Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Surface Acoustic Wave Induced Magnetic Switching S. DAVIS, University of Nebraska-Lincoln, A. BARUTH, University of Minnesota, S. ADENWALLA, University of Nebraska-Lincoln — We report on the use of Surface Acoustic Waves (SAW) to switch the magnetization direction of lithographically patterned 40um by 10um cobalt rectangles between two titanium inter-digital transducers (IDTs) on Y-cut $LiNbO_3$. Easy and hard axis magnetization loops measured using the magneto-optical Kerr effect (MOKE) show the expected in-plane shape anisotropy. After magnetic saturation along the long easy axis, the magnetic field is turned off and the IDT's are excited at the fundamental resonance frequency, 91.5 MHz, producing a SAW that travels across the patterned Co magnetic structure producing a fast time dependent mechanical strain parallel to the short hard axis of the Co. Magneto-elastic coupling results in a rotation of the magnetization into the hard axis direction, measured by in-plane MOKE measurements along the hard axis direction. Both dc MOKE and high frequency MOKE show, as expected, a definite turn on voltage followed by an asymptotic approach to saturation. Support from NSF MRSEC (DMR-0820521), UCARE, and NFC-Minnesota.

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Date submitted: 29 Dec 2009 Electronic form version 1.4