

Contents

PART I NONLINEAR WAVES IN FLUIDS AND PLASMAS

1. Nonlinear waves: From hydrodynamics to plasma theory 1
E. INFELD
2. Solitary waves in slowly varying environments: wave packets 38
R. GRIMSHAW
3. A note on the limiting form of shallow water waves 59
M.I.G. BLOOR
4. A note on the instability of capillary waves 64
YAN-CHOW MA
5. On the integrability of conservative multiple three-wave 75
interaction systems
C.R. MENYUK, H.H. CHEN, and Y.C. LEE
6. An evolution equation for a stratified flow having two 90
characteristics coalesced
C.H. SU
7. Interaction of solitary waves in stratified fluids 108
ANTONY K. LIU
8. The Q-theorem for charged solitons 118
E.W. LAEDKE and K.H. SPATSCHEK
9. Soliton resonance experiments 133
KARL E. LONNGREN
10. Nonlinear wave-function formulation for compressible-fluid 142
mechanics
WELDON J. WILSON
11. Waves propagating over a slowly varying depth with two- 150
dimensional bottom topography
JOHN R-C. HSU and YOSHITO TSUCHIYA

PART II NONLINEAR WAVES IN SOLIDS

12. The loop soliton 162
KIMIYAKI KONNO and ALAN JEFFREY
13. The large-amplitude elastodynamics of transversely isotropic 184
incompressible hyperelastic cylinders
COLIN ROGERS

PART III SOLITONS, INVERSE SCATTERING TRANSFORM, BÄCKLUND TRANSFORMATION
AND NONLINEAR WAVES IN PHYSICS

14.	Soliton dynamics in the presence of external forces D.J. KAUP	197
15.	Riemann spectral method for the nonlinear evolution equation TSUTOMU KAWATA	210
16.	Recursion relations and a class of isospectral manifolds for Schrödinger's equation F. ALBERTO GRÜNBAUM	226
17.	N-dimensional nonlinear systems with exact invariants JOHN R. RAY	230
18.	Bäcklund transformations and integrable Hamiltonian systems WILLIAM F. SHADWICK	234
19.	Bäcklund transformations for the Einstein equation M. OMOTE AND M. WADATI	242
20.	Bäcklund transformations for the Ernst equation of general relativity R.K. DODD, J. KINOULTY and H.C. MORRIS	254
21.	Geometric structures in the singularity theory of hyperbolic equations MICHAEL C. REED	273
22.	A hysteretic RC line for solitary pulses R.W. NEWCOMB and R.C. AJMERA	281
23.	Experiment on lattice soliton by means of nonlinear electric circuit S. WATANABE	292
INDEX		323