# Extracting Knowledge From Time Series: An Introduction to Nonlinear Empirical Modeling (Springer Series in Synergetics)

*Boris P. Bezruchko, Dmitry A. Smirnov*
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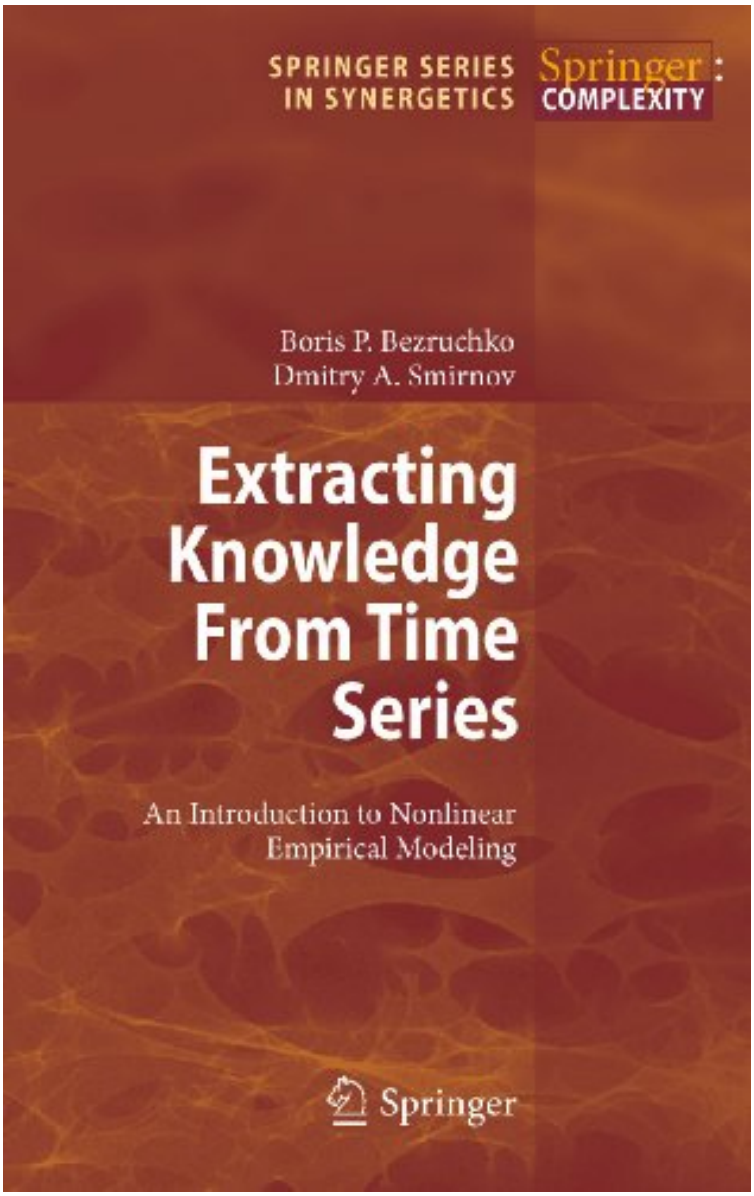




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**Boris P. Bezruchko, Dmitry A. Smirnov : Extracting Knowledge From Time Series: An Introduction to Nonlinear Empirical Modeling (Springer Series in Synergetics)** before purchasing it in order to gage whether or not it would be worth my time, and all praised Extracting Knowledge From Time Series: An Introduction to Nonlinear Empirical Modeling (Springer Series in Synergetics):

0 of 0 people found the following review helpful. So far only 3 starsBy Book_ReaderIt is a rather big book but I could not find answers to questions that I had in mind.Nothing could impress me or raise big interest.So far only 3 stars.

Mathematical modelling is ubiquitous. Almost every book in exact science touches on mathematical models of a certain class of phenomena, on more or less speci?c approaches to construction and investigation of models, on their applications, etc. As many textbooks with similar titles, Part I of our book is devoted to general qu- tions of modelling. Part II re?ects our professional interests as physicists who spent much time to investigations in the ?eld of non-linear dynamics and mathematical modelling from discrete sequences of experimental measurements (time series). The latter direction of research is known for a long time as ldquo;system identi?cationrdquo; in the framework of mathematical statistics and automatic control theory. It has its roots in the problem of approximating experimental data points on a plane with a smooth curve. Currently, researchers aim at the description of complex behaviour (irregular, chaotic, non-stationary and noise-corrupted signals which are typical of real-world objects and phenomena) with relatively simple non-linear differential or difference model equations rather than with cumbersome explicit functions of time. In the second half of the twentieth century, it has become clear that such equations of a s- ?ciently low order can exhibit non-trivial solutions that promise suf?ciently simple modelling of complex processes; according to the concepts of non-linear dynamics, chaotic regimes can be demonstrated already by a third-order non-linear ordinary differential equation, while complex behaviour in a linear model can be induced either by random in?uence (noise) or by a very high order of equations.

From the reviews:ldquo;Extracting knowledge from time series is a very neat titlendash;it exactly encapsulates the topic which the authors hope to cover in this volume. hellip; This is admirable, and the result is valuable. hellip; This is overall a useful volume for providing an overview of the area hellip; .rdquo; (Michael Small, Mathematical s, Issue 2012 d)ldquo;Another book on time-series! hellip; it is a textbook for physicists and practitioners, and in this way of thought it is welcome. Its main purpose is to explain and illustrate how time series can be used to construct mathematical models for dynamical systems. hellip; step by step the applications supports the presentation of the basic theoretical formulation.rdquo; (Guy Jumarie, Zentralblatt MATH, Vol. 1210, 2011)From the Back CoverThis book addresses the fundamental question of how to construct mathematical models for the evolution of dynamical systems from experimentally-obtained time series. It places emphasis on chaotic signals and nonlinear modeling and discusses different approaches to the forecast of future system evolution. In particular, it teaches readers how to construct difference and differential model equations depending on the amount of a priori information that is available on the system in addition to the experimental data sets. This book will benefit graduate students and researchers from all natural sciences who seek a self-contained and thorough introduction to this subject.