

Second Symposium on Hybrid RANS-LES Methods

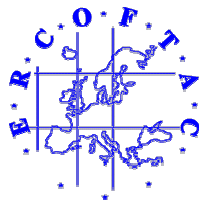
Chandris Dassia Hotel, Corfu, Greece
17-18 June 2007

Organised by

EADS Military Air Systems, Germany
Swedish Defence Research Agency, FOI



Sponsored by



Saturday, 16 June 2007

18:00-20:00 Early Registration

Sunday, 17 June 2007 - morning sessions

08:30 – 09:00 Registration

09:00 – 09:10 Welcome (W. Haase and S.-H. Peng on behalf of the organisers and DESider Project consortium)

09:10 – 10:00 Keynote I (Chairperson: W. Haase, EADS-MAS, Germany)
M. Mallet (Dassault Aviation, France)
The contribution of the DES approach to aerodynamic design challenges

10:00 – 10:20 Coffee break

10:20 – 12:25 Session 1 (Chairperson: W. Haase, EADS-MAS, Germany)

10:20 – 10:45 **V. Brunet and S. Deck** (ONERA, France)

Zonal detached eddy simulation of transonic buffet on a civil aircraft type configuration

10:45 – 11:10 **H. Lüdeke** (DLR, Germany)

Unsteady CFD analysis of a Delta wing fighter configuration by detached eddy simulation

11:10 – 11:35 **S.-H. Peng and S. Leicher** (FOI, Sweden; EADS-MAS, Germany)

DES and hybrid RANS-LES modelling of unsteady pressure oscillations and flow features in a rectangular cavity

11:35 – 12:00 **R. Ashworth** (QinetiQ, UK)

DES of a cavity with Spoiler

12:00 – 12:25 **A.C. Benim, M. P. Escudier, A. Nahavandi, K. Nickson and K.J. Syed** (University of Liverpool, UK; Siemens, UK)

DES analysis of confined turbulent swirling flows

12:25 – 13:45 Lunch

Sunday, 17 June 2007 - afternoon sessions

13:45 – 14:35 **Keynote II (Chairperson: K. Hanjalic, University Rome « La Sapienza »)**
B. Geurts (University of Twente, The Netherlands)
Reliability of LES in complex applications

14:35 – 15:50 **Session 2 (Chairperson: K. Hanjalic, University Rome « La Sapienza »)**

14:35 – 15:00 **S. Pei, Y. Shi and S. Chen** (Peking University, China)
An alternative hybrid RANS/LES method for channel flow using stress constrain dynamic mixed model

15:00– 15:25 **M. Breuer, B. Jaffrézic and A. Delgado** (University of Erlangen-Nürnberg)
Hybrid LES-RANS method based on an explicit algebraic Reynolds stress model

15:25 – 15:50 **H. Xiao, N. Qin and P. G. Tucker** (Swansea University, UK; University of Sheffield, UK)
Volume-filtered DES applied to synthetic jet flows

15:50 – 16:10 **Coffee break**

16:10 – 16:50 **Poster Session**

Z. Xiao, J. Huang, Y. Zhang, Q. Li, H. Chen and S. Fu (Tsinghua University, China)
Studies of supersonic base flows with compressible RANS/LES hybrid methods

G. Martinat, M. Braza, G. Harran, Y. Hoarau and J. Vos (IMFT, France)
Numerical Simulation of the dynamic stall of a NACA0012 airfoil using DES and advanced OES/URANS modelling

C. De Langhe, J. Bigda, K. Lodefier and E. Dick (Ghent University, Belgium)
One-equation RG hybrid RANS/LES modelling

N. Hu (Peking University, China)
A dynamic subgrid-scale model constrained by standard k- ϵ model

T. G. Elizarova and P. N. Nikolskii (RAS; Moscow State University, Russia)
A new variant of subgrid dissipation for LES method in simulation of laminar-turbulent transition in subsonic gasflows

M. Gorokhovski, A. Chtab and V. Sabel'nikov (Ecole Centrale de Lyon; Université de Rouen; ONERA, France)
Formulation of subgrid stochastic acceleration model (SSAM) for LES of a high

J. Ziefle and L. Kleiser (ETH Zurich, Switzerland)
Compressibility effects on turbulent separated flow in a periodic channel

