

## **Program of the 94th Statistical Mechanics Meeting Rutgers University, December 18–20, 2005**

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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/index.html>

The next Statistical Mechanics Meeting will take place May 7–9, 2006.

\*For author presenting talks

### REVIEW TALKS

P. Hohenberg, New York University, [pierre.hohenberg@nyu.edu](mailto:pierre.hohenberg@nyu.edu) The Foundations of Quantum Mechanics: an Update

R. Balian, CEA-Saclay, [balian@cea.fr](mailto:balian@cea.fr) Quantum Measurement, a Problem of Statistical Mechanics

N. Berker, Koc University and M.I.T., [nihat@gursey.gov.tr](mailto:nihat@gursey.gov.tr) New Phases, Superfluid Weights, and Free Carrier Densities: Renormalization-Group Theory of Electronic Models

N. Andrei, Rutgers University, [natan@physics.rutgers.edu](mailto:natan@physics.rutgers.edu) Nonequilibrium Transport in Quantum Impurity Systems (exact results)

D. Nelson, Harvard University, [nelson@cmt.harvard.edu](mailto:nelson@cmt.harvard.edu) Two Dimensional Hydrodynamics: Can Cell Membranes Sense Walls?

J. Banavar, Penn State University, [jayanth@phys.psu.edu](mailto:jayanth@phys.psu.edu) Patterns in Ecology—a Statistical Mechanics Perspective

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- R. Lipowsky, Max-Planck Institute, lipowsky@mpikg.mpg.de Activity Patterns on Scale-Free Networks
- J. Chayes, Microsoft, jchayes@microsoft.com Controlling the Spread of Viruses on Power-Law Networks
- L. Barabasi, Notre Dame University, alb@nd.edu The Nature of Time in Complex Networks
- F. Wu, Northeastern University, fywu@neu.edu Two-point Impedance in an Impedance Network: A New Formulation
- C. Borgs, Microsoft, borgs@microsoft.com The Random Energy Conjecture for Number Partitioning and Spin Glasses
- I. Giardina, University of Rome, irene.giardina@roma1.infn.it Metastability and Supersymmetry in Glassy Systems
- A. Theumann, Universidade Federal do Rio Grande do Sul, Brazil, al bath@ifufrgs.br Quantum Spherical Spin Glass: Supersymmetry and Annealing
- P. Young, University of California Santa Cruz, peter@bartok.ucsc.edu Do Spin Glasses Have a Phase Transition in a Magnetic Field?
- J.-P. Bouchaud, CEA-Saclay, bouchau@dsm-mail.saclay.cea.fr, Cooperative Lengthscales in Glass-Formers: Theoretical Motivations and Empirical Evidence
- J. Langer, University of California, Santa Barbara, langer@physics.ucsb.edu Dynamics of the Glass Transition
- E. Brezin, ENS, brezin@physique.ens.fr Historical Perspective on Quantum Field Theory
- J. Zinn-Justin, CEA-Saclay, Jean.Zinn-Justin@cea.fr The Critical Temperature of the Weakly Interacting Bose Gas
- A. G. Yodh, University of Pennsylvania, yodh@physics.upenn.edu Melting in Temperature Sensitive Suspensions
- P. Winkler, Dartmouth College, peter.winkler@dartmouth.edu Fluid/solid Transition in a Hard-core System
- Human Rights and Social Responsibilities of Scientists*
- J. Hirsch, University of California, San Diego, jhirsch@ucsd.edu Why are Physicists Silent? The Dangers of New US Nuclear Weapons Policies
- J. Lebowitz, Human Rights of Scientists and Academics
- H. W. Diehl, Universitaet Duisburg-Essen, phy300@theo-phys.uni-essen.de Casimir Effect in the Presence of van-der Waals-Type Interactions
- J. Hirsch, University of California, San Diego, jhirsch@ucsd.edu Electric Fields in Superconductors: an Explanation of the Tao Effect
- B. Shraiman, University of California, Santa Barbara, shraiman@itp.ucsb.edu Physics and Biology of Growth
- H. Orland, CEA-Saclay, orland@sph.t.saclay.cea.fr RNA Folding and Large N Matrix Field Theory

