

## Programme

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| <b>Tuesday, 27 September 2011</b>                      |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                          |
| 18:00-20:00 Early Registration                         |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                          |
| <b>Wednesday, 28 September 2011 - morning sessions</b> |                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                          |
| <b>08:00 – 09:00</b>                                   | <b>Registration</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                          |
| <b>09:00 – 10:40</b>                                   | <b>Welcome Opening</b> (Chairperson: Song Fu, Tsinghua University)                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                          |
|                                                        | <b>Special Lectures: Aeronautics – An EU-China View</b> (Chairperson: Shia-Hui Peng, FOI)                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                          |
| 09:10 – 09:40                                          | <b>Dietrich Knoerzer</b> (DG Research & Innovation, European Commission)<br>Towards the Greening in Aviation - Aeronautics in the Research Framework Programme of the European Union                                                                                         |                                                                                                                                                                                                                                                                                                                          |
| 09:40 – 10:10                                          | <b>Huilu Zhang</b> (Head of Aero Design, Beijing Aeronautical Science & Technology Research Institute of COMAC)<br>On the Current Progress of China's Commercial Aircraft                                                                                                    |                                                                                                                                                                                                                                                                                                                          |
| 10:10 – 10:40                                          | <b>Adel Abbas, Klaus Becker</b> (Airbus Operations S.A.)<br>Advanced Numerical Simulation – Vision and Strategy                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                          |
| <b>10:40 – 11:00</b>                                   | <b>Coffee break</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                          |
| <b>11:00 – 12:40</b>                                   | <b>Session 1A (Chairperson: Dieter Schwamborn, Room A)</b>                                                                                                                                                                                                                   | <b>Session 1B (Chairperson: Frank Thiele, Room B)</b>                                                                                                                                                                                                                                                                    |
| 11:00 – 11:25                                          | <b>R. Larauie<sup>1</sup>, S. Deck<sup>1</sup>, P. Sagaut<sup>2</sup></b> ( <sup>1</sup> ONERA France; <sup>2</sup> Université Pierre et Marie Curie, France)<br>A Rapid Switch from RANS to WMLES for Spatially Developing Boundary Layers                                  | <b>Y. You, H. Luedeke, V. Hannemann</b> (DLR, Germany)<br>Detached Eddy Simulation of the Subsonic Base Flow with a Side Support                                                                                                                                                                                         |
| 11:25 – 11:50                                          | <b>S. Jakirlic<sup>1</sup>, C. Chang<sup>1</sup>, B. Basara<sup>2</sup></b> ( <sup>1</sup> Technische Universität Darmstadt, Germany; <sup>2</sup> AVL List GmbH, Austria)<br>Performance Assessment of the PANS-z-f Model by Reference to a Flow Separated at a Curved Wall | <b>D. Angelidis<sup>1</sup>, V. Assimakopoulos<sup>2</sup>, G. C. Bergeles<sup>1</sup></b> ( <sup>1</sup> Technical University of Athens, Greece; <sup>2</sup> Institute for Environmental Research and Sustainable, Greece)<br>3D Flow and Pollutant Dispersion Simulation in Organized Cubic Structures                |
| 11:50 – 12:15                                          | <b>W. Wang, N. Qin</b> (University of Sheffield, UK)<br>Balancing Destruction and Production in the S-A Model Based Hybrid RANS-LES for Flow Around an Aerofoil with Mild Separation                                                                                         | <b>R. van Rennings<sup>1</sup>, K. Shi<sup>2</sup>, S. Fu<sup>2</sup>, F. Thiele<sup>1</sup></b> ( <sup>1</sup> Technische Universität Berlin, German; <sup>2</sup> Tsinghua University, China)<br>Delayed-Detached-Eddy Simulation of Near Stall Axial Compressor Stator Flow for Geometrical Models of Varying Passage |

