Noise in Spatially Extended Systems /

García-Ojalvo, Jordi

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Monografía

Intended for graduate students and researchers in physics, chemistry, biology, and applied mathematics, this book provides an up-to-date introduction to current research in fluctuations in spatially extended systems. It offers a practical introduction to the theory of stochastic partial differential equations and gives an overview of the effects of external noise on dynamical systems with spatial degrees of freedom. The text begins with a general introduction to noise-induced phenomena in dynamical systems followed by an extensive discussion of analytical and numerical tools needed to get information from stochastic partial differential equations. It then turns to particular problems described by stochastic partial differential equations, covering a wide part of the rich phenomenology of spatially extended systems, such as nonequilibrium phase transitions, domain growth, pattern formation, and front propagation. The only prerequisite is a minimal background knowledge of the Langevin and Fokker-Planck equations

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