

Abstract Submitted
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Imaging Spatially Varying Magnetic Order in Proximity Induced Magnetic Topological Insulator AARON J. ROSENBERG, Stanford University, FERHAT KATMIS, MIT, YIHUA H. WANG, JOHN R. KIRTLEY, Stanford University, JAGADEESH S. MOODERA, MIT, KATHRYN A. MOLER, Stanford Institute for Materials and Energy Sciences, SLAC National Laboratories — Broken time-reversal symmetry on the surface states of a three dimensional topological insulator, such as Bi_2Se_3 , results in quantized anomalous Hall conductance and is predicted to exhibit topological magneto-electric effects. We plan investigate how Dirac fermions interact with magnetism by imaging the magnetization of a topological insulator (Bi_2Se_3) sandwiched between two ferromagnetic insulator layers (EuS) with a scanning SQUID microscope. Cooling in an in-plane field leads to a magnetization that varies spatially on a micron scale, with 6-fold rotational symmetry. Understanding the origin of this magnetism may shed light on the exchange interaction and electronic properties of topological insulators.

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