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| 12:15 – 12:40 | <b>S. Chen, Y. Shi, Z. Xiao, Z. Xia, J. Wang</b><br>(Peking University, China)<br>Constrained Large Eddy Simulation of Wall-Bounded Turbulent Flow s | <b>S. Arvidson<sup>1</sup>, S.-H. Peng<sup>2</sup>, L. Davidson<sup>3</sup></b><br>( <sup>1</sup> Saab Aeronautics, Sweden; <sup>2</sup> FOI, Sweden; <sup>3</sup> Chalmers University of Technology, Sweden)<br>Some Critical Remarks on Hybrid RANS-LES Modeling of Shock/Boundary-Layer Interaction in a Duct |
| 12:40 – 14:00 | <b>Lunch</b>                                                                                                                                         |                                                                                                                                                                                                                                                                                                                  |

| <b>Wednesday, 28 September 2011 - afternoon sessions</b> |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                         |
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| 14:00 – 14:50                                            | <b>Invited Keynote I (Chairperson: Adel Abbas)</b><br><b>Dieter Schwaborn</b> (DLR, Germany), <b>Misha Strelets</b> (NTS, Russia)<br>ATAAC – an EU-Project Dedicated to Hybrid RANS/LES Methods                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                         |
| 14:50 – 16:30                                            | <b>Session 2A (Chairperson: Florian Menter, Room A)</b>                                                                                                                                                                                                                                                                                                                                                            | <b>Session 2B (Chairperson: Werner Haase, Room B)</b>                                                                                                                                                                                                                                                                                   |
| 14:50 – 15:15                                            |                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>J. Huang</b> (Tsinghua University, Beijing, China)<br>Computations of Shock Wave Buffet and Its Control by VGs on OAT15A Airfoil Using IDDES                                                                                                                                                                                         |
| 15:15 – 15:40                                            | <b>R. Maduta, S. Jakirlic, M. Ullrich</b><br>(Technische Universität Darmstadt, Germany)<br>An Eddy-Resolving Reynolds Stress Transport Model for Unsteady Flow Computations                                                                                                                                                                                                                                       | <b>J. Liu, R. Zhao, C. Yan</b> (BUAA, China)<br>Detailed Investigation of the Flow past a Circular Cylinder at Re=3900 Employing Detached Eddy Simulation                                                                                                                                                                               |
| 15:40 – 16:05                                            | <b>M. Gual Skopek<sup>1</sup>, M. Braza<sup>1</sup>, Y. Hoarau<sup>3</sup>, F. Thiele<sup>2</sup></b> ( <sup>1</sup> IMFT-Institut de Mécanique des Fluides de Toulouse; <sup>2</sup> TUB-Technical University Berlin; <sup>3</sup> IMFSS-Institut de Mécanique des Fluides et de Solides de Strasbourg)<br>Hybrid RANS-LES Modeling of a Strongly Detached Turbulent Flow Around a Tandem Cylinders Configuration | <b>V. Brunet</b> (ONERA, France)<br>Random Flow Generation Technique for Civil Aircraft Jet Simulations with the ZDES Approach                                                                                                                                                                                                          |
| 16:05 – 16:30                                            | <b>H. Xiao, P. Jenny</b> (ETH Zürich, Switzerland)<br>A Consistent Dual-Mesh Framework for Hybrid LES/RANS Modeling                                                                                                                                                                                                                                                                                                | <b>A. Gavrilov<sup>1</sup>, A. Dekterev<sup>1</sup>, A. Minakov<sup>2</sup>, D. Platonov<sup>2</sup>, A. Sentyabov<sup>1</sup></b> ( <sup>1</sup> Institute of Thermophysics SB RAS, Russia; <sup>2</sup> Siberian Federal University, Russia)<br>Application of Hybrid Methods to Calculations of Vortex Precession in Swirling Flow s |
| 16:30 – 16:50                                            | <b>Coffee break</b>                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                         |
| 16:50 – 18:30                                            | <b>Session 3A (Chairperson: Marianna Braza, Room A)</b>                                                                                                                                                                                                                                                                                                                                                            | <b>Session 3B (Chairperson: Hong Yan, Room B)</b>                                                                                                                                                                                                                                                                                       |

