Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Interstate switching induced by non-Gaussian noise[1] LORA BILLINGS, Montclair State University, MARK DYKMAN, Michigan State University, IRA SCHWARTZ, US Naval Research Laboratory — We consider the rate of switching between stable states of a dynamical system driven by a non-Gaussian noise. The problem of the switching barrier is reduced to a variational problem of finding a mechanical action for an auxiliary noise-free system. The emphasis of our analysis is placed on the generic system-independent features of fluctuations induced by Poisson noise. If the system is overdamped, Poisson noise leads to switching only for a certain polarity of pulses. This is qualitatively different from the noise effect on underdamped systems. We study the transition between these types of behavior with varying damping. For systems close to a bifurcation point, the barrier height displays a scaling dependence on the control parameter and on the noise parameters. We study parametric dependence for generic types of bifurcations, such as saddle-node and pitchfork bifurcations. Analytical results are compared with the results of detailed numerical simulations.

[1]Supported by ARO Grant No. W911NF-06-1-0320.

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Date submitted: 26 Nov 2008 Electronic form version 1.4