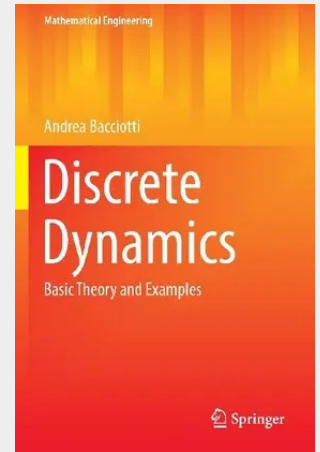


Discrete Dynamics

Basic Theory and Examples

This book offers a complete and detailed introduction to the theory of discrete dynamical systems, with special attention to stability of fixed points and periodic orbits. It provides a solid mathematical background and the essential basic knowledge for further developments such as, for instance, deterministic chaos theory, for which many other references are available (but sometimes, without an exhaustive presentation of preliminary notions). Readers will find a discussion of topics sometimes neglected in the research literature, such as a comparison between different predictions achievable by the discrete time model and the continuous time model of the same application. Another novel aspect of this book is an accurate analysis of the way a fixed point may lose stability, introducing and comparing several notions of instability: simple instability, repulsivity, and complete instability. To help the reader and to show the flexibility and potentiality of the discrete approach to dynamics, many examples, numerical simulations, and figures have been included. The book is used as a reference material for courses at a doctoral or upper undergraduate level in mathematics and theoretical engineering.

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