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Sommario/riassunto	This monograph is devoted to random walk based stochastic algorithms for solving high-dimensional boundary value problems of mathematical physics and chemistry. It includes Monte Carlo methods where the random walks live not only on the boundary, but also inside the domain. A variety of examples from capacitance calculations to electron dynamics in semiconductors are discussed to illustrate the viability of the approach.The book is written for mathematicians who work in the field of partial differential and integral equations, physicists

and engineers dealing with computational methods and applied probability, for students and postgraduates studying mathematical physics and numerical mathematics. Contents:IntroductionRandom walk algorithms for solving integral equationsRandom walk-on-boundary algorithms for the Laplace equationWalk-on-boundary algorithms for the heat equationSpatial problems of elasticityVariants of the random walk on boundary for solving stationary potential problemsSplitting and survival probabilities in random walk methods and applicationsA random WOS-based KMC method for electron-hole recombinationsMonte Carlo methods for computing macromolecules properties and solving related problemsBibliography