Program of the 82nd Statistical Mechanics Meeting

Department of Mathematics, Rutgers University, December 10–12, 1999

Here are the titles presented at the last semiannual Statistical Mechanics Meeting, held in December 1999. As usual these titles are informal and, in many cases, there is only one speaker listed, although the work may have been done by many collaborators. Also, the addresses are incomplete, but e-mail addresses are provided if you are interested in communicating with a speaker.

Information about past and future meetings, as well as positions wanted and available can be obtained via WWW browser at the URL ftp://math.rutgers.edu/pub/smm.

The next Statistical Mechanics Meeting will take place May 7–9, 2000, at Rutgers University.

Joel L. Lebowitz

REVIEW TALKS

Turbulent Convection
    K. R. Sreenivasan, Yale University, krs@kolmogorov.eng.yale.edu (Will also discuss APS Topical Group in Statistical and Nonlinear Physics)

Scalings and Vortex Models in Fluid Turbulence
    S. Chen, Los Alamos National Laboratory, syc@argon.lanl.gov

Undercompressive Shocks in Driven Film Flow
    A. Bertozzi, Duke University, bertozzi@math.duke.edu

Human Rights and Social Responsibilities of Scientists
    Participants include X.-Y. Fu, Yale University, xin-yuan.fu@yale.edu, K. Ivanova, Pennsylvania State University/Bulgaria, kristy@essc.psu. edu, and J. L. Lebowitz, Rutgers University, lebowitz@sakharov. rutgers.edu

Review: Decoding Genomes: The Statistical Mechanics in Bioinformatics
> E. Siggia, Rockefeller University, siggiae@rockvax.rockefeller.edu

Rare-Event Statistics in Protein Sequence Alignment
> T. Hwa, University of California, San Diego, and Rockefeller University, hwa@matisse.ucsd.edu

Replica Symmetry Breaking, Non-equilibrium Fluctuation-Dissipation Relations, and All That
> D. Fisher, Harvard University, fisher@physics.harvard.edu

Classical and Quantum Statistical Mechanics of Cracks
> M. Marder, University of Texas, marder@stratus.ph.utexas.edu

Review: Life in Flatland: Statistical Mechanics
> R. H. Austin, Princeton University, rha@pupgg.Princeton.edu

Estimates for Composite Materials
> L. Nirenberg, New York University, nirenl@cims.nyu.edu (Math Colloquium)

Round Table on Cooperative Phenomena in Large Systems Composed of Complex Entities
> F. Dyson, Institute for Advanced Study, dyson@ias.edu, S. Leibler, Princeton University, leibler@phoenix.princeton.edu, M. Nowak, Institute for Advanced Study, nowak@ias.edu, and D. Ruelle, I.H.E.S./Rutgers, ruelle@ihes.fr

A New Gordon Conference on Research and Teaching of Statistical and Thermal Physics
> H. Gould, Clark University, hgould@clarku.edu

Review: Fruits of a Decade of Statistical Physics of Protein Folding
> P. Wolynes, University of Illinois, wolynes@scs.uiuc.edu

The Protein Data Bank as a Research Resource
> H. Berman, Rutgers University, berman@adenine.rutgers.edu

Learning from Examples, One at a Time
> S. A. Solla, Northwestern University, solla@nwu.edu

Mechanics, Cancer and the Social Etiquette of Metazoan Cells
> M. Dembo, Boston University, mxd@bu.edu

Phase Transitions in Mixtures of Rods and Spheres
> S. Fraden, Brandeis University, fraden@brandeis.edu

Sliding Phases in Stacked xy and Related Models
> T. Lubensky, University of Pennsylvania, tom@lubensky.physics.upenn.edu

Spin Condensation: New Experimental Insights into the Magnetic Quantum Critical Point of Metals
> P. Coleman, Rutgers University, coleman@physics.rutgers.edu

Bose Condensation: A Paradigm of Statistical Mechanics
> M. Andrews, Be-ll Labs, mikea@bell-labs.com

Whirling Elastica and Bistable Helices: The Viscous Nonlinear Dynamics of Twist and Writhe

