

Abstract Submitted
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Topological Insulators on kagome and pyrochlore lattices H.-M. GUO, M. FRANZ, University of British Columbia — Electrons hopping on the sites of a two-dimensional kagome and a three-dimensional pyrochlore lattice are shown to form topologically non-trivial insulating phases when the spin-orbit (SO) coupling and lattice distortions are present. On the kagome lattice SO coupling produces a quantum spin Hall state at both $1/3$ and $2/3$ fillings. On the pyrochlore lattice 9 topological classes representing both strong and weak topological insulators are realized for various ranges of model parameters and fillings. Other interesting phases, such as the dimerized, trimerized and Kekule insulators are also obtained. Possible realizations of this physics in crystalline solids are discussed.

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