

**CENTER FOR TURBUENCE RESEARCH  
BIENNIAL SUMMER RESEARCH PROGRAM**

<b>GROUP</b>	<b>PARTICIPANTS</b>	<b>PROJECT TITLE</b>	<b>HOST</b>
<b>ACOUSTICS</b>	Bodony, Daniel	Understanding the role of temperature in turbulent jets	Lele
	Moreau, Stephane Christophe, Julien	Uncertainty quantification for low-speed fan noise predictions based on RANS simulations	Iaccarino
<b>BOUNDARY LAYERS</b>	Wallace, James Wu, Xiaohua	Investigation of the structure and transport processes within the turbulent boundary layer	Wu
	Soria, Julio Atkinson, Callum Kilaney, Kareem	Topology and non-local geometry of wall-bounded flows	Wu/Bermejo-Moreno
	Khujadze, George Wu, Xiaohua Oberlack, Martin Farge, Marie Schneider, Kai	Detection and analysis of coherent structures in turbulent boundary layer flow using wavelets	Wu
	Wutmuff, Jonathan Pook, David	Fundamental physical processes associated with bypass transition	Wu
	O'Sullivan, John	1: Examining separated turbulent flow behind a Gaussian ridge/hill using an ASBM model 2: Comparison of the performance of rough wall models and their grid dependence using DNS data	Pecnik/Iaccarino
	George, Jacob	Modeling roughness effects in 2-D and 3-D rough wall turbulent boundary layers by elliptic relaxation	Iaccarino
	Adrian, Ronald Baltzer, Jon Wu, Xiaohua	Proper orthogonal decomposition study of turbulent boundary layer structure	Wu

	Jovanović, Mihailo Moarref, Rashad	1. Sensitivity analysis of streamwise streaks in channel flows of viscoelastic fluids 2. Model-based feedback flow control	Iaccarino/ Shaqfeh
	Hadjadj, Abdellah	Study of shock/turbulence interactions using high-fidelity numerical simulations. Case of SWBLI at M=2.5	Lele/Mani
	Pirozzoli, Sergio Bernardini, Matteo	Analysis of unsteady effects in shock-boundary interactions	Larsson
<b>COMBUSTION</b>	Duchaine, Florent Poinsot, Thierry	Effects of combustor wall temperature on flame transfer functions	Poinsot
	Moureau, Vincent Pascale, Domingo Vervisch, Luc Veynante, Denis	DNS analysis of a Re = 40,000 swirl burner	Knudsen/Lodato
	Hawkes, Evatt Brear, Michael Chatakonda, Obulesu Talei, Mohsen	Analysis and modeling of premixed turbulent combustion in the thin reaction zones regime	Knudsen
	Amaya, Jorge Cuenot, Benedicte Poinsot, Thierry	Coupling LES, radiation and structure in gas turbine simulations	Pitsch/Poinsot
	Staffelbach, Gabriel Wolf, Pierre Balakrishnan, Ramesh, Poinsot, Thierry	Massively parallel LES of azimuthal instabilities in helicopter combustion chambers	Roux
<b>HYPERSONICS</b>	Bourdon, Anne Bensassi, Khalil Magin, Thierry Munafó, Alessandro Panesi, Marco	Internal energy excitation and dissociation of molecular nitrogen in hypersonic flows	Mansour/Wray

