

## **Program of the 66th Statistical Mechanics Meeting**

Department of Mathematics, Rutgers University,  
December 18–20, 1991

Dear Reader:

Here are the titles of the talks presented at the last semiannual Statistical Mechanics Meeting. This meeting also had an extra day devoted to a symposium in honor of Jerry Percus' 65th birthday. As usual these titles are informal and, in many cases, there is only one speaker listed, although the work may have been done with collaborators. Also, the addresses are incomplete. Anyone who is interested in communicating with a speaker and requires a more complete address may obtain it by writing to me. My electronic mail address is [lebowitz@elbereth.rutgers.edu](mailto:lebowitz@elbereth.rutgers.edu) on arpanet and [LEBOWITZ@ZODIAC](mailto:LEBOWITZ@ZODIAC) on bitnet.

In addition to the talks, the program for these meetings also has a "positions wanted" and "positions available" section. If you are interested in receiving the full program of these meetings, you may write to me at the address below and please send me a self-addressed envelope.

The next meeting, the 67th, is scheduled for May 14 and 15, 1992. In addition there will also be a special one-day meeting on Wednesday, May 13, organized by Bill Klein, from Boston University, and myself on the topic of Kinetics of Phase Transitions to which everyone is invited.

Joel L. Lebowitz

Department of Mathematics  
Hill Center – Busch Campus  
Rutgers University  
New Brunswick, New Jersey 08903

The Mean Spherical Approximation

L. Blum, Puerto Rico

Phase Separation in Ionic Fluids

G. Stell, Stony Brook

The Flux-Phase Problem on Planar Lattices

E. Lieb, Princeton University

Classical Simulation of a Quantum-Mechanical Effect

C. Peskin, Courant

Transport in Polymers

H. L. Frisch, Albany

Colloidal Suspensions as Hard Sphere Fluids

E. G. D. Cohen, Rockefeller University

Capillary Waves and Interface Fluctuations

J. Weeks, University of Maryland

Random Sequential Addition: Theory and Applications of the “Parking Problem”

J. Talbot, Purdue University

Associating Hard Rods in an External Field

M. L. Rosinberg, Université P. et M. Curie, Paris

Some Transport Problems Involving Baker’s Maps

S. Childress, Courant

Renormalization Transformations in the Vicinity of First-Order Phase Transitions: What Can and Cannot Go Wrong

A. Sokal, N.Y.U.

Remarks on the Origins of Universality

M. Aizenman, Princeton University

Density Functionals and Frustration

D. Chandler, Berkeley

### Mini Reviews

Almost Markov Processes in Monte Carlo Simulations of Biological Molecules

R. H. Swendsen, Carnegie-Mellon University

Random Tiling Models: Quasicrystals and More

M. Widom, Carnegie-Mellon University

Some Applications of Conformal Field Theory to 2-D Phase Transitions

P. Kleban, University of Maine

Marginal Fermi Liquids, Three Body Correlations and Beyond

A. Ruckenstein, Rutgers University

Experiments on Tunneling and Correlations

E. Andrei, Rutgers University

Transverse Meisner Effect and Related Phenomena

V. Pokrovsky, Landau/Brookhaven

**Reviews**

Vorticity and Turbulence: Connection with Percolation

A. Chorin, Berkeley and IAS

Random Quantum Spin Systems

D. S. Fisher, Harvard University

**Informal Session**

Statistical Mechanics of Topological Defects in Condensed Matter and Cosmology

E. Chudnovsky, M. P. A. Fisher, D. Huse, C. Schwarz, Turok,

E. Witten and B. Yurke: D. S. Fisher, Chair

Generic Scale Invariance in Noisy, Chaotic, or Turbulent Systems

G. Grinstein, I.B.M.

Interface Dispersion and Correlation in a Non-Equilibrium Steady State System

R. K. P. Zia, Virginia Polytechnic Institute

Biased Diffusion of Two Species: The Blocking Transition

B. Schmittmann, VPI

Finite-Size Scaling of Driven Diffusive System

K.-t. Leung, VPI

Phase Separation Dynamics in Driven Diffusive Systems

C. Yeung, University of Pittsburgh

Phase Diagrams of Interacting Particle Systems

R. Dickman, Lehman College

Phase Transition and Long Range Correlations in a Simple Lattice Gas

S. Janowsky, Rutgers University

Burgers Equations and Integrals of Brownian Motion

Y. G. Sinai, Landau/Princeton University

Fluctuations and Correlations in Sandpiles

J. Krug, I.B.M.

Singular Diffusions in Self-Organizing Systems

G. Swindle, Santa Barbara

SOC and Earthquakes

C. Tang, NEC Research Institute

Avalanches, Hydrodynamics and Great Events in Models of Sandpiles

M. Kardar, M.I.T., and T. Hwa, Harvard

## Summary and Critique

P. Hohenberg, Bell Labs

### Short Communications

#### Moments of the Structure Function

Marvin Bishop, Manhattan College, Julian Clarke, UMIST, and  
Juan Freire, Madrid

