



Transport Systems in Geography, Geosciences, and Networks

May 5 - 9, 2008

ORGANIZING COMMITTEE: ANDREA BERTOZZI (UCLA); BJORN BIRNIR (UC Santa Barbara); DAN ROTHMAN (MIT); WILLIAM ZAME (UCLA)

Scientific Overview

In recent years a large number of scaling laws in geomorphology have been found and recent results suggest that there is only one universal scaling law, implying all the others. Theoretical results suggest that turbulent flow is the source of the universal scaling of river basins and river networks. These results may then provide a key to the understanding of the fundamental structure of the surface of the earth, tectonic uplift, earthquake rifts and the action of glaciers. It provides a way of quantifying transport of water, sediments and chemicals over the surface and exchanges of dissolved chemicals between the water and the atmosphere. This workshop will bring together scientists and mathematicians from a variety of backgrounds to explore why and how this transport due to turbulent flow takes place and is optimal. Other transport phenomena ranging from magma in volcanoes to transport in social networks and economics will also be discussed.

Confirmed Speakers

Andrea Bertozzi (UCLA); **Hakima Bessaih** (University of Wyoming); **Sushil Bikhchandani** (UCLA); **Bjorn Birnir** (UC Santa Barbara); **Victor Chernozhukov** (MIT); **Peter Dodds** (University of Vermont); **Charles Doering** (University of Michigan); **Jinqiao Duan** (Illinois Institute of Technology); **Terry Hogue** (UCLA); **Mohammed Mahdian** (Yahoo! Research); **John Melack** (UC Santa Barbara); **Steven Morris** (University of Toronto); **Mina Ossiander** (Oregon State University); **Maya Paczuski** (University of Calgary); **Parag Pathak** (Harvard University); **Ilya Pavlyukevich** (Humboldt-Universität, Germany); **Vakhtang Putkaradze** (Colorado State University); **Dan Rothman** (MIT); **Daniel Schertzer** (École Nationale des Ponts-et-Chaussées); **Terence Smith** (UCSB); **Donald Turcotte** (UC Davis); **Peter Vorobieff** (University of New Mexico); **Michael Weinstein** (Columbia University);

Long Program Schedule

This workshop is part of the long program **Optimal Transport**.

- Tutorials, March 10 – 14, 2008
- Workshop 1: Aspects of Optimal Transport in Geometry and Calculus of Variations, March 31 – April 4, 2008
- Workshop 2: Numerics and Dynamics for Optimal Transport, April 14 – 18, 2008
- **Workshop 3: Transport Systems in Geography, Geosciences, and Networks, May 5 – 9, 2008**
- Workshop 4: Optimal Transport in the Human Body: Lungs and Blood, May 19 – 23, 2008
- Mini-Workshop: Entropies and Optimal Transport in Quantum Mechanics, June 5 – 6, 2008

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/otws3

