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Minisymposium 3 - Stochastic Processes with Jumps: Theory and applications

Dynamical systems perturbed by heavy-tailed Lévy noise

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We consider a dynamical system in $\mathbb{R}$ driven by a vector field $-U'$, where U is a multi-well potential satisfying some regularity conditions. We perturb this dynamical system by a Lévy noise of small intensity and such that the heaviest tail of its Lévy measure is regularly varying. We show that the perturbed dynamical system exhibits metastable behaviour i.e. on a proper time scale it reminds of a Markov jump process taking values in the local minima of the potential U. Due to the heavy-tail nature of the random perturbation, the results differ strongly from the well studied purely Gaussian case. Joint work with Peter Imkeller, HU Berlin.