

The first exit problem of scalar reaction-diffusion equations with small multiplicative regularly varying Levy noise .

Abstract

The first exit problem of scalar reaction-diffusion equations with small multiplicative regularly varying Levy noise In this talk we shall present the problem of the first exit from a domain of attraction of a generic class of strongly dissipative reaction diffusion equations perturbed by multiplicative regularly varying Levy noise in the regime of small noise intensity. This problem has a long history for Gaussian (Levy) perturbations which is typically solved by large deviation techniques, which are no longer available in case of heavy-tailed Levy noise. The case of additive regularly varying Levy noise perturbations was addressed recently by Debussche, H. and Imkeller based on a noise decomposition technique, which allows the construction of a well-understood "model" of the exit times. We will explain the exponential convergence of the exit times towards such a model in the case of multiplicative noise and how this allows to construct the asymptotic exit distributions.