Abstract Submitted
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Experimental Evidence for a Dynamic Phase Transition in Ultra-thin Magnetic Films[1] D.T. ROBB, Florida State University, Y.H. XU, University of Minnesota, O. HELLWIG, Hitachi Global Storage Technologies, A. BERGER, Hitachi Global Storage Technologies, M.A. NOVOTNY, Mississippi State University, P.A. RIKVOLD, Florida State University — We present the first convincing evidence for an experimental observation of a Dynamic Phase Transition (DPT) in a magnetic system: an ultra-thin $[\mathrm{Co(0.4nm)/Pt(0.7nm)}]_3$ multilayer, which is well modeled by a two-dimensional kinetic Ising system. This DPT, as a function of the period P of an applied alternating magnetic field, has been observed previously in simulations of magnetic systems [1]. For several values of P and bias field H_b, the magnetization was measured for 50 cycles of the field [2]. The order parameter, which was identified in simulations as the magnetization averaged over the ith cycle, Q_i, was obtained from the experimental data as a time series. Kinetic Monte Carlo simulations produced close agreement with the experimental data for the order parameter averaged over the final 30 cycles, $< Q_i >$, as a function of P and H_b. The experimental fluctuations in the order parameter are also consistent with a DPT. [1] S.W. Sides, P.A. Rikvold, and M.A. Novotny, Phys. Rev. Lett. **59**, 2710 (1999). [2] D.T. Robb, Y.H. Xu, O. Hellwig, A. Berger, M.A. Novotny, and P.A. Rikvold, submitted to PRL.

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D.T. Robb
Florida State University

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