

Program of the 98th Statistical Mechanics Conference

Rutgers University, Hill Center, Room 114

Sunday, Monday, Tuesday, December 16–18, 2007

Joel L. Lebowitz

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Please note that in many cases there is only one speaker listed. Although the work may have been done with collaborators. Also, the addresses may be incomplete. Information about past and future meetings, as well as positions wanted and available can be obtained at: <http://www.math.rutgers.edu/events/smm/>

The next Statistical Mechanics Conference will take place May 11–13, 2008.

Conference Program

A. Bertozzi, UCLA, bertozzi@math.ucla.edu
Swarming by Nature and by Design

C. Doering, University of Michigan, doering@umich.edu
Statistical Steady State Mixing Measures and Effective Diffusivities

D. Pine, NYU, pine@nyu.edu
A Nonequilibrium Dynamical Transition in Periodically Strained Suspensions

A. Sokal, NYU, sokal@nyu.edu
Fermionic (Grassmann) Representation for Spanning (Hyper)forests
and Other Combinatorial Objects

E. Shakhovich, Harvard University, eugene@belok.harvard.edu
How Statistical Mechanics of Proteins Shapes Biological Evolution

J.L. Lebowitz (✉)
Center for Mathematical Sciences Research, Rutgers University, 110 Frelinghuysen Road, Piscataway,
NJ 08854-8019, USA
e-mail: lebowitz@math.rutgers.edu

G. Forgacs, University of Missouri, forgacsg@missouri.edu
Computational Tissue-engineering: Relating Biophysical Properties Across Scales from the Subcellular to the Organ Level

M. Widom, Carnegie Mellon University, widom@andrew.cmu.edu
Target Gene Identification for RNA Interference

P. Fratzl, Max Planck Institute, Peter.Fratzl@mpikg.mpg.de
Natural Materials as Mechanical Devices

A. Levelt Sengers, NIST, johanna.sengers@nist.gov
Women for Science—Retrospective and Outlook

H. Cummins, City College of New York, cummins@sci.ccnycuny.edu
Light-Scattering Spectroscopy of Phase Transitions: From Liquid-Vapor to Liquid-Glass and Liquid-Gel

H. Swinney, University of Texas at Austin, swinney@chaos.ph.utexas.edu
Volume Fluctuations, an Invariant Distribution, and a Phase Transition in a Static Granular Medium

W. Webb, Cornell University, www2@cornell.edu
Critical Phenomena in 2 Dimensional Structures Including Living Cells—Like Ours!

P. Hohenberg, NYU, pierre.hohenberg@nyu.edu
Critical Dynamics and Chaos

J. Gollub, Haverford College, jgollub@haverford.edu
Curvature Fields, Topology, and the Dynamics of Spatiotemporal Chaos

G. Ahlers, University of California, Santa Barbara, guenter@physics.ucsb.edu
The Large-scale Circulation in Rayleigh-Benard Convection: A Dynamical System Driven by the Fury of Turbulence!

W. Goldberg, University of Pittsburgh, goldburg@pitt.edu
Fluctuating Entropy of Particles on a Turbulent Sea

D. Rothman, MIT, thr@MIT.EDU
Time-Dependent Reactivity in Earth's Carbon Cycle

R. Weiss, Princeton University, rweiss@Princeton.EDU
Synthetic Biology: From Bacteria to Stem Cells

Human Rights Session.
Guest speaker: Hadi Hadizadeh, Harvard University
Title: Status of Human Rights in Iran!

B. Widom, Cornell University, widom@vdwaals.chem.cornell.edu
Effect of a Solute on the Structure and Energetics of its Solvent—and Vice Versa

E. Stanley, Boston University, hes@buphy.bu.edu
New Results on Water in Bulk, Nanoconfined, and Biological Environments

J. Weeks, University of Maryland, jdweek@ipst.umd.edu
Effective Attraction Between Like-charged Objects in Systems with Strong Coulomb Interactions

S. Dietrich, Max Planck-Gesellschaft, dietrich@mf.mpg.de
Critical Casimir Forces

S. Fraden, Brandeis University, fraden@brandeis.edu
Manipulating Phase Diagrams with Microfluidics

B. Schmittman, Virginia Tech., schmittm@vt.edu
Lack of Consensus in Social Systems

Z. Nussinov, Washington University, zohar@wuphys.wustl.edu
Inhomogeneous Orders, Glassy Dynamics, and Unusual Thermodynamics on Curved Surfaces and Frustrated Systems

B. Chakraborty, Brandeis University, bulbul@brandeis.edu
Phase Space for Jamming: A Statistical ensemble for granular packings

M. Bandi, Los Alamos National Laboratory, mbandi@lanl.gov
Dynamics of the Jamming Transition

Boltzmann video with open discussion. S. Goldstein and J.L. Lebowitz, Commentators

I. Guarneri, Universita dell' Insubria, italo.guarneri@uninsubria.it
Accelerator Modes in Cold Atom Optics

J. Mayo, Sandia National Laboratories, jmayo@sandia.gov
Front Propagation in Random Media: An Application of Burgers Turbulence and Directed Polymers

