



DLES 15

ERCOFTAC Workshop
Direct & Large Eddy Simulation

Day 1

8:00-9:00 Registration

9:00-9:10 Welcome and Orientation – Stefan Hickel

9:10-9:55 Keynote – Oriol Lehmkuhl: On the discovery of novel flow control strategies for external aerodynamics by means of deep-reinforcement learning and supercomputing – Chair: Maria Vittoria Salvetti

9:55-10:40 Keynote – Karine Truffin: Augmented large-eddy simulation and analysis of reactive in-cylinder flows in SI engines – Chair: Marcello Meldi

10:40-11:00 Coffee break

11:00-12:40 Parallel sessions

	Combustion and Reactive Flows Chair: Markus Klein	Fluid Structure Interaction Chair: Elias Balaras	Wall Turbulence Chair: Myoungkyu Lee
11:00-11:20	Numerical Investigation of a Non-Premixed Swirl and Bluffbody Stabilized Burner. Manish Singh, Sudipto Mukhopadhyay, Al Ameen H, Rajesh Sadanandan	Assessing the Impact of Turbulent Inflow Data on Gust-Induced Fluid-Structure Interaction. Guillaume De Nayer, Michael Breuer	Direct Numerical Simulation of the Turbulent Boundary Layer on a Rotating Disk. Nicholas Morse, Mihai Mihaescu, Ramis Örlü, Philipp Schlatter
11:20-11:40	Multiphase Flamelet-Based Large Eddy Simulation of Transcritical Lox-Methane Combustion. Davide Cavaleri, Davide Schintu, Francesco Creta, Pasquale Eduardo Lapenna	Drag and Vortex-Induced Vibration Reduction by Slight Shape Modifications of Cylindrical Structures: An LES Study. Michael Breuer	Stochastic Reconstruction of Near-Wall Turbulence with Diffusion-Based Generative Models. Roberto Dal Monte, Michele Cogo, Francesco Picano
11:40-12:00	DNS of Injection-Driven Scalar Mixing in a Turbulent Channel Flow: Role of Injection Topology and Schmidt Number. Filippo Frizza, Rachele Lamoni, Alessandro Mariotti, Chiara Galletti, Maria Vittoria Salvetti, Antonio Attili	Turbulent Flow over Filamentous Biofilms. Angelo Camminatiello, Nikolaos Beratis, Kyle Squires, Elias Balaras	Forcing-Informed Input-Output Analysis of Self-Sustaining Mechanisms in Boundary Layer Transitions over Heated and Cooled Walls. Yuta Iwatani, Kunihiko Taira, Soshi Kawai
12:00-12:20	Differential Diffusion Effects in LES of Lifted Hydrogen Jet Flames. Agnieszka Wawrzak, Karol Wawrzak, Artur Tyliczszak	Numerical Investigation of 3D-Flow around Tandem Flappers. Maximilian Schenk, Gonzalo Arranz, Manuel Moriche, Manuel Garcia-Villaiba	Drag Reduction in Temporal Turbulent Boundary Layers through Wall Oscillations. Filippo Moroni, Gabriele Boga, Andrea Cimarelli, Enrico Stallo
12:20-12:40	A-Posteriori Evaluation of Eulerian Stochastic Field Approach for Highly Strained Premixed Hydrogen Flames. Maria Rosaria Acquaviva, Ivan Langella	Conservative Phase-Field Modeling of Morphogenesis and Fluid-Structure Interaction in Turbulent Flow. Antonio Brunaccini, Francesco Capuano	Causally-Coherent Structures in Turbulent Boundary Layers. Daniele Massaro, Saleh Rezaeiravesh, Philipp Schlatter

