1. Record Nr. UNINA9910462432503321

Autore	Schilling Rene L
Titolo	Brownian motion [[electronic resource]] : an introduction to stochastic processes / / Rene L. Schilling, Lothar Partzsch ; with a chapter on simulation by Bjorn Bottcher
Pubbl/distr/stampa	Berlin ; ; Boston, : De Gruyter, c2012
ISBN	1-283-85795-2 3-11-027898-7
Descrizione fisica	1 online resource (396 p.)
Collana	De Gruyter graduate
Classificazione	SK 820
Altri autori (Persone)	PartzschLothar <1945-> BottcherBjorn
Disciplina	519.2/33
Soggetti	Brownian motion processes Stochastic processes Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front matter -- Preface -- Contents -- Dependence chart -- Index of notation -- Chapter 1. Robert Brown's new thing -- Chapter 2. Brownian motion as a Gaussian process -- Chapter 3. Constructions of Brownian motion -- Chapter 4. The canonical model -- Chapter 5. Brownian motion as a martingale -- Chapter 6. Brownian motion as a Markov process -- Chapter 7. Brownian motion and transition semigroups -- Chapter 8. The PDE connection -- Chapter 9. The variation of Brownian paths -- Chapter 10. Regularity of Brownian paths -- Chapter 11. The growth of Brownian paths -- Chapter 12. Strassen's Functional Law of the Iterated Logarithm -- Chapter 13. Skorokhod representation -- Chapter 14. Stochastic integrals: L2-Theory -- Chapter 15. Stochastic integrals: beyond L2T -- Chapter 16. Itô's formula -- Chapter 17. Applications of Itô's formula -- Chapter 18. Stochastic differential equations -- Chapter 19. On diffusions -- Chapter 20. Simulation of Brownian motion / Böttcher, Björn -- Appendix -- Index
Sommario/riassunto	Brownian motion is one of the most important stochastic processes in continuous time and with continuous state space. Within the realm of

stochastic processes, Brownian motion is at the intersection of Gaussian processes, martingales, Markov processes, diffusions and random fractals, and it has influenced the study of these topics. Its central position within mathematics is matched by numerous applications in science, engineering and mathematical finance. Often textbooks on probability theory cover, if at all, Brownian motion only briefly. On the other hand, there is a considerable gap to more specialized texts on Brownian motion which is not so easy to overcome for the novice. The authors' aim was to write a book which can be used as an introduction to Brownian motion and stochastic calculus, and as a first course in continuous-time and continuous-state Markov processes. They also wanted to have a text which would be both a readily accessible mathematical back-up for contemporary applications (such as mathematical finance) and a foundation to get easy access to advanced monographs. This textbook, tailored to the needs of graduate and advanced undergraduate students, covers Brownian motion, starting from its elementary properties, certain distributional aspects, path properties, and leading to stochastic calculus based on Brownian motion. It also includes numerical recipes for the simulation of Brownian motion.