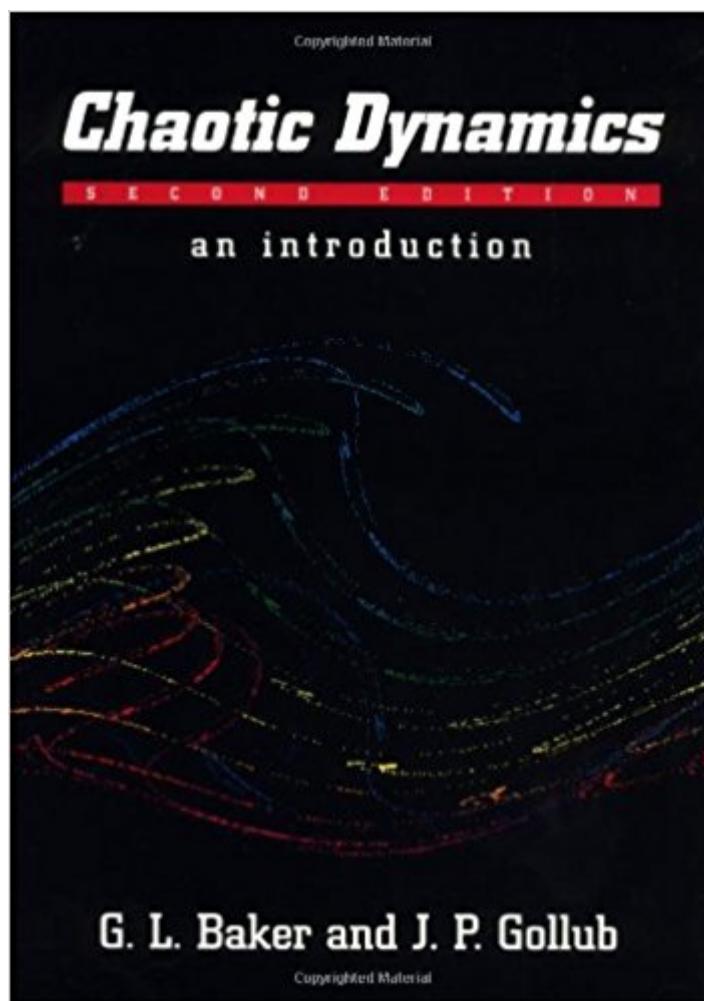


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Chaotic Dynamics: An Introduction



Synopsis

The previous edition of this text was the first to provide a quantitative introduction to chaos and nonlinear dynamics at the undergraduate level. It was widely praised for the clarity of writing and for the unique and effective way in which the authors presented the basic ideas. These same qualities characterize this revised and expanded second edition. Interest in chaotic dynamics has grown explosively in recent years. Applications to practically every scientific field have had a far-reaching impact. As in the first edition, the authors present all the main features of chaotic dynamics using the damped, driven pendulum as the primary model. This second edition includes additional material on the analysis and characterization of chaotic data, and applications of chaos. This new edition of Chaotic Dynamics can be used as a text for courses on chaos for physics and engineering students at the second- and third-year level.

Book Information

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Customer Reviews

"The advantages of the book are the clarity of the writing and the unique and effective way in which the basic concepts are introduced." Sergei A. Dovbysh, *Mathematical Reviews*

Widely praised for its clarity and style, the previous edition of this text was the first to provide a quantitative introduction to chaos and nonlinear dynamics at the undergraduate level. This edition includes additional material on the analysis and characterization of chaotic data and applications of chaos.

Books that take you from undergraduate physics to a nontrivial understanding of nonlinear dynamics, chaos and fractals are rare. Chaotic Dynamics does the job elegantly. The familiar pendulum is used to illustrate the basic techniques and concepts in nonlinear dynamics. The reader is gently introduced to phase diagrams, Poincare sections, basins of attraction and bifurcation diagrams. Computer code is included in the Appendix. The interested reader can use this code to further illustrate the lessons of the text or to embark on his/her own exploration of the pendulum and other dynamical systems. Having used the pendulum to establish a firm conceptual platform, Baker and Gollub progress gracefully into the logistic map to illustrate concepts such as period doubling, Lyapunov exponent, entropy, stretching and folding, and various measures of fractal dimension. The presentation is nicely rounded off with studies of other maps and nonlinear dynamical systems from a range of fields in physics, chemistry and fluid dynamics.

The gateway to experimental chaos research comes through here! The mathematics, the examples and code that illustrates the book is here. It is somewhat narrow in its beginning approach, but delivers after careful study a beginning of understanding with some real industry. Not for the mathematically shy or Professors like Ruelle, but for real people wanting real answers! Your unique Associates ID is: thefractaltransl.

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