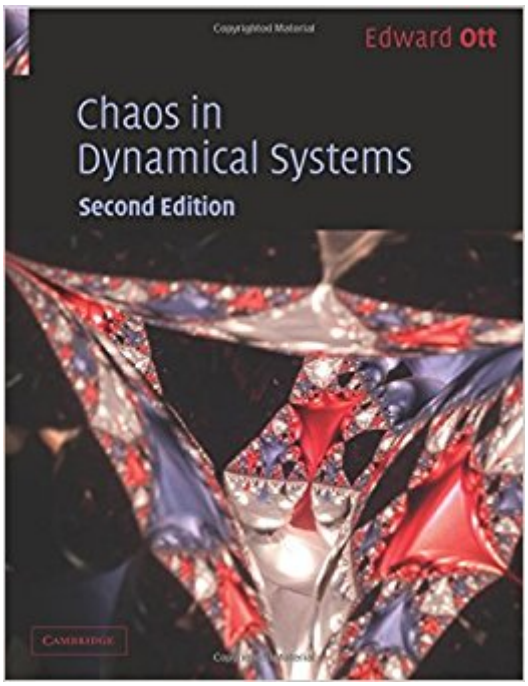
Chaos In Dynamical Systems



Synopsis

In the new edition of this classic textbook Ed Ott has added much new material and has significantly increased the number of homework problems. The most important change is the addition of a completely new chapter on control and synchronization of chaos. Other changes include new material on riddled basins of attraction, phase locking of globally coupled oscillators, fractal aspects of fluid advection by Lagrangian chaotic flows, magnetic dynamos, and strange nonchaotic attractors.

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Customer Reviews

"...a stimulating selection of topics that could be taught a la carte in postgraduate courses. The book is given unity by a preoccupation with scaling arguments, but covers almost all aspects of the subject (dimensions of strange attractors, transitions to chaos, thermodynamic formalism, scattering quantum chaos and so on...Ott has managed to capture the beauty of this subject in a way that should motivate and inform the next generation of students in applied dynamical systems." Nature"...a book that will be of most interest to physicists and engineers...The book is well written, and does contain material that is hard to find elsewhere. In particular, the discussion of fractal basin boundaries is lucidly written, and this is an important topic." Bulletin of Mathematical Biology

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material on riddled basins of attraction, phase locking of globally coupled oscillators, fractal aspects of fluid advection by Lagrangian chaotic flows, magnetic dynamos, and strange nonchaotic attractors.

Ott gives a very clear description of the concept of chaos or chaotic behaviour in a dynamical system of equations. Where often these equations are nonlinear. While containing rigour, the text proceeds at a pace suitable for a non-mathematician in the physical sciences. In other words, it is not at a very formal level, like the epsilon-delta approach to teaching calculus. The concepts are also backed by well drawn diagrams, that illustrate key points.The book does not have the lovely diagrams of Julia sets and fractals, that you often see in other books on this subject. Those are certainly pretty and useful. But Ott’s book concentrates on the ideas.

I can only echo the comments made by other reviewers: excellent, well-paced introduction that focuses on the meat of the subject and leaves out all the pretty-picture stuff. Suitably pitched at non-mathematicians who are drawn to this fascinating subject, it eschews the formal theorem-proof format and carefully explains concepts, then applies them. If you are scientifically literate, I highly recommend this textbook. Genuinely useful.

An excellent text that is written in a very understandable and careful style. It gives the readers a good grasp of the fundamentals by emphasizing main ideas instead of harping on technical definitions. The bibliography at the end of the book is also a good source for readers who want to delve further into the technical literature.

A good introduction to chaos in dynamical systems for physicists. The emphasis is not on time-series analysis or nonlinear systems, but chaos in "physical" systems (in the sense of applications in physics). A good reading for undergrads in physics and maths. One of the best starters for getting deeper into chaos theory...

The best book on chaos in Dynamical Systems for physicists: clear, well written, contains the right things and does not waste time treating less necessary sections on the subject. Particularly valuable is the part on Entropy, Information and strange attractors. A good choice is to use it together with V.I. Arnold’s CM. Contains also a final part on connections between QM and chaos.

The book is a good introduction to chaos and the new edition has a chapter on synchronization that is a good review of the literature

[Differential Equations, Dynamical Systems, and an Introduction to Chaos [DIFFERENTIAL EQUATIONS, DYNAMICAL SYSTEMS, AND AN INTRODUCTION TO CHAOS BY Hirsch, Morris W. (Author) Mar-26-2012] By Hirsch, Morris W. (Author) [2012) [Paperback] Differential Equations, Dynamical Systems, and an Introduction to Chaos, Third Edition Chaos: An Introduction to Dynamical Systems (Textbooks in Mathematical Sciences) Differential Equations, Dynamical Systems, and an Introduction to Chaos Differential Equations, Dynamical Systems, and an Introduction to Chaos, Second Edition (Pure and Applied Mathematics) In the Wake of Chaos: Unpredictable Order in Dynamical Systems (Science and Its Conceptual Foundations series) Chaos in Dynamical Systems Differential Equations and Dynamical Systems (Texts in Applied Mathematics) Ordinary Differential Equations: From Calculus to Dynamical Systems (Maa Textbooks) Introduction to Differential Equations with Dynamical Systems A First Course In Chaotic Dynamical Systems: Theory And Experiment (Studies in Nonlinearity) Dynamical Systems (Dover Books on Mathematics) Dynamical Systems: An Introduction (Universitext) A First Course in Discrete Dynamical Systems (Universitext) Introduction to Dynamical Systems Fractal Geometry and Dynamical Systems in Pure and Applied Mathematics I: Fractals in Pure Mathematics (Contemporary Mathematics) Lectures on Fractal Geometry and Dynamical Systems (Student Mathematical Library) Extremes and Recurrence in Dynamical Systems (Pure and Applied Mathematics: A Wiley Series of Texts, Monographs and Tracts) Dynamical Systems: A Differential Geometric Approach to Symmetry and Reduction Mathematical Theory of Nonequilibrium Steady States: On the Frontier of Probability and Dynamical Systems (Lecture Notes in Mathematics)