

Abstract Submitted
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Transport on the Surface of Weak Topological Insulators ROGER MONG, JENS H. BARDARSON, JOEL E. MOORE, University of California, Berkeley — Weak topological insulators have an even number of Dirac cones in their surface spectrum and are thought to be unstable to disorder, which leads to an insulating surface. Here we argue that the presence of disorder alone will not localize the surface states, rather, the presence of a time-reversal symmetric mass term is required for localization. Through numerical simulations, we show that in the absence of the mass term the surface always flow to a stable metallic phase and the conductivity obeys a one-parameter scaling relation, just as in the case of a strong topological insulator surface. With the inclusion of the mass, the transport properties of the surface of a weak topological insulator follow a two-parameter scaling form.

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