



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

An NSF Research Network in Mathematical Sciences



2012 Young Researchers Workshop: Kinetic Description of Multiscale Phenomena

Oct 10 - 13, 2012

University of Wisconsin-Madison
Department of Mathematics

Van Vleck Hall
480 Lincoln Dr.

(Coffee Breaks are always in Van Vleck Hall Room 911)

Wednesday, October 10, 2012	
8:00 – 9:00	Registration Van Vleck Hall Room 911 Van Vleck Hall Room B135
8:55 – 9:00	Shi Jin (University of Wisconsin-Madison) Welcoming Remarks Chair: Irene Gamba
9:00 – 9:45	Pierre-Emmanuel Jabin (University of Maryland) “Continuous models for rating systems and their long time behavior”
9:45 – 10:15	Stephen Pankavich (United States Naval Academy) “Classical solutions for the Relativistic Vlasov-Maxwell-Fokker-Planck system”
10:15 – 10:45	Coffee Break
10:45 – 11:15	Sébastien Motsch (University of Maryland) “From microscopic to macroscopic models in self-organized dynamics”
11:15 – 11:45	Ricardo Alonso (Rice University) “A mesoscopic scale, particle interaction model for simulation of biological fiber networks”
11:45 – 2:00	Lunch
	Chair: Sébastien Motsch Van Vleck Hall Room B215
2:00 – 2:30	Thomas Rey (University of Maryland) “Fluid Approximations of the Linearized Granular Gases Operator”

2:30 – 3:00	Shijin Deng (Shanghai Jiao Tong University) “Bifurcation on boundary data for linear Broadwell model with conservative boundary”
3:00 – 3:30	Coffee Break
	Van Vleck Hall Room B219
3:30 – 4:00	Trygve Karper (University of Maryland) “Existence of weak solutions and hydrodynamic limit of kinetic flocking models”
4:00 – 4:30	Yao Yao (University of Wisconsin-Madison) “Degenerate diffusion with nonlocal aggregation: behavior of solutions”

Thursday, October 11, 2012	
	Chair: Shi Jin Van Vleck Hall Room 911
9:00 – 9:15	Eitan Tadmor (University of Maryland) "Synergetic activities in KI-net"
9:15 – 10:00	Claude Bardos (ENS-Cachan) “A Vlasov Equation with Dirac Potential Used in Fusion Plasmas”
10:00 – 10:30	Lin Lin (Lawrence Berkeley National Laboratory) “Correlated proton tunneling in ice”
10:30 – 11:00	Coffee Break
11:00 – 11:30	Xu Yang (University of California, Santa Barbara) “Frozen Gaussian approximation for high frequency wave propagation”
11:30 – 12:00	Bokai Yan (University of California, Los Angeles) “A successive penalty--based Asymptotic-Preserving scheme for kinetic equations”
12:00 – 2:00	Lunch
	Chair: Eitan Tadmor Van Vleck Hall Room 911
2:00 – 2:30	Jingmei Qiu (University of Houston) “High order time integrators for singular perturbation problems”
2:30 – 3:00	Yingda Cheng (Michigan State University) “Discontinuous Galerkin Schemes for Vlasov-Maxwell System”
3:00 – 3:30	Graham Alldredge (University of Maryland at College Park) “Optimization Methods for Entropy-based Closures in Slab Geometry”
3:30 – 4:00	Coffee Break
	Van Vleck Hall Room B239
4:00 – 5:00	Irene Gamba (University of Texas at Austin) WIMAW Lecturer “Analytical and numerical issues associated with the dynamics of the non-linear Boltzmann equation”

Friday, October 12, 2012	
	Chair: Claude Bardos Van Vleck Hall Room B135
9:00 – 9:45	Laurent Desvillettes (ENS Cachan) "Recent results for coagulation-fragmentation-diffusion equations"
9:45 – 10:15	Chenglong Zhang (University of Texas at Austin) "Computations on the spectral gap for the linearized Boltzmann operator"
10:15 – 10:45	Coffee Break
10:45 – 11:15	Li Wang (University of California Los Angeles) "Asymptotic Preserving (AP)" schemes for kinetic equations in the high field regime.
11:15 – 11:45	Qin Li (University of Wisconsin-Madison) "Semiclassical limit of Schrodinger equation with periodic potential, and band-crossing"
11:45 – 2:00	Lunch
	Chair: Xu Yang Van Vleck Hall Room B135
2:00 – 2:30	Jingwei Hu (The University of Texas at Austin) "A fast algorithm for the energy space boson Boltzmann collision operator"
2:30 – 3:00	Shumo Cui (Tulane University) "Application of Deterministic Particle Methods to PDEs Arising in Financial Modeling"
3:00 – 3:30	Coffee Break
3:30 – 4:00	Jeff Haack (University of Texas at Austin) "Conservative Spectral Methods for the Inhomogeneous Boltzmann equation"
4:00 – 4:30	Yongyong Cai (University of Wisconsin Madison) "Uniform error estimates of numerical methods for NLSW"
Evening Activities	
6:00	Dinner at Soga Restaurant

Saturday, October 13, 2012	
	Chair: Laurent Desvillettes Van Vleck Hall Room B135
9:00 – 9:45	Michael Graham (University of Wisconsin, Madison) “Segregation phenomena in flowing suspensions of deformable particles: toward an understanding of cell and particle dynamics in blood flow”
9:45 – 10:15	Jose Morales Escalante (The University of Texas at Austin) “A Discontinuous Galerkin (DG) Solver for Boltzmann - Poisson (BP) Models of \\ Electron Transport in Semiconductors using a Radial Average of a Local EPM Band as a Conduction Band Model.”
10:15 – 10:45	Coffee Break
10:45 – 11:15	Changhui Tan (University of Maryland) “Critical thresholds on compressible Euler dynamics with nonlocal viscosity”
11:15 – 11:45	Hui Yu (Iowa State University) “An entropy satisfying conservative method for the Fokker-Planck Equation of Fene Dumbbell Model”
11:45	Closing