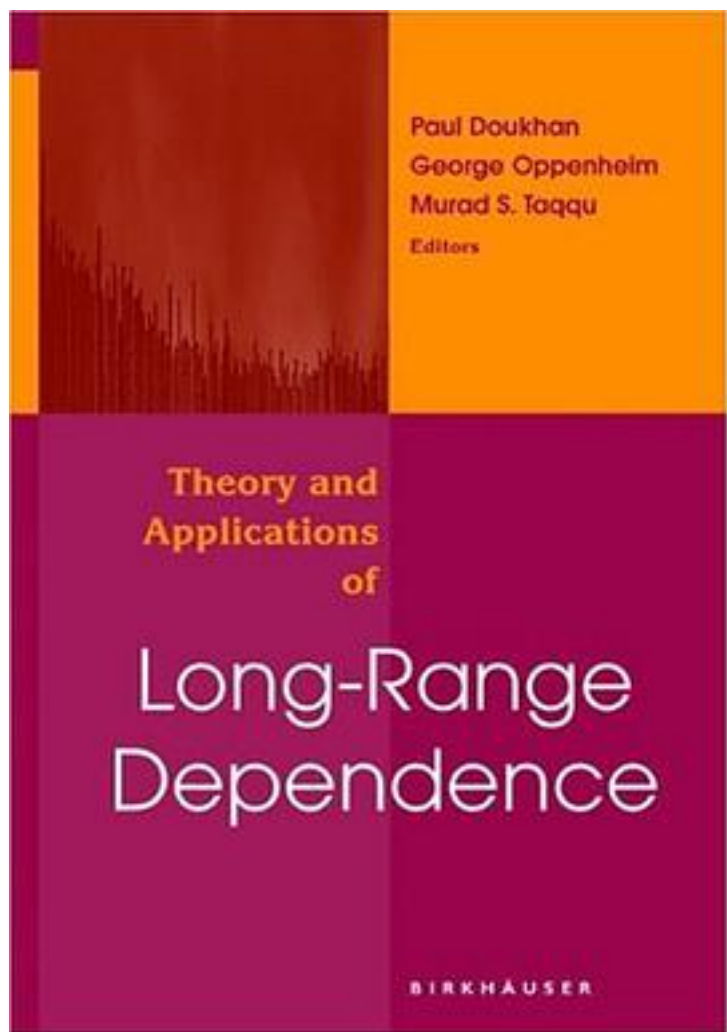


Theory and Applications of Long-Range Dependence



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The area of data analysis has been greatly affected by our computer age. For example, the issue of collecting and storing huge data sets has become quite simplified and has greatly affected such areas as finance and telecommunications. Even non-specialists try to analyze data sets and ask basic questions about their structure. One such question is whether one observes some type of invariance with respect to scale, a question that is closely related to the existence of long-range dependence in the data. This important topic of long-range dependence is the focus of this unique work, written by a number of specialists on the subject. The topics selected should give a good overview from the probabilistic and statistical perspective. Included will be articles on fractional Brownian motion, models, inequalities and limit theorems, periodic long-range dependence, parametric, semiparametric, and non-parametric estimation, long-memory stochastic volatility models, robust estimation, and prediction for long-range dependence sequences. For those graduate students and researchers who want to use the methodology and need to know the 'tricks of the trade,' there will be a special section called 'Mathematical Techniques.' Topics in the first part of the book are covered from probabilistic and statistical perspectives and include fractional Brownian motion, models, inequalities and limit theorems, periodic long-range dependence, parametric, semiparametric, and non-parametric estimation, long-memory stochastic volatility models, robust estimation, prediction for long-range dependence sequences. The reader is referred to more detailed proofs if already found in the literature. The last part of the book is devoted to applications in the areas of simulation, estimation and wavelet techniques, traffic in computer networks, econometry and finance, multifractal models, and hydrology. Diagrams and illustrations enhance the presentation. Each article begins with introductory background material and is accessible to mathematicians, a variety of practitioners, and graduate students. The work serves as a state-of-the art reference or graduate seminar text.

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