

Abstract Submitted  
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**Cantilever torque magnetometry studies of the in-plane to out-of-plane transition in a single nickel magnetic nanorod** ERIC W. MOORE, SANGGAP LEE, STEVEN A. HICKMAN, JONILYN G. LONGENECKER, JOHN A. MAROHN, Cornell University — Torque magnetometry, using attonewton-sensitivity cantilevers, is extremely sensitive to both the average magnetic moment and magnetization fluctuations within a small magnetic tip. Operating at  $T = 4$  K with such a system, we study in-plane to out-of-plane magnetization switching in a single, electron beam lithographically defined nickel nanorod, of radius  $r \approx 50$  nm. Numerous, simultaneous, peaks are visible in cantilever frequency, dissipation and jitter as well as Barkhausen like steps. A analytic model is developed that achieves order of magnitude agreement with the frequency and dissipation peaks.

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