A. Figotin, University of California, Irvine, afigotin@math.uci.edu
Nonlinear Dynamics of a System of Particle-like Wavepackets

R. Ziff, University of Michigan, Ann Arbor, rziff@umich.edu
Percolation and the Quasi-static State of Dynamical Processes

S. Coppersmith, University of Wisconsin-Madison, snc@physics.wisc.edu
Using the Renormalization Group to Classify Boolean Functions

M. den Nijs, University of Washington, dennijs@phys.washington.edu
ECoG Observations of a Power Law in the Brain

H. van Beijeren, Universiteit Utrecht, H.vanBeijeren@phys.uu.nl
Green-Kubo for Solids

M. Vogelius, Rutgers University, vogelius@math.rutgers.edu
Electromagnetic Cloaking and Near-cloaking of Objects

L. Blum, Rutgers University, lesblum@yahoo.com
The Analytical Solution of the Extended Soft Binding Mean Spherical Approximation

A. Neimark, Rutgers University, aneimark@rutgers.edu
Fluid-Solid Interactions: Accounting for the Surface Roughness

P. Grassberger, University of Calgary, pgrassbe@ucalgary.ca
Practical Applications of Mutual Information: Phylogenetic Trees, Independent Component Analysis, and Microarray Gene Expression Data

Short Talks

*For author presenting talk

*W. Ellenbroek, Ellak Somfai, Martin van Hecke, Wim van Saarloos
A Diverging Length Scale in the Response of Granular Media Near Unjamming

*N. Xu, V. Vitelli, M. Wyart, A. J. Liu, S. R. Nagel,
University of Chicago and University of Pennsylvania
Energy Transport in Jammed Systems

*T. Haxton, A. J. Liu, University of Pennsylvania
Activated Dynamics and Effective Temperature in a Steady State Sheared Glass

*L. Daniels, Y. Park, T.C. Lubensky, D.J. Durian, University of Pennsylvania
Bipolar Rods in a Fluidized Bed

*E. Rericha, A. Pomerance, D. Sisan, R. McAllister, J. Urbach, W. Losert,
University of Maryland
Relaxation from Micron Scale Perturbations in Actin Networks

*A. Kabakcioglu, D. Balcan, M. Mungan, A. Erzan, Koc University, Istanbul
Yeast's Regulatory Network Topology from Regulatory DNA Sequences

*S. Mukhopadhyay, Bob Behringer and Tom Witelski, City College, NY
Dynamics of Circular Contact Lines

*B. Goncalves, Stefan Boettcher, Emory University
Hierarchical Small World Graphs

*P. De Gregorio, A. Lawlor, K. A. Dawson, Cornell University
Finite Size Effects in Some Bootstrap Percolation and Kinetically Constrained Models

*T. Brzinski, T.A. Brzinski and D.J. Durian, University of Pennsylvania
Drag Forces in a Gas Fluidized Granular Bed

*K. Nordstrom, B. Polak, P. Arratia, A. Alsayed, J. Gollub and D. Durian,
University of Pennsylvania
Microfluidic Jamming

*J. Quintana, J. C Armas and L. Gonzalez-Lee, University of Mexico
Chiral Segregation of Two Dimensional Models

Z-F. Huang, Wayne State University
Defect Dynamics in Stripe Phases of Nonpotential, Patterning Forming Systems

*S. Boettcher, E. Marchetti, Emory University
Thermal-to-Percolative Crossover in Dilute Lattice Spin Glasses

*B. Miller, J.-L. Rouet and E. Le Guirrec, Texas Christian University
Emergence of Fractal Geometry in a Toy Model of the Expanding Universe

*M. Pleimling, L. Kornyei and F. Igloi, Virginia Tech
Nonequilibrium Critical Dynamics of the Two-Dimensional Ising Model Quenched from
a Correlated Initial State

*J. Joo, S. Plimpton and J.-L. Faulon, Sandia National Laboratories
Interplay of Noise and Time-Delayed Negative Feedback Loops in a Biochemical Signaling
Network

M. Hagan, Brandeis University
Dynamic Models for Templated Viral Capsid Assembly

*A. Rutenberg, G. Ryan, Dalhousie University
Bacteriophage Control of Bacterial Lysis Timing

*P. Viot and A. Burdeau
Gaussian Velocity Distribution in a Vibrated Granular Bilayer System

*Y. Shokef, Y. Han, A. Alsayed, P. Yunker, T. Lubensky and A. Yodh,
University of Pennsylvania
Geometrical Frustration in Buckled Colloidal Monolayers

*G. Hentschel, I. Procaccia, Emory University
Dielectric Relaxation in Glass-Forming Hydrogen-Bonded Liquids Near the Glass
Transition

*C. Henley, S. Hicks, Cornell University
Virus capsid elasticities: atomistic to coarse-grained I. Triangulated network models

