

## Topics in Classical and Quantum Engineering Science Symposium

**Celebrating the career of K.R. Sreenivasan at 75!**

May 1-3 2023, Texas A&M University

Monday, May 1	Opening	8:30 AM	Anand, Junkins, Donzis	Welcome and Introductory Remarks		
	Largescale Flows	9:00 AM	Nagib	Wall-Bounded Turbulence: Recent Lessons from Experiments-Asymptotics-Computation	Ranjan	
		9:30 AM	Ranjan	Mixing Behavior in a Confined Jet with Disparate Viscosity and Implications for Complex Reactions		
		10:00 AM	Niemela	Ruminations on Herring's Theory of Convection		
		Break 10:30-11:00am				
	Convection in the Sun	11:00 AM	Hanasoge	The Physics of Convection in the Sun	Niemela	
		11:30 AM	Gizon	Interaction of Solar Inertial Modes with Turbulent Convection		
		12:00 PM	Dikpati	Generation of Solar Rossby Waves by Inverse Cascade of Kinetic Energy and/or MHD Instability		
		Rudder Tower Room 701. 12:30pm - 2pm				
	Geophysical and Vortical Flows	2:00 PM	Sarkar	Ocean Turbulence Forced by Flow at Bottom Topography	Falkovich	
		2:30 PM	Saravanan	Chaos and Irreducible Uncertainty of Climate Prediction		
		3:00 PM	Newton	Vortex Lattices in the Large N Limit		
		Break 3:30pm - 4:00pm				
	Circulation and Universality	4:00 PM	Migdal	Statistical Equilibrium of Circulating Fluids	Eyink	
		4:30 PM	Iyer	Circulation and Universality		
		5:00 PM	Moriconi	Optimal Surfaces for Turbulent Circulation Statistics		
End Day 1			Dinner -- Atrium Garden in the ZACH building (5th floor)			

Tuesday, May 2	Massive Simulations and Basic Physics	Time	Author	Title		
		8:30 AM	Chen	Average Turbulence Dynamics from a One-Parameter Kinetic Theory	Girimaji	
		9:00 AM	Yeung	Turbulence at the Exascale Frontier: Algorithms and Early Science		
		9:30 AM	Moser	Some Surprising Results of Turbulence DNS		
	10:00 AM	Eyink	The Josephson-Anderson Relation in Classical Turbulence			
		Break 10:30am-10:50am				
	Future Leaders Session	10:50 AM	Das	Understanding the Role of Pressure in Small-Scale Dynamics of Incompressible Turbulence	Poludnenko	
		11:10 AM	John	Compressibility Effects on Superadiabatic Convection		
		11:30 AM	Itani	Quantum Algorithm for Lattice Boltzmann Simulation of Fluids		
		11:50 AM	Bharadwaj	Linear Flow Problems with Hybrid Quantum Algorithms Using QuOn		
		12:10 PM	Buaria	Forecasting Extreme Events in Turbulence Using Deep Learning		
		Lunch 12:30pm-1:30pm				
	Reacting Flows	1:30 PM	Karpetis	A Kinetic-Theory Analogy in a Two-Phase Flow Problem	Sarkar	
		2:00 PM	Poludnenko	Reacting Turbulence in Astrophysical Plasmas and Terrestrial Chemical Systems		
		2:30 PM	White	Methane Dispersion in a Large Reynolds Number Boundary Layer		
		Break 3:00pm-3:30pm				
Adventures in Turbulence	3:30 PM	Guo	Imaging Quantized Vortex Rings in Superfluid Helium to Decipher Quantum Dissipation	Donzis		
	4:00 PM	Bewley	Intermittency in Flight			
	4:30 PM	Falkovich	Multi-Mode Correlations in Turbulence			
End Day 2			Dinner at The George -- 6:30pm			

Wednesday, May 3	Turbulence and Beyond	Time	Author	Title	
		8:30 AM	Banerjee	nanoFin Effect: Science and Applications	Yeung
		8:50 AM	Donzis	Compressible Turbulence Very Close to a Wall	
	9:10 AM	Girimaji	A possible mechanism of intermittency in turbulence		
	Quantum Fluids	9:30 AM	Scully	Quantum Overview	Yi
		9:40 AM	Sreenivasan	Quantum Turbulence	
		10:00 AM	Kocharovsky	Quantum Supremacy of Quantum Fluids	
		Break 10:20am-10:30am			
		10:30 AM	Bagnato	Nonequilibrium BEC	Kim
	Quantum Sensing	10:50 AM	Agarwal	Quantum Advantage in Sensing, Metrology and Microscopy	
		11:10 AM	Sokolov	Quantum Sensing -- Near and Far	
	Quantum Optics	11:30 AM	David Lee	Low Temperature Quantum Optics	
		11:50 AM	Yang	Advanced Capabilities for Modeling the Single and Multiple Scattering (Radiative Transfer) in a Medium Composed of Dielectric Particle	
	Lunch 12:20pm-1:20pm				
	Quantum Optics	1:20 PM	Kocharovskaya	Quantum Optics with X-ray Photons and Ultra-narrow Nuclear Transitions	Kocharovskaya
		1:40 PM	Kurouski	Plasmon-Driven Chemistry on Mono and Bimetallic Nanostructures	
	Quantum Biophotonics	2:00 PM	Zheltikov	Quantum Biosensing, Neurophotonics, and Neuroinformation	
		2:20 PM	Yakovlev	Brillouin Spectroscopy: From Simple Classical Physics to Quantum-Enhanced Imaging of Brain	
		Break 2:40pm-3:10pm			
Quantum Engineering	3:10 AM	Svidzinsky and Moochan	Improving Heat Engines by Quantum Mechanics	Scully	
	3:50 PM	Zubairy	An Adventure in Psychic Communication		
	4:10 PM	Anand, Sreenivasan	Concluding Remarks		
End Workshop					