

Program of the 65th Statistical Mechanics Meeting

Department of Mathematics, Rutgers University,

May 15–17, 1991

Dear Reader,

Here are the titles of the talks presented at the last semiannual Statistical Mechanics Meeting. This meeting had an extra day devoted to quantum chaos. That part was organized jointly by myself and Peter Reynolds and was given financial support by ONR. 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.

The next meeting, the 66th, is scheduled for December 19 and 20, 1991. In addition there will also be a special one-day meeting on Wednesday December 18, 1991 in honor of Jerome K. Percus to which everyone is invited. The December 20 afternoon program will be devoted to mini-reviews on driven diffusive systems and self-organized criticality. 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, please send me a self-addressed envelope.

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Reviews

Where is Quantum Chaos?

Richard Prange, University of Maryland

Chaos and Quantum Mechanics: An Experimental Perspective

Daniel Kleppner, Massachusetts Institute of Technology

Statistics of Quantum Levels and Thermodynamics of Mesoscopic Systems

Boris Altshuler, Massachusetts Institute of Technology

Interference Phenomena and Quantum Transport in Mesoscopic Structures

Laurent P. Levy, Bell Labs

Spin-Glass Theory: Does Parisi-like Symmetry Breaking and Scaling Work Below $D = 6$?

C. De Dominicis, Saclay and Harvard University

Wavelets: Theory and Applications

I. Daubechies, Bell Labs

Mini-Reviews

Quantum Manifestations of Classical Order and Chaos

J. Delos, William and Mary

Quantum Images of Hamiltonian Chaos

G. Muller, University of Rhode Island

Quantum Qualitative Dynamics

C. Martens, University of California, Irvine

Quantum Localization on Classical Periodic Orbits: Quantization and Statistics

D. Meredith, University of New Hampshire

Quasienergies and Eigenfunctions of Periodic Hamiltonians

J. Jose, Northeastern University

Quantum and Classical Dynamics of a Kicked Morse Oscillator

J. Heagy, Naval Surface Warfare Center

Properties of Quantum Systems with Time-Dependent Forces

H. Jauslin, Rutgers University

Statistics of Levels for Integrable Quantum Systems

Z. Cheng, Rutgers University

Experiments in a Classical Chaotic Driven Quantum System

P. Koch, Stony Brook

Driven Bound Electrons with Microwave Noise

J. Bayfield, University of Pittsburgh

Quantum Irreversibility and Chaos

B. West, University of North Texas

Quantum Chaos in Chemical Reactions

R. Skodje, University of Colorado

Periodic Orbits and Correlations in Doubly Excited States of Two-Electron Systems

G. Ezra, Cornell University

Inhibition of Quantum Transport Due to “Scars” of Unstable Periodic Orbits

R. Jensen, Wesleyan and Harvard Universities

Negative Probabilities in the Quantum–Classical Correspondence for the Hydrogen Atom

M. Nauenberg, University of California, Santa Cruz

Optical Frequency Localization in Atoms: A New Possibility

D. Meyerhofer, University of Rochester

Coupled Maps with an Ising Phase Transition

D. Huse, Bell Labs

Generic Scale Invariance in Nonequilibrium Systems

G. Grinstein, IBM

Wetting Transition in a Random Surface Model

C. Newman, Courant Institute

Dynamics of a Cellular Automaton Interface

E. R. Speer, Rutgers University

Volume-Preserving Flows: Applications to Fluid Dynamics

R. de la Llave, University of Texas

Ergodic Hamiltonian Systems and the Boltzman–Sinai Ergodic Hypothesis

D. Szasz, Princeton University

Energy Levels in Quantum Systems with Integrable Classical Counterpart

P. Blekher, Tel Aviv University

“Large n , r and d Limit” in Statistical Mechanics and the Spectral Theory of Disordered Systems

L. Pastur, Ukrainian Academy of Science

Exact Monte Carlo for Few-Electron Systems

M. Kalos, Cornell University

Informal Session

Classical Randomness, Quantum Chaos, and the Real World

B. Altshuler, N. Balazs, F. Dyson, M. Gutzwiller, S. Goldstein, and R. Prange

Short Communications

Semiclassical Mechanics of Particles with Spin

Robert G. Littlejohn, University of California, Berkeley

Quantum Properties of an Oscillating Disk

R. Badrinarayan and J. V. Jose, Northeastern University

Classical and Quantum Correspondence in the Fermi Acceleration Model

G. Chu and J. V. Jose, Northeastern University

Experimental Observation of Scarred Eigenfunctions of a Chaotic Microwave Cavity

S. Sridhar, Northeastern University

Effects of Quantum Fluctuation in Classical Chaos

J. M. Yuan, W. M. Zhang, and D. H. Feng, Drexel University

Analysis of Chaotic Scattering in Simple Models

D. M. Wardlaw, Queens University

An Expression for the Unitary Free Energy of Phase Partition Based on the Flory–Huggins Entropy of Mixing