#### Standard-State Independent Free Energies of Solvation and Binding

Richard A. Friedman, K. A. Sharp, and B. Honig, Columbia University

#### Some Problems in the Theory of Electron Transfer

A. B. Helman and T. Keyes, Boston University

#### Structural Phase Transitions and Oxygen–Oxygen Interaction Energies in $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$

D. Hilton, B. M. Gorman, P. A. Rikvold, and M. A. Novotny, FSU

#### Electron Structure and Physical Properties of the 3d and 4f Metal Borides

Sh. Sh. Abelsky, A. L. Zilichikhis, Yu. P. Irk, A. A. Povzner, and  
E. V. Rosenfeld, Cleveland State University

#### A Realistic Continuum Spin Glass Model

Jim Given, SUNY/Stony Brook

#### Study of Cluster Algorithm on Fully Frustrated Spin System

Leping Han and Paul Coddington, Syracuse University

#### A Convergence Exponent for Multidimensional Continued Fraction Algorithm

Philip R. Baldwin, University of Akron

#### Gravitational Phase Transition without Spherical Symmetry

Michael Kiessling, New York University

#### Ward Identities for Local Hamiltonians

Lev. V. Mikheev, University of Maryland

#### Statistical Mechanics on Group Lattices

Stuart Samuel, City College of New York

#### New Nested Multicriticality in 2D Field Theory

Michael Lässig, Institute für Fest Körper Forschung, Juelich

#### A Partial Failure of Universality in the Ising Model Susceptibility above $T_c$

Yizhong Fan, Courant Institute

#### Topological Field Theory of Reptation

Arkady L. Kholodenko, Clemson University

#### Time Reversal and Quantum Phase

Garnet N. Ord, University of Western Ontario

## Kubo–Einstein Relation in a Periodic Potential

Y. C. Chen, University of Science and Technology of China, and  
J. L. Lebowitz, Rutgers

## External Noise in a Diffusion-Limited Reaction Process

Charles R. Doering, T. S. Ray, W. Horsthemke, and M. A. Burschka,  
Clarkson University

