Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Multiple Reversal Paths in Magnetization Switching for Models of Iron Nanopillars S.H. THOMPSON, Florida State University, G. BROWN, Oak Ridge National Lab, P.A. RIKVOLD, Florida State University — Stochastic micromagnetic simulations are employed to study switching in three-dimensional magnetic nanopillars exposed to highly misaligned fields. The switching proceeds through two different reversal modes, with very different average lifetimes and average values of the transverse magnetization components. We present projective-dynamics and phase-plot analyses that clearly demonstrate the existence of these two paths, but which do not expose the underlying mechanism that determines the reversal path. Information provided by quenching or annealing the system to $T = 0$ while in the metastable state is also presented. Upon decreasing the temperature in this regime, the system magnetization settles into a local energy minimum which one expects to be characteristic of the particular reversal mode.

S.H. Thompson
Florida State University

Date submitted: 30 Nov 2004 Electronic form version 1.4