

# Preface

This book developed from the urgent need of a text for students in their undergraduate and graduate career. While many excellent books on classical chaos as well as on quantum chaos are on the market, only a joint collection of some of them could be proposed to the students from my experience. Here, I try to give a coherent but concise introduction to the subject of classical Nonlinear Dynamics and Quantum Chaos on an equal footing, and adapted to a four hour semester course.

The stage is set by a brief introduction into the terminology of the physical description of nonintegrable problems. [Chapter 2](#) may as well be seen as part of the introduction. It presents the definition of dynamical systems in general, and useful concepts which are introduced while discussing simple examples of one-dimensional mappings. The core of the book is divided into the two main [Chaps. 3 and 4](#), which discuss classical and quantum aspects, respectively. Both chapters are linked wherever possible to stress the connections between classical mechanics, semi-classics, and a pure quantum approach. All the chapters contain problems which help the reader to consolidate the knowledge (hopefully!) gained from this book.

Readers will optimally profit from the book if they are familiar with the basic concepts of classical and quantum mechanics. The best preparation would be a theory course on classical mechanics, including the Lagrange and Hamiltonian formalism, and any introductory course on quantum theory, may it be theoretical or experimental.

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An Introduction

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