12:40-13:40 Lunch – Theater de Veste

13:40-15:20 Parallel sessions

	Hybrid RANS/LES 1 Chair: Jochen Fröhlich	Numerical Methods 1 Chair: Oriol Lehmkuhl	Roughness Chair: Davide Modesti
13:40-14:00	K-Q SST Based Hybrid RANS/LES Simulation for Supersonic and Hypersonic Flows. Camille Gouin, Laurent Muscat, Marina Olazabal Loumé	Residual Kinetic Energy Spectral Vanishing Viscosity: Towards Performing Large-Eddy Simulations with Continuous Galerkin Spectral-Element Method. Shiyu Du, Nicolas Jansson, Philipp Schlatter	Transition to Turbulence in a Compressible Boundary Layer Induced by Ablated Surface Roughness. Giuseppe Matera, Neil Sandham
14:00-14:20	Hybrid RANS-LES Simulation: Definition of a Remeshing Criterion based on Physical Consideration. Edouard Butaye, Alan Burlot	On the Energy Contribution of Explicit Time Integration in Projection Methods. Josep Piana-Riu, Sara-Medina Šehović, F. Xavier Trias, Assensi Oliva	Investigation of Transition over Real Roughness using Scale-Resolving Simulations. Rohit S Varma, Ananth S M, Nagabhushana Rao Vadlamani, John Coull
14:20-14:40	Scale-Resolving Simulation of an Inverse-Chevron Shock Tube: Effects of Grid and Physical Resolution. Jérémie Janin, Chad Meyer, Juan Saenz, Daniel Israel	Towards a Numerical Dissipation Free Symmetry-Preserving Collocated Method for Turbulent Flows. Daniel Santos Serrano, Josef Hasslberger, Magnus Schweiger, F. Xavier Trias, Miquel Markus Klein	DNS Study of Stably Stratified, Temporally Developing Rough-Wall Turbulent Boundary Layers. Mammad Norouzi, Rene Pecnik, Pedro Costa
14:40-15:00	Scale-Resolving Modeling of a Boundary Layer over an 'Active' Wall. Steffen Kiefer-Gröniger, Suad Jakiric	A Simplex Based Conservative Discretization of the Lorentz Force for Liquid Metal Flows. Robbe Allet, Manuel Bernard, Bernard Knaepen, Ghislain Lartigue	Spurious Mean Flow Structures in Direct Numerical Simulations of Rough-Wall Turbulent Channel Flow. Angela Busse
15:00-15:20		Low-Mach Number Navier-Stokes Solver for Real Gases in Closed Systems. Sanath Kotturshettar, Goncalo Alcobia, Rene Pecnik, Pedro Costa	The Effect of Rib Height on Flow and Heat Transfer in a Turbulent Channel. Jayadeep K., Harshad Deepak Akolekar, Kameswararao Anupindi

15:20-15:40 Coffee break

15:40-17:00 Parallel sessions

	Hybrid RANS/LES 2 Chair: Maria Vittoria Salvetti	Numerical Methods 2 Chair: Michael Breuer	Turbulence Chair: Artur Tyliczszak
15:40-16:00	Turbulence Forcing for Grey Area Mitigation in Hybrid RANS/LES Simulation of Complex Flows. Antoine Monot, Jeroen Wackers, Christophe Friess, Emmanuel Guilleminau, Michel Visonneau	A Multiresolution Vortex Particle-Mesh Method for the Large Eddy Simulation of Wind Turbine Wakes. Pierre Batty, Gilles Poncelet, Matthieu Duponcheel, Jonathan Lambrechts, Philippe Chatelet, Denis-Gabriel Caprace	Compressibility Effects on Decaying and Forced Homogeneous Isotropic Turbulence. Jesus Ruano, Adel Alsaib-Baldellou, Francesc Xavier Trias
16:00-16:20	A Hybrid DNS-RANS Approach for Reliable and Computationally Efficient Transition Modeling. Blanca Fuentes Monjas, Jonas Luther, Patrick Jenny	High-Order Simulation of the Spleen Cascade Wake Generator: Impact of the Stabilisation Method. Antoine Reuter, Maxime Borbouse, Mars Thys, Amaury Bilocq, David Henneaux, Koen Hillewaert	Scale Analysis of Non-Homogeneous Turbulent Flow and Passive Scalar Field using High Resolution Direct Numerical Simulation Database. Bruno Chauvat, Roland Schiestel
16:20-16:40	Transitional IDDES in a Discontinuous Galerkin Solver with an Application on Oscillating Foils. Luca Alberti, Emanuele Carnevali, Andrea Crivellini	A Flexible Building-Block Inflow Generator for Transient Scale-Resolving Simulations. Moritz Kreuseler, Bastian Löhner, Jörg Stiller, Jochen Fröhlich	On the Non-Uniqueness of Local Enstrophy Production in Homogeneous Isotropic Turbulence. Roozbeh Aslani, Mahdi Saeedipour
16:40-17:00		Statistical Convergence of Selected Quantities in Canonical Wall Turbulence. Savash Toosi, Daniela Ayzazova, Saleh Rezaeiravesh, Philipp Schlatter	Quasi-One-Dimensional Turbulent Flows. Kinga Andrea Kovács, Gergely Kristóf

