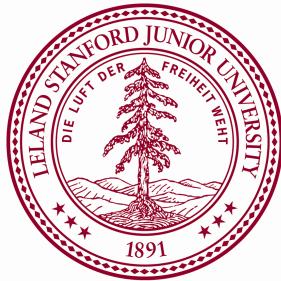
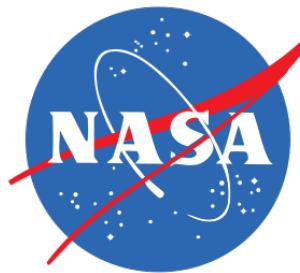


16th Biennial Summer Program Center for Turbulence Research

PROJECTS AND PARTICIPANTS



COMBUSTION

Effects of wall heat transfer on flame stabilization and dynamics

Abdulla Ghani, Thierry Poinsot

Fluid Mechanics Institute, Toulouse (CNRS)/CERFACS, France

Host(s): Lucas Esclapez

Indirect Combustion Noise Simulation in a High Pressure Turbine Stage

Friedrich Bake

German Aerospace Center, Berlin

Host(s): Jeff O'Brien, Jeonglae Kim

Including real fuel chemistry in Large Eddy Simulation of turbulent combustion

Bénédicte Cuenot, Anne Felden

CERFACS Toulouse, France

Host(s): Lucas Esclapez, Hai Wang

Inspecting Lagrangian Coherent Structures in turbulent combustion

Vineeth Nair

Indian Institute of Technology, Bombay

Host(s): Matthias Ihme, Luca Magri

Analysis of a Transverse Combustion Instability in a Full Rocket Engine Under Supercritical Conditions

Laurent Selle, Anna Federica Urbano

French National Center for Scientific Research

Host(s): Daniel Banuti, Lluis Jofre-Cruanyes, Dokyun Kim

Sub-grid scale modeling of the equation of state for fully compressible large-eddy simulation of oxy-combustion

Guillaume Ribert, Luc Vervisch, Pascale Domingo

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Evaluation of optimal ignition placement using adjoint techniques

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Evaluation of the Subgrid Turbulence Dispersion Model for Spray under the Influence of Flames

Xinyu Zhao

University of Connecticut

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LES AND WALL MODELING

A Comparative Study of Wall Models for LES of a NACA 4412 airfoil at near-stall conditions

Prahladh S. Iyer

National Institute of Aerospace, Virginia

Host(s): George Park, Mike Howland

Dynamic model for the near-wall region based on reduced representations and system identification

Peter J. Schmid, Taraneh Sayadi

Imperial College, London / University of Illinois, Urbana-Champaign

Host(s): Curtis Hamman, Adrian Lozano-Duran

Exploring nonlinear subgrid-scale models and new characteristic length scales for large-eddy simulation

Roel Verstappen, Maurits Silvis

University of Groningen, The Netherlands

Host(s): Mahdi Abkar, Jane (Hyunji) Bae, Niranjan Ghaisas

Assessment of WMLES in complex geometries

Oriol Lehmkuhl

Technical University of Catalonia

Host(s): George Park

Towards Real-Time High-Fidelity Simulation using Integral Boundary Layer modeling

Qiqi Wang, Alexandre Marques

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Host(s): Sanjeeb Bose

Extending the Dynamic Slip Boundary Condition to Variational Multiscale Methods

Corentin Carton de Wiart, Scott Murman

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Large-eddy simulation of roughness induced turbulent separation in adverse pressure gradient

Jongwook Joo

United Technologies Research Center (UTRC)

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Towards low-order models of wall turbulence

Beverly McKeon, Kevin Rosenberg, Theresa Saxton-Fox

California Institute of Technology

Host(s): Adrian Lozano-Duran, Aaron Towne

Statistical Mechanics-based Closures for Large Eddy Simulations

Karthik Duraisamy, Eric Parish

University of Michigan

Host(s): Parviz Moin, Jane (Hyunji) Bae

AEROACOUSTICS

Effects of heat transfer on transitional states of supersonic boundary layers

Abdellah Hadjadj, Mostafa Saadari Shadloo

Institut National des Sciences Appliquées de Rouen, France

Host(s): Sanjiva Lele

Laminar boundary layer instability noise:aeroacoustic or hydrodynamic feedback?

