Kinetic and Related Models in the Natural Sciences

Talks will take place in Van Vleck Hall Room 911, except for the Tutorial (room TBA)

Sunday, April 29 (morning):

8:50: Welcome
9:00 - 9:45: Alan Newell
   *A brief overview of why and when the wave turbulence closure works*
9:45 - 10:30: Yuri Lvov
   *Internal Waves in the Ocean – what we know, and what we don’t*
10:30 - 11:00: Coffee Break
11:00 - 11:45: Enrique Zuazua
   *Long time horizons and turnpike properties*

Lunch Break: 11:45 - 1:30

Sunday, April 29 (afternoon):

1:30 - 2:15: George Craciun
   *Chemical reaction networks, mass-action kinetics, and the Boltzmann equation*
2:15 - 3:00: David Anderson
   *Stochastic reaction networks and their qualitative behavior*
3:00 - 3:45: Massimiliano Esposito
   *Thermodynamics of open chemical reaction networks: Energy and Information transduction in biology*
3:45 - 4:15: Coffee Break
4:30 - 5:15: Tutorial by Alan Newell (room TBA)

Monday, April 30 (morning):

9:00 - 9:45: Sergey Nazarenko
   *Evolving turbulence spectra en route to the Kolmogorov spectrum*
9:45 - 10:30: Luca Biferale
   *Energy Transfer and Energy Dissipation in Turbulent Flows*
10:30 - 11:00: Coffee Break
11:00 - 11:45: Sebastien Galtier
   *Turbulence of weak gravitational waves and cosmology*

Lunch Break: 11:45 - 2:00

Monday, April 30 (afternoon):

2:00 - 2:45: Irene Gamba
   *The Cauchy problem & BEC stability for the quantum Boltzmann-Gross-Pitaevskii’s system*
2:45 - 3:30: Chun Liu
   General Diffusion in Biological Environments
3:30 - 4:00: Coffee Break
4:00 - 5:00: Panel Discussion
6:00 - 8:00: All Conference Dinner

**Tuesday, May 1 (morning):**

9:00 - 9:45: Anne Shiu
   *Bistability and oscillations in mass-action kinetics systems arising in biology*
9:45 - 10:30: Adrian Tudorascu
   *Chemical reaction-diffusion networks: convergence of the method of lines*
10:30 - 11:00: Coffee Break
11:00 - 11:45: Stas Boldyrev
   *TBA*

Lunch Break 11:30 - 2:00

**Tuesday, May 1 (afternoon):** Session for Early Career Researchers - 40 minutes each

2:00 - 2:40: Qin Li
   *Low rankness in forward and inverse kinetic theory*
2:40 - 3:10: Chanwoo Kim
   *Field-Boundary Interactions in the Kinetic Theory*
3:10 - 3:50: Minh Binh Tran
   *On the wave turbulence theory for stratified flows in the ocean*
3:50 - 4:10: Coffee Break
4:10 - 4:50: Liu Liu
   *Sensitivity Analysis and Spectral Convergence of the Stochastic Galerkin Approximation to Collisional Kinetic Equations with Multiple Scales and Random Inputs*
4:50 - 5:30: Casian Pantea
   *Effective deficiency, and parametrizations of positive equilibria for generalized mass action systems*

**Wednesday, May 2 (morning):**

9:00 - 9:45: Petr Plechac
   *Approximation of quantum observables by ab initio molecular dynamics*
9:45 - 10:30: Markos Katsoulakis
   *Model-Form Uncertainty Quantification for Probabilistic Graphical Models*
10:30 - 11:00: Coffee Break
11:00 - 11:45: Shi Jin
   *On kinetic equations with random uncertainties*