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Nota di contenuto	Random variables and probability distributions -- Martingales, Markov, and nonstationarity -- Stochastic calculus -- Ito processes and Fokker-Planck equations -- Selfsimilar Ito processes -- Fractional Brownian motion -- Kolmogorov's PDEs and Chapman-Kolmogorov -- Non Markov Ito processes -- Black-Scholes, martingales, and Feynman-Katz -- Stochastic calculus with martingales -- Statistical physics and finance, a brief history of each -- Introduction to new financial economics -- Statistical ensembles and time series analysis -- Econometrics -- Semimartingales.
Sommario/riassunto	Stochastic calculus provides a powerful description of a specific class of stochastic processes in physics and finance. However, many

econophysicists struggle to understand it. This book presents the subject simply and systematically, giving graduate students and practitioners a better understanding and enabling them to apply the methods in practice. The book develops Ito calculus and Fokker-Planck equations as parallel approaches to stochastic processes, using those methods in a unified way. The focus is on nonstationary processes, and statistical ensembles are emphasized in time series analysis. Stochastic calculus is developed using general martingales. Scaling and fat tails are presented via diffusive models. Fractional Brownian motion is thoroughly analyzed and contrasted with Ito processes. The Chapman-Kolmogorov and Fokker-Planck equations are shown in theory and by example to be more general than a Markov process. The book also presents new ideas in financial economics and a critical survey of econometrics.