

TSFP5 – Programme Overview

Sunday 26 th August				
18:00-20:00	Registration and welcome reception <i>Auditorium Lobby / Magistrale</i>			
Monday 27 th August				
8:00 – 9:00	Registration - <i>Magistrale</i>			
9:00 – 9:20	Opening and Welcome - <i>Auditorium 1801</i>			
9:20	Invited Lecture – <i>H. Choi (Auditorium 1801)</i>			
10:00	Invited Lecture – <i>S. Sarkar (Auditorium 1801)</i>			
10:40	Coffee Break			
11:00	Session 1A Turbulent Boundary Layers I <i>Auditorium 1801</i>	Session 1B RANS I <i>Hall 0350</i>	Session 1C Compressible Flows I <i>Hall 0250</i>	Session 1D Fundamentals I <i>Hall 1250</i>
12:40	Lunch			
14:00	Session 2A Turbulent Boundary Layers II <i>Auditorium 1801</i>	Session 2B RANS II <i>Hall 0350</i>	Session 2C Compressible Flows II <i>Hall 0250</i>	Session 2D Fundamentals II <i>Hall 1250</i>
15:40	Coffee Break			
16:00	Session 3A Turbulent Boundary Layers III <i>Auditorium 1801</i>	Session 3B LES Methodology I <i>Hall 0350</i>	Session 3C Numerical Methods <i>Hall 0250</i>	Session 3D Fundamentals III <i>Hall 1250</i>
18:00	Symposium Reception (Bus transfer to Flugwerft Schleisheim)			
Tuesday 28 th August				
8:30	Invited Lecture – <i>C. Tropea (Auditorium 1801)</i>			
9:10	Invited Lecture – <i>R. D. Moser (Auditorium 1801)</i>			
9:50	Coffee Break			
10:10	Session 4A Turbulent Boundary Layers IV <i>Auditorium 1801</i>	Session 4B LES Methodology II <i>Hall 0350</i>	Session 4C Heat Transfer I <i>Hall 0250</i>	Session 4D Experimental Methods <i>Hall 1250</i>
11:50	Lunch			
13:30	Poster Session – <i>Auditorium 1801</i>			
15:20	Coffee Break			
15:40	Session 5A Turbulent Boundary Layers V <i>Auditorium 1801</i>	Session 5B LES/Hybrid/URANS <i>Hall 0350</i>	Session 5C Heat Transfer II <i>Hall 0250</i>	Session 5D Separated/Aerod.Flows I <i>Hall 1250</i>
17:20	Session 6A Transition and Control <i>Auditorium 1801</i>	Session 6B LES Applications <i>Hall 0350</i>	Session 6C Jets/Free Shear Flows I <i>Hall 0250</i>	Session 6D Separated/Aerod.Flows II <i>Hall 1250</i>
19:15	Bus transfer to Symposium Banquet			
20:00	Symposium Banquet			
Wednesday 29 th August				
8:30	Invited Lecture – <i>P. Koumoutsakos (Auditorium 1801)</i>			
9:10	Invited Lecture – <i>T. Miyauchi (Auditorium 1801)</i>			
9:50	Coffee Break			
10:20	Session 7A Combustion I <i>Auditorium 1801</i>	Session 7B Biofluidmechanics <i>Hall 0350</i>	Session 7C Jets/Free Shear Flows II <i>Hall 0250</i>	Session 7D Magnetohydrodyn. Flows <i>Hall 1250</i>
12:00	Lunch			
13:20	Session 8A Combustion II <i>Auditorium 1801</i>	Session 8B Geophysical/Rotating Flows I <i>Hall 0350</i>	Session 8C Jets/Free Shear Flows III <i>Hall 0250</i>	Session 8D Multiphase Flows I <i>Hall 1250</i>
15:00	Coffee Break			
15:20	Session 9A Combustion III <i>Auditorium 1801</i>	Session 9B Geophysical/Rotating Flows II <i>Hall 0350</i>	Session 9C Jets/Free Shear Flows IV <i>Hall 0250</i>	Session 9D Multiphase Flows II <i>Hall 1250</i>
17:10	Closing Session – <i>Auditorium 1801</i>			

FIFTH INTERNATIONAL SYMPOSIUM ON TURBULENCE AND SHEAR FLOW PHENOMENA – 2007

MUNICH UNIVERSITY OF TECHNOLOGY
FACULTY OF MECHANICAL ENGINEERING, D-85748 GARCHING
AUGUST 27-29, 2007

Programme

AUGUST 26, SUNDAY

18:00-20:00 Registration and Welcome Reception – Magistrale (Auditorium Lobby)

AUGUST 27, MONDAY

8:00-9:00

Registration

9:00-9:20

Opening and Welcome – Ernst Schmidt Lecture Hall (MW 1801)

PLENARY SESSION – Invited Lectures (Auditorium 1801)

Session Chair: *N. Kasagi, University of Tokyo*
R. Friedrich, T.U. Munich

9:20-10:00

Control of Flow over a Bluff Body
H. Choi, Seoul National University

10:00-10:40

Compressible Turbulence
S. Sarkar, U.C. San Diego

10:40-11:00

Coffee Break

SESSION 1A – Turbulent Boundary Layers I (Auditorium 1801)

11:00 – 12:40

Session Chair: *M.G. Mungal, Stanford University*

11:00-11:20

High Reynolds Number Flat Plate Turbulent Boundary Layer Experiments Using a Hot-Wire Rake Synchronized with Stereo PIV
J. Delville, C. Fourment, M. Tutkun, P.B.V. Johansson, W.K. George, J. Kostas, S. Coudert, J.-M. Foucaut, and M. Stanislas

11:20-11:40

Effects of Adverse Pressure Gradient on a Turbulent Boundary Layer
J.-H. Lee, and H.J. Sung

11:40-12:00

Spatio-Temporal Turbulent Structures of Thermal Boundary Layer Subjected to Non-Equilibrium Adverse Pressure Gradient
T. Houra, S. Shakouchi, and Y. Nagano

12:00-12:20

Hairpin Structures in a Turbulent Boundary Layer with Strong Adverse Pressure Gradient
M.H.S. Mayam, and Y. Maciel

12:20-12:40

Effects of Reynolds Number and Adverse Pressure Gradient on a Turbulent Boundary Layer Developing on a Rough Surface
G. Pailhas, Y. Touvet, and B. Aupoix

SESSION 1B – RANS I (Hall 0350)**11:00 – 12:40****Session Chair:** *H. Iacovides, University of Manchester*

