

Abstract Submitted
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Microwave-assisted Magnetization Reversal Dynamics¹ ZIHUI WANG, MINGZHONG WU, Department of Physics, Colorado State University — Microwave-assisted magnetization reversal (MAMR) was proposed as one promising approach for the realization of fast low-field switching in high-anisotropy perpendicular media. Previous work on MAMR was done with static or quasi-static reversal fields and, therefore, provided no direct information on the magnetization reversal dynamics. This simulation work utilized the standard Gilbert equation to explore the actual MAMR dynamics in perpendicular-anisotropy magnetic thin film elements. The reversal time and reversal field threshold were calculated, and various approaches to reduce them were also examined. It is found that both the reversal time and field can be significantly reduced with increasing the amplitude of microwave fields and/or reducing the damping constant of the film materials. It is also found that one can significantly reduce the reversal field by the use of frequency-chirped microwaves.

¹Information Storage Industry Consortium (INSIC), Seagate Technology

Zihui Wang
Department of Physics, Colorado State University

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