Center for Scientific Computation And Mathematical Modeling

Kinetic Description of Multiscale Phenomena:
Modeling, Theory, and Computation
an NSF Focus Research Group
University of Maryland, College Park

CSCAMM

$$\frac{\partial f}{\partial t} + v\frac{\partial f}{\partial x} + \frac{F}{m}\frac{\partial f}{\partial v} =$$

Workshop Announcement

Kinetic Description of Multiscale Phenomena: Young Researchers Workshop

March 2-5, 2009

Organizers: Dionisios Margetis, Antoine Mellet, Eitan Tadmor, Athanasios Tzavaras

CONFIRMED PARTICIPANTS

Ricardo Alonso, University of Texas at Austin

Bin Cheng, University of Michigan

Maria Emelianenko, George Mason University

Maria Gualdani, University of Texas at Austin

Clemens Heitzinger, University of Vienna

Juhi Jang, New York University

Ning Jiang, New York University

Xiantao Li, Penn State University

Vladislav Panferov, California State University, Northridge

Jaemin Shin, Iowa State University

Alexandros Sopasakis, UNC, Charlotte

Robert Strain, Princeton University

Zhongming Wang, University of California, San Diego

Dongming Wei, University of Wisconsin, Madison

Michael Westdickenberg, Georgia Institute of Technology

Xu Yang, University of Wisconsin, Madison

A limited number of openings are available.
Priority will be given to postdocs
and non-tenured junior faculty.

To apply please RSVP at:

www.cscamm.umd.edu/frg/frg0903/

Email: frg09@cscamm.umd.edu

SCIENTIFIC BACKGROUND

Kinetic descriptions play a critical role in the physical, social, and biological sciences, and have expanded into diverse applications of cutting-edge technology ranging from microfluidics, semiconductors, polymers and plasma to traffic networking and swarming.

Modern kinetic theory captures fundamental issues in the modeling and simulation of phenomena across length and time scales, from the atomistic to the continuum. In the context of kinetic theory mathematical approaches help the design of numerical methods and, conversely, numerical simulations help improve the quantitative understanding of underlying complex problems.

This workshop is targeting primarily researchers at an early stage of their career. It will focus on recent developments in the modeling and simulation of multiscale phenomena via kinetic methods. These include, for example, analytic techniques for the passage from particle systems to macroscopic descriptions in classical and quantum mechanical settings; computational methods for multiscale problems in materials science and fluid dynamics; and the asymptotic analysis of kinetic equations to describe macroscopic behaviors (homogenization of transport problems, diffusion limit, hydrodynamic limits).

Center for Scientific Computation
And Mathematical Modeling (CSCAMM)
CSIC Building #406, Paint Branch Drive
University of Maryland, College Park

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UNIVERSITY OF MARYLAND

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