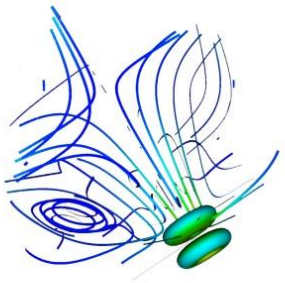
INSTITUTE FOR PURE AND APPLIED MATHEMATICS

Los Angeles, California



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MATHEMATICAL ANALYSIS OF TURBULENCE

September 29 – October 3, 2014

ORGANIZING COMMITTEE: Peter Constantin (Princeton), **Greg Eyink** (John Hopkins), **Michael Jolly** (Indiana U.), and **Anna Mazzucato** (Penn State)

Scientific Overview

This workshop will focus on recent analysis and simulations supporting the theories of 2D and 3D turbulence. On the rigorous side there are proofs of the locality in wave number of energy and enstrophy fluxes, as well as sufficient conditions for, and connections between energy power laws, cascades, and dissipation laws. Direct numerical simulations have shed light on mode interactions, intermittency, condensates, and coherent structures, as well as the effects of rotation and stratification. In addition to the fundamental system, the Navier-Stokes equations, these phenomena are examined for a variety of fundamental systems including stochastic models, probabilistic approaches, and quasi-geostrophic, magnetohydrodynamic, and Rayleigh-Bénard convection equations.

It is the goal of this workshop to bring together mathematicians, physicists, and engineers who work in the area of Mathematical Analysis of Turbulence. We expect this workshop will attract junior as well as senior participants. This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

Confirmed Speakers

Hussein Aluie (LANL), **Hakima Bessaih** (U. of Wyoming), **Animikh Biswas** (U. of Maryland Baltimore County), **John Bowman** (U. of Alberta), **Alexey Cheskidov** (U. of Illinois at Chicago), **Peter Constantin** (Princeton), **Radu Dascaliuc** (Oregon State), **Jinqiao Duan** (Illinois Inst. of Technology), **Robert Ecke** (LANL), **Gregory Eyink** (Johns Hopkins), **Marie Farge** (École Normale Supérieure), **Aseel Farhat** (Indiana U.), **Nathan Glatt-Holtz** (Virginia Tech), **Zoran Grujic** (U. of Virginia), **Tom Hou** (Caltech), **Michael Jolly** (Indiana U.), **Konstantin Khanin** (U. of Toronto), **Igor Kukavica** (USC), **Susan Kurien** (LANL), **David Levermore** (U. of Maryland), **Anna Mazzucato** (Penn State), **Alan Newell** (U. of Arizona), **Helena Nussenzveig Lopes** (Federal U. of Rio de Janeiro), **Koji Ohkitani** (U. of Sheffield), **Ricardo Rosa** (Federal U. of Rio de Janeiro), **Roman Shvydkoy** (U. of Illinois at Chicago), **Vladimir Sverak** (U. of Minnesota, Twin Cities), **Vlad Vicol** (Princeton), **Natalia Vladimirova** (U. of New Mexico), **Jiahong Wu** (Oklahoma State), **Bill Young** (UCSD)

Long Program Schedule

- Mathematics of Turbulence Tutorials. September 9 - 12, 2014.
- **Workshop I: Mathematical Analysis of Turbulence. September 29 - October 3, 2014.**
- Workshop II: Turbulent Transport and Mixing. October 13 - 17, 2014.
- Workshop III: Geophysical and Astrophysical Turbulence. October 27 - 31, 2014.
- Workshop IV: Turbulence in Engineering Applications. November 17 - 21, 2014.
- Culminating Workshop at Lake Arrowhead Conference Center, December 7 – 12, 2014.

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.

www.ipam.ucla.edu/programs/mtws1

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