

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Chiral Majorana Interference in Quantum Anomalous Hall-Superconductor Junctions BIAO LIAN, JING WANG, SHOUCHEG ZHANG, Stanford University — We study the interference of the edge chiral Majorana fermions in junctions of quantum anomalous Hall (QAH) insulators and superconductors (SCs). We show the two chiral Majorana fermions on a QAH edge in contact with an SC generically have a momentum difference Δk that depends on the chemical potentials of both the QAH insulator and the SC. Due to the spacial interference induced by Δk , the longitudinal conductance of normal SC/QAH junctions exhibits an oscillation with respect to the edge lengths and the chemical potentials, which can be measured in transport experiments. Further, we show for QAH/chiral topological SC junctions where there is only one edge chiral Majorana fermion, the dynamical fluctuation of the SC phase yields a geometrical correction to the longitudinal conductance usually derived.

Biao Lian
Stanford University

Date submitted: 04 Nov 2015

Electronic form version 1.4