Richard A. Friedman, Kim Sharp, and Barry Honig, Columbia University

A Stochastic Treatment of Chemical Reactions

Lamberto Rondoni, VPI and SU

Universal Double Periodicity of Aharonov–Bohm Effect Without Ensemble Averaging and Quantum Resistor Network Theory

C. H. Wu, University of Missouri–Rolla, and G. Mahler, University of Stuttgart, Germany

Ionized vs. Bound Electrons in a Dense System

Nicolas Macris, Rutgers University and Ecole Polytechnique, Lausanne

Localization Properties and Structure at a Random Flow on a Lattice

Alex Figotin, University of North Carolina, Charlotte

Phase Segregation and Driven Diffusive Behavior in a Probabilistic Cellular Automaton

F. J. Alexander, I. Edrei, P. Garrido, and J. L. Lebowitz, Rutgers University

Boundary-Induced Phase Transitions in Driven Diffusive Systems

Joachim Krug, IBM, T. J. Watson Research Center

Roughening of Interfaces in Randomly Driven Systems

R. K. Zia, Virginia Tech

Time-Dependent Series Expansions for Nonequilibrium Lattice Models

Ronald Dickman and Iwan Jensen, Lehman College, CUNY

Granular Flows: Molecular Dynamics Simulations and Random Walk Approach

D. C. Hong, J. A. McLennan, and H. Caram, Lehigh University

Some Exact Results for the Burgers/KPZ Equation in $1 + 1$ Dimension

Terence Hwa, D. S. Fisher, and Erwin Frey, Harvard University

Non-Linear Fluid Flow in Random Media

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

Recent Development of Kagomé Lattice Spin System

Ian Ritchey, Cambridge University, P. Coleman, Rutgers, and P. Chandra, NEC

Distribution of Electrons near the Fermi Surface in the 1-D Hubbard Model

Vladimir Korepin, SUNY at Stony Brook

Stability of the Nagaoka State in the One-Band Hubbard Model

Guang-Shan Tian, Peking University

2-D Domain Wall Energies and Interactions via Conformal Field Theory

P. Kleban, University of Maine

Non-Universal Behavior, First-Order Transitions, and Varying Central Charge in the XY-Ising Model

E. Granato, Harvard University, J. M. Kosterlitz, Brown University, J. Lee, Argonne National Lab, and M. P. Nightingale, University of Rhode Island

Critical Surface of the Blume–Enery–Griffiths Model on the Honeycomb Lattice

L. H. Gwa, Rutgers, and F. Y. Wu, Northeastern University

Bicritical and Tetracritical Phase Diagrams of the BEG Model: Dimensionality Effects

W. Hoston and A. N. Berker, Massachusetts Institute of Technology

Ground-State Selection in Type III FCC Heisenberg Antiferromagnets

Brond E. Larson, Thinking Machines Inc., and Christopher L. Henley, Cornell University

A Nonlinear σ Model for Classical Triangular Antiferromagnets

Lawrence Saul, Massachusetts Institute of Technology

Multi-Grid Monte Carlo Two-Dimensional $O(4)$ Non-Linear σ Model

Robert G. Edwards, Sabino Jose Ferreira, Jonathan Goodman, and Alan D. Sokal, New York University

