



CONTENTS

INTRODUCTION

Conference Summary ..... 1  
Giovanni Gallavotti

CHAOTIC MAPS

Complicated Objects on Regular Trees ..... 5  
Mitchell Feigenbaum

Renormalization Group Methods for Circle Mappings ..... 25  
Oscar E. Lanford, III

Phase Transitions on Strange Sets ..... 37  
Predrag Cvitanović

Stochastic Perturbations of the Invariant Measure of Some  
Hyperbolic Dynamical Systems ..... 55  
Pierre Collet

Fixed Points of Composition Operators ..... 71  
Henri Epstein

Differentiable Structures on Fractal Like Sets, ..... 101  
Determined by Intrinsic Scaling Functions on Dual Cantor Sets  
Dennis Sullivan

CLASSICAL MECHANICS-PARTICLES AND FLUIDS

Painlevé Property and Integrability ..... 111  
Eric Siggia

Nekhoroshev-like Results for Hamiltonian Dynamical Systems ..... 121  
Giancarlo Benettin

Relaxation Times and the Foundations of Classical Statistical  
Mechanics in the Light of Modern Perturbation Theory ..... 147  
Luigi Galgani

Relevance of Exponentially Large Time Scales in Practical  
Applications: Effective Fractal Dimensions in Conservative  
Dynamical Systems ..... 161  
Antonio Giorgilli

Numerical Results from Truncated Navier-Stokes Equations (Summary) .....	171
V. Franceschini	
A Simple and Compact Presentation of Birkhoff Series .....	173
Michel Vittot	
Two Lectures on Chaotic Dynamics in the Solar System .....	185
Jack Wisdom	

#### QUANTUM CHAOS

Quantum Chaology of Energy Levels; Notes Based on Lectures by Michael Berry .....	189
Jonathan Keating and Raul Mondragon	
Quantum Mechanics and Chaos .....	197
Giulio Casati	

#### STATISTICAL MECHANICS

Dynamics of Automata, Spin Glasses and Neural Network Models .....	213
B. Derrida	
On the Weakly Coupled Lorentz Gas .....	245
Detlef Dürr	
Dynamical System Describing the Low Temperature Phase of a Driven Lattice Gas .....	255
Joachim Krug and Herbert Spohn	
Computing Bounds on Critical Indices .....	269
Hans Koch and Peter Wittwer	
A Thermodynamic Active System in Regular and Chaotic Motion .....	279
R. Gallimbeni, M. Miari and L. Sertorio	

#### EXPERIMENTS

Experiment and Theory of the Classically Chaotic Motion of the Bound Electron .....	289
James E. Bayfield	
Shil'nikov Chaos in Lasers .....	301
F. T. Arecchi	
Recent Results of Experiments with Staffman-Taylor Flow .....	313
Mark W. DiFrancesco	
Instabilities and Chaos in Rotating Fluids .....	319
Harry L. Swinney	
From Chaos to Turbulence in an Helium Experiment (Summary) .....	327
Albert Libchaber	

Complex Dynamics in Experiments on a Chemical Reaction (Summary) ...	329
W. D. McCormick	

ADDENDA

Additional Contributed Seminars .....	331
Contributors.....	333
Index.....	335