Research Group

Neesha Anderson (Undergraduate Student) Multi-scale modeling of materials

Aparna Baskaran (Graduate Student) Granular fluids, quantum potentials

"Gaussian kinetic model for granular gases", J. Dufty, A. Baskaran, and L. Zogaib, Phys. Rev. E **69**, 051301 (2004), cond-mat/0312113.

Aditi Mallik (Graduate Student) Multi-scale modeling of materials

"Applicatation of Transfer Hamiltonian Quantum Mechanics in Multi-Scale Modeling" Aditi Mallik, Carlos Taylor, Keith Runge, and James W. Dufty, Int. J. Quant. Chem., in press.

Jeff Wrighton (Postdoc) Plasma spectroscopy for hot, dense matter

"Charge Correlation Effects in Plasma Line Broadening", J. Wrighton (Ph. D. thesis).

Yannick Marandet (Postdoc), Field theoretical methods for turbulent plasmas

"Coupling of Radiative and Transport Properties in Nonequilibrium Plasmas" (Ph. D. thesis)

Keith Runge (Senior Research Associate), Quantum chemistry, multi-scale modeling

"Excited states in artificial atoms via equation-of-motion coupled cluster theory", T. Henderson, K. Runge, and R. Bartlett Phys. Rev. B 67, 045320 (2003).

Jim Dufty (Professor), Non-equilibrium statistical mechanics

"Improved quantum potentials for correlated Coulomb systems", A. Filinov, V. Golubnychiy, M. Bonitz, W. Ebeling, and J. Dufty, cond-mat/0310665, Phys. Rev. E, in press.

Current Collaborators

J. Javier Brey, U. Sevilla, Spain; Granular fluids, nonequilibrium statistical mechanics

"Hydrodynamic Modes for a Granular Gas", James W. Dufty and J. Javier Brey, Phys. Rev. E **68**, 030302 (2003); cond-mat/0302170.

Michael Bonitz, U. Kiel, Germany; Metallic clusters, quantum kinetic theory

"Quantum Kinetic Theory of Metal Clusters in an Intense Electromagnetic Field I", M. Bonitz and J. Dufty, Cond. Matt. Phys. (in press)

Annette Calisti, U. Provence, France; Semi-classical plasma simulation

"Charge Correlation Effects in Electron Broadening of Ion Emitters in Hot and Dense Plasmas", E. Dufour, A. Calisti, B. Talin, M. Gigosos, M. Gozalez, and J. Dufty, JQSRT **81**, 125 – 132 (2003).

Matthieu Ernst, U. Utrecht, The Netherlands; nonequlibrium statistical mechanics

"Exact Short Time Dynamics for Steeply Repulsive Potentials", James Dufty and Mathieu Ernst, Molecular Physics (in press), cond-mat/0401635.

Vicente Garzo, U. Extremadura, Spain; Granular fluids

"Hydrodynamic Equations for Granular Mixtures – A Review", V. Garzo and J. Dufty in *Horizons in Physics Research*, (Nova Pubs., Hauppauge, NY, 2003).

James Lutsko, U. L. Brussels, Belgium; Granular fluids, shear flow

"Long Ranged Correlations in Sheared Fluids", James F. Lutsko and James W. Dufty, Phys. Rev. E **66**, 041206 (2002); cond-mat 0205366.

Maria Jose Ruiz-Montero, U. Sevilla, Spain; Granular fluids

"Linearized Boltzmann Equation and Hydrodynamics for Granular Gases", J. Javier Brey, James W. Dufty, and Maria Jose Ruiz-Montero in *Granular Gases*, T. Poeschel and N. Brilliantov, ed. (Springer, 2003); cond-mat/0302180.

Andres Santos, U. Extremadura, Spain; Granular fluids

"Inherent Rheology of a Granular Fluid in Uniform Shear Flow", A. Santos, V. Garzo, and J. Dufty, Phys. Rev. E **69**, 061303 (2004), cond-mat/0309320.

