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Program of the 90th Statistical Mechanics Meeting Celebrating the 80th Birthday of Freeman Dyson and the 100th Anniversary of the Birth of Lars Onsager

Rutgers University, December 14–16, 2003

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/jmm/index.html.

The next Statistical Mechanics Meeting will take place May 16–18, 2004.

Joel L. Lebowitz

REVIEW TALKS (*For authors presenting talks)

Random Matrix Model with External Source and Multiple Orthogonal Polynomials

P. Bleher, Indiana University, bleher@math.iupui.edu

Random Matrices and Hyperbolic Sigma Models

T. Spencer, Institute for Advanced Study, spencer@ias.edu

Differential Equations for Dyson Processes

C. Tracy, University of California, Davis, tracy@math.ucdavis.edu

Limiting Theorems for Eigenvalue Linear Statistics of Unitary Invariant Matrix Models

L. Pastur, University Paris 7, pastur@math.jussieu.fr

The Lee–Yang Circle Theorem and Zeros of Graph-Counting Polynomials

D. Ruelle, IHES/Rutgers, ruelle@ihes.fr

Exceptional Magic: Lie Groups as Invariance Groups

P. Cvitanovich, Georgia Tech, predrag.cvitanovic@physics.gatech.edu

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New perspective on Parisi's Hierarchal Ansatz for Spin Glass Models
M. Aizenman, Princeton University, aizenman@math.princeton.edu
On Szegő's Strong Limit Theorem for Toeplitz Determinants
P. Deift, NYU/Courant, deift@CIMS.nyu.edu
On Almost Periodicity and Diffusion in Hamiltonian PDE's
J. Bourgain, IAS, bourgain@ias.edu
Spacing of Zeros of the Riemann zeta-Function and Some Arithmetical Applications
H. Iwaniec, Rutgers University, iwaniec@math.rutgers.edu
Some Problems in Physics That I Would Like to See Solved Mathematically
J. Fröhlich, ETHZ, Switzerland, juerg@phys.ethz.ch
Scaling Limits of Quantum Dynamics of Many-Body Systems
H. T. Yau, Stanford University, yau@math.stanford.edu
Dyson's Conjecture for the Energy of a Charged Bose Gas
J. P. Solovej, University of Copenhagen/IAS, solovej@math.ku.dk
Freeman Dyson—a Personal Retrospective
A. Lenard, Indiana University, lenard@indiana.edu
Onsager, Ice, and Biomembranes
J. Nagle, Carnegie Mellon University, nagle@andrew.cmu.edu
Some Fruits of Genius: Lars Onsager and the Ising Model
M. E. Fisher, University of Maryland

SESSION ON HUMAN RIGHTS AND SOCIAL RESPONSIBILITIES OF SCIENTISTS

(a) Effects of the Patriot Act on Scientists and Science in the USA
I. Lerch, Director of International Affairs, The American Physical Society, lerch@aps.org
(b) Scientific Cooperation in the Troubled Middle East
M. I. Weinstein, Bell Labs, miw@research.bell-labs.com
(c) Discussion
Adam Smith's Unreliable Hand: Instability of Financial Markets
J. McCauley, University of Houston, jmccauley@uh.edu
Nonlinear Waves in BEC: A Collection of Short Stories
P. Kevrekidis, University of Massachusetts, kevrekid@math.umass.edu
Generalizations and Applications of Fisher–Hartwig Asymptotics
*P. J. Forrester and N. Frankel, University of Melbourne, Australia, frankel@physics.unimelb.edu.au
The Critical Size for Cubocahedral to Icosahedral Transformation in Nano-Sized Palladium Clusters
N. Jisrawi, Brookhaven National Laboratory/Birzeit University, najeh@solids.phy.bnl.gov

Many-Fermion Density Matrix for a Block in a Lattice: New Tricks
C. Henley, Cornell University, clh@msc.cornell.edu
A Sketch of the Random Matrices Landscape
E. Brezin, ENS, edouard.brezin@lpt.ens.fr
Global Regularity for Certain Analytic Turbulence Model
E. Titi, University of California, Irvine, T-7, Los Alamos National Laboratory/Weizmann Institute of Science, etiti@math.uci.edu
Conformation Dynamics and Transition Pathways in Complex Systems
E. Vanden Eijnden, NYU/Courant Institute, eve2@cims.nyu.edu
Morphogen Gradients and Growth and Size Control
B. Shraiman, Rutgers University, shraiman@physics.rutgers.edu
Does Cancer Solve an Optimization Problem
N. Komarova, Rutgers University, komarova@math.rutgers.edu
The Human Genome Project
A. Levine, IAS, alevine@ias.edu
Round Table—Statistical Mechanics and Biology: A Discussion
Participants Include: N. Rajewsky, NYU, nr@scarbo.bio.nyu.edu, B. Shraiman, shraiman@physics.rutgers.edu
Strongly Correlated Electrons: A Dynamical Mean Field Perspective
G. Kotliar, Rutgers University, kotliar@physics.rutgers.edu
Onsager's Legacy in Nonequilibrium Thermodynamics
G. Jona-Lasinio, University of Rome, Gianni.Jona@roma1.infn.it
Fast Coarsening in Low Dimensions
B. Schmittmann, Virginia Tech, schmittm@vt.edu
New Statistical Theory of Superconductivity
M. de Llano, UNAM, Mexico, dellano@servidor.unam.mx
Q-Dependent Susceptibilities in Planar Ising Models: Recent Progress Combining Two Solution Methods Pioneered by Onsager
J. H. H. Perk, Oklahoma State University, jhhp@jperk.phy.okstate.edu

