Transport and Mixing in Complex and Turbulent Flows

January 11 - 14, 2021

Scientific Overview

Transport and mixing are among the most important properties of fluid flows. Indeed, movement of mechanical and thermal energy and material underlies the most basic dynamical phenomena in astrophysics, geophysics and the environment, as well as in biology and myriad industrial and engineering applications. Understanding the fundamental mechanisms and ways to control, bound, limit or enhance transport and mixing are central to many active research fields. The primary objective of this workshop is to bring together mathematicians working on theoretical aspects of fluid mechanics, transport, mixing, and computational aspects of fluid dynamics and data science, with applied scientists working on quantitative modeling and experimental aspects of mixing and transport phenomena. Recent theoretical developments combined with the explosion of data available from observations, experiments and simulations make this an especially appropriate time to bring these disparate communities together to cross-pollinate insights and encourage knowledge transfer and creation.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.
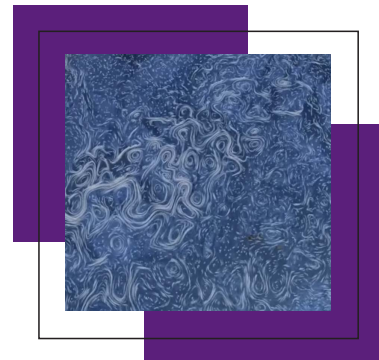
Organizers

Colm-cille Caulfield (University of Cambridge), Charles Doering (UMich), and Anna Mazzucato (Penn State).

Speakers

Jacob Bedrossian (University of Maryland), Steve Brunton (UW), Sergei Chernyshenko (Imperial College), Greg Chini (UNH), Gianluca Crippa (University of Basel), Megan Davies Wykes (University of Cambridge), Theodore Drivas (Princeton University), Giovanni Fantuzzi (Imperial College), Basile Gallet (CEA), David Goluskin (University of Victoria), Gautam Iyer (CMU), Genta Kawahara (Osaka University), Rich Kerswell (University of Cambridge), Alexander Kiselev (Duke University), Camilla Nobili (University of Hamburg), Bartosz Protas (McMaster University), Janet Scheel (Occidental College), Jörg Schumacher (TU Ilmenau), Christian Seis (University of Münster), Leslie Smith (University of Wisconsin-Madison), Jean-Luc Thiffeault (University of Wisconsin-Madison), Ian Tobasco (UIC), Alexandra Tzella (University of Birmingham), Fabian Waleffe (University of Wisconsin-Madison), John Wettlaufer (Yale University), Yao Yao (Georgia Tech), and Andrej Zlatos (UCSD).