

Analytic calculation of switching probabilities in spin torque devices

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#### Abstract

We have solved the linearized Fokker-Planck equation exactly for the problem of spin torque switching. It is linearized about the easy axis (the center of the initial distribution). It describes the motion during the spin-up before switching accurately. During a write pulse in a real spin torque MRAM, the current must be fairly large (at least 1.5 times the critical current for switching) and this approximation gives a very accurate description of the long time tail in the non-switching probability.