- 11:00-11:20 Attempts to Model Density Effects on Mixing Layer Growth Rate
B. Aupoix
- 11:20-11:40 Influence of Turbulence Modelling on the Simulation of a Passively-Controlled Transonic Cavity Flow
I. Mary, F. Daude, and P. Comte
- 11:40-12:00 Evaluation of Diffusion/Transport Constraints for ARSM in Calculation of Fully Developed Rotating Channel Flow
J.-F. Qiu, S. Obi, and T.B. Gatski
- 12:00-12:20 URANS- and Large-Eddy-Simulations of Combustion-Induced Vortex Breakdown in Premixed Swirling Flows
E. Tangermann, and M. Pfitzner
- 12:20-12:40 Wall functions for arbitrarily rough surfaces with application to sediment morphodynamics
D.D. Apsley
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SESSION 1C – Compressible Flows I (Ludwig Prandtl Hall 0250)**11:00 – 12:40****Session Chair:** *N.D. Sandham, University of Southampton*

- 11:00-11:20 Shock Wave System Analysis for Compression-Decompression Ramp Flow
M. Loginov, N.A. Adams, and A.A. Zheltovodov
- 11:20-11:40 Analysis of Shock Motion in STBLI Using DNS Data
M. Wu, and P. Martin
- 11:40-12:00 DNS of the Interaction between a Shock Wave and a Turbulent Shear Flow: Some Effects of Anisotropy
M. Crespo, S. Jamme, and P. Chassaing
- 12:00-12:20 Large-Eddy Simulation of Shock Wave/Turbulent Boundary Layer Interaction at $M=2.25$
A. Hadjadj, S. Dubos, and G. Ribert
- 12:20-12:40 Large-Eddy Simulation of Compressible Turbulent Mixing
B. Thornber, A. Mosedale, and D. Drikakis
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SESSION 1D – Fundamentals I (Hall 1250)**11:00 – 12:40****Session Chair:** *M. Oberlack, TU Darmstadt*

- 11:00-11:20 On the Differences between Production and Dissipation Mechanisms of Enstrophy and Scalar Gradient across the Turbulent/Non-Turbulent Interface in Jets
C.B da Silva, R.J. Reis, and J.C.F Pereira
- 11:20-11:40 Study on the Mechanism of Turbulent Entrainment through 3D-PTV and DNS
M. Holzner, B. Lüthi, W. Kinzelbach, A. Liberzon, N. Nikitin, M. Guala, and A. Tsinober
- 11:40-12:00 Direct Numerical Simulation of Surface Blocking Effects on Isotropic and Axisymmetric Turbulence
K. Nagata, P.A. Davidson, J.C.R. Hunt, Y. Sakai, and S. Komori
- 12:00-12:20 Locally Varying Dissipation Scales in Turbulent Flows
J. Schumacher

12:20-12:40 Unsteady Wall Pressure Field of a Model A-Pillar Conical Vortex
C. Hoarau, J. Borée, J. Laumonier, and Y. Gervais

12:40-14:00 Lunch

SESSION 2A – Turbulent Boundary Layers II (Auditorium 1801)

14:00 – 15:40

Session Chair: *Y. Nagano, Nagoya Institute of Technology*

- 14:00-14:20 Turbulent Boundary Layer Flow Simulations over Urban-Like Roughness using LES
K. Nozawa, and T. Tamura
- 14:20-14:40 Anisotropy of the Rough Turbulent Boundary Layer Subject to a Favorable Pressure Gradient
R.B. Cal, B. Brzek, T.G. Johansson, and L. Castillo
- 14:40-15:00 A Numerical and Experimental Study of Turbulent Boundary Layer with Rod-Roughened Wall
S.-H. Lee, and H.J. Sung
- 15:00-15:20 The Rough-Wall Turbulent Boundary Layer from the Hydraulically Smooth to the Fully Rough Regime
K.A. Flack, and M.P. Schultz
- 15:20-15:40 Modeling of a Wall of Random Roughness for CFD
Y. Miyake, T. Fujii, and Q. Fan
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SESSION 2B – RANS II (Hall 0350)

14:00 – 15:40

Session Chair: *B.E. Launder, University of Manchester*

- 14:00-14:20 Advanced Turbulence Modelling of Wingtip Vortices
A. Revell, K. Duraisamy, and G. Iaccarino
- 14:20-14:40 Rapid Axisymmetric Contraction of Grid-Generated Turbulence and the Reynolds-Stress Models at Rapid Distortion Limit
O. Ertunç, C. Köksoy, S. Ray, and F. Durst
- 14:40-15:00 Prediction of Three-Dimensional Flow and Heat Transfer through Ribbed Ducts Using a Cubic Non-Linear k- ϵ Model
M. Raisee, H. Naeimi, and H. Iacovides
- 15:00-15:20 Modelling the Effect of Forced Unsteadiness on Flow and Heat Transfer in Separated and Reattaching Flows
T.J. Craft, H. Iacovides, and P. Momeni
- 15:20-15:40 Elliptic-Blending Second-Moment Turbulence Closure with Using an Algebraic Anisotropic Dissipation Rate Tensor Model
J.K. Shin, J.S. An, and Y.D. Choi
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SESSION 2C – Compressible Flows II (Ludwig Prandtl Hall 0250)

14:00 – 15:40

Session Chair: *J.-P. Bonnet, Université de Poitiers*

- 14:00-14:20 Effects of Compressibility and Heat Release on Entrainment Processes in Mixing Layers
I. Mahle, J. Mathew, and R. Friedrich
- 14:20-14:40 Numerical Simulation of the Flow over a Confined Shallow Cavity
T. Emmert, P. Lafon, and C. Bailly

- 14:40-15:00 Supersonic Turbulent Flow in Axisymmetric Nozzles and Diffusers
S. Ghosh, J. Sesterhenn, and R. Friedrich
- 15:00-15:20 Modelling Compressible and Under-Expanded Jets with Second-Moment Closure
P.R. Ess, and M.A. Leschziner
- 15:20-15:40 Modelling the Far-Field Acoustic Emission of Rotating Turbulence
F. Godeferd, C. Cambon, and B. Favier

SESSION 2D – Fundamentals II (Hall 1250)

14:00 – 15:40

Session Chair: *S. Kassinos, University of Cyprus*

- 14:00-14:20 Well-Controllable Turbulence Generator Using a Biaxially Rotating Sphere
S. Goto, S. Kida, M. Nishioka, N. Ishii, and K. Nakayama
- 14:20-14:40 Investigation of Fine Scale Structures in a Turbulent Jet by Using
Cinematographic Particle Image Velocimetry
B. Ganapathisubramani, and N. Clemens
- 14:40-15:00 Active Micro-Mixing by Regeneration of Artificial Turbulent Structures
S. Tardu, and R. Nacereddine
- 15:00-15:20 Vorticity, Strain and Large Scale Statistics as a Function of the Shear Parameter
and Reynolds Number in Homogeneous Turbulent Shear Flow
J.C. Isaza, and L.R. Collins
- 15:20-15:40 The Structure of the Velocity Field in an Experimental Forced Box Turbulence
J.F. Krawczynski, B. Renou, L. Danaila, and P.E. Dimotakis

