JOHNS HOPKINS
Center for Environmental & Applied Fluid Mechanics

FALL 2021 CEAFM VIRTUAL SEMINAR SERIES

"Turbulent-Laminar Patterns"

Presented by Dr. Laurette Tuckerman
Centre National de la Recherche Scientifique (CNRS), France

Hosted by Dennice Gayme (MechE)

Experiments and numerical simulations have shown that turbulence in transitional wall-bounded shear flows such as plane Couette and Poiseuille flow frequently takes the form of long oblique bands, if the domains are sufficiently large to accommodate them. At their upper Reynolds-number threshold, laminar regions carve out gaps in otherwise uniform turbulence, thereby forming regular oblique turbulent-laminar patterns with a large spatial wavelength. At the lower threshold, isolated turbulent bands sparsely populate otherwise laminar domains and complete laminarization takes place via their disappearance characterized by the 2D directed percolation scenario.

Laurette Tuckerman received her PhD in Applied Mathematics from MIT. After a decade at the Center for Nonlinear Dynamics at the University of Texas at Austin, she accepted a position at the CNRS (Centre National de la Recherche Scientifique) in France, where she has been ever since. Her research is on hydrodynamic instabilities, using bifurcation theory to interpret numerical simulations of convection, rotating and sheared flows, and free-surface waves. She studies transition to turbulence in wall-bounded shear flows, in particular the states in which turbulent and laminar flow coexist.

Friday, September 24, 2021 at 3:00 PM
https://wse.zoom.us/j/93762992307