	Dubief, Yves Crocker, Ryan	Study and modeling of non-equilibrium turbulence caused by an ablative flow	Iaccarino/Mansour
	Groskopf, Gordon Kloker, Markus	Bi-global stability analysis of hypersonic boundary-layer flows with discrete surface roughness	Marxen
	Chazot, Olivier Magin, Thierry Pinna, Fabio Rambaud, Patrick Sanna, Alessandro Stephani, Kelly	Development on an integrated methodology for the post-flight analysis of the transition payload for the EXPERT mission	Marxen
	Cheung, Sai Hung Jagodzinski, Jeremy Miki, Kenji Moser, Robert Panasi, Marco Prudencio, Ernesto Prudhomme, Serge Varghese, Philip Magin, Thierry	Toward the validation of a thermochemical model with EAST shock tube radiation measurements	Magin
<b>LARGE EDDY SIMULATIONS</b>	You, Donghyun Bromby, William Lee, Jinmo Sifounakis, Adamandios	Grid-independent large-eddy simulation of compressible turbulent flows using explicit filtering	Bose
	Domino, Stefan Paul	Verification of sliding mesh algorithms for complex applications using MMS	Ham
	Nicoud, Franck Cabrit, Olivier Baya Toda, Hubert	Assessment and improvement of Large Eddy Simulation for complex aerothermal applications	Lodato
	Verstappen, Roel	When does eddy viscosity damp subfilter scales sufficiently?	Bose/Moin
<b>MULTI-PHASE FLOWS</b>	Herrmann, Marcus	Multi-scale modeling of interface dynamics for turbulent atomization applications	

	Pepiot, Perrine Desjardins, Olivier	Direct numerical simulation of dense particle-laden flows: investigation of the effect of local packing and non-sphericity on drag forces acting on the particles	Pitsch
	Desjardins, Olivier Moureau, Vincent	A two-velocity ghost-fluid method for multiphase flows with high-density ratio. Application to primary atomization of liquid fuel	Mani
	Hu, Xiangyu Adams, Nikolaus	Multi-scale modeling of compressible multi-fluid flows with conservative interface method	Herrmann
	Selle, Laurent Dombard, Jerome	On the mesoscopic Eulerian formalism for the simulation of dilute turbulent two-phase flows	Pai
	de Chaisermartin, Stéphane Chalons, Christophe Fox, Rodney Fréret, Lucie Boileau, Matthieu Laurent, Frédérique Massot, Marc Réveillon, Julien Thomine, Olivier	Eulerian models for turbulent combustion of polydisperse evaporating sprays: direct numerical simulation and new numerical strategy for LES	Herrmann
<b>SOLAR PHYSICS</b>	Busse, Friedrich	Problems of astrophysical turbulent convection	Hartlep
	Rogachevskii, Igor Kleeorin, Nathan	LES of turbulent convection in solar-type stars and formation of large-scale magnetic structures	Wray
	Simitev, Radostin	Coupling of local and global magnetic fields in a turbulent 3D MHD dynamo model in spherical shells	Hartlep/Mansour/ Kosovichev
	Yokoi, Nobumitsu	Integrated exploration of the turbulent cross-helicity effects: theory, observation, modeling and numerical simulations of the solar convection zone	Kosovichev

	Balarac, Guillaume Kosovichev, Alexander Brugiere, Olivier	Improvement of the subgrid-scale turbulence models for realistic numerical simulations of turbulent subsurface dynamics in magnetic regions of Sun	Kosovichev
	Kitiashvili, Irina	Modeling and data assimilation of turbulent MHD processes on the Sun	Kosovichev
	Parchevsky, Konstantin	Modeling of generation, propagation and scattering of acoustic waves on turbulent convection zone of the Sun	Nagi
	Kosovichev, Alexander	Turbulent MHD phenomena on the Sun: testing turbulence models by observations	Nagi
<b>UNCERTAINTY QUANTIFICATION</b>	Wang, Qiqi Dow, Eric	Stochastic modeling for the $k-\epsilon$ model	
	Colonna, Piero Congedo, Pietro Corre, Christophe	Robust simulation of nonclassical gasdynamics phenomena	Iaccarino
	Doostan, Alireza Wang, Qiqi Constantine, Paul	Statistical inverse analysis of HyShot II flight experiment	Witteveen
	Stemmer, Christian So, Kwok Kai Hu, Xiangyu Adams, Nikolaus	Uncertain analysis for shock-bubble interaction	Iaccarino/Witteveen/ Tonkid