: DEMETRA)
09.00-09.45			(ROOM: DEMETRA)	
I1: P. Moin, D.You, F. Ham: Large eddy body simulation analysis of turbulent combustion in a gas turbine engine combustor				
09.45-10.30			(ROOM: DEMETRA)	
I2: E. Longmire, C. Ortiz-Duenas, Q. Gao, N. Saikrishnan: Eddy structure in turbulent boundary layers				
10.30 – 10.50			COFFEE BREAK	
10.50 - 12.30			PARALLEL SESSIONS	
S1: LES Methods, 1 (ROOM: DEMETRA)	S2: Experiments, 1 (ROOM: ARES)	S3: RANS Modelling (ROOM: HERMES)		
RANS-LES simulations around a complete landing gear geometry L. Georges, K. Hillewaert, R. Capart, J.F. Thomas, P. Geuzaine	Compressible vortex loops: effect of nozzle geometry H. Zare-Behtash, K. Kontis, K. Takayama	Modeling turbulent flows over permeable walls K. Suga, S. Nishiguchi		
Identification and removal of numerical instability components in Low-order LES schemes G.M. Fishpool, A. Avdis, M. A. Leschziner,	Experimental characterization of the flow topology around a vehicle A-pillar using PIV and fluctuating wall pressure B. Levy, P. Brancher, A. Giovannini	A hierarchy of explicit algebraic models for wall-bounded flows A. G. Oceni, R. Manceau, T. B. Gatski		
A statistically consistent approach to segregated LES-RANS coupling at tangential interfaces D. A. von Terzi, J. Fröhlich,	Inlet condition and Reynolds number effects on the flow over a wavy wall M. Falchi, G. P. Romano	A new formulation of the $v^2 - f$ model using elliptic blending and its applications to heat transfer prediction F. Billard, J. C. Uribe, D. R. Laurence		
Reconstruction of turbulent fluctuations for hybrid RANS/LES simulations using a synthetic eddy method N. Jarrin, R. Prosser, F. Billard, D. Laurence	Experimental and numerical study of contaminant dispersion in an array of cubic obstacles B-C. Wang, E. Yee, F-S. Lien	A modification of the elliptic relaxation equation to account for pressure transport in RANS modeling J. Hui, S. Obi		
Subgrid-scale modelling of scalars for large eddy simulations of transitional flows G. Balarac, C. Brun, C. B. da Silva, M.Petrovan Boiarciuc, O. Métais	Combined influences of high free-stream turbulence over a favorable pressure gradient turbulent boundary layer: smooth and rough S. N. Torres-Nieves, J. R. Lebrón-Bosques, B. Brzek, L. Castillo,R.B. Cal, C. Meneveau	Modeling adverse pressure-gradient turbulent boundary layers using the nonlinear $v2f$ model in combination with a structure based model M. Mortensen, B. A. P. Reif, C. Langer		
12.30 - 14.10			LUNCH	
(KALYPSO RESTAURANT)				
14.10 - 15.50			PARALLEL SESSIONS	
S4: Flow Control, 1 (ROOM: DEMETRA)	S5: Multiphase Flows, 1 (ROOM: HERMES)	S6: Heat Transfer Fundamentals (ROOM: ARES)		
On a turbulent mixing layer created downstream of A "A" notch simulating one wave length of a chevron nozzle B. Zakhari, E. Kit, I. Wygnanski	Large eddy simulation of an evaporating acetone spray M. Bini, W. P. Jones,	DNS of turbulent heat transfer in a channel flow with a high spatial resolution M. Kozuka, Y. Seki, H. Kawamura		
Control of flow topology using electromagnetic body forcing : Numerical simulations and experiments S. Ferrari, J. M. G. de la Cruz, S. Lardeau, L. Rossi	Numerical computation of turbulent gas-particle flow in a backward-facing step A. Benavides, B. van Wachem	Direct numerical simulation of passive scalar transport in a turbulent boundary layer K. Tohdoh, K. Iwamoto, H. Kawamura		
Control of transition using plasma actuators R. de Quadros, S. Grundmann, C. Tropea,	Modeling of liquid jet break-up with level set and ghost fluid method M. Marek, A. Tyliczszak, A. Boguslawski	Turbulent structures and modelling of spatially developing thermally-stratified turbulent boundary layers H. Hattori, M. Tagawa, Y. Nagano		
In-flight experiments on active wave control on a two-dimensional laminar wing glove I. Peltzer, A. Päetzold, W. Nitsche	Spatial DNS of a perturbed compressible annular two-phase jet G. A. Siamas, X. Jiang, L. C. Wrobel	Spectral analogy between velocity and scalar fields in a turbulent channel flow R. A. Antonia, H. Abe, H. Kawamura		