Geometrical Properties of Ursell–Mayer Clusters in the Ising Model

P. D. Gujrati, University of Akron

Continuum $1/r^2$ Ising Model: New Rigorous Results

Luiz Fontes, Courant Institute

Directed Polymers in Random Media—Higher Moments

Tim Halpin-Healy, Barnard College and Columbia University

Some Results for Directed Paths on Hierarchical Lattices

Leon Balents and Mehran Kardar, Harvard University

Polymers with Random Self-Interactions

Yacov Kantor and Mehran Kardar, Massachusetts Institute of Technology

Ising-Like Transition in Polymer-Nematics

Randal D. Kamien, Pierre Le Doussal, and David R. Nelson, Harvard University

Dynamics of Polymers with Cutting and Reconnection

S. Esipov and A. Middleton, Syracuse University

Dynamic Scaling of Moving Lines and Manifolds

M. Deniz Ertas and Mehran Kardar, Massachusetts Institute of Technology

Dynamics of Flat Membranes and Flickering in Red Blood Cells

Erwin Frey and David R. Nelson, Harvard University

Phase Diagram of a Deflated Vesicle

Carlos J. Camacho and Michael E. Fisher, IPST, University of Maryland

The Rigidity of a Mean-Field Interface

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

Stress-Driven Instabilities in Thin Elastic Films

Michael Grinfeld, IAS

Steps on "Misoriented" Surfaces: Using Fermion and Monte Carlo Calculations to Help Interpret Experimental Measurements

T. L. Einstein, N. C. Bartelt, and E. D. Williams, University of Maryland

Flux Lines in a Layered System: Crystallinity vs. Disorder

Lev V. Mikheev, University of Maryland

Microscopic Theory of Smectic A and C Phases of Frustrated Liquid Crystals

Roland R. Netz and A. Nihat Berker, Massachusetts Institute of Technology

Surface Ordering and Finite-Size Effects in Liquid-Crystal Film

Hao Li, Maya Paczuski, Mehran Kardar, and Kerson Huang, Massachusetts Institute of Technology

Finite-Size Scaling via Master Equation

Dana Brown and Bing Yu, Louisiana State University

Universality for Lyapunov Exponents of Large Random Matrices

Marco Isopi and Chuck Newman, Courant Institute

Infinite Susceptibility Phase in Random Anisotropy Magnets

Ronald Fisch, Washington University

A Generalized Bethe Approximation

Yizhong Fan and Jerome K. Percus, New York University

Analytic Free Energy Formulas via Monte Carlo Simulations

B. Rosen, Stevens Institute

An Integrated Free Energy Density Functional for the Nonuniform Hard-Rod Fluids

Michael Zhang, Courant Institute

Statistical Mechanics of Point Particles with Logarithmic Interactions

Michael Kiessling, Courant Institute

Analytical Solution for Random, Sequential Absorption

James A. Given, Stony Brook

Critical Fluctuation in a Nearly Mean-Field Ginsburg–Landau Model

Andrew Rutenberg, Princeton University, and David Huse, Bell Labs
Spin–Orbit Scattering and Magnetoconductance of Strongly Localized Electrons

Ernesto Medina and Mehran Kardar, Massachusetts Institute of Technology

Recursion Method in Quantum Spin Dynamics

V. S. Viswanath, University of Rhode Island

Stochastic Transient of a Noisy Lotka–Volterra Model

H. K. Leung, Institute for Nonlinear Science and UCSD

Ising Models on Husimi Trees: Phase Diagrams, Bifurcations, and Chaos

James L. Monroe, Penn State University

How to Beat Simulated Annealing

O. Martin, CCNY

Validity of the Annealed Approximation in the Theory of Learning

Sara A. Solla and Esther Levin, AT & T Bell Labs

Convergence of Partially Parallel Glauber Dynamics with Annealing

P. Ferrari, USP, Brazil, A. Frigessi, IAC-CNR, Italy and Rutgers, and R. Schonmann, UCLA

Statistical Mechanical Models Defined on an Abstract Algebraic Structure: General Results in the Theory of Symmetry of Ground States

Boris A. Men, Cleveland

The First Passage Time Exponent in any Dimension

Lincoln Chayes, UCLA

Correlation Length Bounds for Disordered Fractals with Possible Applications to Aerogels

Jennifer Chayes and Lincoln Chayes, UCLA, and J. Machta, University of Massachusetts

An Extract Critical Value for the One-Dimensional Threshold Voter Automaton

Rick Durrett and Jeff Steif, Cornell University

Diffusion Anomaly at a Phase Transition

T. Ala-Nissila, Tampere Institute of Technology, and S. C. Ying, Brown University

2D Pattern Formation: Exact Results with Surface Tension and Random Noise

Mark Mineev, Northwestern University

Vibrations in a Fractal Drum

B. Sapoval, T. Gobron, and A. Margolina, Ecole Polytechnique

Greedy Lattice Animals in a Random Environment

Alberto Gandolfi and Harry Kesten, Courant Institute

Validation of the Chaotic Mixing Renormalization Group Fixed Point

Qiang Zhang and James Glimm, SUNY at Stony Brook

Computer Simulation of the Aging of Painting: How Does It Go from
Chaos to Order?

Boris Zilbergleit, Cleveland