Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Chiral topological superconductor and half-integer conductance plateau from quantum anomalous hall plateau transition QUAN ZHOU, Stanford Univ, JING WANG, BIAO LIAN, SHOUCHENG ZHANG, Stanford University, ZHANG'S GROUP TEAM — We propose to realize a two-dimensional chiral topological superconducting (TSC) state from the quantum anomalous hall plateau transition in a magnetic topological insulator thin LM through the proximity E ECT to a conventional s-wave superconductor. This state has a full pairing gap in the bulk and a single chiral majorana mode at the edge. The optimal condition for realizing such chiral tsc is to have inequivalent superconducting pairing amplitudes on top and bottom surfaces of the doped magnetic topological insulator. We further propose several transport experiments to detect the chiral TSC. One unique signature is that the conductance will be quantized into a half-integer plateau at the coercive eld in this hybrid system. in particular, with the point contact formed by a superconducting junction, the conductance oscillates between E2=2H AND E2=H with the frequency determined by the voltage across the junction. we close by discussing the feasibility of these experimental proposals.

Quan Zhou
Stanford Univ

Date submitted: 08 Nov 2015 Electronic form version 1.4