Nonlinear Systems and Complexity

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Discontinuity and Complexity in Nonlinear Physical Systems

Springer

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Preface

This edited book is selected from *International Conference on Nonlinear Science and Complexity*, held at Budapest, Hungary, during August 6–11, 2012. The aims of this edited book are to present the new results in the fundamental and frontier theories and techniques in science and technology, and to stimulate more research interest in the community of nonlinear science and complexity. This is the fourth of a series of events held during the last years reflecting the progress in this challenging area. The first conference on *Nonlinear Science and Complexity* was held in 2006 at Beijing, China. The second conference was held in 2008 at Porto, Portugal. The third conference was held in 2010 at Ankara, Turkey. The edited book included 24 chapters selected and extended from 60 accepted papers in NSC 2012 after peer-review. Presented are the following four issues:

1. Fractional dynamics and nonlinearity
2. Chaos and complexity
3. Discontinuous dynamics
4. Engineering and financial nonlinearity

In the first topic, eight chapters present Lie group analysis, fractional dynamical systems and control. The second topic includes six papers on stability, bifurcation, and chaos in nonlinear dynamics. Discontinuous dynamics constitutes the third topic and includes four chapters presenting impact vibro-dynamical systems and chaos in piecewise linear systems. The fourth topic presents six chapters in engineering and financial nonlinearity.

Herein, editors would like to thank authors and reviewers to support the projects. The results presented in this edited book will constitute an important contribution for the progress in scientific arena of nonlinear science and complexity.

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