15:40-16:00 Coffee Break

SESSION 3A – Turbulent Boundary Layers III (Auditorium 1801)

16:00 – 17:40

Session Chair: *S. Tavoularis, University of Ottawa*

- 16:00-16:20 Near-Wall Measurements of Turbulence Statistics with Laser Doppler Velocity
Profile Sensors
K. Shirai, C. Bayer, A. Voigt, T. Pfister, L. Büttner, and J. Czarske
- 16:20-16:40 Direct Numerical Simulations of a Passive Scalar in a Turbulent Channel with
Local Forcing at Walls
G. Araya, S. Leonardi, and L. Castillo
- 16:40-17:00 Subgrid-Scale Enstrophy Transfer in Turbulent Wall Bounded Flows
G. Hauët, C.B. da Silva, and J.C.F. Pereira
- 17:00-17:20 Temporal Dynamics of Vortical Structures in Turbulent Channel Flow
G. Alfonsi, and L. Primavera
- 17:20-17:40 Direct Numerical Simulation of a Spatially Evolving Supersonic Transitional/
Turbulent Boundary Layer
H. Maekawa, D. Watanabe, K. Ozaki, and H. Takami
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SESSION 3B – LES Methodology I (Hall 0350)

16:00 – 17:40

Session Chair: *K. Hanjalic, TU Delft*

- 16:00-16:20 The Two-Point Average and the Related Subgrid Model
M. Germano
- 16:20-16:40 New Turbulence Models Preserving Symmetries
D. Razafindralandy, A. Hamdouni, and M. Oberlack

- 16:40-17:00 Large Eddy Simulation of Turbulent Boundary-Layer Separation
S. Hickel, and N.A. Adams
- 17:00-17:20 Assessment of Multiscale Models for LES: Spectral Behaviour in Very High Reynolds Number Turbulence and Cases with Aircraft Wake Vortices
L. Bricteux, R. Cocle, M. Duponcheel, L. Georges, and G. Winckelmans
- 17:20-17:40 A New Dynamic GGDH Subgrid-Scale Heat Flux Model for Large-Eddy Simulation of Turbulent Thermal Flows
B.-C. Wang, E. Yee, D.J. Bergstrom, and J. Yin

SESSION 3C – Numerical Methods (Ludwig Prandtl Hall 0250)

16:00 – 17:40

Session Chair: *L. Kleiser, ETH Zürich*

- 16:00-16:20 Turbulence-Induced Secondary Flows in a Square Duct Using a Multiple-Relaxation-Time Lattice-Boltzmann Approach
M.J. Pattison, K.N. Premnath, and S. Banerjee
- 16:20-16:40 Development of Low Dissipative High Order Filter Schemes for Multiscale Navier-Stokes/MHD Systems
H.C. Yee, and B. Sjögren
- 16:40-17:00 Direct Simulation of Turbulence in the Flow Driven by Rotating and Traveling Magnetic Fields
J. Stiller, and K. Koal
- 17:00-17:20 Two-Phase Flow Computations by the Hybrid Particle-Level-Set Method
D. Gaudlitz, and N.A. Adams
- 17:20-17:40 Pure Lagrangian Vortex Methods for the Simulation of Decaying Isotropic Turbulence
R. Yokota, and S. Obi

SESSION 3D – Fundamentals III (Hall 1250)

16:00 – 17:40

Session Chair: *J. Borée, ENSMA, Poitiers*

- 16:00-16:20 Numerical Study of Vortex Ring Evolution and Interaction with a Free Surface
P.J. Archer, T.G. Thomas, C.P. Yorke, and G.N. Coleman
- 16:20-16:40 Shearless and Sheared Flow Past a Circular Cylinder: Comparative Analysis by Means of LES
T. Omori, S. Jakirlić, C. Tropea, and S. Obi
- 16:40-17:00 Dual Vortex Structure Shedding from Low Aspect Ratio, Surface-Mounted Pyramids
R.J. Martinuzzi
- 17:00-17:20 Numerical Simulations of Two-Way Coupled Magnetic Dynamos in Complex Geometries
S. Kenjereš, and K. Hanjalić
- 17:20-17:40 Magnetohydrodynamic Turbulence Produced by Reconnection Instability
M. Onofri, L. Primavera, P. Veltri, and F. Malara

18:00 – 20:30 Symposium Reception

AUGUST 28, TUESDAY

PLENARY SESSION – Invited Lectures (Auditorium 1801)

Session Chair: *J.K. Eaton, Stanford University*
N.A. Adams, T.U. Munich

- 8:30-9:10 Experimental Investigation of a Flapping Wing Model: Some Challenges from Unsteady Aerodynamics
T. Hubel, and C. Tropea (TU Darmstadt)
- 9:10-9:50 Optimization as a Vehicle for LES Modeling in Complex Turbulent Flows
R.D. Moser (University of Texas at Austin), A. Bhattacharya, and H. Chang
- 9:50-10:10 Coffee Break**
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SESSION 4A – Turbulent Boundary Layers IV (Auditorium 1801)

10:10 – 11:50

Session Chair: *A.V. Johansson, KTH Stockholm*

- 10:10-10:30 Tollmien-Schlichting Wave Cancellation Using an Oscillating Lorentz Force
T. Albrecht, H. Metzkes, R. Grundmann, G. Mutschke, and G. Gerbeth
- 10:30-10:50 Turbulence Control for Skin-Friction Drag Reduction: Potentials and Limitations
Y.M. Chung, and S.Y. Jung
- 10:50-11:10 Phase Synchronization and Improvement of Controllability of the Near Wall Turbulence
S. Tardu, and O. Doche
- 11:10-11:30 Composite Expansion of Active and Inactive Motions of the Streamwise Reynolds Stress
R.L. Panton
- 11:30-11:50 New Scaling Laws in ZPG Turbulent Boundary Layer Flow
G. Khujadze, and M. Oberlack
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SESSION 4B – LES Methodology II (Hall 0350)

10:10 – 11:50

Session Chair: *A. Pollard, Queen's University, Kingston*

- 10:10-10:30 Shear-Improved Smagorinsky Model for Large-Eddy Simulation of Wall-Bounded Turbulent Flows
E. Lévêque, F. Toschi, L. Shao, and J.-P. Bertoglio
- 10:30-10:50 Application of a Local SGS Model Based on Coherent Structures to Complex Geometries
H. Kobayashi
- 10:50-11:10 Variational Multiscale Methods for Large Eddy Simulation of Turbulent Flows: Fourier Analysis and Application to Diffuser Flow
V. Gravemeier, M. Kronbichler, and W.A. Wall
- 11:10-11:30 Numerical Analysis of the Modeling and Numerical Uncertainties in Large Eddy Simulation Using Upwind-Biased Numerical Schemes
M. Freitag, M. Klein, and J. Janicka