Manipulation of the large-scale structure in wall turbulence for turbulent wall-friction-drag reduction K. Fukagata, M. Kobayashi, N. Kasagi		Direct numerical simulation of the transition to turbulence in the wake of a heated and of a freely falling/rising sphere M. Kotouč, G. Bouchet, J. Dušek
15.40 – 16.10 COFFEE BREAK		
16.10-17.50 PARALLEL SESSIONS		
S7: LES Methods, 2 (ROOM: DEMETRA)	S8: Experiments, 2 (ROOM: ARES)	S9: Heat & Mass Transfer, 1 (ROOM: HERMES)
Statistically persistent non-homogeneous features in periodic channel-flow simulations G. M. Fishpool, S. Lardeau, M. A. Leschziner	Experimental investigations of the velocity field and the near field pressure of a coaxial subsonic jet. A. Guitton, P. Jordan, J. Delville, C. E. Tinney, F. Kerhervé, V. Fortuné, Y. Gervais	Comparative assessment of LES, DES and elliptic-relaxation based RANS for forced convection over wavy surfaces C. Wagner, S. Kenjereš, P. von Rohr
Evaluation of SST-SAS model for industrial applications F. Brännström, D. Müller,	Experimental study of large-scale coherent structures in isothermal and reacting swirling jets S. V. Alekseenko, V. M. Dulin, Y. S. Kozorezov, D. M. Markovich, S. I. Shtork	Simulations of mixed convection over complex surfaces: a dynamical LES approach S. Kuhn, P. von Rohr, S. Kenjereš
Detached-Eddy Simulation over a simplified windshield wiper A. Travin, P. Spalart, M. Strelets	Open channel flow over array of square and rectangular cylinders at incidence J. M. Tsikata, M. Agelinchaab, M. F. Tachie	Turbulent heat and fluid flow over a two-dimensional hill T. Houra, M. Tagawa, Y. Nagano
Subgrid scale modeling of wall-bounded turbulent channel flow A. Tyliczszak, W. Elsner	Effects of rotation on clear and obstructed turbulent channel flows J. Visscher, M. Barri, H. I. Andersson	Turbulent mixed convection flows computed using low-Reynolds-number and strain-parameter eddy-viscosity closures M. A. Cotton, A. Keshmiri
On the use of high-order finite difference schemes on overset grids for LES in aeroacoustics F. Daude, T. Emmert, P. Lafon, F. Crouzer, C. Bailly	The DESIDER bump experiment B. Aupoix, P. Barricau, Y. Egorov, A. Gilliot, F. Menter, J. C. Monnier, G. Pailhas, L. Perret, M. Stanislas, Y. Touvet, C. Geilar	Low-pass filtering effect of viscous sublayer on high schmidt number mass transfer close to a solid wall Y. Hasegawa, N. Kasagi
20.00 Short Concert by 'Terpandros' at Kourion. Dinner at a tavern will follow.		

