

Program of the 52nd Statistical Mechanics Meeting

Department of Mathematics, Rutgers University,

December 13–14, 1984

The last semiannual Statistical Mechanics Meeting was held on December 13th and 14th, 1984. The next meeting is tentatively scheduled for May 9th and 10th, 1985.

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 who requires a more complete address may obtain it by writing to:

Dr. Joel L. Lebowitz
Department of Mathematics, Hill Center
Rutgers University
New Brunswick, New Jersey 08903

First Order Phase Transition in the F.C.C. Ising Antiferromagnet

Daniel F. Styer, Rutgers University

Pathological Low Temperature Expansions for Frustrated Ising Models

S. N. Coppersmith, Brookhaven National Laboratory

Phase Diagram for a Model of Si/W (110)

J. Amar, S. Katz, and J. D. Gunton, Temple University

Correlation Length in Ising Strips with Free and Fixed Boundary Condition

Theodore W. Burkhardt, Institut Lave-Langevin, and *Ihnsouk Guim*,
Columbia University

Shape of Coexistence Curves at the Critical End-Point

Carlos Borzi, Cornell University

Duality in Dimensions $D \geq 3$

N.-C. Chao, Northeastern University

Analytical Solution for the Alder–Wainwright Model for a Fluctuation

Rodney L. Varley and Christopher Lee, Hunter College

Rheology of Rod-Like Macroparticle Solutions

A. R. Altenberger and *J. S. Dahler*, University of Minnesota

The L -Space: A New Mathematical Space for Molecular Biology

Sungchul Ji, Rutgers University

Equivalence of Layered Transfer Matrices

M. A. Novotny, Northeastern University

The Spectrum of Non-Selfadjoint Matrices: An Application of Statistical Mechanics to Mathematics

Robert S. Maier, University of Texas at Austin

Statistical Behavior in Deterministic Quantum Systems with Few Degrees of Freedom

R. V. Jensen and *R. Shankar*, Yale University

Theory of Activated Events in Presence of Tunneling and Frequency-Dependent Dissipation

P. Hänggi, Polytechnic Institute of New York and University of Stuttgart, *M. Ingold*, *H. Grabert*, and *U. Weiss*, University of Stuttgart

Dissipative Quantum Tunneling: Analytic Solution for Intermediate Coupling Strength

P. Riseborough, Polytechnic Institute of New York, *P. Hänggi*, Polytechnic Institute of New York and University of Stuttgart, and *E. Fredkin*, Polytechnic Institute of New York

Deriving the Classical Description of the Quantum Spin 1/2 Heisenberg Ferromagnet

Lincoln Stoller, University of Texas at Austin

Long Range Order in the Anisotropic Quantum Heisenberg Model

Tom Kennedy, Princeton University

The N -Color Ashkin-Teller Model: Exact Solution in 2D for $N \rightarrow \infty$

Eduardo Fradkin, University of Illinois

Exact Solution of a Two-Dimensional Ising Model in a Random Magnetic Field

G. Forgacs, *A. Sütö*, and *W. F. Wolff*, Stanford University

Corrections to Scaling for 2-D SAW's

K. Kremer, Exxon Research and Engineering Company and *J. W. Lyklema*, JFF-KFA, Jülich

Breakdown of Analytic Continuation in Replicas in 1-D Axis Model

P. D. Gujrati, University of Akron

The Shape of Ring Polymers

Marvin Bishop, Manhattan College, and *J. P. J. Michels*, University of Amsterdam

Consequences of the Balance Between the Repulsive and Attractive Forces in Dense, Non-Associated Liquids

Randall A. La Violette, A. T. & T. Bell Laboratories

Dense Fluids

John Perram, Odense University

Exactly Solvable Model of Ions and Dipoles in One Dimension

F. Vericat and *L. Blum*, University of Puerto Rico

Thresholds for the Mayer Expansion in the 2-D Coulomb Gas

G. Gallavotti, Rutgers University, and F. Nicolò, Università Degli Studi—Roma

Energy-Density Correlations in the Two-Dimensional Ising Model with a Defect Line

Lee-Fen Ko, Helen Au-Yang, and Jacques H. H. Perk, State University of New York at Stony Brook

