

Abstract Submitted
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Dynamic enhancement of the exchange bias training effect¹

SARBESWAR SAHOO, University of Nebraska-Lincoln, ANDREAS BERGER, Hitachi Global Storage Technologies, SRINIVAS POLISETTY, CHRISTIAN BINEK, University of Nebraska-Lincoln — Exchange bias in coupled magnetic films and its accompanying training effect are fundamental interface phenomena which impact spintronic applications. Training is referred to as a gradual change of the bias field, which evolves upon cycling the soft layer through consecutive hysteresis loops. We report on its dynamic enhancement in exchange coupled bilayers of soft and hard ferromagnetic materials. Dynamic effects are induced with increasing sweep rate of the applied magnetic field from quasi-static to the fully dynamic range. A dynamically generalized theory based on triggered and partially truncated relaxation is in excellent agreement with the data. Remarkable universality of our theoretical approach is evidenced when applying the approach to the dynamic training effect of a conventional exchange bias system involving an antiferromagnetic pinning layer.

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