Thursday, 5 June

09.00-09.45 (ROOM: DEMETRA)		
13 : U. Piomelli, M. Vanella and E. Balaras: Effects of local grid refinement on large-eddy simulations statistics and flow-fields		
09.45-10.15 (ROOM: DEMETRA)		
Poster-presentation session 1 : 10 papers x 3 mins		
10.15-10.45 COFFEE BREAK AND POSTER-VIEWING SESSION		
10.45 – 12.25 PARALLEL SESSIONS		
S10 : LES Applications, 1 (ROOM: DEMETRA)	S11 : Flow Control, 2 (ROOM: HERMES)	S12 : Experiments, 3 (ROOM: ARES)
LES of a submerged turbulent round jet impinging on a free air/water surface J. Larocque, S. Vincent, M. Moreau, J.P. Heliot, J.P. Caltagirone, P. Sagaut	Direct numerical simulation of turbulent drag reduction in a rotating channel B. J. Boersma, C. Tesauro	Experimental study of mixing noise from a Mach number 0.97 low Reynolds number turbulent jet H.J. Slot, P.D. Moore, B.J. Boersma
Unstructured large eddy simulation of flows around automobiles using high performance computing technique: a shift from steady to unsteady aerodynamics. M. Tsubokura, T. Nakashima, N. Oshima, K. Kitoh, H. Zhang, K. Hori, T. Kobayashi	Large eddy simulations of three-dimensional synthetic jets in stagnant ambient conditions and in turbulent cross-flow D. K. L. Wu, M. A. Leschziner	Velocity-pressure correlation measurements in complex free shear flows Y. Naka, S. Obi
High order LES of the turbulent "Ahmed body" wake flow M. Minguéz, R. Pasquetti, E. Serre	Lift enhancement and drag reduction of a NACA 0015 airfoil by plasma actuators N. Benard, J. Jolibois, P. Braud, E. Moreau	PIV study of pressure gradient turbulent flows over square ribs M. Agelinchaab, M. F. Tachie
LES predictions of isothermal and hot round jet A. Tyliczszak, A. Boguslawski, S. Drobniak	Optimization of vortex generators for drag reduction on a high-speed train S. Krajnović	PIV study of turbulent flow over triangular ribs in a converging channel M. F. Tachie, M. K. Shah
Numerical simulation of the physiological flow in a bileaflet mechanical heart valve: turbulence enhancement and hemolysis M. de Tullio, R. Verzicco,	Numerical and experimental study of electromagnetically driven vortical flows S. Kenjereš, J. Verdoold, M. J. Tummers, K. Hanjalić, C. R. Kleijn	Aerodynamic sound source investigation by the time-resolved stereoscopic PIV K. Obana, M. Tanahashi, T. Miyauchi
12.25 - 14.10 LUNCH (KALYPSO RESTAURANT)		
14.10-14.55 (ROOM: DEMETRA)		
14: T.Gatski: Models for prediction and simulation of high-speed flows		
14.55-15.35 (ROOM: DEMETRA)		
Poster-presentation session 2: 10 papers x 3 mins		
15.35-16.10 COFFEE BREAK AND POSTER-VIEWING SESSION		
16.10-17.50 PARALLEL SESSIONS		
S13: LES Applications, 2 (ROOM: DEMETRA)	S14: Flow Control, 3 (ROOM: ARES)	S15: Multiphase Flows, 2 (ROOM: HERMES)
Computational investigation of vertically heated pipes using the large-eddy simulations approach Y. Addad, D. Laurence,	Time-resolved velocity measurements in the wake of an axisymmetrical bluff body controlled by a DBD plasma actuator M. Forte, N. Benard, E. Moreau, G. Touchard, M.Cazalens	Analysis of low-order velocity models and their application to heavy particle dispersion C. Allery, M. Waclawczyk, C. Beghein, J. Pozorski
Large-eddy simulation of turbulent fuel jet injection: toward mixing control from monitoring the injection sequence G. Bonomeau, P. Domingo, L. Vervisch	Large eddy simulation of separated flow over a Glauert-Goldschmied wall-mounted hump with and without control by means of a synthetic jet A. Avdis, M. A. Leschziner	Numerical simulation of acoustic agglomeration of diesel particles C. D. Papadopoulos, K. Sardi, G. C. Bergeles
Experimental and computational investigations of flow in a single-annular combustor configuration B. Kniesner, G. Kadavelil, S.Jakirlic, C. Tropea	Experimental damping of boundary-layer oscillations using plasma actuators S. Grundmann, C. Tropea	Transport and deposition of colliding particles in turbulent channel flow L. I. Zaichik, V. M. Alipchenkov, A. R. Avetissian
Large eddy simulation of a semi realistic vehicle shape under crosswind conditions F. Mathey, Y. Ducret, A. S. d'Apollonia, S. Contini	Passive control of mixing in a coaxial jet R. Örlü, A. Segalini, A. Talamelli, P. H. Alfredsson	Model simulations of two-way coupling effects on evolving particle-laden turbulent channel flow T. Strömrgren, G. Brethouwer, G. Amberg, A.V. Johansson

<p>Fully compressible LES of wall-jet turbulent mixing at high Reynolds number G. Lodato, P. Domingo, L. Vervisch</p>	<p>Development of a reduced order model for the leading edge separated shear layer of a NACA 0015 airfoil V. Kitsios, L. Cordier, J. Delville, J-P. Bonnet, A. Ooi, J. Soria</p>	<p>Lagrangian particle dispersion in turbulent flow over a wall mounted obstacle D. Grigoriadis, S. Kassinos</p>
<p>20.30 Limanaki Fish Taverna (Amathus Beach Hotel)</p>		