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| 16:50 – 17:15 | <b>F. Fraysse, J. de Vicente, F. Mesequer, E. Valero</b> ( <i>Universidad Politécnica de Madrid, Spain</i> )<br>Numerical Evaluation of URANS/DES Models in the Acoustic Prediction of a High Reynolds Compressible Open Cavity Flow | <b>C. R. Mockett<sup>1,2</sup>, F. Le Chuition<sup>3</sup>, M. Fuchs<sup>1</sup>, F. Thiele<sup>2</sup></b> ( <sup>1</sup> <i>Technische Universität Berlin, Germany</i> ; <sup>2</sup> <i>CFD Software Entwicklungs- und Forschungsgesellschaft mbH, Germany</i> ; <sup>3</sup> <i>Aerodynamic Department, Eurocopter Deutschland GmbH, Germany</i> )<br>Helicopter Fuselage Wake Prediction Using Detached-Eddy Simulation |
| 17:15 – 17:40 | <b>X. Han, S. Krajnovic</b> ( <i>Chalmers University of Technology, Sweden</i> )<br>A New Very Large Eddy Simulation Model for Turbulent Flow Simulation                                                                             | <b>S. Reuss, T. Knopp, D. Schwaborn</b> ( <i>DLR, Germany</i> )<br>Hybrid RANS/LES Simulations of a Three-Element Airfoil                                                                                                                                                                                                                                                                                                    |
| 17:40 – 18:05 | <b>S. Rolfo, J. C. Uribe, F. Billard</b> ( <i>The University of Manchester, UK</i> )<br>Development of a Hybrid RANS/LES Model for Heat Transfer Applications                                                                        | <b>B. Nebenfuhr<sup>1</sup>, S.-H. Peng<sup>2</sup>, L. Davidson<sup>1</sup></b> ( <sup>1</sup> <i>Chalmers University of Technology, Sweden</i> ; <sup>2</sup> <i>FOI, Sweden</i> )<br>Hybrid RANS-LES Simulation of Turbulent High-Lift Flow in Relation to Noise Generation                                                                                                                                               |
| 18:05 – 18:30 | <b>J.-L. Xu<sup>1</sup>, N. Hu<sup>2</sup>, G. Gao<sup>1</sup></b> ( <sup>1</sup> <i>Beihang University, China</i> ; <sup>2</sup> <i>Peking University, China</i> )<br>A High-Fidelity Turbulence Length Scale for Flow Simulation   | <b>W. Li<sup>1</sup>, T. Nonomura<sup>2</sup>, K. Fujii<sup>2</sup></b> ( <sup>1</sup> <i>University of Tokyo, Japan</i> ; <sup>2</sup> <i>Institute of Space and Astronautics Science/JAXA, Japan</i> )<br>Noise Control of Supersonic Cavity Flow with Mass Injections                                                                                                                                                     |
| 19:00         | <b>Reception</b>                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                              |

**Thursday, 29 September 2011 - morning sessions**

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| 08:30 – 09:20 | <b>Invited Keynote II (Chairperson: Song Fu)</b><br><b>Kozo Fujii</b> ( <i>ISAS, Japan Aerospace Exploration Agency, Japan</i> )<br>Role of RANS, Hybrid and LES for Wing Flow Simulations at Relatively Low Reynolds Numbers |                                                                                                                                                                                                                                                                                                       |
| 09:20 – 10:35 | <b>Session 4A (Chairperson: Charles Mockett, Room A)</b>                                                                                                                                                                      | <b>Session 4B (Chairperson: Haecheon Choi, Room B)</b>                                                                                                                                                                                                                                                |
| 09:20 – 09:45 | <b>N. Qin, N. Durrani</b> ( <i>University of Sheffield, UK</i> )<br>Comparison of URANS and Hybrid RANS-LES Methods for Massively Separated Flows                                                                             | <b>L. Wang<sup>1</sup>, C. Mockett<sup>1,2</sup>, T. Knacke<sup>1</sup>, F. Thiele<sup>1,2</sup></b> ( <sup>1</sup> <i>Technische Universität Berlin, Germany</i> ; <sup>2</sup> <i>CFD Software GmbH, Germany</i> )<br>Noise Prediction of a Rudimentary Landing Gear Using Detached-Eddy Simulation |
| 09:45 – 10:10 | <b>Z. Xiao</b> ( <i>Tsinghua University, China</i> )<br>Comparisons of Three Improved DES Methods on Unsteady Flows past Tandem Cylinders                                                                                     | <b>V. Koeplin</b> ( <i>University of Hannover, Germany</i> )<br>Parameter Study of the Influence of the Transition Area Between Different Riblet Segments on the Viscous Drag Reduction                                                                                                               |

