

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

A study of localized states in topological insulators KUN WOO KIM, TAMAR PEREG-BARNEA, GIL REFAEL, California Institute of Technology — Perturbative and Semiclassical approaches are employed to find the localized state of the topological insulators both on sample edges and defects in the bulk. The models used are massive Dirac with either one or two valleys. The topology is provided by the mass term which has either a momentum dependence or a different sign on the two Dirac points. A semiclassical Hamiltonian is deduced by following a certain classical path and the Hamilton-Jacobi equation determines the dynamics. Our semiclassical results reproduce the lattice model's chiral edge modes and allow us to investigate impurity bound states. These bound states also appear in a T-matrix calculation.

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Date submitted: 17 Nov 2010

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