Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Interplay of quantum oscillations and ferromagnetism in magnetic topological insulators D. NANDI, K. SHAIN, G.H. LEE, Department of Physics, Harvard University, Cambridge, MA 02138, CUI-ZU CHANG, Francis Bitter Magnet Lab, Massachussetts Institute of Technology, Cambridge, MA 02139 , K. HUANG, J. WARD, Department of Physics, Harvard University, Cambridge, MA 02138, J.S. MOODERA, Francis Bitter Magnet Lab, Massachussetts Institute of Technology, Cambridge, MA 02139 , P. KIM, A. YACOBY, Department of Physics, Harvard University, Cambridge, MA 02138 — Ferromagnetictopological insulatorsare of interest because of the experimental realization of quantized anomalousHall effect. Here we report measurementson ebeam lithographicallycontacted devicesof Vanadium doped $(Bi,Sb)_2Te_3$. These devicesexhibit unconventional Shuvnikov-de Haastype oscillationsat zero bias that have a strong dependence on applied biasvoltage. These magneto-oscillationshave been observed with both superconducting and normal metal contacts. Intriguingly, these oscillationsare observed to be most prominent in submicron devicesand weaken significantlyin wider junctions. Logarithmic dependence of the longitudinal resistance and anomalous Hall resistance is observed on temperature and applied bias voltage. A phenomenological model is presented to explain the various experimental observations.

Debaleena Nandi
Department of Physics, Harvard University, Cambridge, MA 02138

Date submitted: 03 Nov 2016 Electronic form version 1.4