
Preface

This book is the outcome of the 2006 Aussois Winter School: “Open problems in Celestial Mechanics”. In this school, we have reviewed the state of the art in the theory and applications of dynamical systems with particular interest in planetary and galactic dynamics. Recent developments have been achieved in two directions: (1) the application of Nekhoroshev’s theorem to the motion of planets and asteroids and (2) the dynamical origin of the diversity of the extra-solar planetary systems.

The aims of the 2006 Aussois Winter School and consequently those of this book are:

- To provide a review of the dynamics of quasi-integrable Hamiltonian systems from the viewpoint of Nekhoroshev’s theorem and its implications for slow diffusion processes.
- To introduce the dynamics of weakly dissipative systems.
- To review the dynamics of small bodies in the solar system.
- To discuss the dynamical origin and the diversity of the extra-solar planetary systems.
- To highlight special problems in galactic dynamics.

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