

107th Statistical Mechanics Conference
Rutgers University, Busch Campus, Hill Center, room 114
Sunday – Tuesday, May 6-8, 2012

CONFERENCE PROGRAM

Sunday, May 6, 2012

8:00 – 9:00 Registration and breakfast

9:00 – 9:25 Bruno Nachtergaele, University of California, Davis
Five generalizations of the AKLT model

9:25 – 9:50 Robert Ziff, University of Michigan
Percolation on regular and hyperbolic lattices

9:50 – 10:15 Michael Chertkov, Los Alamos National Laboratory
Statistical Physics for Smart (Power) Grids

10:15 – 10:40 Santo Fortunato, Aalto University
Characterizing and modeling citation dynamics

10:40 – 11:10 Coffee

11:10 – 11:35 Avraham Soffer, Rutgers University
A model of quantum friction rigorous results

11:35 – 12:00 Vojkan Jaksic, McGill University
Quantum entropic functionals, fluctuations symmetries, and Araki-Lieb-Thirring inequality

12:00 – 12:25 Laszlo Erdos, Universität Muenchen
Localization length in random band matrices

12:25 – 1:45 Lunch

1:45 – 2:10 Horng-Tzer Yau, Harvard University
Random matrices and Dyson Brownian motion

2:10 – 2:35 Jan Sengers, University of Maryland, College Park
Light scattering and shadowgraphy measurements of thermal nonequilibrium fluctuations in

fluids

2:35 – 3:00 Robert Seiringer, McGill University
The Excitation Spectrum for Weakly Interacting Bosons

3:00 – 3:25 Philippe Choquard, ITP, EPF Lausanne CH
The 2D Euler-Coriolis fluid: Theory and Illustration

3:25 – 3:50 Ned Wingreen, Princeton University
The role of enzyme clustering in metabolic regulation

3:50 – 4:20 Coffee

4:20 – 4:45 Carl Franck, Cornell University
Experimentally Exploring the Limits and Consequences of Chemical Communication Between Cells

4:45 – 5:10 Yana Bromberg, Rutgers University
Differentiating SNP-mediated function disruption from disease

5:10 – 5:35 Natalia Komarova, University of California, Irvine
Cooperation as an engine of evolution

5:35 – 5:50 Freeman Dyson, Institute for Advanced Study
Partitions and the Grand Canonical Ensemble

6:00 – 7:00 COCKTAILS AND CONCERT SPONSORED BY SPRINGER, PUBLISHER OF JOURNAL OF STATISTICAL PHYSICS AND COMMUNICATIONS IN MATHEMATICAL PHYSICS. ALL ARE INVITED.

7:00 – 8:00 CONCERT BY TRIO AFFETTUOSO – ELENA CHERNOVA-DAVIS, MICHAEL DAVIS AND DANIEL MERRIMAN

8:00 BANQUET. ADVANCED RESERVATIONS ARE REQUIRED.

Monday, May 7, 2012

8:15 – 9:00 Registration and breakfast

9:00 – 9:45 Short talks, Session A

9:45 – 10:15 Coffee

10:15 – 10:40 Sergio Ciliberto, CNRS

Experimental verification of Landauer's principle linking information and thermodynamics

10:40 – 11:05 Shivaji Sondhi, Princeton University
The Statistical Mechanics of Quantum Satisfiability

11:05 – 11:30 Alexander Zamolodchikov, Rutgers University
On high energy scattering in Ising field theory

11:30 – 11:55 Juan Maldacena, Institute for Advanced Study
Solving a four dimensional gauge theory using integrability

11:55 – 12:25 Human Rights Session with Anneke Levelt-Sengers of NIST and others: "Science and Technology for Development: An Initiative of the Network of Science Academies in the Americas"

12:25 – 1:45 Lunch

1:45 – 2:10 Sriram Shastry, University of California, Santa Cruz
Quantum integrable models in finite dimensional Hilbert spaces

2:10 – 2:35 James P. Crutchfield, University of California, Davis
The Past and the Future in the Present

2:35 – 3:00 Roberto Livi, INFN
Transport properties of the Discrete Nonlinear Schrödinger equation

3:00 – 3:25 Coffee

3:25 – 3:50 Premi Chandra, Rutgers University
An Emergent Critical Phase in a 2D Frustrated Heisenberg Model

3:50 – 4:15 Natan Andrei, Rutgers University
Quench Dynamics of Interacting Bosons

4:15 – 4:40 Mark Bowick, Syracuse University
Facets of Order

4:40 – 5:05 Eitan Tadmor, University of Maryland, College Park
Consensus and flocking in heterophily self-alignment dynamics

5:05 – 5:30 David Pine, New York University
Colloidal lock and keys - towards self-replication

5:30 – 5:55 Jane Wang, Cornell University
How do insects fly and turn

6:00 – 8:00 Cocktails and dinner

8:00 – 9:15 Special Session: On the works of the guests of honor with Jan Sengers, Eric Carlen, Joel Lebowitz and others

Tuesday, May 8, 2012

8:30 – 9:00 Registration and breakfast

9:00 – 9:45 Short talks, Session B

9:45 – 10:15 Coffee

10:15 – 10:40 Raul Rechtman, University of Mexico
Motion of a cylinder attached to a spring subject to a flow

10:40 – 11:05 Zohar Nussinov, Washington University in St. Louis
The detection of hidden spatial and spatio-temporal structures in complex physical systems by multi-scale clustering and some of their properties

11:05 – 11:30 Mariano Lopez, University of Mexico
Structural properties of fluids interacting via piece-wise constant potentials with a hard core

11:30 – 11:55 Yves Elskens, CNRS/Aix-Marseilles University
Propagation of chaos in wave-particle interaction

11:55 – 12:20 Robert McCann, University of Toronto
Higher-order time asymptotics of fast diffusion in Euclidean space: a dynamical systems approach

12:20 – 1:30 Lunch

1:30 – 1:55 Konstantin Khanin, University of Toronto
Intermediate disorder for directed polymers

1:55 – 2:20 Clement Mouhot, University of Cambridge
A new approach to the hydrodynamic limit of interacting particle systems: the zero range process

2:20 – 2:45 Israel Michael Sigal, University of Toronto
Long distance behaviour of van der Waals forces

2:45 – 3:10 Jochen Gemmer, Universitat Osnabruk
Emergence of Thermodynamical Behavior in Closed Quantum Systems: A Small Spin System as an Example

3:10 – 3:35 Eric Carlen, Rutgers University
Bounds for entanglement via an extension of strong subadditivity of entropy

3:35 -4:00 Theodore R. Kirkpatrick, University of Maryland
Eddie Cohen, long time tails, and quantum phase transitions