

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Magnetic ordering at the topological insulator-magnetic insulator interface KARAN BANERJEE, JEAN BESBAS, Natl Univ of Singapore, PENG REN, Nanyang Technological University, LAN WANG, RMIT University, HYUN-SOO YANG, Natl Univ of Singapore — The spin momentum locking property of topological insulators is the key to their practical utility. However, due to large bulk contribution and defects, it has been difficult to harness it. One of the possible solutions is to use heterostructures of topological insulators and magnetic insulators which can make the spin momentum locking robust at the interface. Here we report on the angular dependence of magnetoresistance on heterostructures of the topological insulator BiSbTeSe₂ and the magnetic insulator YIG. We find that a four-fold symmetry arises in the in-plane angular dependence spectrum above a critical external field indicating the presence of magnetic ordering at the interface. We demonstrate that the interfacial magnetic ordering arises from a spin polarized interface state which is distinct from the topological surface state.

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Date submitted: 13 Nov 2014

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