Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

**Detecting an in-plane rotation of magnetization in GdFeCo films**[1]

FARZANEH HOVEYDA, SERBAN SMADICI, University of Louisville — It is often important to distinguish between magnetization reversal by coherent rotation in different planes and domain wall motion. Magnetization curves were measured at different temperatures with magneto-optical Kerr Effect in longitudinal (L-MOKE) and polar (P-MOKE) geometries on sputter-deposited $Gd_xFe_yCo_{1-x-y}$ (GFC) films of variable thickness. Depending on the probed region, the L-MOKE signal measured with decreasing external field $H_{ext}$ was found to be lower than the signal observed with increasing $H_{ext}$ (negative remanence magnetization). We show that this is due to a contribution to the signal of $M_\perp$, the magnetization component perpendicular to the scattering plane. This identifies the type of reversal in these GFC films as in-plane coherent rotation of magnetization. $M_\perp$ is also proportional to the torque. Azimuthal measurements on $Co_2FeAl$ samples showed a regular variation of the MOKE signal, in one possible application of these observations to torque measurements.

[1]Work supported by the University of Louisville Research Foundation.

Farzaneh Hoveyda
University of Louisville

Date submitted: 06 Nov 2015 Electronic form version 1.4