

Contents

Part I	Symmetry Aspects	
<hr/>		
Symmetries, Singularities and Exact Solutions for Nonlinear Systems By P. Winternitz		2
Application of Isovector Approach for the Solutions of Differential Equations of Physical Systems By O.P. Bhutani and K. Vijaya Kumar		12
Master Symmetries of Certain Nonlinear Partial Differential Equations By R. Sarathy and K.M. Tamizhmani		20
Symmetries and Constants of Motion of Integrable Systems By Li Yi-Shen		27
Lie Algebra, Bi-Hamiltonian Structure and Reduction Problem for Integrable Nonlinear Systems By S. Roy and A. Roy Chowdhury		42
On the Role of Virasoro, Kac-Moody Algebra and Conformal Invariance in Soliton Hierarchies By A. Roy Chowdhury		51
Generalised Lie Symmetries and Integrability of Coupled Nonlinear Oscillators with Two Degrees of Freedom By M. Senthilvelan and M. Lakshmanan		65
Aspects of Symmetries of Dissipative Systems By G. Ambika, K. Babu Joseph, and K.M. Valsamma (With 3 Figures) ..		78
Part II	Singularity Structure Aspects	
<hr/>		
Painlevé Property in Hamiltonian and Non-Hamiltonian Systems By S. Puri		92
Singularity Structure and Chaotic Dynamics of the Parametrically Driven Duffing Oscillator By S. Parthasarathy (With 2 Figures)		104
A Singularity Analysis Approach to the Solutions of Duffing's Equation By T. Bountis, M. Bier, and V. Papageorgiou (With 2 Figures)		112

Part III	Integrability and Chaos: Quantum and Classical	
<hr/>		
Avoided Level Crossing, Solitons and Random Matrix Theory By K. Nakamura		122
Random Matrices and Quantum Chaos: Effects of Symmetry-Breaking on Spectral Correlations By A. Pandey		132
Quantum Groups By C. Adimoolam		144
Integrable Quantum Spin Chains and Some Problems Related to Integrable Systems By A. Kundu and B. Basumallick (With 1 Figure)		153
On the Quantum Inverse Problem for a New Type of Nonlinear Schrödinger Equation for Alfven Waves in Plasma By S. Sen and A. Roy Chowdhury		160
Nonlinear Chemical Dynamics By P.K. Chattaraj (With 7 Figures)		172
Dynamics of Solitons on ^4He Films By V.M. Nandakumaran and J. Sreekumar (With 5 Figures)		183
Studies on a Josephson Junction with Nonlinear Resistance By G. Ambika and K. Babu Joseph (With 3 Figures)		196
Index of Contributors		205
Subject Index		207