11:30-11:50 LES of Complex Turbulent Flows with High Order Accuracy Finite Volume Method
G. Cui, R. Shi, Z. Zhang, and L. Xu

SESSION 4C – Heat Transfer I (Ludwig Prandtl Hall 0250)

10:10 – 11:50

Session Chair: *H.J. Sung, KAIST, Daejeon, Korea*

10:10-10:30 Numerical Study of Turbulent Thermal Boundary Layer under Various Stable Stratifications
H. Hattori, and Y. Nagano

10:30-10:50 Analysis and Modelling of the Turbulent Diffusion of Turbulent Heat Fluxes in Natural Convection
L. Chandra, and G. Grötzbach

10:50-11:10 Coherent Structures and Heat Transport in Turbulent Rayleigh-Bénard Convection
C. Wagner, and O. Shishkina

11:10-11:30 Direct Numerical Simulation of Turbulent Convection in a Rectangular Rayleigh-Bénard Cell
M. Kaczorowski, and C. Wagner

11:30-11:50 Scaling of Turbulent Mixed Convection under High Pressure
A. Westhoff, N. Grabinski, J. Bosbach, C. Wagner, and A. Thess

SESSION 4D – Experimental Methods (Hall 1250)

10:10 – 11:50

Session Chair: *J. Westerweel, TU Delft*

10:10-10:30 Measurement of Fine Scale Structure in Turbulence by Time-Resolved Dual-Plane Stereoscopic PIV
M. Tanahashi, T. Hirayama, S. Taka, and T. Miyauchi

10:30-10:50 Three-Dimensional Turbulent Velocity Fluctuation Measurements Using Magnetic Resonance Imaging
C.J. Elkins, M. Alley, L. SaeTRAN, and J.K. Eaton

10:50-11:10 High Resolution Wall-Shear Stress Measurements Using a Micro-Pillar Sensor MPS³
S. Große, and W. Schröder

11:10-11:30 Turbulence Structural Measurements Using a Comprehensive Laser-Doppler Velocimeter in Two- and Three-Dimensional Turbulent Boundary Layers
K.T. Lowe, and R.L. Simpson

11:30-11:50 Lagrangean Acceleration Measurement in Fully Developed Turbulence
Y. Tsuji

11:50-13:30 Lunch

POSTER SESSION – (Auditorium 1801/Magistrale)

13:30 – 15:20

Session Chair: *B. J. Geurts, University of Twente*

P1 Comparative Study of Lagrangian Evolution of Disturbances: Vorticity Versus Material Lines
B. Galanti, D. Gendler-Fishman, A. Liberzon, and A. Tsinober

- P2** Evolution of Material Line in Turbulent Channel Flow
T. Tsukahara, K. Iwamoto, and H. Kawamura
- P3** New Criteria for the Eduction of Three-Dimensional Turbulent Structures
L. Larchevêque, and M. Larchevêque
- P4** Numerical Study of Turbulent Wakes in Background Turbulence
J.A. Redford, and G.N. Coleman
- P5** Rotating Stratified Turbulence with Vertical and Non-Vertical Shear
F.G. Jacobitz
- P6** DNS of Stochastically Forced Laminar Plane Couette Flow: Peculiarities of Hydrodynamic Fluctuations
G. Chagelishvili, M. Oberlack, and G. Khujadze
- P7** Performance of Turbulence Models in Predicting Heat Transfer to CO₂ at Supercritical Pressure – Comparisons with Direct Numerical Simulations
W.S. Kim, J.H. Bae, J.D. Jackson, and S. He
- P8** Influence of Upstream Turbulence on Self-Sustained Oscillations in an Open Cavity
S.B. Lee, and H.J. Sung
- P9** Flow Control Predictions Using URANS Modeling: A Parametric Study
C.L. Rumsey, and D. Greenblatt
- P10** Aircraft Wake Vortex Deformation in Turbulent Atmosphere
I. Hennemann, and F. Holzäpfel
- P11** Characterization and High-Throughput Microfluidic Applications of an Obstructed-Channel Flow Class
K.N. Beronov, N. Özyilmaz, and A. Delgado
- P12** The Characteristics of Rim-Driven Propulsor's Flow Field
C.-W. Lee, and J.-H. Chen
- P13** Trail Following of Turbulent Wake Using Artificial Lateral Line
Y. Yang, S. Pandya, C. Tucker, D. Jones, J. Engel, N. Chen, and C. Liu
- P14** Development of a Miniature Probe for Velocity-Pressure Correlation Measurement
Y. Naka, S. Obi, and S. Masuda
- P15** Experimental and Numerical Study of the Flow in a Synthetic Aorta for Traumatic Rupture Conditions
W.C. Eberhardt, S. Lee, J.A.C. Humphrey, and R. Kent
- P16** Experimental Study on Diffusion Field with Series-Parallel Reaction in Liquid Grid-Turbulence
T. Kubo, Y. Sakai, and S. Honda

- P17** Experimental and Numerical Investigation of a Turbulent Jet Flow in an Enclosure
R. Schwarze, J. Klostermann, D. Bauer, and C. Brücker
- P18** The Turbulent Statistics in the Wake of a Short Stack
M.S. Adaramola, D.J. Bergstrom, and D. Sumner
- P19** Experimental Investigations on the Turbulent Flow over a Periodic Hill Geometry
C. Rapp, and M. Manhart
- P20** Examination of Near-Wall Scaling for Turbulent Boundary Layers with Adverse Pressure Gradient
N. Peller, M. Manhart, M.P. Boiarciuc, and C. Brun
- P21** Studying Streamwise Rotation Variations of a Turbulent Channel Flow Using Direct Numerical Simulation and Coherent Vortex Extraction
T. Weller, M. Oberlack, K. Schneider, and M. Farge
- P22** DNS and PIV Study of the 3D Wake Behind Tapered Circular Cylinders
V. Narasimhamurthy, J.H. Visscher, H.I. Andersson, and B. Pettersen
- P23** Backward-Facing Step Flow between Step-Side Stationary and Moving Walls
Y. Morinishi
- P24** Assessment of LES and RANS Predictions of Impinging Flows
S. Rhea, M. Bini, M. Fairweather, and W.P. Jones
- P25** LES of Film Cooling Efficiency for Different Hole Shapes
P. Renze, W. Schröder, and M. Meinke
- P26** Hybrid LES-RANS: Inlet Boundary Conditions for Flows Including Recirculation
L. Davidson
- P27** A Hybrid RANS-LES Solution of the Flow around an Airfoil-Flap Configuration
Q. Zhang, W. Schröder, and M. Meinke
- P28** Hybrid v2f RANS/LES Model and Synthetic Inlet Turbulence Applied to a Trailing Edge Flow
J. Uribe, N. Jarrin, R. Prosser, and D. Laurence
- 15:20-15:40** **Coffee Break**

