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Autore	Pagès Gilles
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Nota di contenuto	1 Simulation of random variables -- 2 The Monte Carlo method and applications to option pricing -- 3 Variance reduction -- 4 The Quasi-Monte Carlo method -- 5 Optimal Quantization methods I: cubatures -- 6 Stochastic approximation with applications to finance -- 7 Discretization scheme(s) of a Brownian diffusion -- 8 The diffusion bridge method: application to path-dependent options (II) -- 9 Biased Monte Carlo simulation, Multilevel paradigm -- 10 Back to sensitivity computation -- 11 Optimal stopping, Multi-asset American/Bermuda Options -- 12 Miscellany.
Sommario/riassunto	This textbook provides a self-contained introduction to numerical methods in probability with a focus on applications to finance. Topics covered include the Monte Carlo simulation (including simulation of random variables, variance reduction, quasi-Monte Carlo simulation, and more recent developments such as the multilevel paradigm), stochastic optimization and approximation, discretization schemes of stochastic differential equations, as well as optimal quantization methods. The author further presents detailed applications to

numerical aspects of pricing and hedging of financial derivatives, risk measures (such as value-at-risk and conditional value-at-risk), implicitation of parameters, and calibration. Aimed at graduate students and advanced undergraduate students, this book contains useful examples and over 150 exercises, making it suitable for self-study.