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Program of the 70th Statistical Mechanics Meeting

December 15, 16, and 17, 1993

Dear Reader,

Here are the titles of the talks presented at the last 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 contacting me by electronic mail. My e-mail address is: lebowitz@math.rutgers.edu.

If you are interested in receiving the full program of these meetings, you may write to me by e-mail or at the address below, in which case please send me a self-addressed envelope.

The next meeting, the 71st, is scheduled for 11–13 May 1994.

Joel L. Lebowitz

Center for Mathematical Sciences Research
Rutgers University
Hill Center, Bush Campus
New Brunswick, New Jersey 08903

Review Talks

Renormalization of Dyson's Hierarchical Model
H. Koch, Texas

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Dipolar Pattern Formation: Geometry, Hydrodynamics, and Fluctuations
R. Goldstein, Princeton
Towards a Statistical Mechanics of Natural Images
W. Bialek, NEC
Lorentz Lattice Gas Cellular Automata
L. Bunimovich, Georgia Tech
Periodic Orbit Theory of Classical and Quantum Chaos
P. Cvitanovic, Copenhagen
The Inverse-Square Model of Universal Dynamics of Quantum Chaos
S. Shastry, AT&T
Exact Dynamic Correlation Functions of Integrable 1D Models with Inverse-Square Interactions
D. Haldane, Princeton
Scaling of Island Growth in Metallic Monolayers
O. Biham, Syracuse
Hard-Spin Mean-Field Theory
N. Berker, MIT
Quantized Charge Transport and the Definition of Electric Polarization
D. Vanderbilt, Rutgers
Nonlinear Collective Transport in Random Media
D. Fisher, Harvard
An Overview of Some Quantum Hall Effect Experiments
D. Tsui, Princeton
Ginzburg–Landau Vortices, Quantization Effects and Renormalized Energy
H. Brezis, Rutgers
An Overview of Modeling and Simulation of Complex Fluid Flows
S. Orszag, Princeton
Statistics of Shocks in Burgers Turbulence
M. Avellaneda, NYU
Random Shearing Direction Models for Turbulent Diffusion
A. Majda, Princeton
Nonlinear Schrödinger Equations and Variants, with Applications to Weak Turbulence and Other Problems
Y. Pomeau, Arizona and ENS, Paris

Informal Session on Pattern Formation Outside of Equilibrium

E. Bodenschatz, Cornell; J. Gollub, Haverford; P. Hohenberg, Bell; A. Karma, Northeastern; P. Kolodner, Bell

Short Talks

Diffusion-Limited Many-Body Reactions and the Method of Interparticle Distribution Functions
Daniel Ben-Avraham and Dexin Zhong, Clarkson University

Random Sequences of Heteropolymers—Ordering by Disordering
Carlos J. Camacho, University of Maryland

Generalized Hyperscaling in Nonuniversal Critical Spreading
Ron Dickman, CUNY, J. F. F. Mendes and Malte Henkel, Oxford, and M. Ceu Marques, Porto

Continuum Model of Epitaxial Roughening
F. Family and J. G. Amar, Emory University, Atlanta

Distinguishing Initial Structure from Noise Induced Structure in Continuous Ordering
Nicolas Angelo Gross, Wiliam Klein, and Karl Ludwig, Boston University

Finite-Range-Scaling Analysis of Metastability in Two- and Three-State Models with Long-Range Interactions
B. M. Gorman, P. A. Rikvold, and M. A. Novotny, Florida State University, and T. Fiig, Risø National Laboratory

Irregular Patterns in 2D Steady Inviscid Channel Flows
C. Grotta Ragazzo, Universidade de Sao Paulo and Courant Institute

Multiple Equilibrium Solutions in Various Kinetic Theories
Jacek Polewczak, SUNY at Stony Brook

Wave Number Dependence of the Relaxation Time for Longitudinal Mode of Liquid Rb
G. S. Dubey, New York University

Interaction of Turing and Flow-Induced Chemical Instabilities
S. P. Dawson, Los Alamos National Laboratory, A. Lawniczak, University of Guelph, and R. Karpal, University of Toronto

Bogoliubov Transformation for Persistent Supercurrent
H.-F. Meng, Rockefeller University

Finite-Temperature Phase Diagram of the tJ Model: Renormalization-Group Theory
Alexis Falicov and N. Nihat Berker, MIT

Entanglement Transition in the Two-Dimensional Quantum XY Model
Daniel P. Aalberts, MIT

Optimizing the RVB States on Square and Triangular Lattices
Young-Cong Chen, Rutgers University

Parity of Umklapp Scattering and Correlation Exponents for One-Dimensional Quantum Critical Phenomena
E. B. Kolomeisky, Cornell, and J. P. Straley, University of Kentucky

Low Temperature Vortex Dynamics in Twinned Superconductors
M. C. Marchetti, Syracuse, and V. Vinokur, Argonne National Laboratory

Criticality of Fermionic Random Walks
Michael Lassig, Institut für Festkorperforschung Forschungszentrum Julich