SESSION 5A – Turbulent Boundary Layers V (Auditorium 1801)

15:40 – 17:20

Session Chair: *H.I. Andersson, University of Science and Technology, Trondheim*

15:40-16:00 Polymer Stress Contribution in Turbulent Boundary Layer Drag Reduction
Y.X. Hou, V.S.R. Somandepalli, and M.G. Mungal

16:00-16:20 Effect of Rheological Parameters on Drag-Reducing Turbulent Boundary Layer of Viscoelastic Fluid
S. Tamano, M. Itoh, and K. Yokota

- 16:20-16:40 Drag Reduction by Dimples? – A Complementary Experimental/Numerical Investigation
H. Lienhart, M. Breuer, and C. Köksoy
- 16:40-17:00 Optimization of an Anisotropic Compliant Surface for Turbulent Friction Drag Reduction
K. Fukagata, S. Kern, P. Chatelain, P. Koumoutsakos, and N. Kasagi
- 17:00-17:20 On Self-Similarity of Wall-Bounded Flows
M.H. Buschmann, and M. Gad-el-Hak

SESSION 5B – LES/Hybrid/URANS (Hall 0350)

15:40 – 17:20

Session Chair: *W. Rodi, University of Karlsruhe*

- 15:40-16:00 A Seamless Hybrid RANS-LES Model Based on Transport Equations for the Subgrid Stresses and Elliptic Blending
A. Fadai-Ghotbi, R. Manceau, and J. Borée
- 16:00-16:20 RANS-SMC and Hybrid LES/RANS Modelling of a Backward-Facing Step Flow Subjected to Increasingly Enhanced Wall Heating
B. Kniesner, R. Jester-Zürker, S. Jakirlić, and K. Hanjalić
- 16:20-16:40 Hybrid RANS-LES Modeling for Non-Equilibrium Turbulent Flows
B. Chaouat, and R. Schiestel
- 16:40-17:00 A Finite Difference Approximation to the Hybrid RANS/LES Filter
F. Hamba
- 17:00-17:20 Coupling Conditions for LES with Downstream RANS for the Prediction of Incompressible Turbulent Flows
D. von Terzi, and J. Fröhlich

SESSION 5C – Heat Transfer II (Ludwig Prandtl Hall 0250)

15:40 – 17:20

Session Chair: *M. Pfitzner, UniBw München*

- 15:40-16:00 Measurements of Time-Space Distribution of Convective Heat Transfer to Air Using a Thin Conductive-Film
H. Nakamura
- 16:00-16:20 DNS of Conjugate Heat Transfer in Turbulent Channel Flows
P. Orlandi, S. Leonardi, and G. Amati
- 16:20-16:40 Heat Transfer in a Turbulent Channel Flow with Roughness
S. Leonardi, P. Orlandi, and R.A. Antonia
- 16:40-17:00 Numerical Investigation of an Anisothermal Turbulent Flow with Effusion
S. Mendez, and F. Nicoud
- 17:00-17:20 Study of Turbulent Passive Scalar Dispersion within a Regular Array of Obstacles
B.-C. Wang, E. Yee, and F.-S. Lien

SESSION 5D – Separated /Aerodynamic Flows I (Hall 1250)

15:40 – 17:20

Session Chair: *C.L. Rumsey, NASA Langley Research Center, Hampton*

- 15:40-16:00 Geometric Sensitivity of Three-Dimensional Separated Flows
E.M. Cherry, C.J. Elkins, and J.K. Eaton
- 16:00-16:20 Identification of Hairpin-Type Flow Structures in Separated Flow behind a Three-Dimensional Hill Using POD
S. Lardeau, F. Tessicini, and M.A. Leschziner

- 16:20-16:40 Direct Numerical Simulation of Vortex Dynamics Associated with a Separation Bubble on a Rounded Edge
E. Lamballais, J. Silvestrini, and S. Laizet
- 16:40-17:00 Vortex Structures and Turbulent Statistics in Turbulent Flow behind an Orifice
S. Makino, K. Iwamoto, and H. Kawamura
- 17:00-17:20 Influence of Cavitation on Turbulent Separated Flow
T. Kajishima, T. Ohta, H. Sakai, and K. Okabayashi

SESSION 6A – Transition and Control (Auditorium 1801)

17:20 – 19:00

Session Chair: *S. Fu, Tsinghua University, Beijing*

- 17:20-17:40 Growth of Turbulent Spots in High-Speed Boundary Layers
A. Jocksch, and L. Kleiser
- 17:40-18:00 Transition Investigations on a M=5 Ramp
C. Stemmer, and N.A. Adams
- 18:00-18:20 Numerical Study of the Stabilization of Tollmien-Schlichting Waves by Finite Amplitude Streaks
P. Schlatter, H.C. de Lange, and L. Brandt
- 18:20-18:40 DNS and LES of Estimation and Control of Transition in Boundary Layers Subject to Free-Stream Turbulence
L. Brandt, S.M. Mojab, A. Monokrousos, P. Schlatter, and D.S. Henningson
- 18:40-19:00 Laminar-to-Turbulent Transition of Pipe Flows through Slugs and Puffs
B. Ünsal, M. Nishi, and F. Durst

SESSION 6B – LES Applications (Hall 0350)

17:20 – 19:00

Session Chair: *T.B. Gatski, NASA Langley Research Center, Hampton*

- 17:20-17:40 Large Eddy Simulation of a Low Speed, High Aspect Ratio Rectangular Jet in a Cross Flow
F. Golanski, A. Pollard, and K. Hall
- 17:40-18:00 Simulation of Turbulent Flow around Two Cylinders in Tandem
G.M. Fishpool, N. Li, and M.A. Leschziner
- 18:00-18:20 Large Eddy Simulation of Fuel-Air-Mixing in a Direct Injection SI Engine
D. Goryntsev, M. Klein, A. Sadiki, and J. Janicka
- 18:20-18:40 Large-Eddy Simulation of the Flow around a High-Lift Airfoil Configuration
D. König, W. Schröder, and M. Meinke
- 18:40-19:00 Study of Precessing Vortex Core during Vortex Breakdown Using LES and POD
C. Duwig, and L. Fuchs

SESSION 6C – Jets / Free Shear Flows I (Ludwig Prandtl Hall 0250)

17:20 – 19:00

Session Chair: *S. Obi, Keio University*

- 17:20-17:40 Control of Coaxial Jets by an Azimutal Excitation: Vortex Dynamic and Mixing Properties
G. Balarac, M. Lesieur, and O. Métais
- 17:40-18:00 Evaluation of Jet Mixing Rate Based on DNS Data of Excitation Jets
K. Tsujimoto, S. Kariya, T. Shakouchi, and T. Ando

