

Program of the 72nd Statistical Mechanics Meeting

Department of Mathematics
December 15–16, 1994

Dear Reader,

Here are the titles presented at the 72nd semiannual Statistical Mechanics Meeting. 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 or contacting me by electronic mail: lebowitz@math.rutgers.edu.

Joel L. Lebowitz

Review Talks

Chaos in Billiards—from Quantum Dots to Concert Halls

R. Heller, Harvard

Time and Turbulence

P. Constantin, Chicago

Finite Temperature Crossovers Near Quantum Phase Transitions

S. Sachdev, Yale

Coherent Oscillating Vortex Patterns in Large Driven Josephson Junction Arrays

J. V. Jose, Northeastern

Symmetries of the Hubbard Model

V. Korepin, SUNY

(Non-) Fermi Liquids with Gauge Interaction

L. Ioffe, Rutgers

Thermodynamic and Dielectric Aspects of Protein Solvation: Explicit Solvent Models

R. M. Levy, Rutgers

Liquid Properties of Embryonic Tissues

G. Forgacs, Clarkson

Recent Rigorous Results on the Ising Model: Wulff Droplets, Complete Analyticity, Metastability

R. Schonmann, UCLA

Low and High Temperature Correlation Lengths in 2D, q -State, Potts Models

J. Chayes, IAS/UCLA

Theory of Learning Curves: From Vapnik–Chervonenkis Bounds to Statistical Mechanics

S. Seung, AT & T

Fluctuations and the Breakdown of Hydrodynamics in Self Organized Criticality

J. Carlson, UCSB

Self Organized Criticality in Nonconserved Systems

C. Tang, NEC

Theory of Self-Organization in Evolution and Growth Models

M. Paczuski, Brookhaven

Statistical Mechanics of Surface Diffusion, In and Out of Equilibrium

J. Krug, IFF, Germany

Driven Diffusive Models of Steady Multiphase Flows and Wetting Dynamics

Y. Shnidman, Kodak

Biased Diffusion of Two Species: Old Puzzles and New Findings

B. Schmittman, Virginia Tech

Should the Entropy Always Be Extensive?

C. Tsallis, Michigan

Fluid Flow in Strongly Inhomogeneous Porous Media

A. Shnirelman, Tel Aviv, Princeton

Round Table on Physical Modeling in Finance and Economics: From Academia to Wall Street

Participants: Marco Avellaneda, NYU/IAS, Dan Furman, AT & T, Masahiko Inui, Nomura Capital Services, George Williams, A. Kalotay Associates

Discussion of Human Rights in China and Statphys 19 with Sophia Woodman, executive editor of China Rights Forum

Short Talks

Structure of Precipitates in Alloys under External Load

C. A. Laberge and J. L. Lebowitz, Rutgers University, and
P. Fratzl, Vienna University

Phase Segregation Kinetics of Ordering Alloys with Elastic Interaction

P. Fratzl, University of Vienna, and V. Gorentsveig and
J. L. Lebowitz, Rutgers University

Sharp Interface Motion in a Particle Model

G. Giacomini and J. L. Lebowitz, Rutgers University

Phase Ordering Kinetics in 2D Binary Fluids Using Lattice Gas
Hydrodynamics. Growth Exponents

S. Bastea, Rutgers University

Diffusion-Limited Aggregation Has a Potentially Infinite Number of
Conservation Laws

M. Mineev, Los Alamos National Laboratory

A Remark on Stationary Measures for Nonreversible Hopping Dynamics

A. Asselah, Rutgers University

Random Walk in Critically Diluted 2D Cluster in the Presence of Traps
Along the Perimeter Sites

S. Mukherjee and H. Nakanishi, Purdue University

Exact Auto-Correlation Function for Deposition–Evaporation Models in
1D with Defect and in Higher Dimensions

N.-N. Chen, R. Stinchcombe, and M. Grynberg, Oxford
University

Kinetics of Catalytic Reactions with Diffusional Relaxation

P. L. Krapivsky, Boston University

Asymptotics of $A + B \rightarrow 0$ with Driven Diffusive Motion

I. Ispolatov, P. L. Krapivsky, and S. Redner, Boston Univer-
sity

Biased Diffusion of Two Species with Particle–Particle Exchange

G. Korniss, B. Schmittmann, and R. K. P. Zia, Virginia Tech

Phase Transitions in a Driven Lattice Gas at Two Temperatures

K. E. Bassler and R. K. P. Zia, Virginia Tech

Nonequilibrium Ordering and Criticality in Anisotropic Lattice Gases

A. Achahbar, P. L. Garrido, J. Marro, and J. J. Alonso, Univer-
sity of Granada

Decay of Metastability in Kinetic Ising Models: Size-Dependent
“Spinodals”

