

**PROGRAM OF THE FRENCH AMERICAN SEMINAR ON
STATISTICAL MECHANICS AND QUANTUM FIELD THEORY
AND THE 43RD STATISTICAL MECHANICS MEETING**

**Department of Mathematics
Rutgers University
May 5-9, 1980**

The last semiannual Statistical Mechanics Meeting was held on May 8 and 9 following a three-day meeting sponsored jointly by the National Science Foundation of the United States and the Centre National de la Recherche Scientifique which was held on May 5 through 7. Titles of lectures given at both meetings are included here.

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 who requires a more complete address may obtain it by writing to:

Dr. Joel L. Lebowitz
Department of Mathematics, Hill Center
Rutgers University
New Brunswick, New Jersey 08903

Remarks on Nonlinear Partial Differential Equations

H. Brezis, University of Paris

Relation Between Resonances and Closed Geodesics for the Exterior
Problem

C. Bardos, Université Nice

Some Nonlinear Equations in the Kinetics of Phase Transitions

J. Lebowitz, Rutgers University

Symmetry and Isolated Singularities in Yang-Mills and Related Equations

B. Gidas, The Institute for Advanced Study

Nonlinear Scalar Field Equations: Part I Existence of a Ground State

P. Lions, C.N.R.S. and Université Pierre et Marie Curie

Some New Results for Classical Gauge Theories

A. Jaffe, Harvard University

Two Variational Problems Related to Thomas Fermi Theory

R. Benguria, Rockefeller University

Nonlinear Scalar Field Equations. Part II. Existence of Infinitely Many Bound States

H. Berestycki, C.N.R.S.

Absence of Singular Spectrum in N -Body Quantum Systems

B. Simon, Princeton University

The Classical Field Limit of Nonrelativistic Boson Systems

J. Ginibre, Laboratoire de Physique Theorique, Paris 11, Orsay

Iteration of Maps, I, II, III

J.-P. Eckmann, University of Geneva, *H. Epstein*, I.H.E.S., Bures-Sur-Yvette, and *P. Collet*, Harvard University

Quantum Field Theory on Manifolds

J. Dimock, Institute for Advanced Study

Schrödinger Operators with a Random Potential and Localization Theory in Disordered Systems

B. Souillard, Ecole Polytechnique

Lower Bounds for N -Body Hamiltonians in Terms of Agmon's Geodesic Distance

R. Carmona, Université St. Etienne and Princeton University

A New Method in the Combinatorics of the Topological Expansion in Field Theory

D. Bessis, C.E.A., Saclay and Los Alamos Scientific Laboratories

Mean-field Bounds on the Magnetization for Ferromagnetic Rotators
P. Pearce, Institute for Advanced Study

Construction of Quantized Gauge Field Theory
D. Brydges, University of Virginia

Some New Results in Constructive Field Theory
R. Seneor, Ecole Polytechnique

Local Existence of the Borel Transform for Noninteger Dimension
E. Speer, Rutgers University

Asymptotic Bounds on ϕ^4 Amplitudes in Dimension 4
V. Rivasseau, Ecole Polytechnique

Classical Field Limit of $P(\phi)_2$ Quantum Field Theory
M. Donald, Cornell University

Mass Spectrum of the ϕ^4 Model
J. Imbrie, Harvard University

Critical Point Dominance in One-Dimensional Field Theory
C. Newman, University of Arizona

Remarks on Heisenberg Model
A. Messenger, C.N.R.S., Centre de Physique Theorique

Inequalities
E. Lieb, Princeton University

Two-Dimensional Coulomb Systems
T. Spencer, Rutgers University

Analyticity Properties of the Z_2 Lattice Higgs System
S. Miracle Sole, C.N.R.S., Centre de Physique Theorique, Lunimy,
Marseille

Expansions in High-Dimensional Lattice Gauge Theories
J. Drouffe, C.E.A., Saclay

The Third Law of Thermodynamics and Degeneracy of the Ground State
M. Aizenman, Princeton University

Low-Temperature Expansion of Phase Diagrams in Pirogov – Sinai Theory
J. Slawny, Virginia Polytechnic Institute

The Long and Short of QCD—A Review of Recent Lattice and Semi-
Classical Results
D. Gross, Princeton University

On Edwards Model for Long Polymer Chains
J. Westwater, University of Washington

Renormalization Group and Perturbation Expansion for a Critical Lattice
Model
K. Gawedzki, Harvard University

Low-Temperature Asymptotic Expansion for the Rotator in Two- and
Three-Dimensions
J.-R. Fontaine, Rutgers University

Exact Results in Percolation Theory
H. Kesten, Cornell University

Long Time Tails in Stochastic Models (and) Fluctuations Around the
Boltzmann Equation
H. Spohn, University of Munich and Rutgers University

General Solution of Some Classes of Nonlinear Boltzmann Equation
M. Barnsley, Georgia Institute of Technology

Mechanical Models of Diffusion Processes
S. Goldstein, Rutgers University

Absence of Second Order Phase Transitions in the Dobrushin Uniqueness
Region
L. Gross, Cornell University

Critical Behavior of the Naive Doubling Algorithm
D. Isaacson, Rutgers University

Wave Functions in Disordered Systems
M. Stephen, Rutgers University

Topical Applications of Series Summation Techniques
G. Baker, Los Alamos Scientific Laboratory

Unanswered Questions About the Replica Method for Spin Glasses

R. Griffiths, Carnegie-Mellon University

Some Rigorous Developments in Nonequilibrium Statistical Mechanics

O. Lanford, University of California, Berkeley

Turbulence and All That

M. Feigenbaum, Los Alamos Scientific Laboratory

Report on Recent Refusnik Conference in Moscow with Slides

J. Lebowitz and R. Herber, Rutgers University

Irreversibility in Experiment and Theory—Is There a Problem?

