

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Controlling the Flow of Spin and Charge in Nanoscopic Topological Insulators**<sup>1</sup> DIRK MORR, JOHN VAN DYKE, University of Illinois at Chicago — Rapid advances in quantum computation and spin electronics, heralded by the discovery of topological insulators, have been hampered by the inability to control the flow of spin and charge currents at the nanoscale. In this talk, I will demonstrate that such control can be established in nanoscopic two-dimensional topological insulators (TIs) by breaking their time reversal symmetry via magnetic defects. This allows for the emergence of two novel phenomena: the creation of nearly 100

<sup>1</sup>This work was supported by the U. S. Department of Energy, Office of Science, Basic Energy Sciences, under Award No. DE-FG02-05ER46225.

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Date submitted: 06 Nov 2015

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