P. A. Rikvold, H. L. Richards, S. W. Sides, R. A. Samos, J. Lee,
and M. A. Novotny, Florida State University, and H. Tomita
and S. Miyashita, Kyoto University

First Passage Properties of a Two Block System

J. Lee and J. Koplik, Levich Institute

Chaotic Scattering on Leapfrogging Vortex Rings

A. Pentek, T. Tel, and Z. Toroczkai, Eotvos University, Hungary and Virginia Tech

Lattice Sums: Applications to Physics, Analysis and Symbolic Computation

S. Allen, University of Waterloo

On-Line Learning in Multilayer Neural Networks

D. Saad, University of Edinburgh, and S. A. Solla, Niels Bohr Institute

Wulff Shape for Quasicrystals

C. Radin, University of Texas

Emerging Symmetry: Critical Behavior for Randomly Pinned Spin-Density Waves

R. Fisch, Washington University

Spectral Properties of 2D Photonic Crystals

A. Figotin and P. Kuchment, University of North Carolina

Gaussian Fluctuation in Random Matrices

O. Costin and J. L. Lebowitz, Rutgers University

Width Distribution of Random Walks and Curvature Dominated Interfaces

Z. Racz, Eotvos University, Hungary; G. Foltin and K. Oerding, University of Düsseldorf; M. Plischke, Simon Fraser University, and R. Workman and R. K. P. Zia, Virginia Tech

Exact Critical Exponents from Random Gaussian Surfaces

J. Kondev and C. L. Henley, Cornell University

Chiral Potts Model and Its Associated Link Invariant

P. Pant, F. Y. Wu, and C. King, Northeastern University

Vortices in the Random-Field XY Model

D. Huse, Bell Labs, and M. Gingras, Triumpf/UBC

Staggered Charge-Order in the Extended Hubbard Model

C. Borgs, IAS/FU-Berlin

Fermions in a Random Medium

H. Kinzelbach and M. Lässig, Forschungszentrum Jülich

Schwinger Functions in an Interacting Filled Band One-Dimensional Fermi System

V. Mastropietro, Università Tor Vergata, Rome

Fractional Charge and Correlation Exponents for Interacting Electrons in One Dimension

E. B. Kolomeisky, Cornell University, and J. P. Straley, University of Kentucky

Bethe Ansatz, Solution of Anisotropic Multichannel Kondo Model

A. Jerez, Rutgers University

Mass Gap Generation in Chiral Invariant Fermi Models

T. R. Hurd, McMaster University, and D. H. U. Marchetti and
P. F. da Veiga, University of Sao Paulo

Physical Properties of a Non-Fermi Liquid-Fixed Point

C. Nayak, Princeton University, and F. Wilczek, IAS

Free-Fermion Model in d Dimensions

H. Y. Huang and F. Y. Wu, Northeastern University

Generalization of the Fortuin–Kasteleyn Representation to Quantum Spin Systems

N. Kawashima and J. E. Gubernatis, Los Alamos National Laboratory

Density of States of a Model Interacting Disordered System

G. Forgacs and V. Kotov, Clarkson University

Only Finitely Many Phases in the Two-Dimensional Coulomb Gas

X. Li, M. E. Fisher, and Y. Levin, University of Maryland

Path Integrals Applied to Quantum Plasmas: Behavior of Pair Correlations at Short Distances

A. Perez and A. Alastuey, E. N. S., Lyon

Correlations in the 2D Coulomb Gas

T. R. Hurd, McMaster University

2D Screening Charge Density by an Integral Equation

A. Krakovsky and J. K. Percus, New York University

Casimir Interaction of Spheres in a Fluid at the Critical Point

T. W. Burkhardt, Temple University, and E. Eisenriegler,
Forschungszentrum Jülich

Why Everyone is More or Less Right about the Renormalized Coupling Constant in the Three-Dimensional Ising Model

G. A. Baker, Jr. and N. Kawashima, Los Alamos National Laboratory

Fluctuations and Stability of Fisher Waves

J. Riordan and C. R. Doering, CNLS Los Alamos, and
D. ben-Avraham, Clarkson University

Defect-Mediated Stability: An Effective Hydrodynamic Theory of Spatiotemporal Chaos

C. C. Chou, Boston University, and T. Hwa, SUNY, Story Brook

Time and Length Scales in Rotating Rayleigh–Benard Convection

Y. Hu, E. R. Ecke, and G. Ahlers, LANL and University of California at Santa Barbara

Importance of the Topological Defects for Two-Dimensional Phase Transitions and Their Relevance for the Renormalization Group

