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.