SHORT COMMUNICATIONS (* For author presenting talk)

The Effects of Shape on Phase Stability
J. F. Kenney, Russian Academy of Sciences—Joint Institute of Earth Physics, JFK@alum.MIT.edu
Superdense Crystal Packings of Ellipsoids
*A. Donev, F. H. Stillinger, P. M. Chaikin, S. Torquato, Princeton University, adonev@math.princeton.edu
Liquid–Liquid Transitions Probed by Sound
V. Kozhevnikov, University of Utah, vkozhev@physics.utah.edu

Simulations of Spinodal Nucleation in Systems with Elastic Interactions
C. Gagne, Clark University, cgagne@physics.clarku.edu

Ionic Criticality: How Can Density and Charge Fluctuations Mix
*J.-N. Aqua, M. E. Fisher, University of Maryland, jnaqua@glue.umd.edu

Weak Chaos in a Two Component Gravitating System
B. Miller, Texas Christian University, B.Miller@tcu.edu

Bifractal Geometry in a One Dimensional Model of the Expanding Universe
*B. Miller, Texas Christian University, and J.-L. Rouet, Universite d'Orleans

Order and Disorder from Nested Recursion
G. Huber, University of Massachusetts, huber@cs.umb.edu

Network Classification via Walks and Words
M. Middendorf, Columbia University, mjm2007@columbia.edu

Extreme Fluctuations in Small-World Synchronized Systems
*H. Guclu, G. Korniss, Rensselaer Polytechnic Institute, gucluh@rpi.edu

A Space and Time Cluster Algorithm for Stochastic Processes
*N. Gulbahce, Clark University/Lanl, ngulbahce@physics.clarku.edu, F. Alexander, Lanl, and G. Johnson, Lanl

FlatPERM, a Flat Histogram Stochastic Growth Algorithm
T. Prellberg, Technical University Clausthal, thomas.prellberg@tu-clausthal.de

Dynamical Instabilities of Quasi-static Crack Propagation Under Thermal Stress
*H. G. E. Hentschel, Emory University, phshgeh@physics.emory.edu, E. Bouchbinder and I. Procaccia, Weizmann Institute

Criticality and Geometry in the Ising Model
R. Costa-Santos, Utrecht University, costa@phys.uu.nl

Actin Filament Growth Kinetics: Dynamics of ATP and ADP-Pi Caps, Large Fluctuations near the Critical Concentration, and Treadmilling
B. O'Shaughnessy, *D. Vavylonis, and Q. Yang, Columbia University, dv35@columbia.edu

G-7 Protein Binding by Design
M. Shlesinger, Office of Naval Research, shlesim@onr.navy.mil

Nucleation of Protein Crystals via Intermediate Metastable States: Phenomenological Approach
*A. B. Kolomeisky, Rice University, tolya@mail.rice.edu, W. Pan and P. G. Vekilov, University of Houston

What Statistical Physics Can Tell Us about DNA Replication
J. Bechhoefer, Simon Fraser University, johnb@sfu.ca

Statistical Mechanics of Thermodynamic Processes
J. Fröhlich, ETH Zurich, *M. Merkli, McGill University, merkli@math.mcgill.ca, S. Schwarz, ETH Zurich and D. Ueltschi, University of Arizona

A Variable-Length Example of 1-D Symmetry Breaking
A. Toom, UFPE, Brazil, toom@de.ufpe.br

Universality of the Edge Distribution of Eigenvalues of Wigner Random Matrices with Polynomially Decaying Distributions of Entries
A. A. Ruzmaikina, Purdue University, aar@stat.purdue.edu

The Dynamics of Conformity and Dissent
*T. Halpin-Healy and A. Soulier, Columbia University,healy@phys.columbia.edu

