



University of Hyderabad
School of Mathematics and Statistics

Cordially invites you to
A Public Lecture on the topic
“Turbulence: Scaling relations and energy transfer”

By



Dr. Prasad Perlekar

*TIFR Centre for Interdisciplinary Sciences, Tata Institute for Fundamental Research
Hyderabad, Telangana.*

Abstract:

Turbulent flows are ubiquitous; examples include flows in astrophysical settings, atmospheric and oceanic flows, boiling, etc. Statistical theories of turbulence provide a natural framework to study various aspects of these flows. In my talk, I will present an overview of the statistical framework used to study homogeneous, isotropic turbulence, discuss the cascade picture of energy transfer, and then present the celebrated Kolmogorov's exact result for the third-order velocity correlations. I will also introduce the multifractal formalism of U. Frisch and G. Parisi.

Finally, I will present how we use these frameworks to study complex spatiotemporal flow patterns generated by a suspension of rising bubbles.

References:

1. U. Frisch, *Turbulence*, Cambridge press (1999)
2. S. B. Pope, *Turbulent Flows*, Cambridge University Press (2011)
3. Pandey et al., *J. Fluid Mech.*, 884, R6 (2020); 932, A19 (2022)

All are invited

Date: 04th September, 2023

Time: 3.00 P.M

Venue: Seminar Hall-1, School of Mathematics and Statistics

About the Speaker:

Dr. Prasad Perlekar is an Associate Professor at the TIFR Centre for Interdisciplinary Sciences, Tata Institute for Fundamental Research, Hyderabad, Telangana. He was elected as Associate of the Indian Academy of Sciences-2015 and NVIDIA Innovation Award in December-2013. He completed Master of Science in Physics from University of Pune (2002-2004), Ph.D from Indian Institute of Science Bangalore, India (2004-2009). He was a fellow of the Department of Physics, Harvard University (2011-2013) and Postdoctoral fellow from Department of Applied Physics & Department of Mathematics and Computer Science, Technische Universite in Eindhoven, Netherland.