## Steady State Behavior of The Two State Model

Cipra, Y. Kolan, Z. Ondich, and Matthew Richey, St. Olaf College

## The Equivalence of Gibbsian Description and Description by Stochastic Dynamics for Discrete Spin Systems

B. Zegarliniski, Bochum and MIT, and D. W. Strook, MIT

## Lorentz Lattice Gas Cellular Automata

E. G. D. Cohen and F. Wang, The Rockefeller University

## Recurrence Properties of Lorentz Lattice Gas Cellular Automata

L. A. Bunimovich, Georgia Tech, and S. E. Troubetzkoy, University of  
Bielefeld

## Ray of Light in a Random Planar Labyrinth

Alex Figotin, University of Nevada

## Kinetic Equations for Dense Gases

William Greenberg, P. Lei, R. Liu, and J. Polewczak, Virginia Tech

## Phase Transformation Waves in Astro- and Low Temperature Physics

Michael Grinfeld, Rutgers University

## Instability of a Surface Growth Model with Diffusion

Michael Plischke and M. Siegert, Simon Fraser University

## Local Limit of Conformal Description of Complex Interface Motion

Mark Mineev, Courant

## Interface Dynamics and the Motion of Complex Singularities

Wei-Shen Dai and Leo Kadanoff, University of Chicago

## Simulation of Crystal Growth Using Facetted Interfaces

Andrew Roosen and Jean Taylor, Rutgers University

## Influence of Local Interdictions on Sizes of Elementary Unit Cells of Ground State Structures in Lattice Models

Boris Men, Cleveland

Critical Behavior of Sliding Charge Density Waves in  $4 - \epsilon$  Dimensions

O. Narayan and D. S. Fisher, Harvard University

## Non-Universality of High Moments of the Conductance for Strong Localization

E. Medina, Intevp, and M. Kardar, MIT

## Scattering Delay and Renormalization of the Wave Diffusion Constant

Gabriel Cwilich, Yeshiva University

Complete Devil's Staircase for Mode-Locking in an Extended System with Disorder

Alan Middleton and O. Biham, Syracuse University

Classical Antiferromagnets on a Kagome Lattice

D. H. Huse, Bell, and A. D. Rutenberg, Princeton University

Equations of State of 1-D Ferrofluids

M. Widom and Haiyun Zhang, Carnegie Mellon University

Quantum Critical Points

Randall D. Kamien and David R. Nelson, Harvard University

Exotic Symmetry Breaking and Gap Generation in VBS-Chains

Bruno Nachtergaele, Princeton University

Ground State Energy of the One Dimensional Falicov–Kimball Model

C. Gruber, J. L. Lebowitz, and Nicolas Macris, Rutgers University

Renormalized Multiphase Landau Liquids

Jose M. P. Carmelo and P. Horsch, Rutgers University

Complete Solution of 1-D Hubbard Model

Vladimir Korepin, SUNY at Stony Brook

Correlations of the Energy Density and Conformal Invariance in the Ising Model with a Defect Line

Theodore W. Burkhardt and J. Y. Choi, Temple University

Monte Carlo Calculation of the Conformal Central Charge

George A. Baker, Jr. and X. Wang, Los Alamos National Laboratories

“Microcanonical” Density Functionals for Near-Critical Systems

Michael E. Fisher and L. V. Mikheev, University of Maryland

A Stiffness Instability in Short-Range Critical Wetting

Albert J. Jin and Michael E. Fisher, University of Maryland

Random-Walk Representation and Mass Gap for the  $\lambda\phi^2\psi^2$  Model

Bin Li and Alan D. Sokal, New York University

Gravity in One Dimension: Stability of Periodic Orbits

B. Miller and C. Reidl, Texas Christian

Positron Annihilation in Xenon: Clustering and Localization

B. Miller and G. Worrell, Texas Christian

Fluctuations and Correlations in Sandpiles

Joachim Krug, IBM T. J. Watson Research Center

Depinning by Quenched Randomness

Martin Zapotocky and Tim Halpin-Healy, Columbia

Disordering and Growth on Pb Surfaces

H.-N. Yang, T.-M. Lu, and G.-C. Wang, Rensselaer

Intensity Profile of Waves in Random Media

D. Livdan, A. Genack, and A. Lisyansky, Queens College, CUNY

Crumpled Glass Phase of Tethered Membranes in Large  $d$  Limit

Leo Radzihovsky, Harvard University

Fluctuation Induced Forces Between Rough Surfaces

Hao Li and Mehran Kardar, MIT

Quenched Disorder in a Hierarchical Coulomb Gas

David Munton, University of Texas at Austin

Disordered Quantum Spin Systems

Abel Klein, University of California, Irvine

Aharonov–Casher Oscillation in a Mesoscopic Magnetic Ring

E. N. Bogachek and I. V. Krive, Kharkov

Quantum Hall Effect and Chern Numbers for a Quasi-One-Dimensional Conductor in Magnetic Field

Victor M. Yakovenko, Rutgers and Landau

Statistics of Topological Properties of Eigenstates in the Lowest Landau Level

Yan Huo and Ravin Bhatt, Princeton

A System of  $n$ -Attracting Fermions and Its Unusual  $n \rightarrow 0$  Limit

Leon Balents, Harvard, and Mehran Kardar, MIT

Monte Carlo Simulation of Phase Transitions in Three-Dimensional Quantum Lattice Models

Jining Han and Allan Blaer, Columbia University

Numerical Study of the (Non-Fractal) Ising Model in  $1 < d \leq 2$

M. A. Novotny, Supercomputer Research Institute, FLS

Polynomial-Time Approximation Algorithms for the Ising Model

Mark Jerrum, Edinburgh, and Alistair Sinclair, University of Edinburgh and DIMACS, Rutgers

Computer Simulation Study of the Entropy, the Pressure and the Chemical Potential of Multiple Chain Systems

Hagai Meirovitch, Florida State University

Direct Estimates of Entropy

B. Rosen, Stevens Institute of Technology

Phase Separation in Aqueous 1–1 Electrolyte Solution Containing Large Charged Particles

