

Abstract Submitted  
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**Domain Wall Pumping with Spin-Transfer Torque** CARL BOONE<sup>1</sup>,  
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Irvine — We numerically investigate the effects of current-perpendicular-to-  
the-plane (CPP), angularly asymmetric Slonczewski spin-transfer torque (ST) on  
transverse domain walls (DW) in nanowires. The CPP ST excites long-range do-  
main wall motion in a direction independent of the current polarity and proportional  
to the square of the current amplitude. This symmetry with respect to current po-  
larity creates the possibility of DW pumping – long range DW motion driven by an  
alternating current. The DW velocity becomes resonantly enhanced near a frequency  
that depends on the nanowire dimensions, corresponding to the eigenfrequency of a  
localized, spatially antisymmetric spin-wave mode that exists within the DW.

<sup>1</sup>The submitted work was done while at University of California, Irvine.

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