1. Record Nr. UNINA9910809145603321 Autore Mahnke Reinhard Titolo Physics of Stochastic Processes: How Randomness Acts in Time Pubbl/distr/stampa Weinheim:,: John Wiley & Sons, Incorporated,, 2009 ©2009 **ISBN** 9783527626106 9783527408405 Edizione [1st ed.] Descrizione fisica 1 online resource (450 pages) Altri autori (Persone) KaupuzsJevgenijs Lubashevskylhor Disciplina 519.23 Soggetti Stochastic processes Random measures Statistical physics Stochastic processes -- Problems, exercises, etc Random measures -- Problems, exercises, etc Statistical physics -- Problems, exercises, etc. Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Physics of Stochastic Processes -- Contents -- Preface -- Part I Basic Nota di contenuto Mathematical Description -- 1 Fundamental Concepts -- 1.1 Wiener Process, Adapted Processes and Quadratic Variation -- 1.2 The Space of Square Integrable Random Variables -- 1.3 The Ito Integral and the Ito Formula -- 1.4 The Kolmogorov Differential Equation and the Fokker-Planck Equation -- 1.5 Special Diffusion Processes -- 1.6 Exercises -- 2 Multidimensional Approach -- 2.1 Bounded Multidimensional Region -- 2.2 From Chapman-Kolmogorov Equation to Fokker-Planck Description -- 2.2.1 The Backward Fokker-Planck Equation -- 2.2.2 Boundary Singularities -- 2.2.3 The Forward Fokker-Planck Equation -- 2.2.4 Boundary Relations -- 2.3 Different Types of Boundaries -- 2.4 Equivalent Lattice Representation of Random Walks Near the Boundary -- 2.4.1 Diffusion Tensor Representations -- 2.4.2

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## Sommario/riassunto

Based on lectures given by one of the authors with many years of experience in teaching stochastic processes, this textbook is unique in combining basic mathematical and physical theory with numerous simple and sophisticated examples as well as detailed calculations. In addition, applications from different fields are included so as to strengthen the background learned in the first part of the book. With its exercises at the end of each chapter (and solutions only available to lecturers) this book will benefit students and researchers at different educational levels. Solutions manual available for lecturers on www. wiley-vch.de.