G. Zumbach, Harvard University

Thermodynamic Properties of Vicsek Fractals

M. Zhou, University of Maine

Diffusion-Limited Coalescence with Finite Reaction Rates in One Dimension

D. Zhong and D. ben-Avraham, Clarkson University

Growth Models for Binary Trees

I. Yekutieli, University of Pittsburgh

Hyperscaling Relation in Lorentz Lattice Gas

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

Wavelength Frustration, Invasive Defect and Spiral Chaos in Gas Convection

Y. Tu, IBM T. J. Watson Research, and M. C. Cross, Caltech Center

Fast Coarsening in an External Driving Force: The Effect of Faceting on Cluster Dynamics in a Driven Lattice Gas

L. K. Wickham and J. P. Sethna, Cornell University

Tails in Harnesses

A. Toom, Incarnate Word College

Complexity of Discrete Symmetries of q^{2d} Vertex Models

S. Boukraa, Algeria; J-M. Maillard, LPTHE, Jussieu, Paris, and G. Rollet, Northeastern University

A Careful Examination of an Old Problem: Dense Random Packings of Hard Spheres

M. Rintoul and S. Torquato, Princeton University

Exact Analytical Approach to One-Dimensional Ballistic Annihilation

M. Droz, and P.-L. Rey, University of Geneva; L. Frachebourg, University of Geneva and Boston University, and J. Piasecki, Warsaw University

Anomalous Decays in One-Dimensional Ballistic Annihilation with Discrete Velocity Distributions

P. L. Krapivsky and S. Redner, Boston University, and F. Leyvraz, UNAM

Renormalization Group Approach for Reaction-Diffusion Systems

B. Lee, University of Maryland, and J. Cardy, Oxford

Laplacian Growth and Interfacial Dynamics

H. G. E. Hentschel, Emory University

Diffusion on All Time Scales

J. M. Kincaid, SUNY at Stony Brook

Levy Flights in Random Environments

H. Fogedby, University of Aarhus

Diffusion of Random Walk in a Random Environment

L. N. Coyle, University of Michigan

Continuum Percolation in Quasiperiodic Media

A. Chernikov, Stevens Institute of Technology, and A. Rogalsky, the University of Maryland

Extremal Segments in Random Sequences

Y. Kantor and D. Ertas, MIT

On the SOC Forest-Fire Model

B. Drossel, MIT, and S. Clar and F. Schwabl, TU München

On the Avalanche-Finiteness of Abelian Sandpiles

H. F. Chau, IAS

Relaxation Oscillations in 1D Sandpile Models

J. Socolar and M. Bleich, Duke University

Hysteresis, Avalanches and Plain Old Criticality

K. Dahmen, J. P. Sethna, S. Kartha, J. A. Krumhansl, O. Perković, B. W. Roberts, and J. D. Shore, Cornell University

The Effect of Polymer Adsorption on Fluid-Fluid Transitions in Langmuir Monolayers

D. J. Olbris, University of Rochester, and Y. Shnidman, Eastman Kodak Co.

Hydrogen Bonding in Models of Phospholipid Bilayers

J. Tobochnik, Kalamazoo College; M. Zuckermann, McGill University, and Z. Zhang, Kansas State University

Liquid-Gas Phase Boundaries for the Restricted Primitive Model

G. Stell, SUNY, Stony Brook

Critical Behavior of the Widom-Rowlinson Lattice Model

R. Dickman and G. Stell, CUNY

Bicontinuity in the Charge Frustrated Ising Model

D. Chandler, H.-J. Woo, and C. Carraro, University of California, Berkeley

Non-Equilibrium Microscopic Structure in Quantum Optics, Entropy Production and Entropy Flow

M. Rosenberg and T. Petrosky, University of Texas at Austin

Universal Parametric Correlations in Quantum Dots

H. Attias and Y. Alhassid, Yale University

Electron Mobilities in Dense Gases—A Probe of 3D Quantum Transport

D. A. Browne, Louisiana State University

The Effect of Dissipation in Chaotic Quantum Dynamics

B. S. Helmkamp and D. A. Browne, Louisiana State University

Josephson Junction Ladders in a Magnetic Field

C. Denniston, Princeton University, and C. Tang, NEC Research Institute

Correlated Electrons in Lattices: Has the Nagaoka Theorem Been Repealed?

A. N. Kocharian, Union College

Modulated Phases in Generalized Hubbard Model

A. N. Kocharian and G. R. Reich, Union College

Nonlocal Methods for Quantum Spin Simulations

H. G. Evertz, University of Georgia

River Models and Vortex Flow in Thin-Film Superconductors

J. Watson and D. S. Fisher, Harvard University

Physics Experiments on Single Molecules of DNA

A. Simon and F. Heslot, ENS-LPMC, Paris