

Small noise asymptotics for transition times of controlled diffusions in potential

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The Eyring-Kramers formula for a diffusion in a potential describes the small noise asymptotics for the mean transition times between wells. The classical theory assumes a twice differentiable potential, the second order derivatives of which appear in the subexponential prefactor. This smoothness assumption naturally breaks down for controlled diffusions whose zero-noise counterpart has an indifference (Skiba) point. We explore how the transition time asymptotics are modified in such cases through the example of the shallow lake model.

Joint work with Angeliki Koutsimpela.