E. G. D. Cohen, Chair, Rockefeller University, *Robert Griffiths*, Carnegie-Mellon University, *Arthur Wightman*, Princeton University, *Harold Grad*, Courant Institute, and *Malcolm Perry*, Princeton University

Applications of the Kinetic—Mean—Field Variational Theory

John Karkheck and George Stell, SUNY at Stony Brook

Bounds on the Free Energy of Disordered Magnetic Systems (Spin Glasses)

S. Goulart Rosa, Jr., Princeton University and Universidade de Sao Paulo, Brasil

Polymer Chains and Vulcanization

A. Coniglio and M. Daoud, Boston University and University of Naples

Theory and Diverse Applications of Effective Intermolecular Potentials and Their Effects on Processes in Polar and Non-Polar Liquids; The Topology, Systematic Generation, and Dynamical Stability Behaviour of Chemical Reaction Networks; Theory and Evaluation of Microscopic Surface Tension for Droplets and Holes Down to Molecular Dimensions

Oktay Sinanoglu, Yale University

Number of Animals and of Percolation Clusters

F. Delyon, Ecole Polytechnique

Application of Riemannian Geometry to a Simple Fluctuating Magnetic System

George Ruppeiner, Duke University

Path Integral Representation for Nonlinear Diffusion Processes

Hermann Grabert, Lyman Laboratory of Physics, Harvard University

Functional Integral Approach to Classical Statistical Dynamics

Rodrich Jensen and Carl Oberman, Princeton University

Collective Modes in Fluids

E. G. D. Cohen, De Schepper, The Rockefeller University

Fixed Points Discrete Hydrodynamics

Pieter B. Visscher, University of Alabama

On the Pseudo-Liouville Equation for Hard Spheres

M. Mareschal, Brussels University

Kinking and Compression in the Polymer Worm

Gerald S. Manning, Rutgers University

Snectic, Cholesteric, and Rayleigh – Benard Order in Two-Dimensions

John Toner and David Nelson, Harvard University

Turbulent Binary Mixtures

Ricardo Ruiz, M.I.T., and *David Nelson*, Harvard University

Critical Phenomena on Fractals

A. Aharony, Tel Aviv University, *Y. Gefen*, Harvard University, and
B. Mandelbrot, M.I.T.

Series Expansions for the Two-Dimensional Transverse Ising Model at $T = 0$

L. Marland, University of Guelph, Ontario

The Intelligent Analysis of Power Series—Especially in Two Variables

Michael E. Fisher, Cornell University

The Intelligent Construction of Phase Diagrams

Robert Griffiths, Carnegie-Mellon University

A Remark on the Physical Interpretation of the Thermodynamics
Formalism

Luciano Mistura, University of Rome

Three-phase Equilibrium and Line Tension

John Kerins and B. Widom, Cornell University

Phase Diagrams of $Z(N)$ Spin Models

P. Rujan, H. L. Frisch, and G. Forgacs, State University of New York, Albany

Ions and Dipoles Near a Charge Wall

Lesser Blum, University of Puerto Rico

Ground State Entropy and Algebraic Order

A. N. Berker, M.I.T., and *Leo P. Kadanoff*, University of Chicago

Ising Models with Competing Interactions in One and Two-Dimensions

M. Kardar, M.I.T.

Factorization of the Direct Correlation Function

M. S. Wertheim, Rutgers University

A Direct Approach to Softening the Cores of Model Fluids

Peter Cummings, University of Guelph, Ontario

Memory Effect in Aerosol Coagulation

George Mulholland, National Bureau of Standards

Metastability in Tricritical Systems

M. San Miguel and J. D. Gunton, Temple University

Kinetics of Order and Disorder Transitions

M. Phani, Rutgers University

Tricritical Spinodal Decomposition in a Two-Dimensional Metamagnet

P. Sahni, Temple University

Elastic Properties of Polymer Chains

I. Webman, Rutgers University

Large Cell Renormalization Group for Two-Dimensional Polymers

Sidney Redner and Peter Reynolds, Boston University

Real Space Renormalization Group for a Correlated Percolation Model

Peter Reynolds and Agustin Gonzalez, Boston University

Dynamical Fluctuation Spectra and High-Frequency Conductivity of Two-Dimensional Classical Electron Liquids

H. Totsuji, Rutgers University

A Solution to the Ising Model by Anticommuting Variables

Stuart Samuel, Institute for Advanced Study

Solution of the Navier-Stokes Equations with a Center of Force

Thomas Keyes, Yale University

$1 + \epsilon$ Expansion of an Interface

D. Forster

Fluid Magnet Universality

Royce Zia, Virginia Polytechnic Institute

Exact Solution of the Boltzmann Equation

Robert Ziff, State University of New York at Stony Brook

Dilute Potts Model on a Decorated Lattice

F. Y. Wu, Northeastern University

The next Statistical Mechanics Meeting will take place November 20, 1980 followed by the Eastern Theoretical Physics Conference at Rutgers, November 21st and 22nd.