Transverse Relaxation in the Spin-Polarized Non-Ideal Fermi Gas
D. I. Golosov and A. E. Ruckenstein, Rutgers University

Non-Fermi Liquid Phases with Decoupled Local Modes in an Extended Hubbard Model
Qimiao Si, M. J. Rozenberg, G. Kotliar, and A. E. Ruckenstein, Rutgers University

Spectrum of a Corner Transfer Matrix with a Line of Defects
H.-P. Eckle, Princeton, and T. T. Truong, University of Tours

Precise Definition of Quantum Integrability and Extension Theorem
J. Groeneveld, Utrecht

Growing Quasicrystals
Steve Dworkin, Charles Radin, and Jiunn-I Shieh, University of Texas

Phase Transition on the Basic Contact Process with Rapid Stirring
Norio Konno, MSI, Cornell

Invasion Percolation on Fractal Supports
Ricardo Paredes, Intevep SA, Venezuela

Instabilities in Cellular Dentritic Morphogenesis
H. G. E. Hentschel, Emory University, and Alan Fine, Dalhousie University Medical School

Avalanches and Autocatalytic Surface Reactions
E. P. Chan and C. L. Henley, Cornell University

Mechanism for Self-Organized Criticality in a Non-Conservative Model
Alan Middleton and Chao Tang, NEC Research Institute

A Partial Mean-Field Theory for an Order Parameter Conserved Dynamics of a One-Dimensional Phase Separation Model
Jian-Cheng Lin and P. L. Taylor, Case Western Reserve University

Equilibrium Interfaces in a Nonthermodynamical Diphasic Lattice Gas
C. Appert and D. d'Humières, Ecole Normale Supérieure, and Stephane Zaleski, Université Paris 6

Phase Transitions in Coulombic Systems
Y. Levin and M. E. Fisher, University of Maryland

Granular Relaxation under Tapping and Traffic Problem
Su Yue and D. C. Hong, Lehigh University

Renormalization Group Study of a Hybrid Driven Diffusive System
K. E. Bassler and B. Schmittmann, Virginia Tech

Critical Behavior of Ising Models with Mixed Glauber and Driven Kawasaki Dynamics

K. E. Bassler and B. Schmittmann, Virginia Tech

Correlations in Systems with Non-Integrable Interactions

Z. Racz, Virginia Tech, H.-J. Xu, UCLA, and B. Bergersen, University of British Columbia

Directed Polymers in Random Media: Crossover Effects and Replica Bound-State

Yi-Kuo Yu and Richard Friedberg, Columbia University

Anomalous Interface Correlations in Driven Diffusive Systems

K.-t. Leung, Institute of Physics, Academia Sinica and R. K. P. Zia, Virginia Tech

Instabilities of "Evaporating" Interfaces in a Driven Ising Lattice Gas

M. S. Rudzinsky, Dahlgren, Virginia, and R. K. P. Zia, Virginia Tech

Asymptotic Behavior of $A + B \rightarrow$ Inert for Particles with a Drift

S. A. Janowsky, University of Texas at Austin

A Simple Model to Calculate Energy Barriers for Adatom Hopping on a Surface

G. Vidali, Syracuse, O. Biham, Syracuse and Hebrew University, and M. Karimi, Indiana University of Pennsylvania

Semiflexible Polymer in the Half Plane and Statistics of the Integral of a Brownian Curve

T. W. Burkhardt, Temple University

Grain Boundary Buckling and Spin-Glass Models of Disorder in Membranes

C. Carraro and D. R. Nelson, Harvard University

Spin Glass Model with Dimension-Dependent Ground State Multiplicities

C. M. Newman, Courant Institute, and D. L. Stein, Courant Institute and University of Arizona

Optimization by Multicanonical Annealing and the Traveling Salesman Problem

J. Lee, SCRI and FSU, and M. Y. Choi, Seoul National University and University of Washington

The $2D \pm J$ Ising Spin Glass: Exact Partition Functions in Polynomial Time

Lawrence Saul and Mehran Kardar, MIT

Clumps, a New Model for Glasses

W. Klein, Boston University, and H. Gould, R. Ramos, I. Clejan, and A. Mel'cuk, Clark University

Dynamics in Two-Dimensional Supercooled Liquids

I. Mel'cuk and H. Gould, Clark University, R. Mountain, NIST, and W. Klein, Boston University

Relaxation to Equilibrium of Single Cluster Monte Carlo Dynamics of the Ising Model
L. Colonna-Romano, A. I. Mel'cuk, and Harvey Gould, Clark University, and W. Klein, Boston University

Localization of Elastic Layers by Columnar Pins
Leon Balents, Harvard University

Elastic Lattice on a Random Background
Eugene M. Chudnovsky and Ronald Dickman, CUNY

New Universality Classes for Two-Dimensional Sigma-Models
S. Caracciolo, R. G. Edwards, A. Pelissetto, and A. D. Sokal, New York University

Equilibrium Statistical Mechanics, Infinite Clusters and Non-Ergodicity
P. D. Gujrati, University of Akron