R. Goldstein, University of Arizona, gold@physics.arizona.edu

Bounds on Turbulent Transport

C. Doering, University of Michigan, doering@math.lsa.umich.edu

Integrable and Conformal Boundary Conditions

P. A. Pearce, University of Melbourne, P.Pearce@ms.unimelb.edu.au

Ground State Entropy in Potts Antiferromagnets and Connections with Chromatic Polynomials

R. Shrock, SUNY at Stony Brook, shrock@insti.physics.sunysb.edu

Potts Models, Chromatic Polynomials, and All That

A. Sokal, New York University, as2@scires.acf.nyu.edu

New Cluster Algorithm and Results for the Random Field Ising Model

J. Machta, University of Massachusetts at Amherst, machta@phast.umass.edu

Review: Optimal Derivation of Macroscopic Description for Statistical Systems: Ising Model Example

A. Brandt and D. Ron, Weizmann Institute, achi@wisdom.weizmann.ac.il, and dron@wisdom.weizmann.ac.il

The Dead Zone Quantization, an Approximation Scheme in Rate Control Theory

R. Seiler, Technische Universitaet Berlin, seiler@math.tu-berlin.de

Probabilistical Mechanics

L. Shepp, Rutgers University, shepp@stat.rutgers.edu

Percolation and Collision

P. Winkler, Bell Labs, pw@research.bell-labs.com

Allometric Scaling in Biology and Hydrology

J. R. Banavar, Penn State University, jayanth@phys.psu.edu

Symmetries and Universality Classes in Sandpile Models

O. Biham, the Hebrew Univeristy, biham@popeye.phys.huji.ac.il

Lattice Models on Non-Orientable Surfaces

F. Wu, Northeastern University, FYWU@neu.edu

Generalized Eigenfunctions for Waves in Inhomogeneous Media

A. Klein, University of California, Irvine, aklein@math.uci.edu

Cummulant Solution of the Elastic Boltzmann Transport Equation In an Infinite Uniform Medium

M. Lax, CUNY, lax@scisun.sci.ccny.cuny.edu

Shock Dynamics of Inelastic Gases

E. Ben Naim, Los Alamos National Laboratory, ebn@cnls.lanl.gov

Statistical Mechanics and Dynamical Systems

E. G. D. Cohen, Rockefeller Upniversity, egdc@rockvax.rockefeller.edu

Is there Equivalence of Ensembles in Nonequilibrium Statistical Mechanics
  D. Ruelle, IHES/Rutgers University, ruelle@ihes.fr

SHORT COMMUNICATIONS

Effect of Random Fields and Random Anisotropies on the Defect-Free 3D XY Model
  R. Fisch, rxf@howdy.wustl.edu
Spin Models on Random Graphs
  W. Janke, Leipzig University, *D. Johnston, Heriot–Watt University, and R. Villanova, Barcelona, Autonoma, des@ma.hw.ac.uk
Order Parameter for Two-Dimensional Critical Systems with Boundaries
  *I. Res and J. P. Straley, University of Kentucky, res@gradi.pa.uky.edu
Non-Ultrametric Multiplicity of Ordered Phases in the Quenched-Diluted Antiferromagnetic Triangular Ising Model
  H. Kaya, Gursey Institute and ITU, and *A. N. Berker, ITU and MIT, nihat@cmt5.mit.edu
Phase Diagram for a Josephson Network in a Magnetic Field
  *J. P. Straley, University of Kentucky, and E. B. Kolomeisky, University of Virginia, phy134@UKCC.UKY.EDU
Improved Kinetic Models for Processive Motor Proteins: Explicit Results for Periodic 1D Hopping
  *A. B. Kolomeisky and Michael E. Fisher, University of Maryland, abk7@glue.umd.edu
Collective Dynamics of the Immune System Response: A Cellular Automaton Model
  M. Bernaschi, Institute Applied Computing, Rome, F. Castiglione, Koeln University, and *S. Succi, Institute Applied Computing, Rome succi@iac.rm.cnr.it
Shielding Effect in Diffusion-Limited Coalescence, $A + A \leftrightarrow A$
  D. ben-Avraham, Clarkson University, qd00@clarkson.edu
Diffusional Effects in Monodispersed Colloidal Growth
  *J. Park and V. Privman, Clarkson University
Microscopic Chaos and Diffusion
  *C. P. Dettmann, E. G. D. Cohen, Rockefeller University, and H. van Beijeren, Utrecht, cpd@physics-sun.rockefeller.edu
Granular Matter: A Liquid, a Fragile Solid, a Nonlinear Elastic Solid?
  *H. Makse, Schlumberger-Doll Research, makse@ridgefield.sdr.slb.com
The Behavior of the Structure Function at Large Wavevectors
  *M. Bishop, Manhattan College, J. H. R. Clarke, UMIST, J. J. Freire, Universidad Complutense, mbishop@manhattan.edu