- C. Jarzynski, Los Alamos National Laboratory, [chrisj@lanl.gov](mailto:chrisj@lanl.gov) Microscopic Reversibility, Macroscopic Irreversibility, and Nonequilibrium Work Theorems
- D. Richards, Penn State University, [richards@stat.psu.edu](mailto:richards@stat.psu.edu) Higher-Order Generalizations of the Gaussian Correlation Conjecture
- D. Calcan and \*A. Erzan, Istanbul Technical University, [erzan@itu.edu.tr](mailto:erzan@itu.edu.tr) Dynamics on Random Content Based Boolean Networks
- P. Braun, S. Heusler, S. Müller, \*F. Haake, Universitaet Duisburg-Essen, [fritz.haake@uni-essen.de](mailto:fritz.haake@uni-essen.de) The Role of Chaotic Classical Orbits for Universality in Quantum Spectra and Transport
- A. Tremblay, Sherbrooke University, [tremblay@physique.usherbrooke.ca](mailto:tremblay@physique.usherbrooke.ca) High Temperature Superconductors: Theory without a Small Parameter
- Special Session with Informal Talks*
- B. Duplantier, CEA, Saclay, [bduplantier@cea.fr](mailto:bduplantier@cea.fr) Einstein and Boltzmann's Entropy Spin Dynamics and Spin Transport in Metals and Semiconductors
- B. Halperin, Harvard University, [halperin@hall.harvard.edu](mailto:halperin@hall.harvard.edu) Broken-Symmetry Dynamics: Nematic Liquid Crystals and More
- T. Lubensky, University of Pennsylvania, [tom@dept.physics.upenn.edu](mailto:tom@dept.physics.upenn.edu) Post Enlightenment Blues L. Kadanoff, University of Chicago, [LeoP@Uchicago.edu](mailto:LeoP@Uchicago.edu)
- Emergent Fields: "Do we need fermions?" M.E. Fisher, University of Maryland
- F. L. Metes and \*W. K. Theumann, Universidade Federal do Rio Grande do Sul, Brazil, [theumann@if.ufrgs.br](mailto:theumann@if.ufrgs.br) Sequence Processing in Feed-Forward Layered Neural Networks
- L. S. Young, New York University, [lsy@cims.nyu.edu](mailto:lsy@cims.nyu.edu) Nonequilibrium Steady States for Some Hamiltonian and Stochastic Models
- K. Mallick, CEA-Saclay, [mallick@spht.saclay.cea.fr](mailto:mallick@spht.saclay.cea.fr) Spectral Properties of the Asymmetric Exclusion Process
- M. Evans, University of Edinburgh, [martin@ph.ed.ac.uk](mailto:martin@ph.ed.ac.uk) Factorised Steady States and Condensation Transitions
- O. Costin, Ohio State University, [costin@math.ohio-state.edu](mailto:costin@math.ohio-state.edu) Ionization in Time Periodic Fields of Arbitrary Strength: Rigorous Results
- \*P. Contucci, G. Parisi, C. Giardinà, C. Giberti and C. Vernia, Università di Bologna, [contucci@dm.unibo.it](mailto:contucci@dm.unibo.it) Factorization and Ultrametricity in Short-Range Spin Glasses: Rigorous and Numerical Results
- A. Okounkov, Princeton University, [okounkov@math.princeton.edu](mailto:okounkov@math.princeton.edu) The Pearcey Process
- L. Korolov, Princeton University, [korolov@math.princeton.edu](mailto:korolov@math.princeton.edu) Inverse Problem for Gibbs Fields
- V. Mastropietro, University of Rome, [mastropi@mat.uniroma2.it](mailto:mastropi@mat.uniroma2.it) Anomalies and Ward Identities in Lattice Spin Models

