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Nota di contenuto		Stochastic Processes -- Diffusion Processes -- Introduction to Stochastic Differential Equations -- The Fokker-Planck Equation -- Modelling with Stochastic Differential Equations -- The Langevin Equation -- Exit Problems for Diffusions -- Derivation of the Langevin Equation -- Linear Response Theory -- Appendix A Frequently Used Notations -- Appendix B Elements of Probability Theory.
Sommario/riassunto		This book presents various results and techniques from the theory of stochastic processes that are useful in the study of stochastic problems in the natural sciences. The main focus is analytical methods, although numerical methods and statistical inference methodologies for studying diffusion processes are also presented. The goal is the development of techniques that are applicable to a wide variety of stochastic models that appear in physics, chemistry and other natural sciences. Applications such as stochastic resonance, Brownian motion in periodic

potentials and Brownian motors are studied and the connection between diffusion processes and time-dependent statistical mechanics is elucidated. The book contains a large number of illustrations, examples, and exercises. It will be useful for graduate-level courses on stochastic processes for students in applied mathematics, physics and engineering. Many of the topics covered in this book (reversible diffusions, convergence to equilibrium for diffusion processes, inference methods for stochastic differential equations, derivation of the generalized Langevin equation, exit time problems) cannot be easily found in textbook form and will be useful to both researchers and students interested in the applications of stochastic processes.