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PROGRAM OF THE 36TH STATISTICAL MECHANICS MEETING
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Dedicated to the Memory of
Lars Onsager (1903–1976)

Lars Onsager, the most distinguished practitioner of statistical mechanics of his time, died in Coral Gables, Florida, on October 5, 1976.

He was born in Oslo, Norway, in 1903. As some other distinguished theorists, he began his career with an engineering degree, but his first major publication was an extension and clarification of Debye's theory of electrolytes. The theory of electrolytic conduction remained a major interest throughout his life. He became affiliated with Johns Hopkins University in Baltimore, Maryland, in 1928 and subsequently with Brown University, Providence, Rhode Island. Two papers written there about reciprocal relations for irreversible processes form the cornerstone of nonequilibrium thermodynamics. In 1933 he became affiliated with Yale University, New Haven, Connecticut, where he became the Willard Gibbs Professor of Theoretical Chemistry. It was there that he obtained his exact solution of the two-dimensional Ising model, published in 1944. This *tour de force,* using branches of mathematics (such as Lie algebras and elliptic functions) almost unheard of in the theoretical physics of the day, has been an inspiration to a generation of theorists.

Shortly thereafter he became interested in low-temperature physics and proposed ideas about the quantization of vortex motion in superfluids and superconductors, which acted as stimulus to the discovery of some of their most striking properties. He also determined how to use magnetic measurements (the de Haas–van Alphen effect) to investigate the Fermi surfaces of metals. On retirement from Yale he went to the Center for Theoretical Studies at Coral Gables, Florida, where one of his main interests was the question of how life originated.

In 1968 he was honored, to the delight of all, by the award of the Nobel Prize for Chemistry. It is the only time this prize has been given for work in statistical mechanics.

His scientific work was characterized by enormous originality, thoroughness, and an encyclopedic knowledge about the many topics that interested him. This knowledge was not confined to chemistry, physics, and mathematics, but included some most-unexpected topics, such as the complete life cycles of all the parasites that might attack the delicious lettuce he so proudly grew on his New Hampshire farm and the appropriate chemical compound that would most effectively combat each parasite.

Those who worked with this unique man remember him not only for his scientific work, but also for his kindness, his complete absence of malice, his patience, his unworldliness, and his gnomic sense of humor. His habit of announcing some of his most important results in the discussion sessions following presentation of now-forgotten papers at conferences and then not publishing the details of these important results for years, if at all, was legendary. So was his talent for mystifying lecture audiences, which led his students at Yale to dub his two postgraduate courses "Norwegian I" and "Norwegian II."

Each of his former colleagues must have his stock of Onsager anecdotes, the file of which is now unhappily concluded. He often answered questions indirectly, with an apt metaphor or anecdote. I remember telling him about some work by Elliott Lieb and myself on the Coulomb system where we packed a volume with spheres of different sizes. He commented, "When I was an engineering student they taught us that graded sand makes the best concrete." He then mentioned he had been to a meeting on the brain, and I asked him what he thought of the usefulness of the EEG in the study of brain activity, to which he replied, "It is like trying to discover how the telephone system works by measuring the fluctuations in the electric power used by the telephone company." On another occasion I asked him if metastability was an equilibrium phenomenon. His answer was typically oblique: "Once there was a factory in Canada which manufactured glycerin. Everything went well until one winter the pipes froze. . . . *They moved the factory.*" (It took me some time to understand this. What he was saying was that the flow in the winter was a metastable phenomenon. After the pipes froze once, they continued to do so every winter, i.e., metastability is a kinetic not an equilibrium phenomenon.) His gift for the unexpected extended into less scientific areas, as well. At a dinner following one of the Yeshiva meetings he charmed a female guest by writing out on the table napkins his own translations of long sections of the great Nordic verse epics.

Oliver Penrose recalls a lecture Onsager gave to a physics club at Cambridge University about the Ising model. After he began by plunging into the properties of spinors in N dimensions for about 20 minutes, one of the many experimentalists in the audience was bold enough to ask him what a spinor was. Onsager replied, thoughtfully, "A spinor—no, a set of spinors—is a set of matrices isomorphic to the orthogonal group." With that he gave the Onsager grin, twinkled his Nordic blue eyes at the bewildered faces around him, and continued the lecture as if nothing had happened! However, anybody who took the trouble to question him closely in private conversation about any obscurity would be rewarded by a wealth of useful information.

All of us who knew and loved Lars Onsager will join with his wife Gretl and their four children in mourning the loss of a great scientist and an endearing personality.

J.L.L.

