

Wednesday, April 10, 2024			
09:00	09:10	Welcome	Opening session P. Schlatter and M. V. Salvetti
09:10	09:55	Keynote 1	Sergio Pirozzoli: On Use of DNS to Extrapolate the State of Wall Turbulence at Extreme Reynolds Numbers Chair: P. Schlatter
10:00	11:00	Session 1	Data assimilation and uncertainty quantification I Chair: M. Meldi
10:00	10:15		Adjoint-based data assimilation for augmented unsteady simulations of turbulent flows (Justin Plogmann)
10:15	10:30		Data assimilation closure for LES of Rayleigh-Bénard convection (Sagy Ephrati)
10:30	10:45		Augmented large eddy simulation for the analysis of complex flows using online data assimilation (Lucas Villanueva)
10:45	11:00		Loosely Coupled Under-Resolved LES/RANS Simulation Augmented by Sparse Near-Wall Measurement (Pasha Piroozmand)
11:00	11:30		Coffee break
11:30	12:45	Session 2	Data assimilation and uncertainty quantification II Chair: M. V. Salvetti
11:30	11:45		Massive ensembles of simulations to assess predictability of turbulence decay in pipe flow (Daniel Morón Montesdeoca)
11:45	12:00		Equation consistent deep-learning of sub-grid scale models for LES of transitional NACA 0012 airfoil flows (Tom Hickling)
12:00	12:15		Robustness and uncertainty of direct numerical simulation under the influence of rounding and noise (Martin Karp)
12:15	12:30		Low cost recurrent and asymptotically unbiased estimators of statistical uncertainty on averaged fields for DNS and LES (Michel Rasquin)
12:30	12:45		A framework for in-situ estimation of time-averaging uncertainties in turbulent flows (Saleh Rezaeiravesh)
12:45	14:00		Lunch
14:00	14:45	Keynote 2	Manuel Garcia-Villalba: Fluid-structure Interaction in Some Bioinspired Problem Chair: J. Fröhlich
14:50	15:50	Session 3	Bubbly flows Chair: E. de Angelis
14:50	15:05		Mesoscale large eddy simulation (LES) of bubble column bubbly flows by considering SGS turbulent dispersion and added mass stress effects on interfacial mass transfer (Xiaogang Yang)
15:05	15:20		DNS of bubbly Taylor-Couette flow to predict drag reduction (Bernard Geurts)
15:20	15:35		Analysis of entropy stable DG schemes based on energy balances for scale-resolved simulations (Amaury Bilocq)
15:35	15:50		DNS of bubble fragmentation by turbulence (Elias Balaras)
15:50	16:20		Coffee break
16:20	17:35	Session 4	Turbulent flows Chair: M. K. Lee

16:20	16:35		Integral length and time scales of higher order moments (Markus Klein)	Numerical Investigation of a Tandem Wing Configuration in Transonic Flow Regime (Marcel Blind)	Detailed LES study on wind gusts impacting a hyperbolic paraboloid structure from different directions (Guillaume De Nayer)
16:35	16:50		Breaking the Reynolds Analogy: Decoupling Turbulent Heat and Momentum Transport via Spanwise Wall Oscillation in Wall-Bounded Flow (Lou Guérin)	Analysis of Upstream Traveling Waves on Transonic Buffet (Thomas Lürkens)	Investigating the flow over different canopies consisting of highly flexible blades (Jochen Fröhlich)
16:50	17:05		Spectral analysis of the Reynolds shear stress transport in turbulent channel flows (Myoungkyu Lee)	Dynamics of incompressible flow over a high-lift airfoil at low Reynolds numbers (Ming Teng)	Breakdown of optimal perturbations in the hydro-magnetic pipe flow (Bernard Knaepen)
17:05	17:20		Componentality of the Reynolds stress tensor spectrum in anisotropic turbulence (Arthur Couteau)	Direct numerical simulations of a flapping wing in turbulent free streams at moderate Reynolds number (Juan Manuel Catalan)	Transitional and turbulent flow around a stepped cylinder (Daniele Massaro)
17:20	17:35		On swirl switching in bent pipe flows (Valerio Lupi)	Statistical analysis of the separated flow about a wing section (Enrico Stalio)	Exploration of Geostrophic Turbulence on a Rotating Sphere (Arnout Franken)

