

Abstract Submitted
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Interface induced ferromagnetism in topological insulator above room temperature¹ CHI TANG, University of California Riverside, CUI-ZU CHANG, MIT, YAWEN LIU, University of California Riverside, TINGYONG CHEN, Arizona State University, JAGADEESH MOODERA, MIT, JING SHI, University of California Riverside — The quantum anomalous Hall effect (QAHE) observed in magnetic topological insulators (TI), an outcome of time reversal symmetry broken surface states, exhibits many exotic properties. However, a major obstacle towards high temperature QAHE is the low Curie temperature in the disordered magnetically doped TI systems. Here we report a study on heterostructures of TI and magnetic insulator in which the magnetic insulator, namely thulium iron garnet or TIG, has perpendicular magnetic anisotropy. At the TIG/TI interface, TIG magnetizes the surface states of the TI film by exchange coupling, as revealed by the anomalous Hall effect (AHE). We demonstrate that squared AHE hysteresis loops persist well above room temperature. The interface proximity induced high-temperature ferromagnetism in topological insulators opens up new possibilities for the realization of QAHE at high temperatures.

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