Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Epitaxial growth of Bi_2Te_3 on the Ferromagnetic Insulator $Cr_2Ge_2Te_6$[1] L.D. ALEGRIA, Princeton University Physics Department, H. JI, Princeton University Chemistry Department, N. YAO, Princeton Institute for the Science and Technology of Materials, R.J. CAVA, Princeton University Chemistry Department, J.R. PETTA, Princeton University Physics Department — We report the experimental realization of a new topological insulator-ferromagnetic insulator (TI-FI) material system: the $Cr_2Ge_2Te_6$-Bi_2Te_3 heterostructure. The layered chalcogenide FI $Cr_2Ge_2Te_6$ exhibits a high Curie temperature of 61 K and a resistivity greater than 10^3 Ω-cm below 77 K, which suit it well for the study of magnetic proximity effects in TI-FI heterostructures. We fabricate heterostructures by growing single crystalline $Cr_2Ge_2Te_6$ substrates and depositing Bi_2Te_3 thin films using metalorganic chemical vapor deposition. Cross-sectional transmission electron microscopy reveals a sharp interface along the (0 0 1) planes of the two crystals, with the structures uniformly oriented as $Cr_2Ge_2Te_6[1\bar{1}0]//Bi_2Te_3[0\bar{1}0]$. The coupling between the $Cr_2Ge_2Te_6$ and Bi_2Te_3 layers is studied via the anomalous hall effect.

[1]We are grateful for support from the NSF funded Princeton MRSEC (DMR-0819860)

Loren Alegria
Princeton University Physics Department

Date submitted: 14 Nov 2013 Electronic form version 1.4