

Abstract Submitted
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Theory of hysteretic magneto-transport on the surface of a magnetic three-dimensional topological insulator KUNAL TIWARI, McGill University, WILLIAM COISH, McGill University; Canadian Institute for Advanced Research, TAMI PEREG-BARNEA, McGill University — We study the magneto-conductance of the surface of a magnetic strong three-dimensional topological insulator (MTI)^{1,2}. An MTI surface is characterized by a two-dimensional Dirac cone dispersion which is gapped by the local magnetization. While the magnetization causes a gap, magnetic domain walls support one-dimensional chiral states within the bulk and surface gaps. These domain-wall states carry current and therefore influence the systems magneto-conductance. Our model reproduces a hysteretic feature in magneto-conductance which is seen in experiment³.

¹Cui-Zu Chang *et al.* Experimental Observation of the Quantum Anomalous Hall Effect in a Magnetic Topological Insulator. *Science* **340**, 167-170 (2013)

²W. Wang *et al.* Visualizing ferromagnetic domain behavior of magnetic topological insulator thin films. *NPJ Quantum Materials* **1**, 16023 (2016)

³Y. Nakajima *et al.* One-dimensional edge state transport in a topological Kondo insulator. *Nature Physics* **12**, 213-217 (2016)

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