

Workshop II: Turbulent Transport and Mixing

Monday October 13, 2014

- 8:00–9:00 *Check-In/Light Breakfast (Hosted by IPAM)*
- 9:00–9:50 **Annalisa Bracco** (Georgia Institute of Technology)
Transport and mixing at the ocean submesoscales in the northern Gulf of Mexico
- 10:00–10:15 *Break*
- 10:15–11:05 **Thomas Haine** (Johns Hopkins University)
Diagnosing sea-surface temperature dynamics from stochastically-forced fluctuations
- 11:15–11:30 *Break*
- 11:30–12:20 **Shane Keating** (University of New South Wales)
Estimating turbulent mixing by ocean eddies using superresolved satellite observations
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Guido Boffetta** (Università di Torino)
Transport and clustering of motile phytoplankton in turbulent flows
- 3:00–3:30 *Break*
- 3:30–4:20 **Jean-Luc Thiffeault** (University of Wisconsin-Madison)
How swimming microorganisms displace fluid particles
- 4:30–6:00 *Poster Session & Reception (Hosted by IPAM)*

Tuesday October 14, 2014

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–9:50 **Alexei Novikov** (Pennsylvania State University)
Exit times of diffusions with incompressible drift
- 10:00–10:15 *Break*
- 10:15–11:05 **Yao Yao** (University of Wisconsin-Madison)
Mixing and un-mixing by incompressible flows
- 11:15–11:30 *Break*
- 11:30–12:20 **Christian Seis** (Rheinische Friedrich-Wilhelms-Universität Bonn)
Optimal bounds on mixing rates
- 12:30–2:00 *Lunch (on your own)*

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- 2:00–2:50 **Jörg Schumacher** (Technische Universität Ilmenau)
Numerical studies of mixing in turbulent Rayleigh-Bénard convection
- 3:00–3:15 *Break*
- 3:15–4:05 **Xiaoming Wang** (Florida State University)
The Rate of Heat Transport in the Vertical Direction at Large Prandtl Number
- 4:15–4:30 *Break*
- 4:30–5:20 **Igor Mezic** (University of California, Santa Barbara (UCSB))
Koopman Mode Decomposition, Mesohyperbolicity and Mixing

Wednesday October 15, 2014

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–9:50 **George Haller** (ETH Zürich)
Coherent Lagrangian vortices in turbulence
- 10:00–10:15 *Break*
- 10:15–11:05 **Francisco Beron - Vera** (University of Miami)
Inertial transport near oceanic coherent Lagrangian eddies
- 11:15–11:30 *Break*
- 11:30–12:20 **James McWilliams** (University of California, Los Angeles (UCLA))
Two-Dimensional Turbulence in Irregular Domains
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:20 **Jacques Vanneste** (University of Edinburgh)
Advection-condensation of water vapour in the presence of coherent stirring
- 3:30–4:00 *Break*
- 4:00–4:50 **Peter Haynes** (University of Cambridge)
Dispersion in the large-deviation regime

Thursday October 16, 2014

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–9:50 **Alexander Kiselev** (Rice University)
Reaction enhancement by chemotaxis
- 10:00–10:15 *Break*

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- 10:15–11:05 **Wenbo Tang** (Arizona State University)
The domain dependence of reaction processes in chaotic flows
- 11:15–11:30 *Break*
- 11:30–12:20 **Evelyn Lunasin** (U.S. Naval Academy)
Finite determining parameters feedback control for distributed nonlinear dissipative systems – a computational study
- 12:30–2:30 *Lunch (on your own)*
- 2:30–3:20 **Alexandra Tzella** (University of Birmingham)
FKPP fronts in cellular flows: the large-Péclet regime
- 3:30–4:00 *Break*
- 4:00–4:50 **Gautam Iyer** (Carnegie-Mellon University)
Anomalous diffusion of tracer particles in fast cellular flows.

Friday October 17, 2014

- 8:00–9:00 *Check-In/Breakfast (Hosted by IPAM)*
- 9:00–9:50 **Alexandros Alexakis** (École Normale Supérieure)
Bounds on scalar dissipation scale for mixing flows in the presence of steady sources
- 10:00–10:15 *Break*
- 10:15–11:05 **Greg Chini** (University of New Hampshire)
Dynamics and Transport in High Rayleigh-Number Porous Medium Convection
- 11:15–11:30 *Break*
- 11:30–12:20 **Charles Doering** (University of Michigan)
Models & measures of mixing and effective diffusion
- 12:30–2:00 *Lunch (on your own)*
- 2:00–2:50 **Richard McLaughlin** (University of North Carolina)
Bodies, Buoyant Jets and Vortex Rings in Stratification
- 3:00–3:15 *Break*
- 3:15–4:05 **Colm-cille Caulfield** (University of Cambridge)
Nonlinear optimisation of scalar mixing in plane Poiseuille flow with finite diffusivity

