

Contents

Preface	v
Contributors	xi
1. Shape Sensitivity Analysis in Hyperbolic Problems with Nonsmooth Domains <i>John Cagnol and Jean-Paul Zolesio</i>	1
2. Unbounded Growth of Total Variations of Snapshots of the 1D Linear Wave Equation Due to the Chaotic Behavior of Iterates of Composite Nonlinear Boundary Reflection Relations <i>Goong Chen, Tingwen Huang, Jonq Juang, and Daowei Ma</i>	15
3. Velocity Method and Courant Metric Topologies in Shape Analysis of Partial Differential Equations <i>Michel C. Delfour and Jean-Paul Zolésio</i>	45
4. Nonlinear Periodic Oscillations in Suspension Bridges <i>Zhonghai Ding</i>	69
5. Canonical Dual Control for Nonconvex Distributed-Parameter Systems: Theory and Method <i>David Y. Gao</i>	85
6. Carleman Estimate for a Parabolic Equation in a Sobolev Space of Negative Order and Its Applications <i>O. Yu. Imanuvilov and M. Yamamoto</i>	113
7. Bilinear Control for Global Controllability of the Semilinear Parabolic Equations with Superlinear Terms <i>Alexander Khapalov</i>	139
8. A Nonoverlapping Domain Decomposition for Optimal Boundary Control of the Dynamic Maxwell System <i>J. E. Lagnese</i>	157

9. Boundary Stabilizability of a Nonlinear Structural Acoustic Model Including Thermoelastic Effects <i>Catherine Lebiedzik</i>	177
10. On Modelling, Analysis and Simulation of Optimal Control Problems for Dynamic Networks of Euler-Bernoulli- and Rayleigh-Beams <i>Guenther Leugering and Wigand Rathmann</i>	199
11. Local Characterizations of Saddle Points and Their Morse Indices <i>Yongxin Li and Jianxin Zhou</i>	233
12. Static Buckling in a Supported Nonlinear Elastic Beam <i>David L. Russell and Luther W. White</i>	253
13. Optimal Control of a Nonlinearly Viscoelastic Rod <i>Thomas I. Seidman and Stuart S. Antman</i>	273
14. Mathematical Modeling and Analysis for Robotic Control <i>S. Tsui</i>	285
15. Optimal Control and Synthesis of Nonlinear Infinite Dimensional Systems <i>Yuncheng You</i>	299
16. Forced Oscillation of the Korteweg-De Vries-Burgers Equation and Its Stability <i>Bing-Yu Zhang</i>	337