TABLE OF CONTENTS

Series Editor's Preface	٧
Preface	vii
Part I: Invited Papers	
- C. Cercignani, "Physical Problems and Rigorous Results in Kinetic Theory	3
- A. Chorin, "Statistical Mechanics of Vortex Filaments" (abstract)	15
- Feng Kang, "The Hamiltonian Way for Computing Hamiltonian Dynamics"	17
- C.W. Gear (with Fen-Lien Juang), " The Speed of Waveform Methods for ODEs"	37
- J.B. Keller, "Diffusively Coupled Dynamical Systems"	49
- P.D. Lax, "Deterministic Turbulence" (extended abstract)	57
- J.L. Lions, "Exact Controllability for Distributed Systems. Some Trends and Some Problems"	59
- V.P. Maslov, "Beginning of Weakly Anisotropic Turbulence"	85
- S.K. Mitter, "Markov Random Fields, Stochastic Quantization and Image Analysis"	101
- H. Neunzert (with F. Gropengießer and J. Struckmeier), "Computational Methods for the Boltzmann equation"	111
- J.R. Ockendon, "A Class of Moving Boundary Problems Arising in Industry"	141
- M. Primicerio, "Systems with Non-Fading Memory Encountered in the Modellization of Industrial Problems"	151
- M. Pulvirenti, " A Stochastic Particle System Modelling the Broadwell Equation"	173
- A. Quarteroni "(with A. Valli), "Theory and Application of Steklov-Poincaré Operators for Boundary-Value Problems"	179

	S. Rionero (with B. Straughan), "On the Problem of Natural Convection"	205
Pai	rt II: Selected Contributed Papers	
۱.	Mathematical Modelling in Fluid Mechanics	
	- J.A. Nohel, "Non-Newtonian Phenomena in Shear Flow"	219
	- O. Pironneau (with C. Bernardi, M.O. Bristeau and M.G. Vallet), "Numerical Analysis for Compressible Viscous Isothermal Stationary Flows"	231
	- E.G. Virga (with D. Roccato), "Drops of Nematic Liquid Crystal Floating on a Fluid"	245
2.	Nonlinear waves	
	- S. Venakides, "The Korteweg-de Vries Equation with Small Dispersion: Higher Order Lax-Levermore Theory"	255
	- P.L. Christiansen, "Solitons in Optical Fibres"	263
3.	Wave Propagation in Random Media	
	- R. Burridge, "Waves in Finely Layered Media"	267
	- B.S. White (with Balan Nair), "Stochastic Geometry and the Intensity of Random Waves"	281
	- V.I. Klyatskin, "Plane Waves in Layered Random Media. The Role of Boundary Conditions"	291
4.	Transport Phenomena	
	- P.A. Markowich (with A. Arnold), "Quantum Transport Models for Semiconductors"	301
	- G.C. Pomraning, "Particle Transport in Random Media"	309
5.	Inverse Problems in the Applied Sciences	
	- G. Alessandrini "Determining Conductivity by Roundary	

Measurements, the Stability Issue"

317

TABLE OF CONTENTS	
- G. Caviglia (with A. Morro), "Scattering Problems for Acoustic Waves"	325
 W.L. Dunn (with A.M. Yacout and F. O'Foghludha), "The Use of Single-Scatter Models in Medical Radiation Applications" 	335
6. Mathematical Modelling of Industrial Problems	
 Li Tatsien (with Tan Yongji, Pen Yuejun and Li Hailong), "Mathematical Methods for the SP Well-Logging" 	343
- C.D. Hill (with P. Susskind and V. Giambalvo), "Effective Computation of the Symmetric Lens"	351
- L. Brusa, "Mathematical Modelling of Structural Industrial Problems: Methodologies and Algorithms"	359
Author Index	
Subject Index	