

Preface

This issue consists of papers related to the program "New Directions in Statistical Mechanics" held at the Institute for Theoretical Physics in Santa Barbara, California in the fall of 1987. The program started with a workshop on "Mathematical Aspects of Nonequilibrium Physics" and some of the papers are based on lectures given at that workshop.

The program was a very successful one and the papers included here are only a small fraction of what was produced there.

Joel L. Lebowitz
Editor

Mathematical Aspects of Nonequilibrium Physics

August 16–21, 1987

Hydrodynamics Experiments

G. Ahlers

Observations of Chaotic Behavior

A. Libchaber

Extracting Interesting Parameters from Time Series

D. Ruelle

Singularity Spectrum: Theory and Relation to Experiment

P. Collet

Perspectives from the Macroscopic World

J. Glimm

Micro Hydrodynamics

L. Hannon

Reduced Descriptions of Hydrodynamic Turbulence

R. Kraichnan

Derivation of Hydrodynamic Equations Using Entropy Estimates

R. Varadhan

Cellular Automata Model for Burgers' Equation

D. Levermore

Solving P.D.E.'s with Cellular Automata

G. Doolen

Derivation of Hydrodynamic Limit: A Report on the Current State of the Art

E. Presutti

Numerical Simulations of Hydrodynamic Instabilities

P. Marcus

Fluctuations and Stationary Nonequilibrium States

H. Spohn

Is Dendritic Crystal Growth a Deterministic Process?

J. Gollub

Front Propagation

J. P. Eckmann

Diffusion and Convection

B. Shraiman

Front Propagation in Certain One-Dimensional Exclusion Models

M. Bramson

Coherence, Chaos and Broken Symmetry in Many-Body Dynamical Systems

G. Grinstein

Dynamical Systems and Localization

T. Spencer

Conference Summary—Discussion of Open Problems

J. L. Lebowitz