NC STATE UNIVERSITY COLLEGE OF SCIENCES

KI-Net: Kinetic description of emerging challenges in multiscale problems of natural sciences

An NSF Research Network in Mathematical Sciences

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## Conference Announcement

# Multiscale computations for kinetic and related problems

## November 7–10, 2018

**Department of Mathematics**
**North Carolina State University**

## Organizers

| | |
|---|---|
| **Alina Chertock** | North Carolina State University |
| **Shi Jin** | University of Wisconsin-Madison |
| **Eitan Tadmor** | University of Maryland |

## Confirmed Participants

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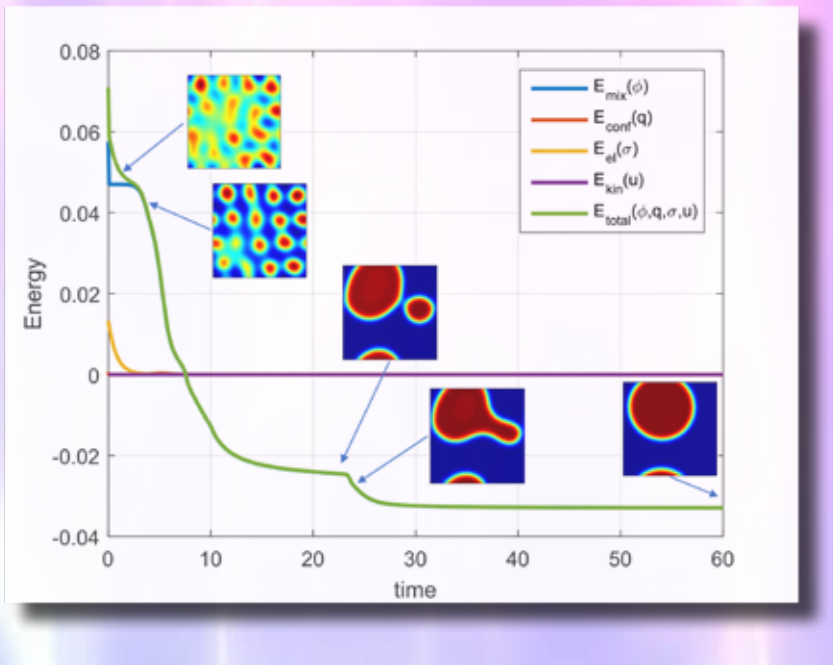
|---|---|
| **Nicolas Crouseilles** | INRIA |
| **Pierre Degond** | Imperial College London |
| **Francis Filbet** | Paul Sabatier University |
| **Rodney O. Fox** | Iowa State University |
| **Cory Hauck** | Oak Ridge National Laboratory |
| **Jingwei Hu** | Purdue University |
| **Alexander Kurganov** | Tulane University |
| **Ruo Li** | Peking University |
| **Liu Liu** | University of Texas at Austin |
| **Jianfeng Lu** | Duke University |
| **Maria Lukacova** | University of Mainz |
| **Lorenzo Pareschi** | University of Ferrara |
| **Samuel Punshon-Smith** | University of Maryland |
| **Jingmei Qiu** | University of Delaware |
| **Henning Struchtrup** | University of Victoria |
| **Li Wang** | SUNY Buffalo |
| **Yuhua Zhu** | University of Wisconsin-Madison |

**A limited number of openings are available.**
To apply, complete the online application before **September 30, 2018**.
For more information and to apply:
**www.ki-net.umd.edu**

KI-Net Hubs




*From "Energy-stable numerical schemes for multiscale simulations of polymer-solvent mixtures" in Mathematical Analysis in Continuum Mechanics by M. Lukacova-Medvidova, B. Dünweg, P. Strasser, N. Tretyakov (2018).*

## Scientific Background

Many kinetic equations arising from physical, biological or social sciences often contain one or more small parameters that lead to various asymptotic behaviors governed by hydrodynamic equations. When the parameter varies in different orders of magnitude one has to couple microscopic and macroscopic models which is often difficult. it is then desirable to develop robust numerical schemes that can work uniformly with respect to the regime considered, in the spirit of asymptotic-preserving (AP) or multiscale schemes.

## Goals

This workshop aims to bring together researchers with different expertise in multiscale computations for kinetic and related problems. Our goal is to assess the current state-of-the-arts of these methods in various applications, and to foster new collaborations. A particular focus will be made on the theoretical foundations and new and practical applications of these techniques. Lots of time will be available for group discussions.

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CSCAMM is a part of the College of Computer, Mathematical and Natural Sciences

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