

Contents

LIST OF CONTRIBUTORS	vii
IN MEMORIAM	ix

Soliton Interactions in Two Dimensions

Neil C. Freeman

I. Introduction	1
II. Korteweg–de Vries Equation and Two-Soliton Interactions	8
III. Inverse Scattering Theory	14
IV. Multisoliton Solutions	17
V. Positive Dispersion and the Kadomtsev–Petviashvili Equation	22
VI. Cylindrical Korteweg–de Vries Equation	30
VII. Conclusion	35
References	36

Theory of Homogeneous Turbulence

T. Tatsumi

I. Introduction	39
II. Mathematical Formulation	42
III. Statistical State of Turbulence	49
IV. Cumulant Expansion	65
V. Incompressible Isotropic Turbulence	78
VI. Turbulence of Other Dimensions	105
VII. Concluding Remarks	127
References	130

Thermoacoustics

Nikolaus Rott

I. Introduction	135
II. Oscillating Flow over a Nonisothermal Surface	138
III. Damping and Excitation of a Gas Column with Temperature Stratification	143

IV. Thermoacoustic Streaming	168
References	174

Simple Non-Newtonian Fluid Flows

Ernst Becker

I. Introduction	177
II. Non-Newtonian Flow Behavior	179
III. The Constitutive Equation of Simple Fluids	184
IV. Fully Developed Pipe Flow	187
V. Peristaltic Pumping	192
VI. Viscosity Pumps	197
VII. Effective Viscosities	204
VIII. Extruder Flow	210
IX. Nearly Viscometric Flow	212
X. Plane Boundary Layer Flow of a Fluid with Short Memory	216
XI. Journal Bearing	219
References	225
AUTHOR INDEX	227
SUBJECT INDEX	231