17:15-18:30 Guided City Tour

18:30-20:30 Welcome Reception – Old City Hall



DLES 15

ERCOFTAC Workshop Direct & Large Eddy Simulation

Day 2

8:30-9:00

Arrival and Registration

9:00-10:40

Parallel sessions

	Convection and Heat Transfer 1 Chair: Bernard Geurts	LES Fundamentals and Modeling 1 Chair: Roel Verstappen	Urban and Environmental Flows 1 Chair: Chiel van Heerwaarden
9:00-9:20	Large-Eddy Simulation of Multi-Slot Jet Impingement: Effect of Stand-Off Distance on Turbulence Generation and Near-Wall Structure. S Jagajth, Kameswararo Anupindi, Chakravarthy Balaji	Sparse Identification of Energy Spectrum Dynamics across Turbulence Modeling Strategies. Haneef Azher, Hanseul Kang, Ville Vuorinen, Shervin Karimkashi	Wall-Resolved LES of Urban-Like Bluff Bodies: Influence of Building Height in a Neutrally Stratified ABL. Matteo Rosellini, Aurora Ursetto, Alessandro Mariotti, Maria Vittoria Salvetti
9:20-9:40	LES Investigation of Secondary Flow in Slot Jet Impingement over a Moving Wall. Antonio Mezzacapo, Rossella D'Addio, Giuliano De Stefano	A Posteriori Analysis of Subgrid Scale Models that Preserve the Lie-Symmetries of the Navier-Stokes Equations for Large Eddy Simulations. Nadyna Akhali, can Selçuk, Stéphane Vincent, Benoit Trouette	On the Prediction of Urban Flows using GAVI and SHRED. Arnau Miró, Benet Ekimeno, Josep Maria Duró, Nathan Kutz, Oriol Lehmkuhl, Ivette Rodríguez
9:40-10:00	Effect of Prandtl Number on Heat-Transfer Enhancement using Spanwise Wall Oscillation. Blessing Mojisola Akinpelu, Cedric Flageul, Lionel Agostini	A Discretization-Consistent Length Scale Definition for Large-Eddy Simulations of Complex Flows. F.Xavier Trias, Jesús Ruano, Alexey Duben, Andrey Gorobets	Forest-Atmosphere Coupling in Cloudy Conditions Revealed by Canopy-Resolving Large Eddy Simulations and Observations. Raquel González-Armas, Xabier Pedruzko-Bagazpota, Hugo de Boer, Vincent S. de Felter, Menno A. Veerman, Oscar Hartogensis, Cléo O. Dias-Júnior, Jordi Vilà-Guerau de Arellano
10:00-10:20	Budget Analysis of Temperature Variance in Rayleigh-Benard Convection. Md. Jariful Haque, Sara Bedolla, Myoungkyu Lee	Assessing Dissipation and Stress Reconstruction on Linearized Variational Multiscale LES. Carlo Brunelli, Bart Janssens, Koen Hillewaert, Mark Runaeres	Quantifying Street Canyon Ventilation in Realistic Urban Environments via Large Eddy Simulations. Ivette Rodríguez, Josep M. Duró, Ernest Mestres, Arnau Miró, Oriol Lehmkuhl
10:20-10:40	Direct Numerical Simulation of Forced Air Convection in Rough Channels with Variable Physical Properties. Alessandro Ceci, Davide Modesti	Large Eddy Simulation of Jet-Stirred Turbulence Generation in a Constant Volume Combustion Chamber. Paula-Maria Handle-Kesseling, Clemens Gößlitzner, Stefan Posch, Marc Klawitter, Helfried Steiner	Brake Urban LES and Inflow Ramp Wind Profile Study. Álvaro Manzano Sevillano, Clara García-Sánchez, Akshay Patil, Soledad Le Clainche

