

CONTENTS

Foreword	x
Preface	xi
Macroscopic limits of the kinetic equation	1
<i>Claude Bardos, Francois Golse and David Levermore</i>	
The essence of particle simulation of the Boltzmann equation	13
<i>H. Babovsky and R. Illner</i>	
The approximation of weak solutions to the 2-D Euler equations by vortex elements	23
<i>J. Thomas Beale</i>	
Limit behavior of approximate solutions to conservation laws	38
<i>Chen Gui-Qiang</i>	
Modeling two-phase flow of reactive granular materials	58
<i>Pedro F. Embid and Melvin R. Baer</i>	
Shocks associated with rotational modes	68
<i>Heinrich Freistühler</i>	
Self-similar shock reflection in two space dimensions	70
<i>Harland M. Glaz</i>	
Nonlinear waves: overview and problems	89
<i>James Glimm</i>	
The growth and interaction of bubbles in Rayleigh-Taylor unstable interfaces	107
<i>James Glimm, Xiao Lin Li, Ralph Menikoff, David H. Sharp, and Qiang Zhang</i>	
Front tracking, oil reservoirs, engineering scale problems and mass conservation	123
<i>James Glimm, Brent Lindquist and Qiang Zhang</i>	
Collisionless solutions to the four velocity Broadwell equations	140
<i>J.M. Greenberg and Cleve Moler</i>	

Anomalous reflection of a shock wave at a fluid interface	156
<i>John W. Grove and Ralph Menikoff</i>	
An application of connection matrix to magnetohydrodynamic shock profiles	169
<i>Harumi Hattori and Konstantin Mischaikow</i>	
Convection of discontinuities in solutions of the Navier-Stokes equations for compressible flow	173
<i>David Hoff</i>	
Nonlinear geometrical optics	179
<i>John K. Hunter</i>	
Geometric theory of shock waves	198
<i>Tai-Ping Liu</i>	
An introduction to front tracking	203
<i>Christian Klingenberg and Bradley Plohr</i>	
One perspective on open problems in multi-dimensional conservation laws	217
<i>Andrew J. Majda</i>	
Stability of multi-dimensional weak shocks	239
<i>Guy Métivier</i>	
Nonlinear stability in non-newtonian flows	251
<i>J.A. Nohel, R.L. Pego and A.E. Tzavaras</i>	
A numerical study of shock wave refraction at a CO ₂ /CH ₄ interface	261
<i>Elbridge Gerry Puckett</i>	
An introduction to weakly nonlinear geometrical optics	281
<i>Rodolfo R. Rosales</i>	
Numerical study of initiation and propagation of one-dimensional detonations	311
<i>Victor Roytburd</i>	
Richness and the classification of quasilinear hyperbolic systems	315
<i>Denis Serre</i>	

A case of singularity formation in vortex sheet motion studied by a spectrally accurate method	334
<i>M.J. Shelley</i>	
The Goursat-Riemann problem for plane waves in isotropic elastic solids with velocity boundary conditions	367
<i>T.C.T. Ting and Tankin Wang</i>	