- 18:00-18:20 Swirl Intensity Influence on Interaction between Non-Swirling and Swirling Co-Axial Jets in a Combustor Configuration: LES and Modelling Study
S. Šarić, B. Kniesner, P. Altenhöfer, S. Jakirlić, C. Tropea, D. Čavar, and B. Basara
- 18:20-18:40 Near-Field Dynamics of a Turbulent Round Jet with Moderate Swirl
L. Facciolo, P.H. Alfredsson, and Y. Maciel
- 18:40-19:00 The Effect of Entrance Conditions on Turbulent Swirling Jets at Low Re-Numbers
W. Kollmann

SESSION 6D – Separated /Aerodynamic Flows II (Hall 1250)

17:20 – 19:00

Session Chair: *A. Glezer, Georgia Institute of Technology*

- 17:20-17:40 Laminar-to-Turbulent Transition in a Shock-Induced Separation Bubble
L. Krishnan, N.D. Sandham, and J. Steelant
- 17:40-18:00 The Effects of Leading and Trailing Edge Details on the Flow around Elongated Bluff Bodies
E. Palombi, G.A. Kopp, and R. Gurka
- 18:00-18:20 Turbulent Transport in Isolated Trailing Vortices
K. Duraisamy, and S.K. Lele
- 18:20-18:40 Direct Numerical Simulation of a Laminar Separation Bubble on a NACA-0012 Airfoil
L.E. Jones, R.D. Sandberg, and N.D. Sandham
- 18:40-19:00 Closed-Loop Aerodynamic Flow Control of a Free Pitching Airfoil
D.P. Brzozowski, M.E. DeSalvo, J.R. Culp, and A. Glezer

19:15 **Bus Transfer from TUM to Banquet Location**

20:00 – 23:00 **Symposium Banquet**

AUGUST 29, WEDNESDAY

PLENARY SESSION – Invited Lectures (Auditorium 1801)

Session Chair: *J.A.C. Humphrey, University of Virginia*
M.A. Leschziner, Imperial College London

- 8:30-9:10 Bioinspired Flow Optimization
P. Koumoutsakos (ETH Zürich), S. Kern, and N. Hansen
- 9:10-9:50 Laser Diagnostics and DNS of Turbulent Premixed Flames
T. Miyauchi (Tokyo Institute of Technology), M. Tanahashi, M. Shimura, S. Taka, and S. Matsuura
- 9:50-10:20 **Coffee Break**
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SESSION 7A – Combustion I (Auditorium 1801)

10:20 – 12:00

Session Chair: *L. Vervisch, Université de Rouen*

- 10:20-10:40 Large Eddy Simulation of a Supersonic Plasma Flow over a Backward Facing Step
K. Miki, J. Schulz, and S. Menon
- 10:40-11:00 Effects of Heat Release on Turbulent Jet Flows
M. Ihme, and H. Pitsch
- 11:00-11:20 Effects of Heat Release on the Turbulence Structure in Temporally Evolving Compressible Mixing Layers
I. Mahle, R. Friedrich, H. Foysi, and S. Sarkar
- 11:20-11:40 Hybrid LES Monte-Carlo PDF Modeling of Turbulent Piloted Jet Flames
J. Kuehne, C. Olbricht, A. Sadiki, J. Janicka, and J.-Y. Chen
- 11:40-12:00 LES and Experimental Study of Self-Ignition of Supersonic Hydrogen and Methane-Hydrogen Jets in a Vitiated Confined Supersonic Air Stream
E. George, V. Sabel'nikov, and P. Magre
-

SESSION 7B – Biofluidmechanics (Hall 0350)

10:20 – 12:00

Session Chair: *L. Sætran, University of Trondheim*

- 10:20-10:40 Experimental and Numerical Investigation of a Fish Artificial Lateral Line Canal
S.B. Pillapakkam, C. Barbier, J.A.C. Humphrey, A. Rüter, B. Otto, H. Bleckmann, and W. Hanke
- 10:40-11:00 The Air Flow Generated by a Flying Prey Insect around a Wandering Spider and its Motion-Sensing Hair Sensilla
C. Klopsch, J.A.C. Humphrey, and F.G. Barth
- 11:00-11:20 Fluid Mechanics of Benign Paroxysmal Positional Vertigo (BPPV)
D. Obrist, and S. Hegemann
- 11:20-11:40 Towards More Efficient Drug Delivery: Blood Flow in Stenotic Arteries Subjected to a Strong Non-Uniform Magnetic Field
S. Kenjereš

11:40-12:00 Flow-Structure-Acoustic Interaction in a Human Voice Model
S. Becker, S. Müller, S. Kniesburges, G. Link, C. Hahn, and M. Kaltenbacher

SESSION 7C – Jets / Free Shear Flows II (Ludwig Prandtl Hall 0250)

10:20 – 12:00

Session Chair: *J.F. Foss, Michigan State University, East Lansing, MI*

10:20-10:40 Large Eddy Simulation of Variable Density Turbulent Axisymmetric Jets

P. Wang, J. Fröhlich, V. Michelassi, and W. Rodi

10:40-11:00 The Turbulent/Non-Turbulent Interface of a Cooled Jet

J. Westerweel, A. Petracchi, R. Delfos, and J.C.R. Hunt

11:00-11:20 LDA Measurements in High Mach Number Axisymmetric Jet Shear Layers

T. Feng, and J.J. McGuirk

11:20-11:40 Turbulence Measurements in a Quasi-Two-Dimensional Jet in a Slot Channel

A.V. Bilsky, V.M. Dulin, D.M. Markovich, and M.V. Shestakov

11:40-12:00 Study of Scalar Macro- and Microstructures in a Confined Jet

N. Kornev, V. Zhdanov, and E. Hassel

SESSION 7D – Magnetohydrodynamic Flows (Hall 1250)

10:20 – 12:00

Session Chair: *Z.-S. Zhang, Tsinghua University, Beijing*

10:20-10:40 Transition in MHD Channel Flow with Spanwise Magnetic Field

T. Boeck, D. Krasnov, M. Rossi, and O. Zikanov

10:40-11:00 LES Modeling of Anisotropic MHD Turbulence

O. Zikanov, and A. Vorobev

11:00-11:20 A Turbulence Model for the Solar Wind: Application of the Turbulent

Magnetohydrodynamic Residual-Energy Equation

N. Yokoi, and F. Hamba

11:20-11:40 Towards a Structure-Based Model for the Prediction of Passive Scalar Transport

in Hydrodynamic and MHD Turbulence Sheared in Fixed and Rotating Frames

S.C. Kassinos, and E.E. Akylas

11:40-12:00 Vortex Structures in the Separated Flow on an Inclined Flat Plate under

Electromagnetic Forcing: Influences of Excitation, Wave Form, Frequency, and

Amplitude

T. Weier, C. Cierpka, and G. Gerbeth

12:00-13:20 Lunch

SESSION 8A – Combustion II (Auditorium 1801)

