Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Transport properties of RPtBi (R = Gd, Dy, Tm, and Lu) under applied magnetic fields EUNDEOK MUN, Simon Fraser University, SERGEY BUD'KO, PAUL CANFIELD, Iowa State University, Ames Laboratory — It has been suggested that the combination of strong spin-orbit coupling and noncentrosymmetric crystal structure make ternary Heusler compounds a strong candidate for 3D topological materials. The crystal structure of rare-earth platinum bismuth (RPtBi) half-Heusler compounds lacks an inversion symmetry, hence the material is a noncentrosymmeteric. The earlier electrical resistivity data of RPtBi revealed a systematic change from a small gap semiconductor for lighter rare-earth to metallic for heavier rare-earth compounds. The angle resolved photoemission spectroscopy showed a clear spin-orbit splitting of the surface bands that cross the Fermi surface. Here we present very large magnetic field dependences of transport properties in single crystals of RPtBi (R = Gd, Dy, Tm, and Lu). Successfully grown the high quality RPtBi single crystals reveal that a large non-saturating magnetoresistance (MR) of as high as 800 % at 2 K and over 300 % at 300 K under a moderate magnetic field of 14 T. In addition to the large MR, the samples exhibit pronounced temperature and magnetic field dependences of Hall coefficient and thermoelectric power. Obtained transport data suggest that the high hole and electron mobility dominate the magnetotransport.

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Date submitted: 13 Nov 2014 Electronic form version 1.4