Spin-Chain Hamiltonians Associated with the Hard-Hexagon Model and Other SOS-Models

Tobias M. Haas and Jacques H. H. Perk, State University of New York at Stony Brook

Universality of Finite-Size Scaling Amplitudes of Surface Free Energies of 3-D Ising Models

K. K. Mon and *M. P. Nightingale*, University of Rhode Island

Time-Dependent Spin Correlations in the XYZ Heisenberg Chain: A Short-Time Series Approach at Infinite Temperature

José M. R. Roldan, State University of New York at Stony Brook

The Dynamics of Hamiltonian Systems with Short Range Interactions

C. Eugene Wayne, Pennsylvania State University

Random Walks and Directional Solidification

Subir Sarkar and M. Jensen, University of Chicago

Phase Transitions in Some Systems with a Finite Number of Dominant Ground States

Jean Brimont, Louvain, and *Joseph Slawny*, Virginia Polytechnic Institute and State University

Numerical Simulation of 2-D Viscous Flow

Boris Shraiman and *David Bensimon*, University of Chicago

Scaling in a Ballistic Aggregation Model

Shoudan Liang and Leo P. Kadanoff, University of Chicago

DLA and Saffman-Taylor Problem

Chao Tang, University of Chicago

Ultradiffusion

Pinning and Roughening of Domain Walls Due to Quenched Random Impurities

B. A. Huberman and M. Kerszberg, Xerox Palo Alto Research Center

SO(3) Scale Parameter

Michael Creutz and *Daniel Rohrllich*, State University of New York at Stony Brook

Effective Equation and Renormalization for Nonlinear Wave Equation with Random Sources

Luis Bonilla, Stanford University

Localization and Absorption of Waves in a Weakly Dissipative Disordered Medium

Sajeev John, University of Pennsylvania

A Solution of the Inverse Problem for Strange Attractors

M. F. Barnsley, Georgia Institute of Technology

Strange Attractor in the Ising Model with Competing Interactions on the Cayley Tree

C. S. O. Yokoi, M. J. de Oliveira, and S. R. Salinas, Carnegie-Mellon University

Do Low Dimensional Attractors Mean Low Dimensional Chaos?

T. C. Halsey and I. Procaccia, University of Chicago

Quantum Vortices, Unusual Statistics, and Parastatistics from Unitary Representations of Diffeomorphism Groups

Gerald A. Goldin, Rutgers University and Northern Illinois University

Monte Carlo Renormalization Group Study of the Dynamics of an Unstable State

J. Viñals, Martin Grant, M. San Miguel, J. D. Gunton, and E. T. Gawlinski, Temple University

Direct Calculation of Absolute Free Energy for Lattice Systems by Monte Carlo Sampling

