World Scientific Lecture Notes in Physics – Vol. 53

INTRODUCTION TO NONLINEAR DYNAMICS FOR PHYSICISTS

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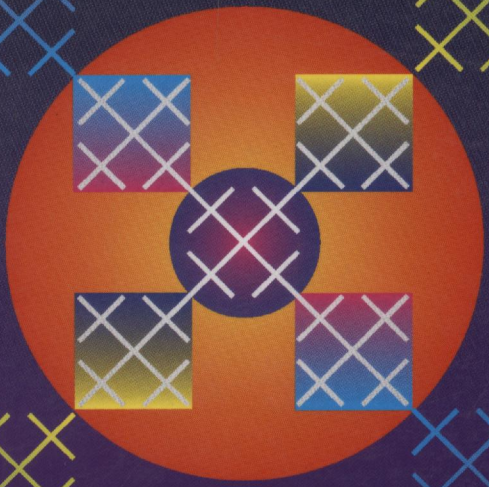

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INTRODUCTION TO NONLINEAR DYNAMICS FOR PHYSICISTS

by **Henry D. I. Abarbanel, Mikhael I. Rabinovich & Mikhael M. Sushchik**

This is a series of lecture notes on nonlinear dynamics for physicists. The level is that of an advanced undergraduate or beginning graduate student. The main aim of these lectures is to present both substantial qualitative information about phenomena in nonlinear systems to the advanced physics student, making the flavor of the material tantalizing, yet sufficient quantitative material such that the student would learn how to progress in the study of similar material without the instructor's "magic wand". The book also aims to address three main questions about nonlinear dynamics: What is nonlinear dynamics all about and what makes it differ from linear dynamics which permeates all familiar textbooks? From the physicist's point of view, why should we study nonlinear systems and leave the comfortable territory of linearity? How can one progress in the study of nonlinear systems both in the analysis of these systems when we know them and in learning about new systems from observations of their experimental behavior? As it would be impossible to answer these questions in the finest details, this volume nevertheless sucessfully points the way for the interested reader. Useful problems have also been incorporated as a guide.

About the Authors

Henry D. I. Abarbanel is Professor of Physics and Research Physicist at the Scripps Institution of Oceanography of the University of California, San Diego, USA. He has a Ph.D. in Physics from Princeton University and has taught at Princeton, Stanford, Northwestern, University of Chicago, and UC, Berkeley before coming to UCSD in 1983. His work is focused on the analysis of chaotic observations in geophysical and laboratory settings. He serves as the Director of the Institute for Nonlinear Science at UCSD.

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