Friday, 6 June

Friday, 6 June		
09.00-09.45 (ROOM: DEMETRA) 15: C. Bailly, C. Bogey and O. Marsden: Advances in computational aeroacoustics: challenges and issues		
09.45-10.30 (ROOM: DEMETRA) 16: J. Janicka, S. Sadiki, D. Goryntsev, B. Wegner: Design of technical combustion systems using LES: state of the art and perspective		
COFFEE BREAK		
10.50 – 12.30 (ROOM: DEMETRA) PARALLEL SESSIONS		
S16: Turbulence Fundamentals (ROOM: DEMETRA)	S17: Turbomachinery (ROOM: HERMES)	S18: Combustion, 1 (ROOM: ARES)
Wall-effects on pressure fluctuations in quasi-incompressible turbulent plane channel flow G. A. Gerolymos, C. Lo, D. Sénécal, I. Vallet, B.A. Younis	Large eddy simulation of pulsatile flow in a turbocharger: assessment of the unsteady flow field F. Hellstrom, L. Fuchs	Flow-flame interactions in a lean premixed low swirl burner M. Irannezhad, LE Eriksson
On the development of langevin models for turbulent pipe flow by 3D PTV and DNS J. G. M. Kuerten, C. W. M. van der Geld	Large eddy simulation of thermal convection in a rotor-stator cavity S. Poncet, E. Serre,	Numerical study of n-heptane auto-ignition using LES-PDF methods W. P. Jones, S. Navarro-Martinez
Hierarchical structure and fine scale eddy cluster in homogeneous isotropic turbulence T. Kubota, M. Tanahashi, T. Miyauchi	DNS of wake-boundary layer interactions in a linear compressor cascade T. A. Zaki, J. G. Wissink, P. A. Durbin, W. Rodi	LES of turbulence-combustion interaction in intense diffusion flames B. J. Geurts, R. Bastiaans, B. Vreman
WKB RDT analysis of variable density flows with low turbulent Mach numbers O. Soulard, J. Griffond	U-RANS of flow in pinned passages relevant to gas-turbine blade cooling G. Delibra, D. Borello, K. Hanjalic, F. Rispoli	Numerical study of the flow structure and air-fuel mixing in the premixing channel of a gas micro-turbine S. Lahlraichi, V. Sabelnikov, P. Bruel
Measurement of the effects of free-stream turbulence kinetic energy and length scale on vortex wandering S. Bailey, S. Tavoularis	Boundary layer transition by discrete and continuous modes P. A. Durbin, Y. Liu, T. A. Zaki	Detailed numerical investigation of Sydney bluff-body flames C. Olbricht, F. Hahn, J. Janicka
LUNCH (KALYPSO RESTAURANT)		
14.10-15.50 (ROOM: DEMETRA) PARALLEL SESSIONS		
S19: Aerodynamic Flows, 1 (ROOM: DEMETRA)	S20: Heat Mass Transfer, 2 (ROOM: HERMES)	S21: Combustion, 2 (ROOM: ARES)
Shock unsteadiness and shock induced separation at transonic flows over a bump O. Bodin, L. Fuchs	Transport equations for the enstrophy and scalar dissipation rate in a turbulent channel flow H. Abe ¹ , R. A. Antonia, H. Kawamura	Study of two swirl stabilized GT combustor devices F. Hahn, C. Olbricht, J. Janicka
Prediction of strongly detached flows around bodies by URANS and DES approaches R. Bourguet, R. Elakoury, M. Braza, Y. Hoarau	Application of a scalar flux model to strongly swirling flows in confined geometries D. von Lavante, E. Laurien	Chemically reactive flow modelling involving physical and compositional space AMR D. A. Olivieri, M. Fairweather, S. A. E. G. Falle
An Extension of DDES Applied to the Computation of a Generic Missile Fin in Transonic Regime J. Riou, E. Garnier, S. Deck, C. Basdevant	Modelling of the turbulent heat fluxes in natural, forced and mixed convection regimes Y. Lecocq, R. Manceau, S. Bournaud, L.E. Brizzi	Turbulent reactive flows with particle formation: precipitation of BaSO ₄ in a turbulent pipe flow via a species-number density PDF method G. di Veroli, S. Rigopoulos
CFD analysis for the optimisation of the IRA exit nozzle within the frame of the AEROHEX project F. Bampas, I. Ossanlis, P. Storm, N. Moussiopoulos	Effect of initial conditions on scalar mixing in the near-field of a effect round jet A. Benaissa, I. Yimer, L. Djenidi, E. Germaine, J. Leymay	Swirling effects on the dynamics of an annular nonpremixed jet flame X. Jiang, K. H. Luo, G. A. Siamas

