Program of the 67th Statistical Mechanics Meeting

Department of Mathematics

May 13–15, 1992

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 Kinetics of Phase Transitions. That part was organized by myself and Bill Klein from Boston University. 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 68th, is scheduled for December 17 and 18, 1992. 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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KINETICS OF PHASE TRANSITIONS*

Structure Function Scaling of the Isotropic to Nematic Phase Transition
    P. Wiltzius, Bell Labs

Volume Fraction Dependence of Scaling Functions in Phase Separation
Processes
    J. Gunton, Lehigh
Scaling Functions, Self-Similarity and Morphology of Phase Separating
Systems
    O. Penrose, Heriot-Watt
Growth Kinetics and Scaling Theory
    G. Mazenko, Chicago
Kinetics of Phase Separation and Ordering
    A. Khachaturyan, Rutgers
In Situ X-Ray Scattering Studies of Ordering
    K. Ludwig, Boston
Order-Disorder Transitions Studied with X-Ray Intensity Fluctuations
    B. Stephenson, IBM
Supersymmetry and Morphology in the C-H-K Theory
    W. Klein, Boston
Phase Ordering and Phase Separation in Systems with Competing
Interactions
    R. Desai, Toronto
Fluctuations in First Order Phase Transitions
    M. Grant, McGill
Transition Zones and Interfacial Dynamics
    R. Pego, Maryland
Spinodal Limits to Crystal Stabilities at Positive and Negative Pressures
    A. Angell, Arizona
Large Cell Dynamics Approach to Phase Ordering Kinetics
    Y. Oono, Illinois
Simple Models of Complex Fluids
    D. Rothman, MIT
Phase Segregation in Hydrodynamical Lattice Models
    S. Chen, Los Alamos
Nucleation in Earthquakes
    J. Rudle, Livermore

Reviews

Majority Rule RG Transformations and Uniqueness of Gibbs States
    T. Kennedy, Arizona
One Dimensional Sandpiles
    M. Feigenbaum, Rockefeller
Stat Mech and Knot Theory
    F. Y. Wu, Northeastern

Stat Mech and Conformal Invariance
    H. Saleur, Yale
The Anti-Integrability Concept Applied to Electron-Phonon Systems
    S. Aubry, Saclay & Los Alamos
Strongly Correlated Electrons in Infinite Dimensions and their Zero
Dimensional Counterparts
    G. Kotliar, Rutgers
Stat Mech of Random Hetropolymers and Protein Folding Problem
    E. Shakhnovich, Harvard
From Neurons to Muscles: Motor Proteins as Stochastic Machines
    S. Leibler, Princeton

Informal Session

NEURAL SYSTEMS
    D. Kleinfeld, Bell, Bruce Knight, Rockefeller, V. Vapnik, AT&T,
    L. Kruglyak, IAS; H. Sussmann, Rutgers, Chair

Pattern-Forming Systems with Non-Gradient Dynamics
    G. Ahlers, Santa Barbara
Nonequilibrium Patterns
    P. Hohenberg, Bell Labs
Renormalization Group and PDE's
    A. Kupiainen, Rutgers
Models of Turbulent Mixing
    E. Siggia, Cornell/Courant

Short Communications

A Possible Barrier at $z = 1$ for Local Algorithms
    G. Bathas and H. Neuberger, Rutgers
Markov Chain Analysis of Random Walks in Disordered Medium
    S. Mukherjee, Purdue
Force Bias Monte Carlo Simulation of Dense Chains
    X. J. Li and Y. C. Chien, Rutgers, Engineering
Simulation of the Entropy of Realistic Models of Peptides
    H. Meirovitch, Florida State
Transport Properties of Polymers
    F. Dowell, Harvard
Strain-Induced Nematic Phase Separation in Polymer Melts
    P. Olmsted and Scott Milber, Exxon

