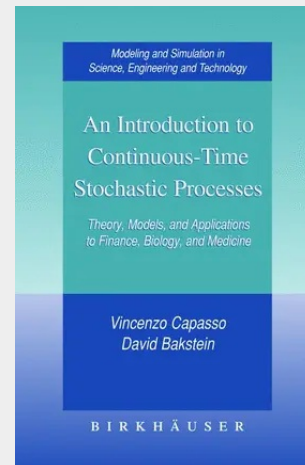


An Introduction to Continuous-Time Stochastic Processes

Theory, Models, and Applications to Finance, Biology, and Medicine

This concisely written book is a rigorous and self-contained introduction to the theory of continuous-time stochastic processes. Balancing theory and applications, the authors use stochastic methods and concrete examples to model real-world problems from engineering, biomathematics, biotechnology, and finance. Suitable as a textbook for graduate or advanced undergraduate courses, the work may also be used for self-study or as a reference. The book will be of interest to students, pure and applied mathematicians, and researchers or practitioners in mathematical finance, biomathematics, physics, and engineering.

This concisely written book is a rigorous and self-contained introduction to the theory of continuous-time stochastic processes. A balance of theory and applications, the work features concrete examples of modeling real-world problems from biology, medicine, industrial applications, finance, and insurance using stochastic methods. No previous knowledge of stochastic processes is required. Key topics covered include: * Interacting particles and agent-based models: from polymers to ants * Population dynamics: from birth and death processes to epidemics * Financial market models: the non-arbitrage principle * Contingent claim valuation models: the risk-neutral valuation theory * Risk analysis in insurance An Introduction to Continuous-Time Stochastic Processes will be of interest to a broad audience of students, pure and applied mathematicians, and researchers or practitioners in mathematical finance, biomathematics, biotechnology, and engineering. Suitable as a textbook for graduate or advanced undergraduate courses, the work may also be used for self-study or as a reference. Prerequisites include knowledge of calculus and some analysis; exposure to probability would be helpful but not required since the necessary fundamentals of measure and integration are provided.



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