<p>An investigations of the flow in a 3D shallow transonic cavity flows with and without representative stores K. Knowles, S. A. Ritchie, N. J. Lawson</p>	<p>A mixed-time-scale SGS model for thermal field at various Prandtl numbers M. Inagaki, h. Hattori, y. Nagano</p>	
15.50-16.15 COFFEE BREAK		
16.15-17.35 PARALLEL SESSIONS		
S22: Aerodynamic Flows, 2 (ROOM: DEMETRA)	S23: Transition (ROOM: HERMES)	S24: Multiphase Flows, 3 (ROOM: ARES)
<p>Pneumatic control strategies for transonic buffet - a numerical approach G. Browaeys, H. Deniou, E. Collin, JP. Bonnet</p>	<p>Modeling the flow transition in supersonic boundary layer with a new k-ω-γ transition/turbulence model S. Fu, L. Wang</p>	<p>The effect of the liquid level on the characteristics of forming slugs U. Kadri, R. F. Mudde, R. V. A. Oliemans</p>
<p>Numerical prediction of the aerodynamic Interference of twin-sting model supports on Empennage measurements C. Mockett, O. Frederich, T. Schmidt, F. Thiele</p>	<p>LES and DNS of the non-isothermal transitional flow in rotating cavity E. Tuluszka-Sznitko, A. Zielinski, M. Biala, W. Majchrowski</p>	<p>Using LES to model turbulent particle transport in the airways of the human respiratory system H. Radhakrishnan, S. Kassinos</p>
<p>Detached-eddy simulation applied to understanding and reducing airframe noise R. Langtry, J. V. Larssen, P. Spalart</p>	<p>Measurements on transition and stability of hypersonic boundary layer over circular cone Z. Bi, N. Zhu, Q. Shen, Z. Li, Z. Zhang</p>	<p>Thermal coupling in particle-laden turbulent channel flow F. Zonta, C. Marchioli, A. Soldati</p>
<p>Simulation strategies for shock-turbulence interaction A. Cook, J. Larsson, W. Cabot, S. Lele</p>		<p>Investigation of particle stress tensor closures for dense liquid-solid turbulent flows F. N. Krampa, D. J. Bergstrom, J. D. Bugg, J. Schaan, R.S. Sanders</p>
17.35 – 17.50 CLOSING SESSION		

Useful Information

Registration Desk

The registration desk will open on the 3rd June at 17.00-21.00 for registration and will continue to be open throughout the duration of the Conference. All conference documents (program, abstracts, booklet etc) will be included in the participant's bag. The badge of each participant gives access to all sessions, coffee breaks and lunch breaks.

Social Programme

On *Wednesday, the 4th of June*, buses will depart from the hotel to transfer you to Kourion, one of the most important and glorious ancient kingdoms of Cyprus, where you will enjoy a short concert of 'Terpandros'; a band which plays with ancient Greek instruments. To follow you will be transferred to the village of Moutagiaka where local meze will be offered at a local tavern.

On *Thursday, the 5th of June*, dinner will be offered at Limanaki Fish Taverna which is located in the premises of the Amathus Hotel and is adjacent to the sea.

Internet Café

An Internet Café will be operating, where you will be able to use internet facilities, 24 hours. Sponsor of the Internet café is The Cyprus Telecommunications Authority (CYTA)

Poster Display

The posters will be on display in the foyer area of the mezzanine level.

Local Transfers

Public bus transportation is available every 20 minutes outside the hotel for the town center.

Shopping hours

Shop opening times vary depending on their type and location, though shops normally open between 07:00 and 09:00. For the period April 1st – October 31st shops close at to 20:00 on Monday, Tuesday, Thursday and Friday, at 15:00 on Wednesday and, at 19:30 on Saturday. During the period June 15th – August 31st there is an optional three hour afternoon break from 14:00 - 17:00.

Banking hours for the public

Monday-Friday 08.00-13.00

There are many Automated Teller Machines (ATMs) outside most branches of banks. Hotels, large shops and restaurants normally accept credit cards and traveler's cheques.

Credit Cards

All major credit cards are accepted widely, but not everywhere. If in doubt ask in advance.