	<p>P. Zamankhan (University of Isfahan, Iran) Fiber suspension motion in a stirred tank with a Rushton turbine</p> <p>F. Le Chuiton, A. D'Alascio, G. Barakos, D. Schwaborn (EUROCOPTER, Germany; University Liverpool, England; DLR, Germany) Computation of the helicopter fuselage wake with the SST, SAS, DES and XLES Models</p>
16:50 – 18:55	Session 3 (Chairperson: S.-H. Peng, FOI, Sweden)
16:50 – 17:15	<p>Y. Egorov and F. R. Menter (ANSYS-CFX, Germany) Development and application of SAS turbulence models in the DESIDER project</p>
17:15 – 17:40	<p>A. Revell, T. Craft, M. Braza and D. Laurence (University of Manchester, UK; IMFT, France; EDF, France) Advanced URANS calculation of 3D cylinder in square duct</p>
17:40 – 18:05	<p>S. Šarić, B. Kniesner, A. Mehdizadeh, S. Jakirlić, K. Hanjalić and C. Tropea (Darmstadt University of Technology, Germany) Comparative assessment of hybrid LES/RANS methods by means of separated flow computations</p>
18:05 – 18:30	<p>G. Martinat, R. Bourguet, F. Dehaeze, B. Jorez, M. Braza and Y. Hoarau (IMFT, France) Numerical simulation of the flow in the wake of Ahmed body using detached eddy simulation and URANS modelling</p>
18:30 – 18:55	<p>C. Lübon, M. Kessler, S. Wagner and E. Krämer (University of Stuttgart, Germany) Detached eddy simulation of separated flow on a high-lift device and noise propagation</p>

Monday, 18 June 2007 - morning sessions

08:10 – 09:00 **Keynote III (Chairperson: S. Jakirlic, Darmstadt University of Technology, Germany)**
U. Piomelli (University of Maryland, USA)
Turbulent eddies in the RANS/LES transition region

09:00 – 10:40 **Session 4 (Chairperson: S. Jakirlic, Darmstadt University of Technology, Germany)**

09:00 – 09:25 **D. von Terzi, W. Rodi and J. Fröhlich** (University of Karlsruhe, Germany; Technical University of Dresden, Germany)

Velocity and pressure coupling conditions for LES with downstream RANS calculations

09:25 – 09:50 **S. Deck, P. E. Weiss, M. Pamiès and E. Garnier** (ONERA, France)

On the use of stimulated detached simulation for spatially developing boundary layer

09:50 – 10:15 **L. Davidson** (Chalmers University of Technology, Sweden)

Hybrid LES-RANS: Inlet boundary conditions for flows with recirculation

10:15 – 10:40 **N. Jarrin, J-C. Uribe, R. Prosser and D. Laurence** (University of Manchester, UK)

Synthetic inflow boundary conditions for wall bounded flows

10:40 – 11:00 **Coffee break**

11:00 – 12:40 **Session 5 (Chairperson: E. Dick, Ghent University, Belgium)**

11:00 – 11:25 **S. Trapier, S. Deck and P. Duveau** (ONERA, France)

Delayed detached-eddy simulation of supersonic inlet buzz

11:25 – 11:50 **A. Widenhorn, B. Noll and M. Aigner (DLR, Germany)**

Numerical investigation of a laboratory combustor applying hybrid RANS-LES methods

11:50 – 12:15 **F. Magagnato, B. Pritz and M. Gabi** (University of Karlsruhe, Germany)

Comparison of DES and LES on the transitional flow of turbine blades

12:15 – 12:40 **C. Mockett, B. Greschner, T. Knacke, R. Perrin, J. Yan and F. Thiele** (TU Berlin, Germany; IMFT, France)

Applications of DES at ISTA – Summary of experience

12:40 – 13:50 **Lunch**

Monday, 18 June 2007 - afternoon sessions

13:50 – 14:40 **Keynote IV (Chairperson: M. Strelets, NTS, Russia)**
P. Sagaut (Lab. de Modélisation en Mécanique, France)
Uncertainty modelling, error charts and improvement of subgrid models

Poster Session

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Computation of the helicopter fuselage wake with the SST, SAS, DES and XLES Models

15:10 – 16:25	Session 6 (Chairperson: M. Strelets, NTS, Russia)
15:10 – 15:35	S. Krajnović (Chalmers University of Technology, Sweden) Flow around a surface-mounted finite cylinder: A challenging case for LES
15:35 – 15:00	J. C. Kok, B. I. Soemarwoto and H. van der Ven (NLR, The Netherlands) X-LES Simulations using a high-order finite-volume scheme
15:00 – 16:25	L. Temmerman and Ch. Hirsch (Numecca, Belgium) Towards a successful implementation of DES strategies in industrial RANS solvers
16:25 – 16:35	Closing Remarks
16:35	Move to IUTAM Symposium and/or Coffee Break
16:45	Start of IUTAM Symposium session on “Statistical and hybrid turbulence modelling of unsteady separated flows” with Invited Keynote Lecture by T.B. Gatski
18:30 – 19:30	<p>Following the last IUTAM session of the day, all DESider and IUTAM symposia participants are invited to join for a “Round Table” discussion on “CFD in Future” – where contributions from conference participants are most welcome.</p> <p>Tentative Round Table participants: Tom Gatski (USA) Bernard Geurts (University of Twente, The Netherland) Davor Cokljat (ANSYS, England) Michel Mallet (Dassault, France) Cyril Gacherieu (Airbus, France)</p> <p>Moderation: Marianna Braza (IMFT, France) – Chairwoman IUTAM Symposium Werner Haase (EADS-MAS, Germany) – Chairman DESider Symposium</p>
20:00	Cocktail and Finger-Food Get together with IUTAM participants