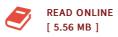# Markov Processes and Differential Equations

By Mark I. Freidlin

Birkhäuser Mrz 1996, 1996. Taschenbuch. Book Condition: Neu. 24.4x17x cm. This item is printed on demand - Print on Demand Neuware - Probabilistic methods can be applied very successfully to a number of asymptotic problems for second-order linear and non-linear partial differential equations. Due to the close connection between the second order differential operators with a non-negative characteristic form on the one hand and Markov processes on the other, many problems in PDE's can be reformulated as problems for corresponding stochastic processes and vice versa. In the present book four classes of problems are considered: - the Dirichlet problem with a small parameter in higher derivatives for differential equations and systems - the averaging principle for stochastic processes and PDE's - homogenization in PDE's and in stochastic processes - wave front propagation for semilinear differential equations and systems. From the probabilistic point of view, the first two topics concern random perturbations of dynamical systems. The third topic, homog-enization, is a natural problem for stochastic processes as well as for PDE's. Wave fronts in semilinear PDE's are interesting examples of pattern formation in reaction-diffusion equations. The text presents new results in probability theory and their applica- tion to the above...

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