Vincent Pereira and George Stell, SUNY/Stony Brook

Cavities in the Hard-Disk Crystal: A Monte Carlo Study

Kathy Sturgeon, UCLA

Ordering and Phase Transitions in Random-Field Ising Systems

Amos Maritan, Michael R. Swift, Marek Cieplak, Moses H. W. Chan, Milton W. Cole, and Jagannath R. Banavar, Penn State

Phase Diagrams of Monolayers Adsorbed on a Square Substrate

O. Biham, L-W. Chen, W. Chen, and G. Vidali, Syracuse

Step Pairing Transitions

C. Doty and J. D. Weeks, University of Maryland

Exact Pair Correlation Function of a Randomly Branched Polymer in 3 Dimensions

Jeffrey Miller, Santa Barbara, UC

Amplitude Universality for Directed Polymers in Random Media

Timothy Halpin-Healy, Barnard College, Columbia

Stock Prices Fluctuate as  $1/f^2$  Noise

Partial  $1/f$  Spectrum in DNA Sequence

Wentian Li, Rockefeller University

A Multi-Length Scale Theory for Anomalous Diffusion Induced by Random Field

Qiang Zhang, SUNY at Stony Brook

Anomalous Transmission Time Moments in the Ballistic Limit of Isotropic Scattering

Tane S. Ray, M. Lawrence Glasser, and Charles R. Doering, Clarkson

A New Approach to the Long-Time Behavior of Self-Avoiding Random Walks

Steven Golowich, Harvard, and John Imbrie, Virginia

Self-Avoiding Walks in Random Environments

I. Smailer and S. Redner, Boston, and J. Machta, University of Massachusetts

Correlation Induced Kinetics of Diffusion Controlled Processes

S. F. Burlatsky, Institute of Chem. Phys., Moscow/MIT, and J. M. Deutch, MIT

New Methods of Studying 3D Percolation Clusters: Illumination and Projection

A. Margolina, Polytechnique, and M. Rosso, Ecole Polytechnique

Green's Function Technique in Investigating Resonance Phenomena in Long Range Electron Transfer in Macromolecules

Magarshak Yuri, Mount Sinai Medical Center

Mean Exit Time Over Fluctuating Barrier: Self-Consistent Solution

C. R. Doering and U. Zurcher, Clarkson

Models of Complicated Behavior of the Geomagnetic Field

Yu Brodsky, Adelphi, and E. Averbukh, Milton Eisner Yeshiva

Macro-Dynamics and the Description of Dynamic Processes Far From Equilibrium

Eynshteyn Averbukh, Milton Eisner Yeshiva

Evolution of Dynamical Systems with Thermal Disturbances: Functional Perturbation Theory

Liudmila A. Pozhar, Cornell

Two-Temperature Thermodynamics

Victor Berdichevsky, Georgia Tech



Analytical Properties of Effective Diffusivity in Periodic Flows

P. A. Kalugin, Landau, A. V. Sokol, Illinois, and E. B. Tatarinova,  
Kurchatov, Moscow

Dynamical Generation of Long-Range Interaction: Random Levy Flights  
in the Kinetic Ising and Spherical Models

B. Bergersen and Z. Racz, Clarkson

Fluctuations of Structure Factors in Driven Diffusive System

Kai Hwang, Beatte Schmittmann, and Royce K. P. Zia, VPI

Dynamics of Driven Fluxline Liquid

Terry Hwa, Harvard University

Perturbations of Self Organizing Systems

J. Carlson, UCSB, E. Grannan, UCI, and G. Swindle, UCSB

Heterogeneous Catalysis of “Dimes” and “Dollars”

H. Park, J. Kohler, I.-M. Kim, D. ben-Avraham, and S. Redner,  
Boston, Clarkson, and Heidelberg

Bimodal Diffusion in Power-Law Shear Flows

E. ben-Naim, D. ben-Avraham, and S. Redner, Boston University and  
Clarkson University

Two-Fluid Model for Turbulence

Zhen Su, Princeton

Dynamics of 2-Species Competition in One Dimension

J. Zhuo, G. Murthy, and S. Redner, Boston University

Self-Similar Distance Distribution in the Reaction  $A + B \rightarrow 0$

F. Leyvraz, UNAM, and S. Redner, Boston University

Self-Organizing Hebbian Neural Networks

Oliver Martin, CCNY