On Determining Structure of Inhomogeneous Liquids from Gaussian Fluctuation Model
    *K. Katsov and J. D. Weeks, University of Maryland, katsov@glue.umd.edu
Unified Approach to Prewetting and Wetting Phase Transitions
    *I. Ispolatov and B. Widom, Cornell University, slava@wisteria.chem.cornell.edu
Size Asymmetry Effects in the Hard-Sphere Electrolyte: Critical Parameters from Fine-Discretization Monte Carlo
    *J. M. Romero Enrique, Universidad de Sevilla, A. Z. Panagiotopoulos, and Michael E. Fisher, University of Maryland ipst2@Glue.umd.edu
Renormalization Group Theory for Semi-Dilute Polymer Solutions
    *H. J. Angerman and E. Shakhnovich, Harvard University angerman@smog.harvard.edu
An Exactly Soluble Compressible Cell Gas: and so what?
    *M. E. Fisher and G. Orkoulas, University of Maryland
Lebowitz Inequalities for Ashkin–Teller Systems
    *L. Chayes and K. Shtengel, UCLA, lchayes@math.ucla.edu
Equilibrium Statistical Mechanics and Stochastic Variational Problems
    V. Berdichevsky, Wayne State University, vberd@mel.eng.wayne.edu
Stochastic Burgers Equation and Turbulence
    F. Hayot, Ohio State University, hayot@cims.nyu.edu
Simplicity of Turbulence: Hierarchical Symmetry
    Zhen-Su She, UCLA and Peking University, she@math.ucla.edu
Geometry and the Rippling of a Collapsing Bubble
    *R. da Silveira, S. Chaieb and L. Mahadevan, MIT, rava@mit.edu
Numerical Investigation of Thermodynamic Limit of Disordered Models
    A. Middleton, Syracuse University, adm@syr.edu
Statistical Mechanics of Money
    *V. Yakovenko and A. Dragulescu, University of Maryland, yakovenk@physics.umd.edu
The Spontaneous Evolution of Optical Activity in Fluids
    J. Kenney, Russian Academy of Sciences/Gas Resources Corporation, Texas, jfk@alum.mit.edu
Dirac Particle on a Qunatum Sphere
    *R. M. Owczarek, Los Alamos National Laboratory/IPPT PAN, Warsaw, Poland, rmo@t13.lanl.gov
Generalized Configuration Spaces for Quantum Systems
    *G. A. Goldin, Rutgers, and U. Moschella, Universita dell'Insubria, gagoldin@dimacs.rutgers.edu

Solution of Quantum Inverse Scattering Problem for Translationary Invariant Models

*V. Korepin and F. Goehmann, SUNY at Stony Brook, korepin@insti.physics.sunysb.edu

The Delta Interaction Bosonic String

J. B. McGuire, Florida Atlantic University, mcguirej@pop.fau.edu

Decoherence of a Nuclear-Spin Qubit in 2D Semiconductor Structures in High Magnetic Fields

*D. Mozyrsky, V. Privman and I. D. Vagner, Clarkson University, mozyrsdv@clarkson.edu

Particle-Phonon Systems

*V. Capek, Charles University, capek@karlov.mff.cuni.cz

Macroscopic Determinism in Noninteracting Systems

*B. R. La Cour and W. C. Schieve, The University of Texas at Austin, blacour@physics.utexas.edu