Molecular Random Field Theory for Isotropic Nematic Phase Transitions
    B. Vugmeister, Lehigh
Orientational Ordering of Dipolar Hard Spheres
    M. Widom and *H. Zhang*, Carnegie Mellon
Growth Kinetics and Metastable Phases of Lead on Cu(001)
    O. Biham, W. Li, J.-S. Lin, *G. Vidali*, H. Zeng, Syracuse
The Quantum Dynamics of Hydrogen on the Palladium (III) Surface
    S. Rick and J. N. Doll, Brown, Chemistry
Classification of Ordered Monolayer Structures on a Square Substrate
    O. Biham, L. W. Chen, W. Chen and G. Vidali, Syracuse
Transverse Spin Diffusion at Rough Surfaces in Knudsen Regime
    A. E. Meyerovich and *S. Stepaniants*, Rhode Island
Correlations in the Presence of Internal Reflection
    A. Genack, A. Lisyansky and *D. Livdan*, CUNY, Queens
Hysteresis in a System with Continuous Symmetry
    R. C. Desai and *A. M. Somoza*, Toronto
Theory for Below to Below Quenches in Order-Disorder Transitions
    K. R. Elder, M. Grant and *R. Morin*, McGill
Effect of Growing Barriers on Domain Growth Under Slow Cooling
    M. Holzer, J. P. Sethna, *J. D. Shore*, Cornell
A Variational Formulation for Motion by Weighted Mean Curvature
    F. Almgren, Princeton, *J. Taylor*, Rutgers, L. Wang, Princeton
Exponential Decay of Resonances in Atomic Systems
    C. King, Northeastern
Spin Kinetics in Polarized Fermi Liquids
    A. E. Meyerovich and *K. A. Musaelian*, Rhode Island
Metals in High Magnetic Field: A New Universality Class of Fermi Liquids
    V. Yakovenko, Rutgers and Landau Institute
Virtual Bond Percolation Scheme for Ising Cluster Dynamics
    R. Brower, Boston, and P. Tamayo, Thinking Machines Corp.
Hydrodynamic Screening, Gauge Invariance and Meissner Effect
    A. L. Rokhlenko, Clemson
Indistinguishable Particles with Delta Function Interactions at Finite Densities
    J. McGuire, Florida Atlantic
An Alternative to Plemelj-Smithies Formula on the Derivatives of P-Regularized Determinants
    D. H. U. Marchetti, McMaster
Determinant Formula for the Six-Vertex Model
    D. A. Coker, D. Korepin, SUNY, Stony Brook, and A. G. Izergin, Academy of Sciences, St. Petersburg

Ground-State Properties of Interacting Bose-Systems in Arbitrary Dimension: New and Old Rigorous Results from a Renormalization-Group Analysis
    E. B. Kolomeisky and J. P. Straley, Kentucky
Ground States for the 2D Josephson Network in a Magnetic Field
    G. M. Barnett, E. B. Kolomeisky and *J. P. Straley*, Kentucky
Exact Ground State for Extended Attractive Hubbard Model in Many Dimensions
    F. Essler, *V. Korepin*, K. Schouteus, SUNY, Stony Brook
Absence of Pair Binding for Hubbard Molecules in the Large U Limit
    S. Chakravarty, *L. Chayes*, and S. A. Kivelson, UCLA
Phase Transitions in Systems with Coupled Order Parameters, Exactly Soluble Model
    A. Lisyansky and *D. Nicolaides*, CUNY, Queens
A Dynamical System Approach to the 2 Dimensional Ising Model
    M. Bundaru, Inst. for Atomic Physics, Bucharest, and *O. Costin*, Rutgers
Tilings as Models of Disordered Crystals
    C. Radin, Austin
The Solution of the Ising Model on the Truncated Icosahedron Lattice of C_{60}
    S. Samuel, CUNY
Phase Diagrams and Chaotic Rescaling of Exactly-Soluble Frustrated Blume-Emergy-Griffiths Models
    M. P. Graham, *S. R. McKay* and J. E. Tesiero, Maine
Chaos and Multifrequency Dynamics in Two Quasilinear Coupled Oscillator
    S. R. McKay and *M. Poliashenko*, Maine
Chaos and Finite-Field Behavior in Ising Models with Competing Quenched Random Interactions from a Renormalization-Group Study
    E. J. Hartford and S. R. McKay, Maine
Bethe Ansatz Solution of the Square Triangle Tiling Model
    M. Widom, Carnegie-Mellon
Aerogels: The Effect of Fractal Randomness on the Critical Behavior
    J. T. Chayes, L. Chayes, UCLA, and J. Machta, U. Mass.
A New Distance Between Quantal States
    D. Styer, Oberlin
On Schrodinger's EPR Paradox and Bell's Theorem
    S. Goldstein and *D. Hemmick*, Rutgers
The Concept of Momentum in Bohmian Mechanics
    M. Daumer, D. Dürr, Munich, S. Goldstein, Rutgers, N. Zanghi, Genova

