An introduction to dynamical systems

Cambridge University Press
978-0-521-31650-7 - An Introduction to Dynamical Systems
D. K. Arrowsmith and C. M. Place
Frontmatter
More information

To
VLADIMIR IGOREVICH ARNOLD
and
STEPHEN SMALE
for their inspirational work

An introduction to

DYNAMICAL SYSTEMS

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PREFACE

In recent years there has been a marked increase of research interest in dynamical systems and a number of excellent postgraduate texts have been published. This book is specifically aimed at the interface between undergraduate and postgraduate studies. It is intended both to stimulate the interest of final year undergraduates and to provide a solid foundation for postgraduates who intend to embark on research in the field. For example, a challenging third-year undergraduate course can be constructed by selecting topics from the first four chapters. Indeed, lecture courses taught by one of us (CMP) provided the basis for Chapters 1, 2 and 4. On the other hand, Chapter 6 is directed at first-year postgraduate students. It contains a selection of current research topics that illustrate the interaction between superficially different research problems.

A major feature of the book is its extensive set of exercises; more than 300 in all. These exercises not only illustrate the topics discussed in the text, but also guide the reader in the completion of technical details omitted from the main discussion. Detailed model solutions have been prepared and hints to their construction are provided.

The reader is assumed to have attended courses in analysis and linear algebra to second-year undergraduate standard. Prior knowledge of dynamical systems is not necessary; however, some familiarity with the qualitative theory of differential equations and Hamiltonian dynamics might be an advantage.

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