Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Quantum anomalous Hall effect and novel topological superconductivity realized in thin-film SnTe[1] CHEN FANG, MATTHEW GILBERT, University of Illinois at Urbana Champaign, B. ANDREI BERNEVIG, Princeton University — The newly discovered topological crystalline insulator SnTe has surface states described by four Dirac cones protected by mirror symmetries. The properties of these novel topological surface states make realizing new topological phases possible. Here we propose that by using magnetic dopants and utilizing piezoelectric deposition, an anomalous Hall state can be obtained with Chern number tunable between ± 4 in thin-film SnTe. In another proposal, we propose that by proximity induced superconductivity in the thin film, a new kind of topological superconductivity can be obtained which hosts two Majorana states at a single superconducting vortex of unit flux, protected from hybridization (gapping) by magnetic group symmetries. The results are extended to other topological crystalline insulators.

[1]ONR-N00014-11-1-0728, AFOSR-FA9550-10-1-0459, ONR-N0014-11-1-0728. NSF CAREER DMR-095242, ONR-N00014-11-1-0635, Darpa-N66001-11-1-4110, MURI-130-6082

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Date submitted: 15 Nov 2013 Electronic form version 1.4