Aspects of Multi-Dimensional Time
     K. Berndl, Rutgers, D. Dürr, Munich, S. Goldstein, Rutgers, and N. Zanghi, Genova
When Time Goes by Moduto 2 Π (Statistical Mechanics on a Torus)
     M. Kiessling, Dartmouth
The 2-Dim Sine-Gordon/Coulomb Gas Model
     J. Dimock and *T. R. Hurd, McMaster*, Ontario
Lee-Yang Zeros, Julia Sets, and Order of the Phase Transitions of Potts Models on Bethe Lattices
     J. L. Monroe, Pennsylvania State
N-Level Systems: A new Approach
     L. Rondoni, Virginia Tech/Rutgers
Critical Phenomena in the Activated Barrier Crossing Problem
     R. Krishnan, G. W. Robinson and *S. Singh*, Texas Tech
Phase Equilibria of Dipolar Diatomics in the Gibbs Ensemble
     G. S. Dubey and S. F. O'Shea, Lethbridge, Canada
Critical Finite Range Scaling
     B. M. Gorman, M. A. Novotny and *P. A. Rikvold*, Florida State
Euler-Lagrange Equations for the Energy Profiles in Dimensions 2 and 3.99...
     M. E. Fisher and *L. V. Mikheev*, Maryland
Zipf's Law in Random Text—An Example of Trivial Power-Law Distribution
     W. Li, Rockefeller
Exact Results for a Simple Lattice Gas
     S. A. Janowsky and J. L. Lebowitz, Rutgers
Diffusion in Lorentz Lattice Gases
     E. G. D. Cohen and *F. Wang*, Rockefeller
Propagation of a Beam of Light and Rectangle Exchange Transformation
     A. Figotin, Nevada, Reno
Random-Walk Model of Optical Penetration into Two-Layered Tissues
     H. Taitelbaum, Maryland
Bounds for Order Parameters of a Class of Attractive Nearest-Particle Systems
     M. Katori, Chuo U., and *N. Konno*, Muroran Institute
A Dimer Reaction Model
     R. Dickman, CUNY , Lehman
Lattice Gas Automaton Model for Reaction Diffusion Systems
     A. Lawniczak, Guelph, Canada
Ordering Dynamics in the Two-Dimensional Swift-Hohenberg Equation
     K. Elder, M. Grant and J. Vinals, McGill

Kim-Kosterlitz Model of Interface Growth. An Exact Equation
    S. F. Esipov and T. J. Newman, Illinois at Urbana
Diffusing Void Model for Granular Flows: Velocity Scaling; Propagating
Modes and Convection
    H. Caram and *D. C. Hong*, Lehigh
Large Scale Behavior of Propagating Flame Fronts
    M. Bohr, M. H. Jensen, J. Krug, IBM, and *K. Sneppen*, NBI,
    Copenhagen and Michigan State
Shock Waves in Media Undergoing a Second Order Phase Transforma-
tions
    M. Grinfeld, Rutgers
Dynamic Scaling in Coupling Map Models of Chaotic Interface Dynamics
    G. Grinstein and *J. Krug*, IBM T. J. Watson Research Cntr.
Simultaneous Basins of Attraction of a Henon Map with Periods 1, 3, 9,
27...
    H. Kaplan, Syracuse
A Critical Phenomenon in Growth Systems
    A. Toom, Texas at Austin
Exact Results for Nonequilibrium Steady States with Deterministic
Gaussian Dynamics
    N. Chernov, UCLA, *G. L. Eyink*, J. L. Lebowitz, Rutgers, Y. Sinai,
    Landau Institute
Further Reductions of Variables in High Dimensional Mayer Graph
Integrals
    Y. Fan and J. K. Percus, Courant
Traffic Jams as a Dynamical Phase Transition
    O. Biham, *A. Middleton*, Syracuse