*S. Hicks and C. Henley, Cornell University
Virus Capsid Elasticities: Atomistic to Coarse-Grained: II. Extracting Parameters from MD
Simulations

*C. Haselwandter, M. Kardar, R. da Silveira, and A. Triller, MIT
Reaction-Diffusion Model for Formation of a Neuronal Synapse

*C. Chatelain, M. Kardar, Y. Kantor, MIT
Probability Distributions for Polymer Translocation

*J. Hoffman, R.K.P. Zia, Virginia Tech
First Order Transition in a Quasi-one-dimensional ABC Model

*A. Angel, R. K. P. Zia, Virginia Tech
Power Spectra of the Occupation of a Segment of a Totally Asymmetric Zero-Range Process on a Ring

*A. Toom, A. V. Rocha and A. Dias-Ramos, UFPE, Brazil
Approximation of Measures by Words

*O. Sariyer, A. Nihat Berker and M. Hinczewski, Istanbul Technical University
Spin-Wave Stiffnesses, Excitation Spectrum Gap and Algebraic Crossovers, and Finite-Temperature Quantum Effects in the XXZ Heisenberg Chain

*A. Malakis, A. Nihat Berker, N.G. Fytas, I.A. Hadjiagapiou and S.S. Martinos, University of Athens
Wang-Landau Studies of Pure and Quenched Random Systems

*C.N. Kaplan, A. Nihat Berker, Koccedil University, Istanbul
Quantum Induced Asymmetric Phase Diagrams of Spin-Glass Systems

*A. Erbas, A. Nihat Berker, H. Aktug, A. Dörtyön and S. Ugur, Technische Universitaet Muenchen
Two-Level Simulated Annealing Solution of Delivery System in Metropolitan Istanbul

*C. Guven (Koç U), A. Nihat Berker (Koç U), M. Hinczewski (Gürsey Res Cen) and H. Nishimori (Tokyo Ins Tech)
Reentrant and Forward Phase Diagrams of the Anisotropic Three-Dimensional Ising Spin Glass

B. Nienhuis, *W. Guo, H. W. J. Bloete, Beijing Normal University
Tricritical $O(n)$ Models in Two Dimensions

R. Fisch, Princeton University
Structure Factor of the 3D Random Field XY Model

*S. Durukanoglu, O.S. Trushin and T.S. Rahman, MIT and Istanbul Tech University
Molecular Static Calculations of Activation Energy Barriers on Cu(111)

M. Hinczewski*, A. Nihat Berker, F. Gurse Research Center
High-Precision Thermodynamic and Critical Properties from Tensor Renormalization-Group Flows

*A. Nihat Berker and M. Hinczewski, Koc University
 $d=3$ tJ Model Global Phase Diagram with Quenched Random Impurities: Renormalization-Group Calculation

*C. Franck, Wui Ip, Albert Bae, Nathan Franck, Elijah Bogart and Thanhbinh Thi Le,
Cornell University

When Cells Collide: Evidence for Cell-Assisted Cell Growth Based on Direct Contacts

*L. Guzman and M. Santillan, Instituto Politecnico Nacional, Mexico

Comparative Study of Two Transcriptional Regulatory Networks: *E. coli* and *S. cerevisiae*

*Z. Konkoli, Chalmers, Gothenburg, Sweden

Diffusion Controlled Reactions in Small and Structured Spaces as a Tool for Describing
Living Cell Biochemistry

R. Zia, J.J. Dong and *B. Schmittmann, Virginia Tech

Applying TASEP to Modify Production Rates of Real Proteins

*M. Lavrentovich, R. K. P. Zia, Kenyon College

Exact Energy Flux Through the Steady State of a Non-Equilibrium 1-D Ising Chain

J. Park and A.-L. Barabasi, Northeastern University

Distribution of Node Characteristics on Complex Networks

*J. Basner and C. Jarzynski, University of Maryland

Unbiased Estimation of the Potential of Mean Force

*A. Taloni, M. Kardar and M. Andersen Lomholt

Langevin Formulation for Single File Diffusion

*B. Vollmayr-Lee, S. Yasuda and A. Rutenberg, Bucknell University

Phase Ordering Dynamics: The Influence of Asymmetric Mobility

*R. Akiyama, N. Fujino, K. Kaneda and M. Kinoshita, Kyushu University

Attractive Force between Like-Charged Colloidal Particles Arising Solely from Solvent
Granularity

*J.-C. Domenge, C. Lhuillier, L. Messio, L. Pierre and P. Viot, Rutgers University

Chirality and Z₂ Vortices in a Heisenberg Spin System on the Kagomé Lattice

*T. Burkhardt, G. Györgyi, N.R. Moloney and Z. Rácz, Temple University

Extreme Value Statistics in Correlated Systems

G. Tellez, Universidad de los Andes

Charge Inversion of a Guest Charge in a +2:-1 Electrolyte

*S. Lehmann, M. Schwartz and L. K. Hansen, Northeastern University

Bi-clique Communities

A. Ayyer, Rutgers University

Exact Solution for a Driven Open Lattice System with Three Kinds of Particles