10:40-11:00

Coffee break

11:00-12:40

Parallel sessions

	Convection and Heat Transfer 2 Chair: Michele Cogo	LES Fundamentals and Modeling 2 Chair: Xavier Trias	Urban and Environmental Flows 2 Chair: Ivette Rodríguez
11:00-11:20	Passive Scalar Transport in Wall-Bounded Flows: WR-LES and WM-LES Assessment. Federico Verolani, Sergio Prozzoli	Resolution Assessment for Implicit Large-Eddy-Simulations based on Kinetic-Energy and Entropy Balances. Michael Bergmann, Bjørn F. Klose, Melvin Claßen	Large-Eddy Simulations of Cumulus Clouds over Land with Coupled 3D Monte-Carlo Ray Tracing. Chiel van Heerwaarden, Menno Veerman, Wouter Mol, Mirjam Tijhuis, Bart van Stratum
11:20-11:40	Effect of Porous Substrate Height on Momentum and Heat Transfer in Turbulent Forced Convection. Aneek Chakraborty, Stefan Hickel, Davide Modesti	On the Use of EDQNM for the Development of Explicit and Implicit SGS Modeling. Eric Lamballais, Rodolphe Perrin	High-Fidelity Simulations of Urban Climate in Paradigmatic Environments. Anna Pavan, Filippo Venturini, Andrea Cimarelli, Enrico Stallo, Pedro Simoes Costa
11:40-12:00	Large-Eddy Simulations of Turbulent Wall-Bounded Double Diffusive Convection: Flow Morphology, Energy Spectra, and Second-Moment Budgets. Sasa Kenjeres	Spectral Closure for Large Eddy Simulations. Adrian Anton	Analysis of Canyon Flow under Varying Atmospheric Stability Conditions using Modal Decomposition. Ximeng Kang, Saleh Rezaei-Avash, Chongyu Zhao, David Topping, Alstair Revell
12:00-12:20	Wake Dynamics and Heat Transfer in Rotating Diamond and Circular Pin-Fin Arrays: An LES Study. Gouri Sankar Pattanaik, Kameswararo Anupindi	Developing a Coherent LES Methodology through the Integration of Filtering, Modeling and Discretization. Roel Verstappen	Simulation of the Flow over an Aquatic Canopy in the Presence of Sidewalls. Bastian Lührer, Jochen Fröhlich
12:20-12:40	Turbulent Flow and Heat Transfer in a Channel: Effects of Arbitrary Axis Rotation Using Hybrid SLBM. Kiran Swadas, Kameswararo Anupindi	Approximate Deconvolution Discretization based on the Van Cittert Procedure for Periodic Boundary Conditions. Lena Caban, Steffen Stolz, Andrzej Boguslawski, Artur Tylliszczak, Bernard Geurts	A Lattice Boltzmann Model for LES Simulations of Wind-Turbine Wakes and Urban Flows. Geir Evensen

12:40-13:40

Lunch – Theater de Veste

13:40-14:25

Keynote – Markus Klein: Modelling multiphase flows across scales and physics – Chair: Manuel García-Villalba

14:30-15:30

Parallel sessions

	Flow over Porous Media Chair: Angelita Busse	Data Assimilation and Data-Driven Modeling 1 Chair: Paola Cinnella	Separated Flows 1 Chair: Alessandro Mariotti
14:30-14:50	The Impact of Buoyancy Effects on Flow and Transport at the Interface between a Turbulent Flow and a Porous Medium. Simon v. Wenczowski, Yoshiyuki Sakai, Michael Manhart	Consistent CFD-Driven Subgrid-Scale Models for Wall-Modelled Large Eddy Simulations. Arthur Shinti Cato, Melissa Kozul, Richard Sandberg	Implications of Bluff-Body Hat Shape on the Recirculation Zone. Lukas Galpi, Wei Guan, Dominique Thévenin
14:50-15:10	A Brinkman Penalization Lattice Boltzmann Method Simulation of the Flow over a Porous Backward-Facing Step. Léo Roussel, Chloé Mirneau, Simon Maré	Structure-Preserving Approaches for Learning LES Models from Data. Benjamin Sandefer, Syver Agdestein, Roel Verstappen	Comparative LES Study of Upstream Plasma Actuation on Bluff Bodies with Strong and Weak Forebody Separation. Guglielmo Minelli, Lorenzo Balzani, Ritvik Magal
15:10-15:30	Direct Numerical Simulations of Turbulent Flows in Triply Periodic Minimal Surface Porous Media. Adrian Rusnak, Rémi Roncen, François Chedeveigne	Subgrid-Scale Phenomena in LES of Transcritical Mixing Layers. Joel Gracia I Sanz, Nguyen Anh Khoan Doo, Stefan Hickel	Effect of Secondary Currents on the Flow and Turbulence in Annular Sector Ducts. Xin Liu, Benlong Wang, Yan Bao

