Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Current-induced dynamics in almost symmetric magnetic nanopillars[1] SERGEI URAZHDIN, WENG LIM, ANDREW HIGGINS, West Virginia University — Magnetic nanodevices usually include a free layer whose configuration can be changed by spin-polarized current via the spin transfer (ST), and a fixed reference (polarizing) layer. The polarizer is usually made much larger than the free layer to minimize the effects of ST. However, it is presently not known what makes a specific magnetic layer behave as a fixed polarizer or a free layer driven by ST. Little is also known about the dynamics in bilayers with thin polarizers, where the effects of ST on both layers are significant. We will discuss our spectroscopic measurements of current-induced dynamics in nanopillars with similar thicknesses of the extended polarizer and the nanopatterned free layer. We demonstrate coherent precession for both polarities of current in symmetric devices. However, even slightly asymmetric devices exhibit a rapid suppression of precession for one of the current polarities. We interpret our results in terms of the dynamical coupling between magnetic layers due to spin transfer, completely suppressing precession of the thicker layer.

[1]Supported by NSF DMR-0747609 and a Cottrell Scholarship from Research Corporation.

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Date submitted: 29 Oct 2008 Electronic form version 1.4