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Nota di contenuto	Front matter -- Preface -- Contents -- 1. Introduction -- 2. Scalar second-order PDEs -- 3. High-order elliptic equations -- 4. Triangular systems of elliptic equations -- 5. Systems of elasticity theory -- 6. The generalized Poisson formula for the Lamé equation -- 7. Spherical means for the stress and strain tensors -- 8. Random Walk on Spheres method -- 9. Random Walk on Fixed Spheres for Laplace and Lamé equations -- 10. A stochastic spectral projection method for solving PDEs for some classes of domains -- 11. Stochastic boundary collocation and spectral methods -- 12. Solution of 2D elasticity problems with random loads -- 13. Boundary value problems for some elliptic PDEs with random boundary conditions -- Bibliography -- Index
Sommario/riassunto	The book presents integral formulations for partial differential equations, with the focus on spherical and plane integral operators. The integral relations are obtained for different elliptic and parabolic equations, and both direct and inverse mean value relations are studied. The derived integral equations are used to construct new numerical methods for solving relevant boundary value problems, both deterministic and stochastic based on probabilistic interpretation of the spherical and plane integral operators.