

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Investigating dissipation in the quantum anomalous Hall effect¹

ELI FOX, ANDREW BESTWICK, DAVID GOLDHABER-GORDON, Stanford University, YANG FENG, YUNBO OU, KE HE, YAYU WANG, QI-KUN XUE, Tsinghua University, XUFENG KOU, LEI PAN, KANG WANG, University of California, Los Angeles — In the quantum anomalous Hall effect, a magnetic exchange gap in a 3D topological insulator gives rise to dissipationless chiral edge states. Though the effect has recently been realized in a family of ferromagnetically-doped $(\text{Bi,Sb})_2\text{Te}_3$ topological insulator thin films, experiments to date have found non-vanishing longitudinal resistance, contrary to initial theoretical expectations. Proposed sources of this dissipation include extra gapless or activated quasi-helical edge states, thermally activated 2D conduction, and variable-range hopping. Here, we discuss transport measurements of Corbino disk and non-local geometries to identify the mechanism of non-ideal behavior.

¹This work supported by the U.S. Department of Energy, Office of Science, Basic Energy Sciences, under Award No. 19-7503.

Eli Fox
Stanford University

Date submitted: 06 Nov 2015

Electronic form version 1.4