

Abstract Submitted
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Kinetic Monte Carlo simulations of thermally activated magnetization reversal in dual-layer Exchange Coupled Composite recording media. M. L. PLUMER, A. M. ALMUDALLAL, J. I. MERCER, J. P. WHITEHEAD, Memorial University of Newfoundland, T. J. FAL, University of Colorado at Colorado Springs — The kinetic Monte Carlo (KMC) method developed for thermally activated magnetic reversal processes in single-layer recording media [1] has been extended to study dual-layer Exchange Coupled Composition (ECC) media used in current and next generations of disc drives [2]. The attempt frequency is derived from the Langer formalism with the saddle point determined using a variant of Bellman Ford algorithm. Complication (such as stagnation) arising from coupled grains having metastable states are addressed. MH-hysteresis loops are calculated over a wide range of anisotropy ratios, sweep rates and inter-layer coupling parameter. Results are compared with standard micromagnetics at fast sweep rates and experimental results at slow sweep rates.

1. T.J. Fal, J.I. Mercer, M.D. Leblanc, J.P. Whitehead, M.L. Plumer, and J. van Ek, Phys. Rev. B. 87, 064405 (2013).
2. Ahmad M. Almudallal, J. I. Mercer, J. P. Whitehead, M. L. Plumer, J. van Ek, and T. J. Fal, Phys. Rev. B 92, 134418 (2015).

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