Surface Free Energy Calculation on a Bethe Lattice
M. Chhajer and P. D. Gujrati, University of Akron

Fluctuation-Induced Transport: The Nonequilibrium Ratchet
C. R. Doering and J. Riordan, Clarkson University, and W. Horsthemke, Southern Methodist University

Free Energy Decrease is Information Loss: Application to Chaos and the Second Law
Ruddiger Schack and Carlton M. Caves, University of New Mexico

The Boltzmann Entropy and Randomness Tests
Peter Gacs, Boston University

Mean Field Theory of an Ising Model with Competing Interactions on an Elastic Lattice
M. Sobkowicz and B. Chakraborty, Brandeis University

Percolation Model of High-Energy Reactions in Random Powder Mixtures
B. J. Zilbergleyt and A. L. Zilichikhis, Cleveland State University

Scaling Properties of Fluctuations in Systems with Continuous Symmetries
U. Zurcher, MIT

Critical Dynamics of Contact Line Depinning
D. Ertas and M. Kardar, MIT

Kinetics of Clustering in Traffic Flows
P. L. Krapivsky, E. Ben-Naim, and S. Redner, Boston University

Collective Properties of Adsorption-Desorption Processes
E. Ben-Naim and P. L. Krapivsky, Boston University

Universal and Non-Universal First Passage Properties of Brownian Particles in Two-Dimensional Potential Flows
J. Koplik, CUNY, and S. Redner, Boston University

The Generic Shape of Limiting Exit Distributions in Escape Problems with Nongradient Drift Fields
R. S. Maier and D. L. Stein, University of Arizona

Non-Equilibrium Statistical Thermodynamics, Applied to Fluid Dynamics and Laser Physics
X. de Hemptinne, Catholic University of Leuven

The Generalization of a Classical Cauchy Inequality
E. Averbukh and D. Mavlo, Computer Sciences Corp. and the Milton Eisner Yeshiva

Exact Bounds for Properties of Two-Component Composites
L. Gibiansky, Princeton University

Analytical Treatment of the Lorentz Gas
Ricardo Garcia-Pelayo, Instituto de Fisica, UNAM, Mexico

Computer Simulation of Shear Flow in Deterministically Driven Hamiltonian Systems
N. Chernov, Princeton University

Stationary Vlassov–Fokker–Planck Plasmas
Michael Kiessling and Joel L. Lebowitz, Rutgers University

Dissipation in Time-Reversible Systems
Alex Kaganovich, Rutgers University

Size and Shape Effects in Random Walks and Diffusion
R. Ramakrishnan and V. Balakrishnan

Annealed Ising Model on Percolation Clusters
M. Kaufman and J. E. Touma, Cleveland State University

The Critical Behavior of the Two-Dimensional EA Spin Glass
N. Kawashima, University of Tokyo and Los Alamos National Laboratory

Exactly Solvable 3D Vertex Models
Andrei Borovick, San Francisco

Breakdown of the Scaling Relation $ds = 2df/dw$ in DLA
S. Mukherjee, Purdue, D. Jacobs, Institute for Theoretical Physics, Utrecht, and H. Nakanishi, Purdue

Band-Gap Structure of the Spectrum for Periodic Dielectric and Acoustic Media
A. Figotin, UNC at Charlotte, and P. Kuchment, Wichita State University

Localization Length Exponent in Landau Bands Using Thouless Number
M. Guo and R. N. Bhatt, Princeton University

Polaron Theory of Light Particle Localization
J. Chen and B. N. Miller, Texas Christian University

Anderson Localization on a Tree
Jeffrey Miller and Bernard Derrida, Saclay

KAM and QFT: An Exact Relation
G. Gallavotti, Rutgers University and Rome

On the Critical Behavior of Dyson's Quantum Hierarchical Models

C. Moreira and R. Schor, Universidade Federal de Minas Gerais, Brazil and Institute for Advanced Study, Princeton

Quantum Phase Transitions from a New Class of Representations of Diff(R)

G. A. Goldin, Rutgers University, and U. Moschella, Laboratoire de Physique Théorique, Université Paris 7

Electromagnetic Response of the Fractional Quantized Hall State

Steven H. Simon and Bertrand I. Halpertin, Harvard University

Correlation Lengths in the Two-Dimensional Potts Model

C. Borgs, Free University, Berlin and UCLA, and J. T. Chayes, UCLA

The Mixed-Valence State—Is it a Crystal or Some Quantum-Liquid Phase? A Formation Mechanism for the Mixed Valence State (MVS) for Strongly-Correlated Fermions

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

Surface-Induced Finite-Size Effects at First-Order Phase Transitions

C. Borgs, Free University, Berlin and UCLA, J. T. Chayes, UCLA, and R. Kotecky, Charles University, Prague

Generalized Gaussian Sums and New Knot Invariants

F. Y. Wu, Northeastern University

Phase Turbulence in the Complex Ginzburg–Landau Equation

Greg Huber, Niels Bohr Institute, and University of California, Berkeley