15:30-15:50

Coffee break

15:50-17:30

Parallel sessions

	Multiphase Flows 1 Chair: Mahdi Saeedipour	Data Assimilation and Data-Driven Modeling 2 Chair: Saleh Rezaei-Avash	Separated Flows 2 Chair: Philipp Schlatter
15:50-16:10	A Phase-Field DNS Study of Turbulent Flow Over Liquid-Infused Surfaces. Francesco Villani, Francesco Serafini, Mirko Gallo, Francesco Battista, Paolo Gualtieri, Boris Francesco Jacob, Elena Ciappi, Carlo Massimo Casciola	Physics-Informed Data-Driven Inference of an Interpretable Equivariant LES Model of Incompressible Fluid Turbulence. Matteo Ugolini, Brandon Choi, Mateo Reynolds, Daniel Gurevich, Roman Grigoriyev	High-Fidelity Simulation and Database Generation of Adverse-Pressure-Gradient Flow over a Rounded Step. Nicola Pasqua, Margaux Bouché, Thomas Toulorge, Koen Hillewaert
16:10-16:30	Collective Dynamics of Flexible Fibers in Turbulent Channel Flow. Cristian Marchioli, Darish Jeswin Dhas	Non-Local Data-Driven Turbulence Model Correction via the Non-Linear Super Stencil. Jonas Luther, Blanca Fuentes-Morjas, Patrick Jenny	Direct Numerical Simulation of Flow Transition and Separation around a NACA-4412 Airfoil. Roberto Corsini, Andrea Cimarelli, Enrico Stallo
16:30-16:50	Investigation of Polymeric Homogeneous Isotropic Turbulence with an Eulerian Lagrangian Model. Ludovico Cresspi, Francesco Serafini, Francesco Battista, Paolo Gualtieri, Carlo Massimo Casciola	From Filtering to Forcing: Advanced Turbulence Modeling via Data Assimilation and Machine Learning. Tom Moussie, Paolo Errante, Marcello Melfi	Near-The-Wall Analysis of the NASA Wall-Mounted Hump. Pedro Muñoz Hoyos, Bernat Font, Matteo Rosellini, Maria Vittoria Salvetti, Oriol Lehmkuhl
16:50-17:10	Viscous-Inertial Transition in Dense Suspensions and Sedimentary Flows. Aireza Khodabakhshi, Hafeul Rahman Koshan, Franco Tappia, Sudarshan Koridena, Bernhard Vowinkel	Investigating Machine Learning-Based Shock Sensors for Scale-Resolving Discontinuous Galerkin Simulations. Francesco Mangini, Alessandro Colombo, Francesco Carlo Massa, Daniel Regener Rog, Andrea Crivellini	Numerical and Experimental Investigation of Pressure-Gradient-Induced Separation on a Smooth Ramp. Matteo Rosellini, Alessandro Mariotti, Angela Reitano, Oriol Lehmkuhl, Maria Vittoria Salvetti
17:10-17:30	DNS-Informed Assessment of Turbulent Viscosity Closure for Stratified Two-Phase Flows. Sina Tajfirooz, Thijs Haartmans, Victor Habyaremye, Edo Frederix, Stein Stoter, Hans Kuerten		Large Eddy Simulations of Distributed Electric Propulsion Arrays. Péter Onódi, Vito Pasquariello, Stefan Hickel

18:30-22:00

Gala Dinner – Old Railway Station



DLES 15

ERCOFTAC Workshop
Direct & Large Eddy Simulation

Day 3

8:30-9:00 **Arrival and Registration**

9:00-9:45 **Keynote – Charles Meneveau: Physics-based wall modeling concepts for large-eddy simulations of turbulence – Chair: Stefan Hickel**