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For many years Yeshiva University has held semiannual one-day meetings on statistical mechanics. These meetings are extremely informal, with participants invited to present brief talks on their work. No proceedings of these meetings are published, so, as a service to the statistical mechanics community, the speakers and the titles of their work are listed below. In many cases, there is only one speaker listed although the work may have been done with collaborators. Also, many 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
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The Ground State of Quantum Systems on Lattices
Donald D. Betts, University of Alberta

On a New Class of Lattice Models, and Lieb's Theorem and on Sherman's GKS Inequalities for Vector Spins
Andrew Lenard, Indiana University

Novel Approximants for Singular Functions of Two Variables
M. E. Fisher, Cornell University

Proof of the Existence of a Phase Transition with Spontaneous Magnetization in the Quantum and Classical Two-Dimensional Anisotropic Heisenberg Ferromagnet for All Anisotropy
J. Fröhlich and E. H. Lieb, Princeton University

Inequalities, Phase Coexistence, and Critical Exponents in Ferromagnets
J. L. Lebowitz, Yeshiva University

Hyperscaling in the Ising Model
George A. Baker, Jr., Los Alamos and Saclay

Charge-Ordered States in Classical Coulomb Systems
Phillipe Choquard, Institute for Advanced Study and EPFL, Lausanne, Switzerland

Renormalization-Group Calculation of the Superfluid Density
David Jasnow and Joseph Rudnick, University of Pittsburgh and Case Western Reserve University

Two Phase Transitions in Triplet Ising Models
F. Y. Wu, Northeastern University

Cumulants for Time-Correlation Functions
Eugene P. Gross, Brandeis University

Scaling and Concentration Expansions for the Resistor Network
A. B. Harris, University of Pennsylvania

Percolation in a Random Array of Resistors
L. Roth, State University of New York at Albany

Symmetry-Breaking Fields in the *XY* Model—Midgal's Approximation
Scott Kirkpatrick, IBM

Statistical Equilibrium in Planor Channeling (Large-Time Behavior of a 1-D Nonlinear Oscillator with Random Initial Conditions)
J. Ellison, State University of New York at Albany and University of New Mexico

Fitting a 2 Yukawa Direct Correlation Function to the Hard-Sphere Solid
Charles E. Hecht, Hunter College

Atomic Correlation Functions
Andrei N. Weiszmann, College of Staten Island

Essential Singularities at First-Order Phase Transition
W. Klein, Boston University

Equilibrium and Nonequilibrium Statistical Mechanics of Polymers
J. L. Lebowitz, Yeshiva University

Computer Simulation of fcc Alloys
C. Tsai, Courant Institute

Cluster Shapes at the Percolation Threshold: Connection Between Critical Point Exponents and Fractal Dimensionality
H. E. Stanley, Boston University

High-Temperature Series for the Spin Glass as a Function of Continuous Dimensionality
R. Fisch, University of Pennsylvania

Topology of Three-Dimensional Percolation Clusters
G. D. Quinn, G. M. Bishop, and R. J. Harrison, U.S.A. Materials Research

Distribution of Clusters in Equilibrium and Metastable Phases
A. Sur, Yeshiva University

Ising Model with Random Exchange Near the Percolation Limit
Michael Stephen and G. S. Grest, Rutgers University

Real Space in Renormalization Group as Applied to Percolation
Peter Reynolds, Massachusetts Institute of Technology

Free Energy of a Vacancy
Robert Cook, Lafayette College

Graphical Expansion for Spin Relaxation
Harold Friedman, Stony Brook

Dynamical Orientation Correlations in Solution
Peter G. Wolynes, Harvard University

Metastability and Analytic Continuation of Eigenvalues
L. S. Schulman, Indiana University

Spinodal Transitions in the Baker–Essam Model
Leon Gunther, Tufts University

Use of Actual Versus Self-Consistent Variational Frequencies for the Thermodynamics of Anharmonic Crystals
J. A. Cox and R. J. Harrison, U.S.A. Materials Research

On Universality of the Critical Correlation Function
J. V. Sengers, University of Maryland

Destruction of First-Order Transitions by Symmetry-Breaking Fields
D. Mukamel, E. Domany, and M. E. Fisher, Cornell University

The Kadanoff Block Transformation by Monte Carlo
Zvi Friedman, Duke University

A Lower-Bound Approximation for the Free Energy of the Three-Dimensional Ising Model
S. Katz, Temple University

The Landau–Ginsberg–Wilson Model at Low Temperatures Near Two Dimensions
R. Meyerson, Institute for Advanced Study

Tricritical Dynamics Near Four Dimensions
E. Siggia, University of Pennsylvania

Computer Simulation of the Properties of Hard Spheres Near a Hard Wall
I. Shook and D. Henderson, IBM, San Jose, California

The Interface Roughening Transition
R. H. Swendsen, Brookhaven

Surface Structure of a Liquid–Vapor Interface
M. Rao, Columbia University

Correlations at a Fluid Surface
D. Sullivan, Stony Brook

Electrolyte Effect in Electrochemical Reactions
E. Waisman, G. Worry, and R. A. Marcus, University of Illinois

Studies of a Charged Hard-Sphere Model
Bjorn Larsen, Stony Brook

The Radial Distribution Function for a Hard-Sphere Crystal
J. M. Kincaid and G. Stell, Stony Brook

Correlation Scaling Functions for Multicritical Points
E. Domany, Cornell University

The Relaxation Function for the *XY* Model and the Mathematics of Continued Fractions
M. Howard Lee, University of Georgia

Thermodynamics for a Two-Dimensional Ising Model with Quenched Bond Impurities
J. R. Hamm, Stony Brook

Some Rigorous Results in Mean-Field Theory
W. Klein, Boston University

Statistical Symmetry of Decay Processes
Burt V. Bronk, Clemson University

Development of Order in Quenched Binary Alloys
M. Phani, Yeshiva University

Generalized Bethe Approximation: A Magnetization Upper Bound for Random Ising Ferromagnets
H. Falk, City College of New York