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Field-Driven Hysteresis of the d=3 Ising Spin Glass: Hard-Spin Mean-Field Theory BURCU YÜCESOY, Istanbul Technical University and University of Massachusetts, Amherst, A. NIHAT BERKER, Koç University — Hysteresis loops are obtained in the Ising spin-glass phase in $d = 3$, using frustration-conserving hard-spin mean-field theory.[1] The system is driven by a time-dependent random magnetic field H_Q that is conjugate to the spin-glass order Q, yielding a field-driven first-order phase transition through the spin-glass phase. The hysteresis loop area A of the $Q - H_Q$ curve scales with respect to the sweep rate h of magnetic field as $A - A_0 \sim h^b$. In the spin-glass and random-bond ferromagnetic phases, the sweep-rate scaling exponent b changes with temperature T, but appears not to change with antiferromagnetic bond concentration p. By contrast, in the pure ferromagnetic phase, b does not depend on T and has a sharply different value than in the two other phases.
[1] B. Yücesoy and A.N. Berker, Phys. Rev. B **76**, 014417 (2007).

A. Nihat Berker
Koç University

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