Conference Announcement

Kinetic Descriptions of Chemical and Biological Systems: Models, Analysis and Numerics
March 23-25, 2017

Department of Mathematics, Iowa State University, Ames, IA

Organizers
James W. Evans  Iowa State University
Hailiang Liu  Iowa State University

Confirmed Participants
Aletheo Barbaro  Case Western Reserve University
Eli Ben-Naim  Los Alamos National Laboratory
Pierre Degond  Imperial College London
Seung-Yeal Ha  Seoul National University
Michael Herty  RWTH Aachen
Raymond Kapral  University of Toronto
Markos Katsoulakis  University of Massachusetts-Amherst
Yongki Lee  University of California, Riverside
Bo Li  University of California, San Diego
Jian-Guo Liu  Carnegie Mellon University
Robert Pego  Arizona State University
Christian Ringhofer  Florida International University
Zhongming Wang  RWTH Aachen

Scientific Background
The scope of the conference is to review latest advances in the development of mathematical modeling approaches and numerical methods for kinetic descriptions of evolution in physical, chemical, and biological systems. Such evolution and often self-organization involves an interplay between non-linear interaction or reaction of the constituent “particles” and either convective or diffusive transport. Related phenomena include: front propagation and pattern formation in reaction-diffusion systems; phase transitions or bifurcations; competitive selection; aggregation; swarming and other non-conventional quasi-hydrodynamic behavior. There are many open issues in both mathematical analysis of those models and their numerical realization.

Goals
The aim of the conference is to provide an overview of current modeling strategies, of newly developed techniques of analysis, and of novel numerical methods to capture the complex behavior produced by the mathematical models. Some techniques used are related to classical kinetic theory and hydrodynamic treatments of fluids, and others to stochastic and non-equilibrium statistical mechanical models. The lectures aim to be accessible to graduate students, postdocs, and non-experts to familiarize them with central concepts and new directions in the field. Though the audience is expected to have a general mathematical background, knowledge of technical terminology and of recent findings is not assumed.

A limited number of openings are available. To apply, complete the online application before January 31, 2017.

For more information and to apply: www.ki-net.umd.edu