**Thursday, April 11, 2024**

08:30	09:15	Keynote 3	Simone Sebben: High-fidelity Simulation to Access the Aerodynamic Performance of Real Road Vehicles Chair: F. Menter		
09:20	10:50	Session 5	Industrial and environmental applications I Chair: S. Becker	Aerodynamics/Aeroacoustics II Chair: M. Rasquin	Numerical techniques Chair: E. Lamballais
09:20	09:35		High fidelity simulations of airborne virus inactivation in a UV air purifier: impact of volumetric flow rate and UV radiation intensity (Shriram Sankarantripti)	Requirements & Current Capabilities for Implicit Large Eddy Simulation of the Imperial Front Wing using Spectral h/p Element Methods (Alexandra Liosi)	Structured grid-adaptation for LES of a smooth ramp flow (Johan Larsson)
09:35	09:50			Acoustic Liners and their Aerodynamic Impact (Davide Modesti)	A Fast and Scalable Algorithm for Span-wise Periodic External Flows (Wei Hou)
09:50	10:05		A Comparison of Reynolds-averaged Navier-Stokes and Scale Resolving Simulation methods for a tip clearance flow of a linear compressor cascade (Johannes Deutsch)	A topologically consistent procedure for finding critical points in the wall shear stress field (Lukas Unglehart)	Systematic grid design in direct numerical simulation (Siavash Toosi)
10:05	10:20		Influence of inflow turbulence on the laminar separation bubble of a 3D low-pressure turbine cascade using large eddy simulation (Nima Fard Afshar)	Large Eddy Simulation and direct noise prediction of a fan stage in transonic regime (Allan Beurville)	Synthetic turbulence generation for spectral/hp element methods (João Isler)
10:20	10:35		Investigation via large-eddy simulations of the unsteady aerodynamics of the combined capsule-parachute system during planetary descent (Luca Placco)	Aeroelastic coupling between a shock-wave/turbulent boundary-layer interaction and a flexible panel (Luis Laguarda Sanchez)	Mesh constraints for an energy preserving unconditionally stable projection method on collocated unstructured grids (Daniel Santos Serrano)
10:35	11:00		Coffee break		
11:00	12:30	Session 6	Turbulent boundary layers/separation Chair: M. Klein	Compressible flow Chair: D. Modesti	Bluff bodies Chair: S. Toosi
11:00	11:15		LES of a turbulent boundary layer subjected to adverse and zero pressure gradient in a channel with a wavy wall (Piotr Kamiński)	Fully compressible, highly stratified convection: Insights from well-resolved Direct Numerical Simulations (John Panickacheril John)	Budget of turbulent kinetic energy and temperature variance on the 5:1 rectangular body (Roberto Corsini) -> <b>MOVED TO END OF THIS SESSION</b>
11:15	11:30		Direct Numerical Simulation of Turbulent Boundary Layers with Streamline Curvature and Pressure Gradients (Jason Appelbaum)	Impact of Compressibility on Drag Reduction by Spanwise Traveling Transversal Waves for Turbulent Flat Plate Flow (Xiao Shao)	Effect of inflow unsteadiness on elongated rectangular cylinders (Alessandro Mariotti)
11:30	11:45		Investigation of Taylor's Hypothesis in Pressure Gradient Boundary Layers Using Direct Numerical Simulation (Atalay Ak)	GPU-accelerated DNS of diabatic transitional boundary layers at supercritical pressures (Pietro Carlo Boldini)	Three-dimensional Direct Numerical Simulations of Shock-wave Boundary Layer Interactions for a Compression Ramp and Impinging-Reflecting Shock Wave (Pushpender K. Sharma)
11:45	00:00		Effect of convex transverse curvature and concave grooves on the turbulent boundary layer along a cylinder in axial flow (Florian Wachter)	Direct numerical simulation of compressible turbulent boundary layers with heat transfer and pressure gradients (Tobias Gibis)	DNS, LES and experimental analysis of the flow around a 5:1 rectangular cylinder at moderate Reynolds number (Maria Vittoria Salvetti)
12:00	12:15		Analysis of turbulent statistics over the Boeing Speedbump (Ronith Stanly)	Reynolds number effects on high-speed turbulent boundary layers (Giacomo Della Posta)	Efficient Euler-Lagrange LES of agglomerate-laden flow in a T-junction including an Ann-based collisional breakage model (Ali Khalifa)
12:15	12:30		Building-block-flow model for large-eddy simulation: application to a smooth body separated flow (Gonzalo Arranz)	Conjugate heat transfer in channel flows up to Prandtl number 5 (Gregory Cartland-Glover)	DNS and LES simulations of the flow over periodic hills with a Remeshed Vortex Method (Marthe de Crouy-Chanel)

