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| Titolo | Stochastic Differential Equations [[electronic resource] ] : An Introduction with Applications / / by Bernt Oksendal |
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| ISBN | 3-662-03620-7 |
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| Descrizione fisica | 1 online resource (XIX, 324 p.) |
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| Disciplina | 519.2 |
| Soggetti | Probabilities<br>Partial differential equations<br>Mathematical physics<br>System theory<br>Calculus of variations<br>Probability Theory and Stochastic Processes<br>Partial Differential Equations<br>Theoretical, Mathematical and Computational Physics<br>Systems Theory, Control<br>Calculus of Variations and Optimal Control; Optimization |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
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| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | 1. Introduction -- 2. Some Mathematical Preliminaries -- 3. Ito Integrals -- 4. The Ito Formula and the Martingale Representation Theorem -- 5. Stochastic Differential Equations -- 6. The Filtering Problem -- 7. Diffusions: Basic Properties -- 8. Other Topics in Diffusion Theory -- 9. Applications to Boundary Value Problems -- 10. Application to Optimal Stopping -- 11. Application to Stochastic Control -- 12. Application to Mathematical Finance -- Appendix A: Normal Random Variables -- Appendix B: Conditional Expectation -- Appendix C: Uniform Integrability and Martingale Convergence -- Appendix D: An Approximation Result -- Solutions and Additional |

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| | Hints to Some of the Exercises -- References -- List of Frequently Used Notation and Symbols. |
| Sommario/riassunto | The main new feature of the fifth edition is the addition of a new chapter, Chapter 12, on applications to mathematical finance. I found it natural to include this material as another major application of stochastic analysis, in view of the amazing development in this field during the last 10-20 years. Moreover, the close contact between the theoretical achievements and the applications in this area is striking. For example, today very few firms (if any) trade with options without consulting the Black & Scholes formula! The first 11 chapters of the book are not much changed from the previous edition, but I have continued my efforts to improve the presentation through- out and correct errors and misprints. Some new exercises have been added. Moreover, to facilitate the use of the book each chapter has been divided into subsections. If one doesn't want (or doesn't have time) to cover all the chapters, then one can compose a course by choosing subsections from the chapters. The chart below indicates what material depends on which sections. Chapter 6 Chapter IO Chapter 12 For example, to cover the first two sections of the new chapter 12 it is recom- mended that one (at least) covers Chapters 1-5, Chapter 7 and Section 8.6. VIII Chapter 10, and hence Section 9.1, are necessary additional background for Section 12.3, in particular for the subsection on American options. |