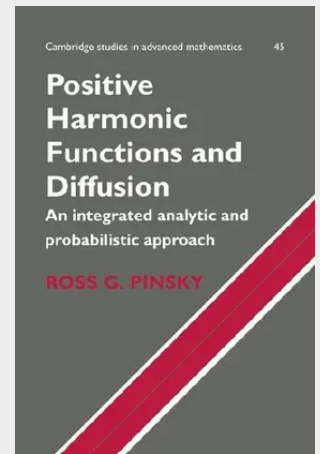


Positive Harmonic Functions and Diffusion

In this book, Professor Pinsky gives a self-contained account of the theory of positive harmonic functions for second order elliptic operators, using an integrated probabilistic and analytic approach. The book begins with a treatment of the construction and basic properties of diffusion processes. This theory then serves as a vehicle for studying positive harmonic functions. Starting with a rigorous treatment of the spectral theory of elliptic operators with nice coefficients on smooth, bounded domains, the author then develops the theory of the generalized principal eigenvalue, and the related criticality theory for elliptic operators on arbitrary domains. Martin boundary theory is considered, and the Martin boundary is explicitly calculated for several classes of operators. The book provides an array of criteria for determining whether a diffusion process is transient or recurrent. Also introduced are the theory of bounded harmonic functions, and Brownian motion on manifolds of negative curvature. Many results that form the folklore of the subject are here given a rigorous exposition, making this book a useful reference for the specialist, and an excellent guide for the graduate student.

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184,50 €

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Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780521470148

Medium: Buch

ISBN: 978-0-521-47014-8

Verlag: Cambridge University Press

Erscheinungstermin: 04.02.2003

Sprache(n): Englisch

Auflage: Erscheinungsjahr 2003

Serie: Cambridge Studies in Advanced Mathematics

Produktform: Gebunden

Gewicht: 943 g

Seiten: 490

Format (B x H): 157 x 235 mm