13:20 – 15:00

Session Chair: *L. Fuchs, Royal Institute of Technology, Stockholm*

13:20-13:40 Assessment of a Conditional PDF-Transport Method in the Combustion-LES Context

A. Brandl, and M. Pfitzner

13:40-14:00 Conditional Moment Closure Modelling of Soot Formation in Turbulent Non-Premixed, Ethylene-Air Flames

Yunardi, R.M. Woolley, and M. Fairweather

14:00-14:20 Joint Scalar vs. Joint Velocity-Scalar PDF Modelling of Bluff-Body Stabilised Flames with REDIM

B. Merci, B. Naud, D. Roekaerts, and U. Maas

- 14:20-14:40 PDF Simulation of Premixed Bunsen Flames
M. Stöllinger, and S. Heinz
- 14:40-15:00 Large Eddy Simulation of Mixing Processes in Turbulent Liquid Flows with Chemical Reactions
Y. Huai, and A. Sadiki

SESSION 8B – Geophysical and Rotating Flows I (Hall 0350)

13:20 – 15:00

Session Chair: *K. Nagata, Nagoya University*

- 13:20-13:40 Direct and Large Eddy Simulations of a Bottom Ekman Layer under an External Stratification
J. Taylor, and S. Sarkar
- 13:40-14:00 Scaling Analysis and Simulation of Stably Stratified Flows
G. Brethouwer, P. Billant, and E. Lindborg
- 14:00-14:20 LES on Plume Dispersion in Stable Turbulent Boundary Layer
T. Tamura, and K. Ohta
- 14:20-14:40 Dispersion of a Vertical Jet of Buoyant Particles in a Stably Stratified Wind-Driven Ekman Layer
R. Inghilesi, V. Stocca, F. Roman, and V. Armenio
- 14:40-15:00 Systematic Analysis of High Schmidt Number Turbulent Mass Transfer across Clean, Contaminated and Solid Interfaces
Y. Hasegawa, and N. Kasagi

SESSION 8C – Jets / Free Shear Flows III (Ludwig Prandtl Hall 0250)

13:20 – 15:00

Session Chair: *G.N. Coleman, University of Southampton*

- 13:20-13:40 Analysis of Flow Structures in Supersonic Plane Mixing Layers with POD Method
S. Fu, and Q. Yang
- 13:40-14:00 Effects of Flow Scale on the Intermittent Properties of a Single Stream Shear Layer
A.M. Hellum, and J.F. Foss
- 14:00-14:20 Fractal Geometry and Mixing Transition in Turbulent Mixing Layer
M. Tanahashi, Y. Wang, T. Fujisawa, M. Sato, K. Chinda, and T. Miyauchi
- 14:20-14:40 Influence of a Synthetic Jet Excitation on the Development of a Turbulent Mixing Layer
S. Bourgois, W.L. Siau, J. Tensi, and J.-P. Bonnet
- 14:40-15:00 Direct Simulation of Turbulence Generation and Transformation in Flows Obstructed by Square Grids
N. Özyilmaz, K.N. Beronov, and F. Durst

SESSION 8D – Multiphase Flows I (Hall 1250)

13:20 – 15:00

Session Chair: *S. Banerjee, U.C. Santa Barbara*

- 13:20-13:40 Direct Simulations of a Liquid Sheet in Compressible Gas Environments
G.A. Siamas, X. Jiang, and L.C. Wrobel
- 13:40-14:00 Experimental Studies of Liquid-Liquid Dispersion in a Turbulent Shear Flow
F. Ravelet, R. Delfos, and J. Westerweel
- 14:00-14:20 Modelling of Liquid Sprays in Excited Jets Using Large Eddy Simulation
A. Tyliczszak, and L. Kuban

14:20-14:40 Surface Deformation Effects on the Free-Surface Turbulence Structure in a High-Fr Open-Channel Flow
Y. Yamamoto, T. Kunugi, and S. Satake

15:00-15:20 **Coffee Break**

SESSION 9A – Combustion III (Auditorium 1801)

15:20 – 17:00

Session Chair: *J. Janicka, T.U. Darmstadt*

- 15:20-15:40 LES of Turbulence Modulation in Diffusion Flames – Regularization and Flamelet Modeling
B.J. Geurts, and R.J.M. Bastiaans
- 15:40-16:00 Large Eddy Simulation of an Unsteady Lifted Flame
C. Duwig, and L. Fuchs
- 16:00-16:20 Direct Numerical Simulation of a Transitional Jet in Crossflow with Mixing and Chemical Reactions
J.A. Denev, J. Fröhlich, and H. Bockhorn
- 16:20-16:40 A Fully Physical Model to Simulate Wildfire Behaviour
D. Morvan
- 16:40-17:00 Turbulence-Chemistry Interactions in Reactive Flows with Particle Formation
S. Rigopoulos
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SESSION 9B – Geophysical and Rotating Flows II (Hall 0350)

15:20 – 17:00

Session Chair: *R. Martinuzzi, University of Calgary*

- 15:20-15:40 Analytical Solutions for Stratified Turbulent Shear Flow in a Rotating Frame
E.E. Akylas, S.C. Kassinos, and C.A. Langer
- 15:40-16:00 Large Eddy Simulation and Measurements in a Turbulent Rotor-Stator Flow
E. Séverac, S. Poncet, E. Serre, and M.-P. Chauve
- 16:00-16:20 The Generating Conditions of a High-Reynolds-Number Swirling Jet
B. Leclaire, L. Jacquin, and D. Sipp
- 16:20-16:40 The Effects of Swells on Turbulence Structure over Wavy Walls
T. Imashiro, T. Yamamoto, R. Kurose, and S. Komori
- 16:40-17:00 Measured and Numerically Simulated Bursting Frequency of Flow within and above a Successively Thinned Forest Canopy
S. Edburg, D. Stock, B. Lamb, and H. Thistle
-

SESSION 9C – Jets / Free Shear Flows IV (Ludwig Prandtl Hall 0250)

15:20 – 17:00

Session Chair: *P. Orlandi, University of Rome (La Sapienza)*

- 15:20-15:40 Direct Numerical Simulation of Non-Isothermal Turbulent Wall-Jets
D. Ahlman, G. Brethouwer, and A.V. Johansson
- 15:40-16:00 Fully Compressible Large-Eddy Simulation of Wall-Jet Turbulent Mixing: Improved Boundary Conditions for Edge, Corner and Transverse Fluxes
G. Lodato, P. Domingo, and L. Vervisch
- 16:00-16:20 Flow and Heat Transfer Modelling of Three-Dimensional Jet Impingement on a Concave Surface
T.J. Craft, H. Iacovides, and N.A. Mostafa

