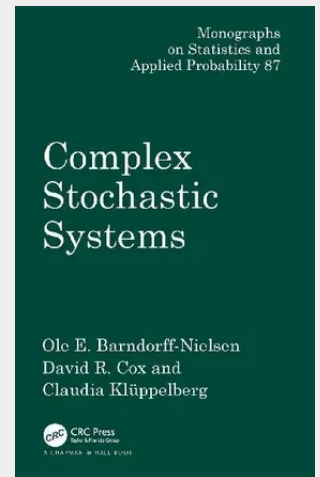


Complex Stochastic Systems

Complex stochastic systems comprises a vast area of research, from modelling specific applications to model fitting, estimation procedures, and computing issues. The exponential growth in computing power over the last two decades has revolutionized statistical analysis and led to rapid developments and great progress in this emerging field. In *Complex Stochastic Systems*, leading researchers address various statistical aspects of the field, illustrated by some very concrete applications. A Primer on Markov Chain Monte Carlo by Peter J. Green provides a wide-ranging mixture of the mathematical and statistical ideas, enriched with concrete examples and more than 100 references. Causal Inference from Graphical Models by Steffen L. Lauritzen explores causal concepts in connection with modelling complex stochastic systems, with focus on the effect of interventions in a given system. State Space and Hidden Markov Models by Hans R. Künsch shows the variety of applications of this concept to time series in engineering, biology, finance, and geophysics. Monte Carlo Methods on Genetic Structures by Elizabeth A. Thompson investigates special complex systems and gives a concise introduction to the relevant biological methodology. Renormalization of Interacting Diffusions by Frank den Hollander presents recent results on the large space-time behavior of infinite systems of interacting diffusions. Stein's Method for Epidemic Processes by Gesine Reinert investigates the mean field behavior of a general stochastic epidemic with explicit bounds. Individually, these articles provide authoritative, tutorial-style exposition and recent results from various subjects related to complex stochastic systems. Collectively, they link these separate areas of study to form the first comprehensive overview of this rapidly developing field.

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