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| 10:10 – 10:35 | <b>M. Terracol, S. Deck</b> (ONERA, FRANCE)<br>Numerical Investigation of the Flow around a Three-Element High-Lift Airfoil Using Two Zonal Hybrid RANS/LES Methods: ZDES and NLDE             | <b>C.-H. Hu</b> (Globalflowsolutions, Technology R & D, Vestas Wind Systems A/S, Denmark)<br>Modelling of Wind Flows over Complex Terrain Using a DES Method                                                |
| 10:35 – 11:00 | <b>Coffee break</b>                                                                                                                                                                            |                                                                                                                                                                                                             |
| 11:00 – 12:15 | <b>Session 5A (Chairperson: Frederic Archambeau, Room A)</b>                                                                                                                                   | <b>Session 5B (Chairperson: Kozo Fujii, Room B)</b>                                                                                                                                                         |
| 11:00 – 11:25 | <b>P. Wu, J. Meyers</b> (Katholieke Universiteit Leuven, Belgium)<br>An Improved Blending Formulation for Wall-Modeled Large-Eddy Simulations                                                  | <b>T. Chen, M. Sun, W. Liu</b> (National University of Defense Technology, China)<br>Hybrid LES/RANS Simulation of Crossing Shock/Turbulent Boundary-Layer Interaction                                      |
| 11:25 – 11:50 | <b>J. Liang, S. Kang</b> (North China Electric Power University, China)<br>Two-Point Correlation and Its Spectrum Analysis for Jet in Cross Flow Based on DES Simulations                      | <b>K. Fukushima, E. Wakisaka, A. Mizuno</b> (Kogakuin University, Japan)<br>Performance Estimation by DES Analysis of Straight Winged Vertical Axis Wind Turbine                                            |
| 11:50 – 12:15 | <b>Y. Zhang, R. A. Khurram, W. G. Habashi</b> (McGill University, Montreal, Canada)<br>Multiscale Finite Element Method Applied to Detached-Eddy Simulation for Computational Wind Engineering | <b>F. Grossi, M. Braza, Y. Hoarau</b> (Institut de Mécanique des Fluides de Toulouse, France)<br>Delayed Detached-Eddy Simulation of the Transonic Flow Around a Supercritical Airfoil in the Buffet Regime |
| 12:15 – 13:50 | <b>Lunch</b>                                                                                                                                                                                   |                                                                                                                                                                                                             |

**Thursday, 29 September 2011 - afternoon sessions**

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| 13:50 – 14:40 | <b>Invited Keynote III (Chairperson: Werner Haase)</b><br><b>Florian Menter</b> (ANSYS Germany, Germany)<br>Global vs. Zonal Approaches in Hybrid RANS-LES Turbulence Modelling |
| 14:40 – 18:40 | <b>Great Wall Tour</b>                                                                                                                                                          |
| 19:30         | <b>Conference dinner, Badaling Great Wall Hotel</b>                                                                                                                             |

**Friday, 30 September 2011**

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| 08:30 – 09:20 | <b>Invited Keynote IV (Chairperson: Shia-Hui Peng)</b><br><b>Sharath Girimaji</b> (Texas A&M University, USA)<br>Partially Averaged Navier-Stokes (PANS) Method for Variable-Resolution Turbulence Simulations: Theory and Practice |                                                           |
| 09:20 – 10:35 | <b>Session 6A (Chairperson: Shiyi Chen, Room A)</b>                                                                                                                                                                                 | <b>Session 6B (Chairperson: Lionel Temmerman, Room B)</b> |

