104th Statistical Mechanics Conference
Rutgers University, Busch Campus, Hill Center, room 114
Sunday – Tuesday, December 19-21, 2010

<u>CONFERENCE PROGRAM</u>

Sunday, December 19, 2010

8:00-9:00   REGISTRATION & BREAKFAST

9:00 – 9:25 Kurt Binder, University of Johannes Gutenberg
"Monte carlo methods for estimating interfacial free energies and line tensions"

9:25 – 9:50 Kurt Kremer, Max Planck Institute for Polymer Research
"Adaptive Resolution Simulations: Towards Open Systems Molecular Dynamics Simulations"

9:50 – 10:15 David Landau,University of Georgia
"Monte Carlo simulations of the HP model: The 'Ising model of protein folding'"

10:15 – 10:45   COFFEE

10:45 – 11:10   Frank Verstraete, University of Vienna
"Variational methods for 1+1 dimensional quantum field theories"

11:10 – 11:35 Ayse Erzan, Istanbul Technical University
"Spectral Renormalization Group Theory on Networks"

11:35 – 12:00   Marty Golubitsky, Ohio State University
"Phase-shift synchrony and symmetries of periodic solutions in networks"

12:00 – 12:30 Terry Hwa, University of California, San Diego
"On bacterial growth, drug resistance, and evolution"

12:30 – 1:45   LUNCH

1:45 – 2:10 Erwin Frey,University of Munich
"Minimal premises for the evolution and maintenance of cooperation"

2:10 – 2:35 Jorge Jose, Indiana University
"Non-equilibrium biophysical model of self-organized in-vitro spindle formation"

2:35 – 3:00 Michael Deem, Rice University
"The Adaptive, Heritable Bacterial Immune System: Heterogeneous Diversity of Spacers within CRISPR"

3:00 – 3:25 Cristina Marchetti, Syracuse University
"Hydrodynamics and Rheology of Active Fluids"

3:25 – 3:55   COFFEE

3:55 – 4:20 Michael Shelley, CIMS, New York University
"Instability thresholds, density fluctuations, and large-scale mixing in active suspensions"

4:20 – 4:50 Charles Doering, University of Michigan
"Demographic stochasticity versus spatial variation in the competition between fast and slow dispersers"

4:50 – 5:20 Dave Thirumalai, University of Maryland
"Learning about Molecular Motors Using Polymer models"

5:20 – 5:50 Ned Wingreen, Princeton University
"Why are chemotaxis receptors clustered but other receptors aren't?"

6:00 –   8:00   COCKTAILS AND CONCERT WILL BE HELD AT THE FIBER OPTICS AUDITORIUM. SPONSORED BY SPRINGER, PUBLISHER OF JOURNAL OF STATISTICAL PHYSICS AND COMMUNICATIONS IN MATHEMATICAL PHYSICS. ALL ARE INVITED.

8:00   BANQUET WILL BE HELD AT THE BUSCH CAMPUS FACULTY DINING ROOM. ADVANCED RESERVATIONS ARE REQUIRED
SEE MAP FOR DIRECTIONS: http://maps.rutgers.edu/maps

Monday, December 20, 2010

8:00 – 8:45   REGISTRATION & COFFEE

8:45 – 10:15   Short talks - Session A

10**:15 – 10:50   COFFEE**

10:50 – 11:20 Susan Coppersmith, University of Wisconsin
"Incommensurate phases of a compressed nanoparticle film"

11:20 – 11:50 Sang-Wook Cheong, Rutgers University
"Ferroelectric domain patterns and graph theory?"

11:50– 12:30   Human Rights Session, with Clare Robinson, Scholars at Risk

12:30 – 1:50   LUNCH

1:50 – 2:15 Nikolay Prokofiev, University of Massachusetts
"Solution of the dirty Boson problem"

2:15 – 2:40 Joaquin Marro, University of Granada
"Networks of excitable units: structure and nonequilibrium phase transitions"

2:40 – 3:05 Werner Krauth, Ecole Normale Superieure
"Damage spreading and coupling in Markov chains"

3:05 – 3:30 David Wilson, Microsoft
"XOR-Ising loops and the Gaussian free field"

3:30 – 4:00   COFFEE

4:00 – 4:25 Boris Svistunov, University of Massachusetts, Amherst
"Diagrammatic Monte Carlo for Fermionic Systems"

4:25 – 4:50 Vladimir Korepin, C.N. Yang Institute of Theoretical Physics, SUNY
"Measures of Entanglement in Spin Chains"

4:50 – 5:15   Bill Eaton, National Institute of Health
"An Ising-like model for protein folding"

5:15 – 5:45 Jayanth Banavar, Penn State
"Metabolic efficiency and the shapes of flora and fauna"

5:45 – 6:15 Sid Nagel, University of Chicago
"Memories"

6:15 – 8:00 Cocktails and dinner

8:00   Round table with open discussion on: Computational approaches to important problems in Nature, Industry and Society: a statistical mechanics perspective.

Participants will include: Tom Russell, NSF program for Cyber-enabled Discovery and Innovation (CDI)*, Frederica Darema, Air Force Office of Scientific Research, Gyan Bhanot, Rutgers University, Gene Stanley, Boston University, and others.

Tuesday, December 21, 2010

7:40 – 8:10 REGISTRATION & BREAKFAST

8:10 – 9:20 Short talks - Session B

9:20 – 9:50 COFFEE

9:50 – 10:20 Alan Sokal, New York University
"Overcoming Critical Slowing down: Where Do We Stand 23 Years after Swendsen and Wang?"

10:20 – 10:45 Giovanni Ciccotti, University of Rome, "La Sapienza"
"Free energies for rare events: Temperature accelerated MD & MC"

10:45 – 11:10 Lawrence Pratt, Tulane University
"Organizing information for the statistical theory of liquid water: Good theories are either Gaussian or everything"

11:10 – 11:35 Gabi Kotliar, Rutgers University
"The Mystery of the Hidden Order in URu2Si2"

11:35 – 12:00 Michael Vogelius, Rutgers University
"Electromagnetic Cloaking at all frequencies"

12:00 – 12:25 Tom Lubensky, University of Pennsylvania
"Isostaticity, Auxetic Response, and Conformal Invariance in Two-dimensional Elastic Networks"

12:25 – 1:45 LUNCH

1:45 – 2:10 Troy Shinbrot, Rutgers University
"Granular Electrostatics"

2:10 – 2:35 Nathan Clisby, University of Melbourne
"Efficient Monte Carlo simulation of polymers"

2:35 – 3:00 Henk van Beijeren, Institute for Theoretical Physics, Utrecht, The Netherlands
"Multi-species simple exclusion processes with two-way traffic and overtaking"

3:00 – Short talks - Session C