9:45-10:30 **Keynote – Pedro Costa: Compute-rich alternatives for direct numerical simulation of complex turbulent flows – Chair: Luis Laguarda**

10:30-11:00 **Coffee break**

11:00-12:40 **Parallel sessions**

	Multiphase Flows 2 Chair: Wim-Paul Breugem	LES Wall Modeling 1 Chair: Soshi Kawai	High-Speed Compressible Flows 1 Chair: Francesco De Vanna
11:00-11:20	Direct Numerical Simulation of a Bubble Swarm Interacting with a Solid Wall. Bernard Geurts, Lena Caban, Steffen Stolz, Andrzej Boguslawski, Artur Tyliczszak	Validity of the Reynolds Analogy in Compressible Rough-Wall Turbulence and implications for Wall Modelling. Michele Cogo, Davide Depieri, Matteo Bernardini, Francesco Picano	Parametric Study of Backward-Facing Step Influence on Shock–Boundary-Layer Interaction. Charlie Poppy, Neil Sandham
11:20-11:40	A New Lift Model for the Euler-Lagrange LES of Bubble Plumes. Mohammad Karimi Zand, Stefan Puttinger, Mahdi Saeedipour	Implementation of Wall Models for Efficient Implicit Large-Eddy Simulation in a Discontinuous Galerkin Solver. Francesco Mangini, Francesco Carlo Massa, Luca Alberti, Emanuele Carnevali, Andrea Crivellini, Alessandro Colombo	Multi-Fidelity Assessment of Supersonic Cascade Unsteadiness. Ludovic Taguena, Yves Marichal, Michel Rasquin, Koen Hillewaert, Thomas Toulorge
11:40-12:00	DNS of Gravity-Driven Bubbles with Insoluble Surfactants using the UCLS Method. Néstor Vinicio Bakcázar Arciniega, Joaquim Rigola, Assensi Oliva	Sensitivity Analysis of WM-LES for T-Junction Mixing: Effects of Wall-Normal Sampling Height and Advection Schemes. Omar Al-Abri, Timothy Craft, Saleh Rezaeivavesh	Numerical Investigation of Low-Frequency Unsteadiness in Shock-Wave Boundary Layer Interactions. Kamil Skoczylas, Andrzej Boguslawski, Sławomir Dykas, Mirosław Majkut, Krystian Smolka
12:00-12:20	Observations from the LACIS-T Turbulent Wind Tunnel to Validate Simulations of Collision-Coalescence between Cloud Droplets. Reinaart van Loon, Wiebke Frey, Dennis Niedermeier, Silvio Schmalfuß	Data-Driven Wall Model for Large-Eddy Simulations of Separated Flows. Mohammed Kasseem, Magnus Carlsson, Niklas Andersson	Scale-Resolving Discontinuous Galerkin Simulations of Shock-Induced Turbulent Boundary-Layer Separation. Francesco Mangini, Daniel Regener Roig, Alessandro Colombo, Francesco Carlo Massa
12:20-12:40	Towards LES of Multiphase Compressible Flows. F. Edoardo Tagliatela, Giuliano De Stefano, Kevin Schmidmayer	A Machine-Learning Enriched Wall-Model for Large-Eddy Simulations in the Context of the Spectral Element Method. Manuel Münsch, Sachin Bharadwaj Manjunath, Philipp Schlätter	

