

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Topological insulators on the Lieb and Perovskite lattices CONAN WEEKS, MARCEL FRANZ, University of British Columbia — We study a system of tight-binding electrons on both the 2D Lieb and 3D edge-centered cubic (Perovskite) lattices. With spin-orbit coupling between next-nearest neighbor sites these systems become band insulators with non-trivial Z_2 topological invariants. We calculate the Z_2 invariants for various fillings and study the emergence of topologically protected gapless edge and surface modes. Aside from establishing simple models for topological insulators with cubic symmetry, we also discuss some possible candidates among the naturally occurring Perovskites.

Conan Weeks
University of British Columbia

Date submitted: 19 Nov 2009

Electronic form version 1.4