



Analysis of observed chaotic data /

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Monografía

This book develops a clear and systematic treatment of time series of data, regular and chaotic, that one finds in observations of nonlinear systems. The reader is led from measurements of one or more variables through the steps of building models of the source as a dynamical system, classifying the source by its dynamical characteristics, and finally predicting and controlling the dynamical system. The text examines methods for separating the signal of physical interest from contamination by unwanted noise, and for investigating the phase space of the chaotic signal and its properties. The emphasis throughout is on the use of the modern mathematical tools for investigating chaotic behavior to uncover properties of physical systems. The methods require knowledge of dynamical systems at the advanced undergraduate level and some knowledge of Fourier transforms and other signal processing methods. The toolkit developed in the book will provide the reader with efficient and effective methods for analyzing signals from nonlinear sources; these methods are applicable to problems of control, communication, and prediction in a wide variety of systems encountered in physics, chemistry, biology, and geophysics

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Contenido: 1 Introduction -- 1.1 Chatter in Machine Tools -- 2 Reconstruction of Phase Space -- 2.1 Observations of Regular and Chaotic Motions -- 2.2 Chaos in Continuous and Discrete Time Dynamics -- 2.3 Observed Chaos -- 2.4 Embedding: Phase Space Reconstruction -- 2.5 Reconstruction Demystified -- 3 Choosing Time Delays -- 3.1 Prescriptions for a Time Delay -- 3.2 Chaos as an Information Source -- 3.3 Average Mutual Information -- 3.4 A Few Remarks About I(T) -- 4 Choosing the Dimension of Reconstructed Phase Space -- 4.1 Global Embedding Dimension dE -- 4.2 Global False Nearest Neighbors -- 4.3 A Few Remarks About Global False Nearest Neighbors -- 4.4 False Strands -- 4.5 Other Methods for Identifying dE -- 4.6 The Local or Dynamical Dimension dL -- 4.7 Forward and Backward Lyapunov Exponents -- 4.8 Local False Neighbors -- 4.9 A Few Remarks About Local

False Nearest Neighbors -- 5 Invariants of the Motion -- 5.1 Invariant Characteristics of the Dynamics -- 5.2 Fractal Dimensions -- 5.3 Global Lyapunov Exponents -- 5.4 Lyapunov Dimension -- 5.5 Global Lyapunov Exponents from Data -- 5.6 Local Lyapunov Exponents -- 5.7 Local Lyapunov Exponents from Data -- 5.8 A Few Remarks About Lyapunov Exponents -- 6 Modeling Chaos -- 6.1 Model Making in Chaos -- 6.2 Local Models -- 6.3 Global Models -- 6.4 Phase Space Models for Dependent Dynamical Variables -- 6.5 'Black Boxes' and Physics -- 7 Signal Separation -- 7.1 General Comments -- 7.2 Full Knowledge of the Dynamics -- 7.3 Knowing a Signal: Probabilistic Cleaning -- 7.4 'Blind' Signal Separation -- 7.5 A Few Remarks About Signal Separation -- 8 Control and Chaos -- 8.1 Parametric Control to Unstable Periodic Orbits -- 8.2 Other Controls -- 8.3 Examples of Control -- 8.4 A Few (Irreverent) Remarks About Chaos and Control -- 9 Synchronization of Chaotic Systems -- 9.1 Identical Systems -- 9.2 Dissimilar Systems -- 9.3 Mutual False Nearest Neighbors -- 9.4 Predictability Tests for Generalized Synchronization -- 9.5 A Few Remarks About Synchronization -- 10 Other Example Systems -- 10.1 Chaotic Laser Intensity Fluctuations -- 10.2 Chaotic Volume Fluctuations of the Great Salt Lake -- 10.3 Chaotic Motion in a Fluid Boundary Layer -- 11 Estimating in Chaos: Cramér-Rao Bounds -- 11.1 The State Estimation Problem -- 11.2 The Cramér-Rao Bound -- 11.3 Symmetric Linear Dynamics -- 11.4 Arbitrary, Time-Invariant, Linear Systems -- 11.5 Nonlinear, Chaotic Dynamics -- 11.6 Connection with Chaotic Signal Separation -- 11.7 Conclusions -- 12 Summary and Conclusions -- 12.1 The Toolkit-Present and Future -- 12.2 Making 'Physics' out of Chaos-Present and Future -- 12.3 Topics for the Next Edition -- A.1 Information Theory and Nonlinear Systems -- A.2 Stability and Instability -- A.2.1 Lorenz Model -- References

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