

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Weak-Localization-Like Magnetoresistance on a Topological Insulator - Ferromagnetic Insulator Interface¹ QI YANG, MERAV DOLEV, LI ZHANG, Stanford University, JINFENG ZHAO, University of California, Davis, MIN LIU, Stanford University, SUBHASH RISBUD, University of California, Davis, ALEXANDER PALEVSKI, Tel Aviv University, Isreal, AHARON KAPITULNIK, Stanford University — In this talk, we will present measurements on the interface between a topological insulator (TI) and a ferromagnetic insulator (FI). The results provide a likely indication for gap opening in the TI surface states by its proximity to the FI. While above the Curie temperature (T_C) of the FI we observed weak-antilocalization-like positive magnetoresistance as ubiquitously in TIs, below T_C an unusual weak-localization-like negative magnetoresistance was seen at low magnetic fields, which has never been observed in TIs without any magnetic doping. Such proximity introduced gap-opening and resulting massive Dirac fermions will hopefully lead to realization of many intriguing phenomena such as the quantum anomalous Hall effect and the inverse spin-galvanic effect.

¹This work is supported by DARPA

Qi Yang
Stanford University

Date submitted: 08 Nov 2012

Electronic form version 1.4