Phase Transitions at Grain Boundaries: An Exact Result
*D. Abraham, V. Mustonen, and A. J. Wood, Oxford University, d.abraham1@physics.ox.ac.uk

New Results on Dyson's Spin Wave Approximation
B. Nachtergaele, UC Davis, bxn@math.ucdavis.edu

Size Control in Spontaneous Cell Aggregation
*S. Di Talia, A. Gamba, A. de Candia, A. Coniglio, L. Preziosi, Rockefeller University, ditalis@mail.rockefeller.edu

Lane Preference in a Simple Traffic Model
*J. Krometis, B. Schmittmann, and R. K. P. Zia, Virginia Tech, mrometis@vt.edu

Real Space Renormalization Group Study of the ASEP Model
I. Georgiev, Virginia Tech, georgiev@vt.edu

Universal Scaling Functions in Earthquake and Avalanche Models
A. Mehta, University of Illinois-Urbana/Champaign, apmehta@uiuc.edu

General Properties of Magnetization Distributions: Illustration on the 1D Ising Model
*T. Antal, Boston University, antal@bu.edu, M. Droz, University of Geneva, and Z. Racz, Eotvos University

Response of a semiflexible polymer to a uniform field
P. Benetatos, Hahn-Meitner-Institut, Berlin, panayotis@hmi.de

Hard Sphere Virial Coefficients
N. Clisby, SUNY at Stony Brook, nclisby@grad.physics.sunysb.edu

A Relativistic Generalization of the Field of Complex Numbers
E. Grgin, Institute Rudjer Boskovic, Zagreb, eg55@earthlink.net

The Cavity Approach to Heteropolymers: Sequence Correlations and Freezing Scenarios
M. Muller, Rutgers University, muller@ipno.in2p3.fr

Asymptotic Behavior of Solid Partitions
R. Rajesh, Brandeis University, rrajesh@brandeis.edu

Accurate Exponents from Dilute Lattice Spin Glasses
S. Boettcher, Emory University, sboettc@emory.edu
On Hysteresis in Random Field Ising Model
S. Sabhapandit, University of Wisconsin-Madison, sanjib@gandalf.physics.wisc.edu
A Phase Transition in Pippenger's Model of Boolean Networks with Unreliable Gates
M. Raginsky, Northwestern University, maxim@ece.northwestern.edu
Limit Lognormal Multifractal as an Exponential Functional
D. Ostrovsky, Yale University, dvo2@pantheon.yale.edu
An Ensemble Approach to the Asymptotic Evolution of Classical Non-integrable Hamiltonian System with Few Degrees of Freedom
C. B. Li, The Univeristy of Texas at Austin, cbli@physics.utexas.edu
Quantum Statistical Physics: A New Approach
U. Edgal, North Carolina A&T State University, ufedgal@ncat.edu
Extended Farey Spin Chain and the Lewis Three-Term Equation
J. Fiala, University of Maine, jan.fiala@umit.maine.edu
A Complexity Measure for Statistical Mechanical Models
*I. Erb, Leipzig University, ierb@bioinf.uni-leipzig.de, N. Ay, Santa Fe Institute
Statistical Mechanical Derivation of Gain-Threshold Mechanism in Neurons
L. Andrey, Academy of Sciences, Prague, andre@cs.cas.cz
Random Walks on a Complete Graph and a Model for Infection
*T. C. Dorlas and N. Datta, Dublin Institute for Advanced Studies, dorlas@stp.dias.ie
Ferromagnetic Ordering of Energy Levels in Spin Chains
B. Nachtergaele, W. Spitzer, and *S. Starr, McGill University, sstarr@math.mcgill.ca
Entropy Production in Random Flows
*A. Fouxon, and G. Falkovich, Weizmann Institute of Science, fefouxon@wicc.weizmann.ac.il
Broken Symmetry and Elasticity in Nematic Gels
R. Mukhopadhyay, Clark University, ranjan@clarku.edu
Mean Absorption Time of Randomly Accelerated Particle
S. Kotsev, Temple University, skotsev@temple.edu
Equation of State of Hard-Sphere Fluid in Very Narrow Cylindrical Pore
*I. E. Kamenetskiy, K. K. Mon, J. K. Percus, New York University, iek202@nyu.edu
Behavior of SIS Epidemics on Heterogeneous Network with Saturation
*J. Joo and J. L. Lebowitz, Rutgers University, jwjoo@physics.rutgers.edu

A Relativized Dobrushin Uniqueness Condition and Applications to Pirogov–Sinai Models

T. Kuna, Rutgers University, tkuna@math.rutgers.edu

Anomalous Universality in the Anisotropic Ashkin–Teller Model

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Monotonicity of the Nucleation Rate in the 2D Ising Model

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