Stephane Moreau, Marlene Sanjose

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Host(s): Sanjeeb Bose

Prediction of supersonic heated jet noise using non-parallel flow asymptotics and Large-eddy simulation data within Goldstein's acoustic analogy

Adrian Sescu, Vasileios Sassis

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Host(s): Sanjiva Lele, Guillaume Bres, Aaron Towne

NUMERICAL METHODS

DNS of a turbulent buoyant helium plume using unstructured high-order low-Mach discretizations

Stefan P. Domino

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Host(s): Javier Urzay

Numerical modeling of shockwaves in biomedicine

Stefan Adami

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Host(s): Ivan Bermejo-Moreno

Development of LES-Subgrid Models for High-Order DG Schemes

Andrea Beck

University of Stuttgart, Germany

Host(s): Yu Lv

LES of shock-turbulence interaction using unstructured high-order DG

Jean-Sebastien Cagnone, Koen Hillewaert

Cenaero Headquarters, Belgium

Host(s): Yu Lv

INSTABILITY AND TRANSITION

Very-large-scale, physically realistic spatially-developing direct numerical simulation (DNS) on von Karman rotating disk boundary layer

Xiaohua Wu

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Instability and Transition of a Mach 5.8 Zero Pressure Gradient Boundary Layer Over a Thermomechanically Compliant Panel

Team: Daniel Bodony

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Host(s): Daniel Bodony

Evolution of vortex-surface fields in transitional boundary layers

Yue Yang, Yaomin Zhao

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Host(s): Philipp Hack, Jeonglae Kim

Causal structure evolution in turbulence cascade

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Turbulence modulation by variable density and viscosity

Rene Pecnik, Ashish Patel, Jurriaan W. R. Peeters, Bendiks Jan Boersma

Delft University of Technology

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Separation control in a hypersonic compression ramp interaction

Anne-Marie Schreyer

Technische Universität Braunschweig, Germany

Host(s): Javier Urzay, Ivan Bermejo-Moreno, Jeonglae Kim

Symmetry breaking in 3D wakes

Georgios Rigas

California Institute of Technology

Host(s): Gianluca Iaccarino

UNCERTAINTY QUANTIFICATION

Model-Form Uncertainty in RANS Simulations: An Approach to Fully Explore Uncertainty Space

Heng Xiao, Jianxun Wang

Virginia Tech

Host(s): Wouter Edeling

Uncertain Flow Solutions due to Stochastically Varying Geometries

Jan Nordström, Markus Wahlsten

Linköping University, Sweden

Host(s): Gianluca Iaccarino, Gianluca Geraci

Adjoint-based sensitivity analysis of a reactive jet in cross flow

Taraneh Sayadi, Palash Sashittal

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Host(s): Ik Jang, Luca Magri

Uncertainty Quantification for Turbulent Flow Statistics Using New Insights in Sparse Polynomial Chaos Techniques

Richard Ahlfeld

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Towards a Chaotic Adjoint for LES

Patrick J. Blonigan, Pablo Fernandez del Campo

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Uncertainty Quantification of RANS modeling: Perturbation of the eigenvectors of the deviatoric part of the Reynolds Stress tensor

Roney Thompson

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Second-order statistics of transitional and turbulent spatially evolving flows

Mihailo Jovanovic, Armin Zare

University of Minnesota

Host(s): Aaron Towne, Adrian Lozano-Duran, Philipp Hack

MULTI-PHASE FLOWS

Modeling Primary Atomization

Marcus Herrmann

Arizona State University

Host(s): Lluis Jofre-Cruanyes, Ronald Chan

Multiscale Geometrical Lagrangian statistics: Extensions and applications to particle-laden turbulent flows

Kai Schneider, Marie Farge Coulombier

Aix-Marseille Université, France

Host(s): Maxime Bassenne, Jeremy Horowitz, Mahdi Esamly-Moghadam

Why are Sandstorms so Shocking?

Cheng Wan, Mustafa Rahman

King Abdullah University of Science and Technology, Saudi Arabia

Host(s): Javier Urzay

Turbulence in Living Fluids

Amin Doostmohammadi

University of Oxford

Host(s): Javier Urzay

Simulation of a reactive fluidized bed reactor using coupled CFD DEM

Vincent Moureau, Yann Dufresne

French National Centre for Scientific Research

Host(s): Matthias Ihme

Turbulence and Inertial Effects in Flow Through a Porous Bed: DNS and Analysis

Sourabh V. Apte, Pedram Pakseresht, Xiaoliang He

Oregon State University

Host(s): Ali Mani

Real-gas effects in transcritical multi-phase injection and mixing at high pressure

Stefan Hickel, Jan Mattheis

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Host(s): Daniel Banuti, Lluis Jofre-Cruanyes

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Corrections or updates email pamela.nelson@stanford.edu. Thank you!