Interacting topological insulators on the kagome and decorated honeycomb lattices

JUN WEN, ANDREAS RÜEGG, University of Texas at Austin, CHENG-CHING WANG, Georgetown University, GREGORY FIETE, University of Texas at Austin — We study the phase diagram of an extended Hubbard model on the kagome and decorated honeycomb lattice. At the mean-field level a rich set of conventional and topological phases emerges, including some where spin-orbit coupling is dynamically generated and a $\mathbb{Z}_2$ topological band insulator with time-reversal symmetry appears. We discuss the connection between different topological phases, including those involving broken time-reversal symmetry in the strong interaction limit.

Grant Acknowledgement: We gratefully acknowledge support from ARO grant W911NF-09-1-0527.