

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Modulation of spin torque from spin transport through two nearby domain walls** ELIZABETH GOLOVATSKI, MICHAEL FLATTÉ, OSTC and Dept. of Physics and Astronomy, University of Iowa — The motion of domain walls due to the spin torque generated by coherent carrier transport [1] is of considerable interest for the development of spintronic devices [2]. We model two  $\pi$  Néel walls [3] separated by a variable distance, and calculate transport characteristics and spin torque through the system [4]. We find that for large separations, the domain walls show the resonant transmission behavior of a spin-dependent double barrier; for small separations, the transmission spectrum resembles that of a  $2\pi$  wall. We also find that the spin torque across the system initially increases as the separation between the walls increases from zero, then decreases slightly before reaching a saturation value that is larger than both the spin torque of a  $2\pi$  wall and that of two individual  $\pi$  walls. This work is supported by an ARO MURI.

[1] M. Yamanouchi, D. Chiba, F. Matsukura, and H. Ohno, *Nature* 428, 539 (2004).

[2] S. Parkin, M. Hayashi, L. Thomas, *Science* 320, 190 (2008)

[3] G. Vignale and M. Flatté, *Phys. Rev. Lett.* 89 (2002).

[4] D. Ralph and M. Stiles, *J.M.M.M.* 320, 1190 (2008).

Elizabeth Golovatski  
OSTC and Dept. of Physics and Astronomy, University of Iowa

Date submitted: 26 Nov 2010

Electronic form version 1.4