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Measurement of Spin Torques in WTe2/Ferromagnet Bilayers DAVID MACNEILL, GREGORY M. STIEHL, MARCOS H. D. GUIMARÃES, JIWOONG PARK, DANIEL C. RALPH, Cornell University — WTe_2 is a semimetallic transition metal dichalcogenide (TMD) stable in the T_d crystal structure. The strong spin-orbit coupling, metallic conduction, and crystalline layered structure of the material make it interesting for both fundamental and applied spintronics research, but measurements of the spin transport properties (e.g., the spin Hall conductivity) are lacking. Here we report measurements of current induced spin torques in WTe_2/Ferromagnet bilayers, detected using spin torque ferromagnetic resonance. We will attempt to distinguish whether these torques arise from interfacial spin-orbit coupling or the spin Hall effect in the TMD. We study these torques as a function of TMD layer number, from bulk to few-layer, and correlate our results with layer-number dependent charge transport measurements.

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