

Abstract Submitted
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Vertical Transport in Topological Insulator Thin Films ALLAN MACDONALD, University of Texas, Austin, BYOUNGHAK LEE, Texas State University-San Marcos — We present a theory of inter-surface transport in topological insulator thin film. We calculate the transport between two 2-dimensional Dirac fermion surfaces using a phenomenological model with band parameters, obtained from Density Functional calculations. Resonant tunneling between surfaces is absent in the absence of external fields that break inversion symmetry. More generally tunneling is strongest when the Fermi level lies in the conduction band on one surface and in the valence band on the other surface. We discuss manipulation of vertical transport by dual gates and by in-plane magnetic fields and compare with other 2-dimension to 2-dimension tunneling systems.

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