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Intrinsic domain wall flexing from current-induced spin torque ELIZABETH GOLOVATSKI, Dept. of Physics, Luther College, MICHAEL FLATTÉ, OSTC and Dept. of Physics and Astronomy, University of Iowa — Spin torque generated by coherent carrier transport in domain walls [1] is a major component in the development of spintronic devices [2]. We model spin torque in Néel walls [3] using a piecewise linear transfer-matrix method [4] to calculate spin torque on interior wall segments. For a π wall with a total positive torque (current left-to-right), we find the largest positive and negative spin torques left of the central region, 4-5 orders of magnitude larger than the center. The wall's rightward push comes from the back of the wall; all other significant regions pull to the left. Adding a second wall (both walls with positive total torque) changes the first wall little, but produces spin torques in the second wall with large canceling torques on the left, and the push rightward from a smaller torque on the right. The gradient of torque across the wall generates an intrinsic domain wall flexing (distinct from extrinsic wall flexing from pinning centers [5]). Work supported by an ARO MURI.

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