

1. Record Nr.	UNINA9910466995203321
Autore	Arsenjev Dmitry G.
Titolo	Adaptive stochastic methods : in computational mathematics and mechanics / / Dmitry G. Arseniev, Vladimir M. Ivanov, Maxim L. Korenevsky
Pubbl/distr/stampa	Berlin ; ; Boston : , : De Gruyter, , 2018
ISBN	3-11-055367-8
Descrizione fisica	1 online resource (xi, 278 pages)
Disciplina	519.2
Soggetti	Stochastic processes Stochastic integrals Adaptive control systems Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
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 IntegralsFundamentals of the Monte Carlo Method to Evaluate Definite IntegralsSequential Monte Carlo Method and Adaptive IntegrationMethods of Adaptive Integration Based on Piecewise ApproximationMethods of Adaptive Integration Based on Global ApproximationNumerical ExperimentsAdaptive Importance Sampling Method Based on Piecewise Constant Approximation Part II: Solution of Integral EquationsSemi-Statistical Method of Solving Integral Equations NumericallyProblem of Vibration ConductivityProblem on Ideal-Fluid Flow Around an AirfoilFirst Basic Problem of Elasticity TheorySecond Basic Problem of Elasticity TheoryProjectional and Statistical Method of Solving Integral Equations Numerically