## SHORT TALKS

- N. Petrov, University of Oklahoma, npetrov@ou.edu Empirical Studies of Regularity in Critical Dynamical Systems
- \*S.K. Das, J. Horbach, and K. Binder, University of Maryland, subir@umd.edu Crossover in Dynamic Critical Behavior?
- \*R. Fisch, ron@princeton.edu and A. Hartmann, U. Gottingen Finite-Size Scaling of the Domain Wall Energy for the 2D +J Ising Spin Glass
- \*M. Hinczewski and N. Berker, MIT, mgh@mit.edu Phase Diagrams of Electronic Systems in 3d: Effects of Spatial Anisotropy and Quenched Impurities
- J. Schwarz, Syracuse University, jschwarz@physics.syr.edu The Physics of Filopodia
- \*M. Linden, linden@kth.se, E. Johansson, A.-B. Jonsson and M. Wallin, Royal Institute of Technology, Stockholm Modeling Bacterial Motility via Pilus Retraction
- A. Kabakcioglu, Koc University, akabakcioglu@alum.mit.edu Theta-Point: Where a Scale Free Network Is Born
- A. Vazquez, University of Notre Dame, avazque1@nd.edu Spreading Dynamics on Graphs with a Power Law Degree Distribution: Extensive Dynamics and Polynomial Growth
- M. Loecher, Rutgers University, loecher@mailaps.org Improved Epidemic Path Predictability in Complex Networks
- G. Szabo, University of Notre Dame, gabor.szabo@nd.edu Diffusion in Social Networks
- \*A. Kolakowska and M.A. Novotny, Mississippi State University, alicjak@bellsouth.net Stochastic Dynamics of Two-Component Surface Growth Processes that Mix Random Deposition with Other Universality Class Growth
- H. Hasegawa, Nihon University, h-hase@mxj.mesh.ne.jp Onsager-Machlup Functions and the Fluctuation Theorem for Diffusion Processes
- G. Ramirez-Santiago, Universidad Nacional Autonoma de Mexico, memo@fisica.unam.mx Phase and Charge Reentrant Phase Transitions in Ultrasmall Josephson Junction Arrays
- \*M.C. Rechtsman, F.H. Stillinger and S. Torquato, Princeton University, mr@princeton.edu Optimized Interparticle Interactions via Inverse Methods
- A. Gabrielli, University of Rome, andrea.gabrielli@roma1.infn.it Gravitational Evolution of a Perturbed Lattice vs. Coulomb Lattice
- R. Ghafouri, UCLA, rouzbeh@physics.ucla.edu Dimensional Reduction for Branched Polymers
- \*B. Schmittmann, D. Adams, and R.K.P. Zia, Virginia Tech, schmittm@vt.edu Totally Asymmetric Exclusion Processes with Particle Number Constraints
- A. Middleton, Syracuse University, aam@syr.edu Computing Barriers for Spin Glasses

- R. Ziff, University of Michigan, rziff@umich.edu Generalization of the Star-Triangle Transformation and New Exact Thresholds in Percolation
- S. Ji, Rutgers University, sji@rci.rutgers.edu Molecular Density Functional Theory of the Living Cell
- D. O'Maoileidigh, Rutgers University, dmelody@physics.rutgers.edu Predicting the Motion of the Molecular Motor RNA Polymerase
- \*D. Adams, B. Schmittmann, and R.K.P. Zia, Virginia Tech, daadams@vt.edu How Clouds Grow Away From Equilibrium
- \*B. Skinner, B. Schmittmann and R.K.P. Zia, Virginia Tech, brian.skinner@vt.edu Dynamics of Particle Escape from a Simple Lattice Gas: How the Plaza Evacuates
- \*D. Erickson, daericks@vt.edu, G. Pruessner, B. Schmittmann and R.K.P. Zia, Virginia Tech Spurious Phase in a Model for Traffic on a Bridge
- \*J. Dong, B. Schmittmann and R.K.P. Zia, Virginia Tech, jjdong@vt.edu TASEP with "Bottlenecks" Motivated by Protein Synthesis
- \*D. Tsygankov, University of Maryland, dtsygank@umd.edu and K. Wiesenfeld, Georgia Institute of Technology, Synchronizing an Oscillator Network by Weak Dynamic Links
- E. Klotins, Institute of Solid State Physics, Riga, Latvia, klotins@cfi.lu.lv Critical Dynamics in Models of Coupled Overdamped Anharmonic Oscillators: Symplectic Approach
- S. Huntsman, Naval Postgraduate School, schuntsm@nps.edu Descriptive Thermodynamics
- V. Shneidman, NJIT, vitaly@oak.njit.edu Collapse of Nucleation Fluxes in a Cold Lattice Gas
- A. Khaneles, akhaneles@yahoo.com Integer Lattice Gases at Equilibrium
- M. Islam, Purdue University, islam@physics.purdue.edu Transmission through 2D Disordered Cluster
- \*S.-C. Park and H. Park, Korea Institute for Advanced Study, psc@kias.re.kr Pair Contact Process with Diffusion: Controversary in Absorbing Phase Transition
- G. Tellez, Universidad de los Andes, Bogota, Colombia, gtellez@uniandes.edu.co Short-Distance Expansion of Correlation Functions for a Two-Dimensional Coulomb Gas
- G. Grason, UCLA, grason@physics.ucla.edu Chiral Phase Transition in Frustrated Polyelectrolyte Bundles
- A. Erbas, A. Tuncer, B. Yucesoy\*, and A.N. Berker, Istanbul Technical University and Koc University, yucesoyb@gmail.com Phase Diagrams and Crossover in Spatially Anisotropic  $d=3$  Ising, XY Magnetic and Percolation Systems: Exact Renormalization-Group Solutions of Hierarchical Models
- \*G.L. Daquila, gdaquila@vt.edu, T.J. Bullard, J. Das and U.C. Tauber, Virginia Tech Vortex Transport in Type-II Superconductors: Comparison of Variable Columnar Defect Length and Point Pinning Strength

