

Preface

The idea of this book arose during the meeting “Nonlinear Dynamics: New Directions”, held in honor of Professor Valentin Afraimovich in Guanajuato Mexico during May 2010. The meeting took place in the “Centro de Investigación en Matemáticas”, one of the finest places to do mathematics. During the meeting we had the opportunity, not only to share our passion for nonlinear dynamics, but also to discuss its foundations and the emerging applications mainly in biology. It was as well the occasion to share life experiences and celebrate this magnificent person, Valentin Afraimovich. The book covers all scientific aspects of the meeting. For an accounting of its human aspects we have Lev Tsimling’s photo gallery. We are awaiting a convincing translation of Micha Ravinovich’s poetic work.

This two-volume book covers part of the vast spectrum of interests of Professor Afraimovich, which range from fractal analysis to very specific applications of the theory of dynamical systems to biology. The first volume of this book is devoted to fundamental aspects and includes a number of important new contributions as well as some review articles, which emphasize new development prospects. The second volume contains mostly new applications of the theory of dynamical systems to both engineering and biology.

The authors contributing to these two volumes, all of them academically related to Professor Afraimovich, are among the most prominent specialists in nonlinear dynamics. The topics addressed in these two volumes include a rigorous treatment of fluctuation in dynamical systems, topics in fractal analysis, studies of the transient dynamics in biological networks, synchronization in lasers, and control of chaotic systems, among others.

We are very happy to have finally completed this compilation and we thank all the contributors from the bottom of our hearts. We also thank all the agencies that contributed to financing the 2010 meeting, in particular FENOMECH-UNAM, CONACyT, CIMAT, and UASLP. If despite our effort, some mistakes remain, we are accountable for it.

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Nonlinear Dynamics New Directions

Theoretical Aspects

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