12:30	13:30		Lunch		
13:30	14:15	Keynote 4	Sylvain Lardeau: Performance, Potential and Pitfalls of Scale-Resolving Simulation in Industry, a Commercial CFD Perspective Chair: M. Manhart		
14:20	15:35	Session 7	Industrial and environmental applications II Chair: E. Stalio	Wall modelling Chair: J. Larsson	Immersed boundary methods Chair: M. Garcia-Villalba
14:20	14:35		Influence of atmospheric stability on wind and thermal conditions in an urban canyon (Ximeng Kang)	On the wall-modeled Large Eddy Simulations of the Windsor body at different yaw angles (Benet Eiximeno Franch)	Application of an immersed boundary method to predict the flow in an experimental wind gust generator: an LES study (Khaled Boulbrachene)
14:35	14:50		Application of Lagrangian stochastic methods for indoor air quality (Harriet Jones)	Formulation of an algebraic Wall-Modelled LES Formulation Suitable for Laminar-Turbulent Transition Prediction (Florian Menter)	Towards Novel Insights in Gas Turbine Aerothermodynamics with Wall-Modeled LES and Immersed Boundary Method (Francesco De Vanna)
14:50	15:05		Influence of free-stream turbulence on real-gas flows through a supersonic turbine cascade (Camille Matar)	Towards investigation of airfoils near stall using spectral element-based wall-modeled large-eddy simulation (Timofey Mukha)	A data-driven IBM method for the analysis of wall-bounded turbulent flows (Marcello Meldi)
15:05	15:20		Boundary layer stability and shock interactions in a high-speed low pressure turbine cascade (Borbose Maxime)	GALEXI: Scale-resolving simulations of compressible turbulence on GPU-accelerated systems (Marius Kurz)	Feedback-forcing immersed boundaries in spectral element methods: Capabilities and limitations (Lorenz Weber)
15:20	15:35		Lagrangian FDF modeling of nanoparticle synthesis in turbulent spray flames (Andreas Kempf)	FIRST GROUP TO THE BUSES WITH STEFAN BECKER	An immersed boundary method for neutrally-buoyant particles of arbitrary shape (Maximilian Schenk)
15:40	22:30		Transport to Nürnberg / Social event		

Friday, April 12, 2024					
09:00	09:45	Keynote 5	Taraneh Sayadi: Data-driven Modelling of High-fidelity Hypersonic Flow Simulations in Chemical Nonequilibrium Chair: S. Hicckel		
09:45	10:30	Keynote 6	Wolfgang Schröder: Acoustic Emission of Hydrogen-Air Slot Flames Chair: S. Becker		
10:30	11:00		Coffee break		
11:00	12:30	Session 8	LES fundamentals and modelling Chair: B. Geurts	Roughness Chair: D. Modesti	Particle-laden flows Chair: C. Marchioli
11:00	11:15		Temporal Large-Eddy Simulation Based on Direct Deconvolution (Daniel Oberle)	DNS of supersonic turbulent boundary layers over rough surfaces (Michele Cogo)	Effects of filtering on particles clustering in turbulence (Lukas Codispoti)
11:15	11:30		High-order numerical schemes based on Approximate Deconvolution Discretisation (Artur Tylliszczak)	Direct numerical simulation of a rough pipe using body-fitted grid (Venkatesh Pulletikurthi)	Turbulent Flows of Dilute Polymer Solutions: Comparing DNS with Experiments (Francesco Serafini)
11:30	11:45		Improving the approximate deconvolution method for large eddy simulations through the use of induced filters (Lena Caban)	DNS of turbulent flow over random sphere packs - insight from turbulent kinetic energy budgets (Simon v. Wenczowski)	Validation of an enhanced model for particle-bubble collisions in flotation by DNS (Benedikt Tiedemann)
11:45	12:00		A stable regularization of the gradient model (F. Xavier Trias)	Effects of Spanwise Heterogeneous Roughness on Shock-Wave/Turbulent Boundary Layer Interactions (Wencan Wu)	Slender flexible fibers in turbulent channel flow (Cristian Marchioli)
12:00	12:15		How to model distant triad interactions to supplement implicit LES? (Eric Lamballais)	Direct numerical simulation of smooth and rough wall turbulent boundary layers with heat transfer (Francesco Secchi)	Influence of Maxey-Riley terms on the microplastic particle distributions in open channel turbulence (Yoshiyuki Sakai)
12:15	12:30		Evaluation of dynamic $\sigma$ sub-grid scale models (Manuel Münch)	Turbulent flow of Herschel-Bulkley Fluids in Rough Channels (Djamel Lakehal)	Simulating the settling of finite-size particles in a vertically non-periodic configuration (Manuel Moriche)
12:30	13:30		Lunch		
13:30	14:30	Session 9		Hybrid LES/RANS (Room H4) Chair: T. Mukha	Multiphase and complex flows Chair: M. Münch
13:30	13:45			Anisotropic mesh refinement in automotive flow and hybrid RANS-LES models (Emmanuel Guilmineau)	DNS of a turbulent polymeric flow at high friction Reynolds number (Elena Massarelli)
13:45	14:00			A method for zonal hybrid RANS-LES simulations in multi-stage turbomachinery applications (Jonas Buchmeier)	Turbulent magnetic field amplification in binary neutron star mergers using the gradient SGS model (Ricard Aguilera-Miret)

14:00	14:15			Hybrid High-Order Methods with Turbulence Modelling Capabilities (Francesco Carlo Massa)	DNS of shear turbulence interacting with a melting-freezing ice layer (Diego Perissutti)
14:15	14:30			A priori validation of a generalized wall stress function with the flow over a periodic hill (Kuiju Xue)	Effect of Ablation on Laminar-Turbulent Transition over Compression Ramp at Mach 8 (Ata Onur Başkaya)
14:40	15:00	Closing	Closing session (Room H4) P. Schlatter and M. V. Salvetti		