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Descrizione fisica	1 online resource (xi, 278 pages)
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Soggetti	Stochastic processes Stochastic integrals Adaptive control systems
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Nota di contenuto	Frontmatter -- Preface -- Contents -- Introduction: Statistical Computing Algorithms as a Subject of Adaptive Control -- Part I: Evaluation of Integrals -- 1. Fundamentals of the Monte Carlo Method to Evaluate Definite Integrals -- 2. Sequential Monte Carlo Method and Adaptive Integration -- 3. Methods of Adaptive Integration Based on Piecewise Approximation -- 4. Methods of Adaptive Integration Based on Global Approximation -- 5. Numerical Experiments -- 6. Adaptive Importance Sampling Method Based on Piecewise Constant Approximation -- Part II: Solution of Integral Equations -- 7. Semi-Statistical Method of Solving Integral Equations Numerically -- 8. Problem of Vibration Conductivity -- 9. Problem on Ideal-Fluid Flow Around an Airfoil -- 10. First Basic Problem of Elasticity Theory -- 11. Second Basic Problem of Elasticity Theory -- 12. Projectional and Statistical Method of Solving Integral Equations Numerically -- Afterword -- Bibliography -- Index
Sommario/riassunto	This monograph develops adaptive stochastic methods in computational mathematics. The authors discuss the basic ideas of the algorithms and ways to analyze their properties and efficiency. Methods of evaluation of multidimensional integrals and solutions of integral equations are illustrated by multiple examples from mechanics, theory of elasticity, heat conduction and fluid dynamics. Contents Part I:

Evaluation of Integrals Fundamentals of the Monte Carlo Method to
Evaluate Definite Integrals Sequential Monte Carlo Method and Adaptive
Integration Methods of Adaptive Integration Based on Piecewise
Approximation Methods of Adaptive Integration Based on Global
Approximation Numerical Experiments Adaptive Importance Sampling
Method Based on Piecewise Constant Approximation Part II: Solution of
Integral Equations Semi-Statistical Method of Solving Integral Equations
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