- 16:20-16:40 Experimental Investigation of Free and Impinging Swirling Turbulent Jets with Different Inflow Conditions
S.V. Alekseenko, A.V. Bilsky, V.M. Dulin, and D.M. Markovich
- 16:40-17:00 Three-Dimensional Flow Structure and Turbulence Measurements about a Trailing-Edge Film-Cooling Breakout
Y. Chen, C.G. Matalanis, and J.K. Eaton

SESSION 9D – Multiphase Flows II (Hall 1250)

15:20 – 17:00

Session Chair: *C. Tropea, TU Darmstadt*

- 15:20-15:40 Direct Numerical Simulation of Turbulent Fibre Suspension Shear Flow
J.J.J. Gillissen, B.J. Boersma, G. Brethouwer, P.H. Mortensen, and H.I. Andersson
- 15:40-16:00 Reynolds-Stresses Modification in Particle-Laden Turbulent Channel Flows
M.J. Bijlard, and L.M. Portela
- 16:00-16:20 On the Orientation of Ellipsoidal Particles in Turbulent Shear Flow
P.H. Mortensen, H.I. Andersson, J.J.J. Gillissen, and B.J. Boersma
- 16:20-16:40 Experimental Study on the Interaction between Burgers Vortex and Single Particle for Modeling of a Particulate Turbulent Flow
Y. Tanaka, T. Tsuji, and T. Tanaka
- 16:40-17:00 Flow Structure near the Leading Edge of a Deep-Water Hydraulic Jump
J. Rodríguez-Rodríguez, A. Aliseda, and J.C. Lasheras

17:10 **Closing Session (Auditorium 1801)**

Instructions

Instructions for Chairpersons:

Please note that the allocated time for invited lectures is 35 min plus 5 min for discussion. The time for presentations in Sessions 1A-9D is 15 min plus 5 min for discussion. Every 20 min a new presentation has to start simultaneously in each parallel session. It is the chairperson's duty to stop any speaker who overruns the allotted time. A talk-timer displayed on a screen will indicate the remaining talk-time to speaker and chairperson.

It is important that session chairs and speakers meet well before the session starts. That way any changes/problems can be perceived and hopefully solved in time. In case a speaker does not show up, the starting times of the remaining presentations should not, in any case, be modified. Assistants will be informed about last minute programme changes and will forward these to the chairperson.

Chairpersons are requested to introduce themselves briefly, but clearly at the beginning of their session.

Instructions for invited speakers:

The allocated time for invited lectures is 35 min plus 5 min for discussion. Please upload your presentation at least half an hour before the Plenary Session starts and get acquainted with the audiovisual system in Lecture Hall 1801.

Instructions for oral presenters:

Please do not exceed 15 min for the presentation of your work so that 5 min remain for discussion. Session chairs are requested to stop any talk which exceeds the allocated total time of 20 min.

Your presentation must be uploaded onto the computer in the conference hall in which your session takes place, at least 2 hours in advance. Please carry a copy of your presentation on a CD or a USB memory stick. Ask the assistant 20 min before your session starts, to instruct you about the use of the audiovisual equipment in your conference hall.

Instructions for poster presenters:

You are requested to bring a poster to the conference having the size of DIN (ISO) A0 (0.84m wide x 1.19m high). This poster will be displayed on boards (carrying your poster number) during all three conference days and should be mounted either on August 26, during registration or on August 27, early morning. Please be available at your poster as much as you can, during coffee breaks and lunch time. Do not forget to remove it at the end of the conference. The poster area is located in the Magistrale of the Mechanical Engineering Faculty.

During the Poster Session on Tuesday, August 28 (1:30-3:20 p.m.) you are requested to present highlights of your work on a maximum of three slides and within 3 min. Discussion will be possible at the poster only.

Social Events

Symposium Reception (Monday, August 27 – 6:30 p.m.)

The reception takes place in the historic part of the Schleißheim Hangar (part of Deutsches Museum) built in 1918. Drinks, including wine and beer, and canapés will be served. During the reception there is the possibility to visit the exhibits of the historic and new part of this museum and to get an impression of propeller- and jet-driven planes, of sailplanes, VTOL aircrafts and rocket engines. In a few areas, guides will be available to provide explanations.

Buses start at 6:00 p.m. from the regular bus stop in the Lichtenberg Straße, north of the Conference Site and go partly back to hotels located in the centre of Munich at about 9:30 p.m. and partly to the University Campus.

Symposium Banquet (Tuesday, August 28 – 8 p.m.)

The Symposium Banquet takes place at Hotel Kandler in Oberding/Notzing (http://www.hotelkandler.de/diashow/start_en.htm), a small village east of Garching and close to Munich Airport. The restaurant of this Hotel is known for its pleasant Bavarian ambiance and its delicious menus. After an aperitif which, depending on the outside temperature, may well be a “Weissbier”, a four-course menu will be served with white or red wine and soft drinks.

Buses start at 7:15 p.m. from the regular bus stop in the Lichtenberg Straße, north of the Conference Site and go partly back to hotels located in the centre of Munich at about 11:30 p.m. and partly to the University Campus.

Useful Information

Lunch and coffee break

Lunch is served on all three conference days in the Magistrale of the Faculty of Mechanical Engineering close to the Lecture Halls. During coffee breaks, coffee, tea, drinks and cakes will be served in two designated areas of the Magistrale.

Conference Desk / Registration

The conference desk will be located close to Hall 1801 and will be available also via telephone (Tel.: 089 289 16640) during the following opening hours:

- Sunday, 26 August: 18:00-20:00
- Monday, 27 August: 8:00-17:00
- Tuesday, 28 August: 8:30-17:00
- Wednesday, 29 August: 8:30-15:00

Equipment in Conference Halls

The conference halls 1801, 0350, 0250 and 1250 are equipped with a video projector, remote control, laser pointer and computer (Windows operating system). There will be one to two assistants taking care of the audiovisual equipment and ready to help you with any queries you may have.

Internet Access and Electronic Mail

There are two ways to access the internet and your personal email:

- By connecting your laptop via a wireless connection (see next page)
- By using computers in the Foyer of the Lehrstuhl fuer Aerodynamik (follow the indication "Internet Spot"). The internet access via these computers is:
login: ●●●●, password: ●●●●●●●●

TSFP5 Network Information

Wireless access to the Internet will be available in the conference area via the 802.11b/g Protocol.

The access is possible during meeting hours from 8 a.m. to 8 p.m.

SSID: con

No encryption!

TCP/IP: automatically

You will see the network '**con**' once you check for available networks. The IP will be given dynamically. No proxy-server is needed. Since network traffic is not encrypted, please use encrypted connections like VPN, https or ssh to transfer sensitive or private data.

Only if you don't see the network or have other problems, the following information might be needed to configure your laptop properly:

SSID:	con
Gateway:	138.246.9.254
Subnetmask:	255.255.255.0
DNS-Server:	10.156.33.53 (primary Nameserver)
DNS-Server:	129.187.5.1 (secondary Nameserver)
Domain:	kongress.mhn.de