



Wolfgang König

The Parabolic Anderson Model

Random Walk in Random Potential

Series: Pathways in Mathematics

- This book omits all technicalities and comes quickly to the point
- This volume organizes an enormous wealth of material in a quickly understandable way
- It reports on the latest achievements in an active and timely research field on the edge between probability and analysis that has a lot of cross-connections

This is a comprehensive survey on the research on the parabolic Anderson model – the heat equation with random potential or the random walk in random potential – of the years 1990 – 2015. The investigation of this model requires a combination of tools from probability (large deviations, extreme-value theory, e.g.) and analysis (spectral theory for the Laplace operator with potential, variational analysis, e.g.). We explain the background, the applications, the questions and the connections with other models and formulate the most relevant results on the long-time behavior of the solution, like quenched and annealed asymptotics for the total mass, intermittency, confinement and concentration properties and mass flow. Furthermore, we explain the most successful proof methods and give a list of open research problems. Proofs are not detailed, but concisely outlined and commented; the formulations of some theorems are slightly simplified for better comprehension.

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