1. Record Nr. UNINA9910300111103321

Autore	Doukhan Paul
Titolo	Stochastic Models for Time Series / / by Paul Doukhan
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	9783319769387 3319769383
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XX, 308 p. 29 illus., 10 illus. in color.)
Collana	Mathématiques et Applications, , 2198-3275 ; ; 80
Disciplina	519.55
Soggetti	Statistics Probabilities Econometrics Dynamics Statistical Theory and Methods Probability Theory Dynamical Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I Independence and Stationarity -- 1 Probability and Independence -- 2 Gaussian convergence and inequalities -- 3 Estimation concepts -- 4 Stationarity -- Part II Models of time series -- 5 Gaussian chaos -- 6 Linear processes -- 7 Non-linear processes -- 8 Associated processes -- Part III Dependence -- 9 Dependence -- 10 Long-range dependence -- 11 Short-range dependence -- 12 Moments and cumulants -- Appendices -- A Probability and distributions -- B Convergence and processes -- C R scripts used for the gures -- Index-List of figures.
Sommario/riassunto	This book presents essential tools for modelling non-linear time series. The first part of the book describes the main standard tools of probability and statistics that directly apply to the time series context to obtain a wide range of modelling possibilities. Functional estimation and bootstrap are discussed, and stationarity is reviewed. The second part describes a number of tools from Gaussian chaos and proposes a tour of linear time series models. It goes on to address nonlinearity

from polynomial or chaotic models for which explicit expansions are available, then turns to Markov and non-Markov linear models and discusses Bernoulli shifts time series models. Finally, the volume focuses on the limit theory, starting with the ergodic theorem, which is seen as the first step for statistics of time series. It defines the distributional range to obtain generic tools for limit theory under long or short-range dependences (LRD/SRD) and explains examples of LRD behaviours. More general techniques (central limit theorems) are described under SRD; mixing and weak dependence are also reviewed. In closing, it describes moment techniques together with their relations to cumulant sums as well as an application to kernel type estimation. The appendix reviews basic probability theory facts and discusses useful laws stemming from the Gaussian laws as well as the basic principles of probability, and is completed by R-scripts used for the figures. Richly illustrated with examples and simulations, the book is recommended for advanced master courses for mathematicians just entering the field of time series, and statisticians who want more mathematical insights into the background of non-linear time series. .