12:40-13:40 **Lunch – Theater de Veste**

13:40-15:20 **Parallel sessions**

	Particle-Laden Flows 1 Chair: Cristian Marchioli	Data Assimilation and Data-Driven Modeling 3 Chair: Patrick Jenny	High-Speed Compressible Flows 2 Chair: Stefan Hickel
13:40-14:00	Buoyant Particle Dispersion in Stratified Open Channel Turbulent Flow. Francesco Serafini, Irene Silvestrini, Paolo Gualtieri, Francesco Battista	Discerning the Causality of Drop Breakup in Turbulent Flows using Massive Ensembles of Simulations. Daniel Morón, Ianto Cannon, Alberto Vela-Martín, Marc Avila	Self-Similarity Behavior of Entropy Dissipation in Cooled Transonic Shock–Boundary-Layer Interaction. Francesco De Vanna
14:00-14:20	Direct Numerical Simulation of Inertial Particle Transport in Stably Stratified Turbulent Boundary Layers. Baptiste Hardy, Andrea Ramogida, Pedro Costa	Predictive Reduced Order Models of Unsteady Chaotic Flows using Transformer Architecture. Kashish Taneja, Taraneh Sayadi, Iraj Mortazavi	Application of Wall-Modeled LES to Supersonic Turbulent Boundary Layers over Rough Walls. Anna Fabrizia Spada, Davide Depieri, Michele Cogo
14:20-14:40	Applicability of LES for Estimating Collision Statistics of Particles in Homogeneous Turbulence under Two-Way Momentum Coupling. Maciej Manna, Ahmed Ababbai, Bogdan Rosa	Deep Learning Compression of Injected Residuals in Adjoint-Based Error Estimation for Unsteady Problems. A. Sadiq Madani, T. Hunter, J. Colazo Romana, S. Hulshoff	To Bulk or Not to Bulk? On Stokes' Hypothesis in Shock–Boundary-Layer Interactions. Samir El Oteby, Sarah Baziz, Radwan Boukharfane
14:40-15:00	Large-Eddy Simulation of a Stratospheric Jet Engine Wake and its Implications for Particle Collision Probabilities. Jordi Cornette, Steven Hulshoff	A Comparison of Standard and Extended Bayesian Optimisation for Benchmark CFD Applications. Mohammed Sardar, Şihmeht Yildiz, Melike Nikbay, Nadir Ince, Saleh Rezaeivavesh	High-Fidelity Simulations of Hypersonic Shock Wave/Turbulent Boundary Layer Interaction over Compression Ramps. Xavier Gierke, Paul Calvi, Paola Cinnella, Jérôme Breil, Marina Olazabal
15:00-15:20	Novel Insights Gained From Direct Numerical Simulations of Gas-Particle Flows for the Development of Large Eddy Simulation Models for Large-Scale Processes. Stefanie Rauchenzauner, Marco Edoardo Rosti	An Adaptive, Physics-Based Localization Methodology for the Ensemble Kalman Filter. Marcello Meldi, Er Sarp	Direct Numerical Simulation of Hypersonic Flow Over a Three-Dimensional Bump. Max Walker, Neil Sandham

15:20-15:40 **Coffee break**

15:40-16:40 **Parallel sessions**

	Particle-Laden Flows 2 Chair: Dominique Thévenin	LES Wall Modeling 2 Chair: Charles Meneveau	Complex Applications Chair: Marcello Meldi
15:40-16:00	Particle-Resolved DNS of the Rheology of Dense Suspensions in Pressure-Driven Channel Flow. Wim-Paul Breugem, Wouter Peerbooms, Antoine van der Heijden	A Novel Non-Equilibrium ODE Wall Model for LES with Enhanced Near-Wall Physics in Favorable and Adverse Pressure Gradients. Matteo Rosellini, Pedro Muñoz Hoyos, Alessandro Mariotti, Oriol Lehmküh, Maria Vittoria Salvetti	DNS of Nasal Flows with a new Immersed-Boundary Solver. Andrea Portoli, Marco Atzori, Maurizio Quadrio
16:00-16:20	Influence of Compressibility on Particle-Laden Turbulent Channel Flows. Hamood Ur Rahman, Cristian Marchioli	Formally Exact Wall-Boundary Conditions in Large Eddy Simulations. Max Hausmann, Eberhard van Wachem	LES-Based Study of Flow Laminarization in Filgree Cooling Channels for Fuel Cells. Louis Krüger, Andreas Lindenthal, Jeanette Hussong, Suad Jakirlic
16:20-16:40	Modelling and Analysis of Dispersed Phases in Turbulent Flows. Eugenio Doria, Francesco Serafini, Francesco Battista, Paolo Gualtieri	Importance of Wall Shear-Stress Fluctuations on the Grid Convergence in Wall-Modeled Large-Eddy Simulation. Hirotaka Maeyama, Haruki Itsui, Soshi Kawai	

16:45-17:00 **Closing Session**