Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Topological insulators from complex orbital order in transition-metal oxides heterostructures[1] GREGORY FIETE, ANDREAS RUEGG, University of Texas at Austin — Topological band insulators which are dynamically generated by electron-electron interactions have been the- oretically proposed in two and three dimensional lattice models. We present evidence that the two-dimensional version can be stabilized in digital (111) heterostructures of transition-metal oxides as a result of purely local interactions. The topological phases are accompanied by spontaneous ordering of complex orbitals and we discuss their stability with respect to the Hund's rule coupling, Jahn-Teller interaction and inversion symmetry breaking terms. As main competitors we identify spin-nematic and magnetic phases.

[1]We gratefully acknowledge funding from ARO grant W911NF-09-1-0527 and NSF grant DMR- 0955778.

Gregory Fiete
University of Texas at Austin

Date submitted: 11 Nov 2011 Electronic form version 1.4