Abstract Submitted
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Low-temperature magneto-transport in topological insulator-ferromagnetic insulator heterostructures[1] JAMES KALLY, Dept. of Physics, The Pennsylvania State University, TAO LIU, Dept. of Physics, Colorado State University, HAILONG WANG, Dept. of Physics, The Pennsylvania State University, DANIELLE REIFSNYDER HICKEY, K. ANDRE MKHOYAN, Dept. of Chemical Engineering and Materials Science, University of Minnesota, MINGZHONG WU, Dept. of Physics, Colorado State University, ANTHONY RICHARDELLA, NITIN SAMARTH, Dept. of Physics, The Pennsylvania State University — The spin polarized surface states of a topological insulator (TI) have potential for topological spintronics applications wherein the surface states are used for electrically detecting and manipulating the magnetization of a ferromagnetic (FM) material. Heterostructures that interface a TI with a FM insulator are ideal in this context since they isolate the charge current to the topological insulator, thus allowing a clean probe of any phenomena related to spin-charge conversion between the TI surface states and the FM material. We use molecular beam epitaxy to deposit crystalline Bi_2Se_3 films on high-quality yttrium iron garnet (YIG) thin films [Wang *et al.*, Phys. Rev. Lett. **117**, 076601 (2016)] and report on the magneto-transport properties of these heterostructures at low temperature (400 mK $<T<$4.2 K). Our measurements show evidence for a magnetic coupling between the FM insulator and the TI thin film.

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