- Y. Wu, Virginia Tech, wuyong@vt.edu  
The Random Field Ising Model at Zero and Positive Temperature
- A. Adib, Brown University, artur@brown.edu Nonequilibrium Free Energy Estimation without Work Measurement
- J. Ardelius, KTH Stockholm, Sweden, ardelius@kth.se Investigation of Behavior of Heuristics near SAT/UNSAT Transition
- N. Gulbahce, Los Alamos National Laboratory, gulbahce@cnls.lanl.gov Optimization in Gradient Networks
- S. Boettcher, Emory University, sboette@emory.edu On the Lower Critical Dimension of the Edwards-Anderson Spin Glass
- F. Hansen, Copenhagen University, Frank.Hansen@econ.ku.dk Extensions of Lieb's Concavity Theorem
- T. Garoni, New York University, garoni@nyu.edu Asymptotics of Hankel Determinants Generated by Fisher-Hartwig Symbols Defined on the Real Line
- \*A. Prasad, ashok@brandeis.edu, Y. Hori and J. Kondev, Brandeis University Stretching Stiff Biofilaments
- M. Hertzberg, MIT, mphertz@mit.edu Casimir Forces in Closed Geometries
- M. Zyskin, University Bristol, UK and Rutgers University, zyskin@yahoo.com Liquid Crystals in Polyhedral Domains
- Y. Zou, Princeton University, yzou@princeton.edu Equation-Free Uncertainty Quantification of Heterogeneous Catalytic Reactions
- K.-I. Goh, University of Notre Dame and Dana-Farber Cancer Institute, kwangil.goh@gmail.com Skeleton and Fractal Scaling in Complex Networks
- K. Lin, New York University, klin@cims.nyu.edu Correlations in Nonequilibrium Steady States
- A. Sain, IIT Bombay, India, asain@phy.iitb.ac.in Phase Separation Kinetics in Binary Fluids—an Effective One Fluid Model
- M. Ranganathan, University of Maryland, madhav@glue.umd.edu Spiral Evolution in Confined Geometry
- C. Hidalgo, University of Notre Dame, chidalgo@nd.edu The Effect of Social Interactions in the Consumption Life Cycle of Motion Pictures
- G. Ariel, NYU, ariel@cims.nyu.edu Testing Transition State Theory on a Kac-Zwanzig Model
- H. Wang, Clark University, hwang@physics.clarku.edu Non-Constant Nucleation Rate in a System in Apparent Metastable Equilibrium
- A. Gaudilliere, University of Rome/Rutgers, gaudilli@mat.uniroma2.it On Metastability and Nucleation for a Diluted Lattice Gas under Kawasaki Dynamics at Low Temperature
- Y. Deng, NYU, yd10@nyu.edu The Ashkin-Teller Model in the Antiferromagnetic Limit
- J. Lebowitz, Rutgers University, lebowitz@math.rutgers.edu Wetting and Droplet Formation for Systems with Long Range Kac Potentials