Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Time-resolved spin dynamics studies of ferromagnetic thin films grown by molecular beam epitaxy VLADIMIR ALEXANDRU STOICA, ROBERTO MERLIN, Applied Physics, University of Michigan, ROSA ALEJANDRA LUKASZEW, Department of Physics and Astronomy, University of Toledo, ROY CLARKE, Applied Physics, University of Michigan — Results are presented for pump-probe experiments that are using ultrafast laser excitation and detection of coherent spin waves in ferromagnetic thin films. Spin precession around the magnetic field is excited by an intense laser pulse whereas a weaker pulse monitors the real-time spin dynamics by means of detecting the magneto-optical Kerr effect (MOKE) changes. The phase, amplitude, frequency and damping of the spin waves are experimentally determined for magnetic field values between 500 and 5000 Oe. The thickness dependency of the magnetic anisotropy is estimated for the case polycrystalline and epitaxial ferromagnetic films. Materials considered under the present study (Ni, Co and Fe) are grown by molecular beam epitaxy (MBE) on semiconducting and insulating single crystal substrates.

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Date submitted: 06 Dec 2004 Electronic form version 1.4