K. K. Mon, University of Rhode Island

Finite-Size Effects in Spherical Model

Surjit Singh and R. K. Pathria, University of Waterloo

Finite-Size Effects in 2-D Ising Systems Via Conformal Mapping

P. Kleban, G. Akinici, R. Hentschke, and K. R. Brownstein, University of Maine

Finite-Size Tests of Hyperscaling

K. Binder, M. Nauenberg, V. Privman, and A. P. Young, California Institute of Technology

Theory for the Early Stages of Phase Separation: The Long-Range-Force Limit

Martin Grant, M. San Miguel, J. Vinals, and J. D. Gunton, Temple University

Spontaneous Emission and the Role of Fluctuation-Dissipation Theorem

Cerin Obcemea, University of Florida

Statistics of Polymer Walks in Entanglement Net

Michael Rubinstein and Eugene Helfand, A. T. & T. Bell Laboratories

Computer Simulation of Polymer Chain Models with the Scanning Method

Hagai Meirovitch, Cornell University and the Weizmann Institute

- A New Monte Carlo Simulation for Self-Avoiding Branched Polymers
Ueli Glaus, ETH-Zurich
- Self-Avoiding Walks in a Wedge Geometry
S. G. Whittington and J. M. Hammersley, University of Toronto
- Critical Behaviour at an Edge for the S.A.W. and Ising Model
A. J. Guttmann G. M. Torrie, University of Newcastle
- Critical Effects at Wetting
R. Lipowsky, Cornell University
- Wetting Layers and Dispersion Forces Between SF₆ and Fused Silica
R. F. Kayser, J. W. Schmidt, and M. R. Moldover, National Bureau of Standards
- Reentrant Melting of Krypton/Graphite and the Helical Potts-Lattice-Gas Model
R. G. Caflish, A. N. Berker, and M. Kardar, Massachusetts Institute of Technology
- Krypton on Graphite and the Striped Helical Potts Model
Timothy Halpin-Healy and Mehran Kardar, Harvard University
- Theory of Interaction Driven Asymmetry in Binary Mixture Coexistence Curves
Raymond E. Goldstein, Cornell University, and James S. Walker, Washington State University
- Biaxial Order to Liquid Crystals and Their Mixtures: A Potts-Ising Model
Robert G. Caflisch, Zhong-Ying Chen, A. Nihat Berker, and John M. Deutch, Massachusetts Institute of Technology
- First Order Transitions in Anisotropic Magnets with Random Fields and Random Uniaxial Anisotropies
Yadin Y. Goldschmidt and A. Aharony, University of Pittsburgh
- Random Fields and Ginzburg Criterion
Miron Kaufman and Mehran Kardar, Massachusetts Institute of Technology
- The Mattis Model and Experimental Random Fields
Serge Galam, New York University
- Magnetic Susceptibilities of Cluster-Hierarchical Models
Susan R. McKay and A. Nihat Berker, Massachusetts Institute of Technology
- Quantum Fluctuations in a Josephson Junction Ladder
Mehran Kardar, Harvard University
- Low Frequency Relaxation in Ising Spin Glasses
M. Randeria, J. P. Sethna, and R. G. Palmer, Cornell University
- Fluctuation Effects in Smoluchowski Reaction Kinetics
Kiho Kang and Sidney Redner, Boston University
- A Sound Propagation Gap in Liquids
E. G. D. Cohen and T. M. de Schepper, Rockefeller University

Decay of the Velocity Autocorrelation Function for the Periodic Lorentz Gas

B. Friedman and *R. F. Martin, Jr.*, University of Illinois at Urbana-Champaign

A New Approach to Find the Ground States of Atoms Connected by Springs in a One-Dimensional Periodic Potential

R. B. Griffiths and *W. R. Chou*, Carnegie-Mellon University

Trajectory Scaling Function for Bifurcations in Area-Preserving Maps

G. H. Gunaratne and *M. J. Feigenbaum*, Cornell University

Anomalous Voltage Distribution of Random Resistor Networks

L. De Arcangleis, Boston University, *S. Redner*, Schlumberger-Doll Research and Boston University, and *A. Coniglio*, Boston University and University of Naples

Transport in a Two Component Randomly Composite Material: Scaling Theory and Computer Simulations of Termite Diffusion Near the Superconducting Limit

Armin Bunde, *Antonio Coniglio*, *Daniel Hong*, and *H. Eugene Stanley*, Boston University

Growth Aggregates with Continuously Variable Dimension

Francois Leyvraz, *Paul Meakin*, and *H. Eugene Stanley*, Boston University

Cellular Patterns in Directional Solidification

Boris Shraiman, University of Chicago

Fractal Growth of Viscous Fingers: Quantitative Characterization of a Fluid Instability Phenomenon

J. Nittmann, Schlumberger-Doll, *G. Daccord*, Schlumberger-Doll, and *H. Eugene Stanley*, Boston University

Ising Domain Growth Barriers on a Cayley Tree at Percolation

Christopher L. Henley, A. T. & T. Bell Laboratories

Hamiltonian Approach to Eden Model of Cluster Growth

Yonathan Shapir and *Yi-Cheng Zhang*, Brookhaven National Laboratory

Excluded Volume in Continuum Percolation

A. L. R. Bug, *S. A. Safran*, and *I. Webman*, Exxon Research and Engineering Company

A New "Butterfly" Kinetic Walk

A. Bunde, Boston University, *H. J. Herrmann*, Saclay, *A. Margolina*, Du Pont, and *H. E. Stanley*, Boston University

Diffractional Dimension of Cluster Perimeters Generated by a "Butterfly" Walk

A. Margolina, Du Pont

Exact Integral Hierarchies for Connectedness Functions in Percolation

William Klein and *George Stell*, Boston University

Exact Equation for the Pair-Connectedness Function

G. Stell, SUNY at Stony Brook

Pair-Connectedness Function and Percolation Transitions of Randomly-Centered Spheres

