

Preface

Complexity science and chaos theory, as the study and analysis of nonlinear systems is known, is a very fascinating area of scientific research. Nonlinear systems, although deterministic, demonstrate a strange behavior, due to widely diverging outcomes, provoked by small variations in initial conditions or system parameters that lead to inobservance of long-term system-behavior prediction. This behavior is known as deterministic chaos (simply chaos). The interdisciplinary nature of complexity and chaos is a feature that provides scientists with a global theoretical tool. Complex systems give rise to emergent behaviors that lead to interesting phenomena in science, engineering, as well as social sciences.

The aim of all symposia on chaos and complex systems (CCS) is to convene scientists, engineers, economists, as well as social scientists and discuss the latest improvements in the area of corresponding nonlinear-system complex (chaotic) behavior.

Especially in the “4th International Interdisciplinary Chaos Symposium on Chaos and Complex Systems”, which took place from April 29th to May 2nd, 2012 in Antalya, Turkey, the contents of the symposium have been enriched in an interdisciplinary-widening way, so as to allow work from circuits to econophysics and from nonlinear analysis to the history of chaos theory, to be presented. Thus, this symposium became an attractor (a strange for sure) for researchers. It should be mentioned that the organizers’ expectations concerning the international resonance of the conference have been fulfilled.

Consequently, the “Conference proceedings: Chaos and Complex Systems—2012,” published by Springer Team in the frame of the “Springer Complexity” series, aim to address emerging topics, but not strictly restricted to networks, circuits, systems, biology, evolution and ecology, nonlinear dynamics and pattern formation, as well as neural, psychological, psychosocial, socioeconomic, management complexity, and global systems. These proceedings also aspire to serve as a compact reference book on nonlinear systems, catering to research scholars, interested readers, and advanced learners from multidisciplinary areas.

On behalf of the organizing committee we would like to express our thanks to the Symposium's International Scientific Committee and the Advisory Committee, as well as all those who have contributed to this conference, for their support and advice. We are also grateful to Prof. Dr. Leon CHUA, for his support and the wonderful opening lecture. Our thanks are also due to all the invited lecturers: Prof. Dr. Fatihcan ATAY, Dr. Santo BANERJEE, Prof. Dr. Ernesto ESTRADA, Prof. Dr. Bahman KALANTARI, Prof. Dr. Bulent KARASOZEN, Prof. Dr. Arkady PIKOVSKY, and Prof. Dr. Michael ROSENBLUM. The organizers also thank Istanbul Kultur University and its Rector Prof. Dr. Dursun KOÇER, its Vice Rector Çetin BOLCAL, and Prof. Dr. Tamer KOÇEL for their support and incentive encouraging.

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