Two-Chain Path Integral Model of Positronium

L. Larrimore, R. N. McFarland and *A. L. R. Bug, Swarthmore College abug1@swarthmore.edu

Cloud Structure Breaking Predicted from Non Brownian Motion Liquid Water Fluctuations

*K. Ivanova, Pennsylvania State University, M. Ausloos, University of Liege, Belgium, E. E. Clothiaux, Pennsylvania State University, and T. P. Ackerman, Pacific Northwest National Laboratory, kristy@essc.psu.edu

Elastic Properties of Supercooled Liquids

U. Zurcher, University of Rhode Island, zurcher@uri.edu

From Massively Parallel Algorithms and Fluctuating Time Horizons to Non-equilibrium Interfaces

*G. Korniss, Florida State University, Z. Toroczkai, The University of Maryland, M. A. Novotny, and P. A. Rikvold, Florida State University, korniss@scri.fsu.edu

Finger Competition and Formation of a Single Saffman–Taylor Finger without Surface Tension: An Exact Result

M. Mineev-Weinstein, *O. Kupervasser, Weizmann Institute and Tower Semiconductor, Israel, colkmh@tsl.co.il

On Homogenization of Elliptic Equations with Random Coefficients

*J. Conlon and A. Naddaf, University of Michigan, conlon@math.lsa.umich.edu

Density of Fisher Zeros of the Ising model

*W. Lu and F. Y. Wu, Northeastern University, wtlu@max.physics.neu.edu

Is Really Everything Clear with Two-Dimensional Disordered Ising Models?
*G. Mazzeo and R. Kuehn, University of Heidelberg, mazzeo@pooh.tphys.uni-heidelberg.de

Cluster Monte Carlo Method for Ising Models with Fields: Application to Benzene Adsorbed in Zeolite
*I. Dukovski, J. Machta, C. Saravanan, and S. M. Auerbach, University of Massachusetts, dukovski@physics.umass.edu

Localization and Domain Growth in Biased Diffusion
*B. Schmittmann, Virginia Tech, and M. Thies, University of Erlangen, schmittm@vt.edu

Particle Systems with Stochastic Passing
I. Ispolatov, Cornell University, and *P. L. Krapivsky, Boston University, paulk@sid3.bu.edu

Nucleation Dynamics in an Ising-Type System
*V. A. Shneidman, NJIT, vitaly@super.arizona.edu

Persistence in the 2D Voter Model
H. Chate, CEA Saclay, *J. Chave, CEA Saclay/Princeton, I. Dornic, CEA Saclay and Max-Planck Institute, jchave@princeton.edu

All Invariant Measures of Some Cellular Automata are Non-Gibbs
R. Fernandez, University of Rouen and *A. Toom, UFPE, Brazil, toom@de.ufpe.br

Age-structured Populations with Competition: Stationary Distributions, Fluctuations and Correlations
*R. K. P. Zia, M. Howard, Virginia Tech, and R. Desai, University of Toronto, rkpzia@vt.edu

Interspecies Competition in the Penna Model
*R. J. Astalos, and R. K. P. Zia, Virginia Tech, rastalos@blacksburg.net

Clusters and Fluctuations at Mean-Field Critical Points and Spinodals
W. Klein, *H. Gould, Clark University, J. Tobochnik, F. J. Alexander, M. Anghel, and G. Johnson, hgould@physics.clarku.edu

(Correlations in a Vlasov System
P. Youngkins and *B. N. Miller, Texas Christian University, B. Miller@tcu.edu, and

(Chaos in the Hyperbolic Billiard
*B. N. Miller and M. Ferguson, Texas Christian University

Stationary States of One and Many Particle Current-Carrying Thermostatted Systems
*F. Bonetto, D. Daems and J. L. Lebowitz, Rutgers University, bonetto@math.rutgers.edu

Derivation of a Linear Boltzmann Equation for a Lattice Gas
E. Caglioti, M. Pulvirenti, and *V. Ricci, Universita "La Sapienza," Rome/Rutgers, ricciv@roma1.infn.it