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| 09:20 – 09:45        | <b>F. Gand, V. Brunet</b> (ONERA, France)<br>Zonal Detached Eddy Simulation of the Flow Behind a Spoiler Using the Chimera Method                                                                                                                                                       | <b>R. Poletto, A. Revell, T. Craft</b> (University of Manchester, UK)<br>Development and Application of a Divergence Free Synthetic Eddy Method for LES Inflow Conditions                                                                                                             |
| 09:45 – 10:10        | <b>B. Roidl, M. Meinke, W. Schroder</b> (RWTH Aachen University, Germany)<br>Synthetic Turbulence Generation for a Zonal RANS-LES Method                                                                                                                                                | <b>X. Han<sup>1</sup>, S. Krajnovic<sup>1</sup>, B. Basara<sup>2</sup></b> ( <sup>1</sup> Chalmers University of Technology, Sweden; <sup>2</sup> AVL List GmbH, Austria.)<br>Study of Active Flow Control for a Simplified Vehicle Model Using PANS Turbulence Model                 |
| 10:10 – 10:35        | <b>J. Lee<sup>1</sup>, H. Choi<sup>1</sup>, P. Moin<sup>2</sup></b> ( <sup>1</sup> Seoul National University, Korea; <sup>2</sup> Stanford University, USA)<br>Toward a Simplified Wall Boundary Condition for Wall-Modeled Large Eddy Simulation                                       | <b>X.-B. Deng<sup>1</sup>, L. Jin<sup>2</sup></b> ( <sup>1</sup> State Key Laboratory of Aerodynamics; <sup>2</sup> Low Speed Aerodynamics Institute; China Aerodynamics Research and Development Center)<br>A Dynamic Adaptive Upwind Method for LES and LES/RANS Hybrid Simulations |
| <b>10:35 – 10:55</b> | <b>Coffee break</b>                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                       |
| <b>10:55 – 12:10</b> | <b>Session7A (Chairperson: Suad Jakirlic, Room A)</b>                                                                                                                                                                                                                                   | <b>Session7B (Chairperson: Ning Qin, Room B)</b>                                                                                                                                                                                                                                      |
| 10:55 – 11:20        | <b>S. Krajnovic<sup>1</sup>, P. Ringqvist<sup>1</sup>, B. Basara<sup>2</sup></b> ( <sup>1</sup> Chalmers University of Technology, Sweden; <sup>2</sup> AVL List GmbH, Austria)<br>Comparison of PANS and LES Simulations of the Flow around Simplified Train Influenced by a Wind Gust | <b>A. Hemon<sup>1</sup>, S. Fu<sup>2</sup>, L. Shao<sup>1</sup></b> ( <sup>1</sup> Ecole Centrale de Lyon / CNRS, France; <sup>2</sup> Tsinghua University, China)<br>Interfacing Boundary Conditions Toward Zonal RANS/LES                                                           |
| 11:20 – 11:45        |                                                                                                                                                                                                                                                                                         | <b>L. W. Temmerman, C. Hirsch</b> (NUMECA International S.A., Brussels, Belgium)<br>URANS Investigation of the M219 Cavity Flow Using a Hexahedral Unstructured Solver                                                                                                                |
| 11:45 – 12:10        | <b>Cédric Larricq, Xiao-Yu Yang, Hui-Liu Zhang</b> (COMAC – Beijing Aeronautical Science & Technology Research Institute)<br>Comparison Between Lattice Boltzmann Simulation and Detached-Eddy Simulation on the Cavity Problem                                                         | <b>T. Joelsson, R. Yu, X. S. Bai</b> (Lund University, Sweden)<br>Large Eddy Simulation of Turbulent Flows in a Laboratory Reciprocating Engine                                                                                                                                       |
| <b>12:10 – 12:30</b> | <b>Closing remarks</b>                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                       |
| <b>12:30</b>         | <b>“Farewell lunch”</b>                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                       |