Yee C. Chiew and George Stell, SUNY at Stony Brook

Interpenetrable-Sphere Models of Two-Phase Random Media: Microstructure and an Application to Chromatography

P. A. Rikvold and G. Stell, SUNY at Stony Brook

Monte Carlo Renormalization Group Study of Bootstrap Percolation

H. Gould, Clark University and Boston University, *J. Chalupa*, Northeastern University, and *M. A. Khan*, Worcester Polytechnic Institute

The Supersymmetric Kosterlitz–Thouless Phase Transition

Mauro M. Doria, University of Florida

The Critical Surface Near the Ising Transition—A Check on Monte Carlo Studies

G. Murthy and *R. Shankar*, Yale University

A Soluble Triangular Ising Model in a Nonzero Magnetic Field

F. Y. Wu, Northeastern University

Absence of an Intermediate Phase in a Class of One Component Ferromagnetic Models

Michael Aizenman, Rutgers University

Construction of Aperiodic Lattices by Projection

Veit Elser, A. T. & T. Bell Laboratories

Quasi-Crystals: A New Class of Ordered Structures

Dov Levine and Paul J. Steinhardt, University of Pennsylvania

Ordering in Random Magnetic Systems

J. T. Chayes, *L. Chayes*, Harvard University, and *J. Fröhlich*, Institute for Advanced Study and ETH-Zurich

Some Results on Invasion Percolation

J. T. Chayes, *L. Chayes*, Harvard University, and *C. M. Newman*, University of Arizona

Nonperturbative Analysis of a Model of Random Surfaces

D. B. Abraham, Oxford University, *J. T. Chayes* and *L. Chayes*, Harvard University

First Passage, First Covering and Random Resistor Networks: Some Results for $d > 2$

J. T. Chayes and *L. Chayes*, Harvard University

Round Table on “Statistical Mechanical Ideas in Industrial Applications”

K. Jackson, Bell; *R. Linsker*, I.B.M.; *H. Scher*, SOHIO; *D. Wilkinson*, Schlumberger-Doll; *T. Witten*, Exxon; *Paul Leath*, Rutgers, Chair.

Mini Review Talks

Kinetics of First Order Phase Transitions

J. D. Gunton, Temple University

Inhomogeneous Perturbations of Multiple Steady State Transitions: Effect of Stirring

Harry L. Frish, State University of New York at Albany

Fractal Flow Patterns in Porous Media

J. Willemsen, Schlumberger–Doll Research

Using Statistical Mechanics (Simulated Annealing) to Solve Very Practical Problems

Donald W. Jepsen, IBM Thomas J. Watson Research Center

Path Integral Simulations of Quantum Systems

Bruce J. Berne, Columbia University

Density Functional Theory as an Approximation Scheme

David C. Langreth, Rutgers University

Renormalization Group Calculations of Interface Statics and Dynamics

David Jasnow, University of Pittsburgh

Rigorous Renormalization Group

K. Gawedzki and A. Kupiainen, Harvard University

Lower Critical Dimension of the Random Field Ising Model

John Z. Imbrie, Harvard University

Nontrivial Four Dimensional Boson Field Theory

George A. Baker, Jr., Los Alamos National Laboratory

Stark Shifts Due to Blackbody Radiation

G. W. Ford, J. T. Lewis, and R. F. O'Connell, Dublin Institute for Advanced Studies

The Sommerfeld Ansatz—A Generalization of the Bethe Ansatz

James McGuire, Florida Atlantic University

Review Talks

Random Surfaces: Roughening, Wetting, Spin Glasses, etc.

J. Fröhlich, ETH-Zurich

Quantum Tunneling and Coherence in Dissipative Systems

A. Legget, University of Illinois at Urbana-Champaign

Molecular Dynamics Study of Solids Under Anisotropic Stresses

A. Rahman, Argonne National Laboratory

New Developments in Monte Carlo Renormalization Group

R. Swendsen, Carnegie–Mellon University