Time-Asymptotic Traveling Wave Modes in Collisionless Plasmas
    C. Lancellotti, Rutgers University, carlo@math.rutgers.edu
SPDEs in Mathematical Physics
    H. Allouba, University of Massachusetts, allouba@math.umass.edu
Disorder Driven Roughening Transitions
    *T. Emig and Thomas Nattermann, MIT
A Central Limit Theorem for Conductivity of Random Resistor Networks
on Hierarchical Lattices
    J. M. Woo, University of Arizona, jwoo@grad.math.arizona.edu
Potts Antiferromagnet
    *S.-Y. Kim and Richard J. Creswick, University of South Carolina,
    kim@cosm.sc.edu
The Ground-State Ensemble of the $q = 4$ Potts Antiferromagnet
    *M. E. J. Newman and C. Moore, Santa Fe Institute, mark@
    santafe.edu
Covergence of Gibbs Measures and Equivalence of the Microcanonical and
the Grandcanonical Gibbs Measure
    *S. Adams, University of Munich, adams@rz.mathematik.uni-
    muenchen.de
On the Phase Structure of Loop Models
    L. Chayes, UCLA, L. P. Pryadko, Institute for Advanced Study,
    *K. Shtengel, UCLA, shtengel@physics.ucla.edu
Intermediate Phases in Mixed Nematic/Heisenberg Spin-Models
    *M. Campbell, University of California, Irvine, and L. Chayes,
    University of California, Los Angeles, mcampbel@math.uci.edu
Finite-Volume Excitations of the 111 Interface in the Quantum XXZ Model
    O. Bolina, *P. Contucci, B. Nachergaele, S. Starr, University of
    California, Davis, contucci@math.ucdavis.edu
Realization of Almost Perfect 1D Heisenberg Model in Yb4As3, the Origin
of Anisotropy. Comparison with Experiments in a Magnetic Field
    *G. Uimin, Landau Institute, P. Fulde, A. Ovchinnikov, and
    Y. Kudasov
Slow Coarsening and Mesoscopic Lattices in Alloys with Misfitting Phases
    R. Weinkamer, University of Vienna, *H. Gupta, Rutgers, P. Fratzl,
    University of Leoben, and J. L. Lebowitz, Rutgers, himadri@
    physics.rutgers.edu
Modeling Collective Dislocation Dynamics in Ice Single Crystals
    *M. Carmen Miguel, A. Vespignani and S. Zapperi, MIT
A New Type of Critical Point in a Three Constituent Random Columnar
Composite of Normal Conductor, Perfect Conductor, and Perfect Insulator
    D. J. Bergman, Tel Aviv University and The Ohio State University,
    bergman@pacific.mps.ohio-state.edu

Transverse Fluctuations of Discrete Polyelectrolytes

Y. Kantor, Tel Aviv University and *M. Kardar, MIT, kardar@cmt7.mit.edu

DLA Dimension: Mathematical Prediction Supported by Computer Simmulations

*H. Makaruk, Los Alamos National Laboratory/IPPT PAN, Warsaw, Poland hanna_m@lanl.gov

Exact Percolation Properties of Some "Small-World"-Inspired Networks

*D. J. David, Harvard University and M. Kardar, MIT

Kink Adventures on a Lattice: Putting Together the Full Story

P. Kevrekidis, Rutgers University, kevrekid@physics.rutgers.edu

Mode-Coupling Approach to Heteropolymer Dynamics

*E. Pitard, Eugene I. Shakhnovich, Harvard University, estelle@smog.harvard.edu

Unbinding Transitions and Phase Separation of Multi-Component Membranes

*T. Weikl, R. Netz, and R. Lipowsky, Max-Planck-Institut for Colloids and Interfaces, weikl@elnath.mpikg-golm.mpg.de

Viscoelastic Depinning of Driven Systems

*T. Prellberg, A. Alan Middleton, M. Cristina Marchetti, Syracuse University, tprell@suhep.phy.syr.edu

Essential Nonlinearities in Hearing

V. M. Eguiluz, M. Ospeck, Y. Choe, A. J. Hudspeth and *M. Magnasco, Rockefeller University and Universitat delles Illes Balears, marcelo@zahir.rockefeller.edu