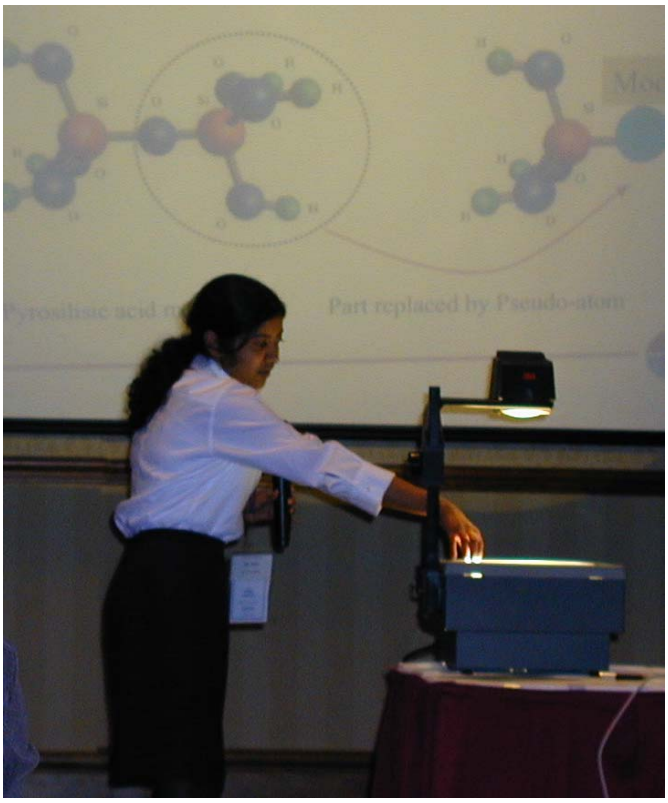
Bernard Talin, U. Provence, France; Semi-classical simulation of plasmas

"High Z Ions in Hot, Dense Matter", J. Dufty, B. Talin, and A. Calisti, in *Theory of Energy Deposition*, Advances in Quantum Chemistry **46**, 293 (2004).

Lorena Zogaib, Inst. Tech. Aut., Mexico; Granular fluids; density functional theory

"Semi-classical Representation of Density Functional Theory for Electrons and Ions", J. Dufty and L. Zogaib (in preparation).

(Some photos on the next page, more to come)



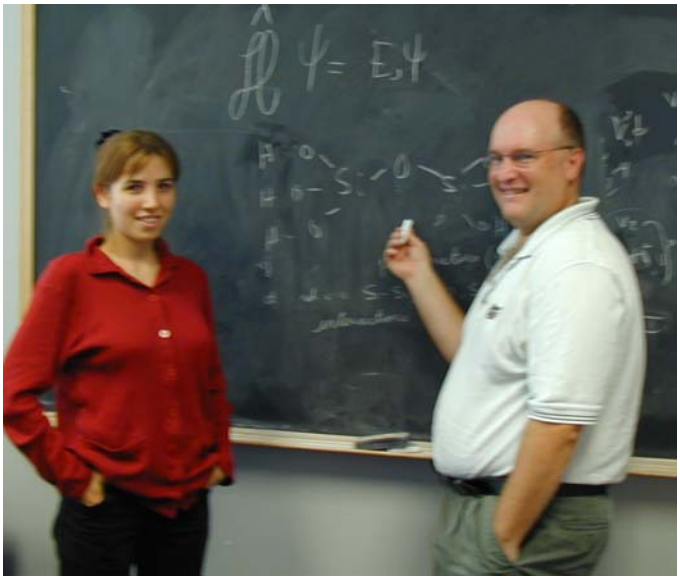
Aditi at Sanibel meeting

Aditi at Montreal APS meeting

Aparna in at Lipari Workshop

Aparna at University of Sevilla

Lorena after seminar at ITA



Neesha and Keith at work

Andres and Angeles at the RGD meeting in Bari

Matthieu at UF-Paris workshop

Bernard visiting UF