

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Vanishing edge currents and orbital angular momentum in non- $p$ -wave topological chiral superconductors**<sup>1</sup> WEN HUANG, EDWARD TAYLOR, McMaster University, CATHERINE KALLIN, McMaster University, and Canadian Institute for Advanced Studies — The edge currents of two dimensional topological chiral superconductors with nonzero Cooper pair angular momentum—e.g., chiral  $p$ -,  $d$ -, and  $f$ -wave superconductivity—are studied. Bogoliubov-de Gennes and Ginzburg-Landau calculations are used to show that in the continuum limit, only chiral  $p$ -wave states have a nonzero edge current and orbital angular momentum. Outside this limit, when lattice effects become important, edge currents in non- $p$ -wave superconductors are comparatively smaller, but can be nonzero. Using Ginzburg-Landau theory, a simple criterion is derived for when edge currents vanish for non- $p$ -wave chiral superconductivity on a lattice. The implications of our results for putative chiral superconductors such as  $\text{Sr}_2\text{RuO}_4$  and  $\text{UPt}_3$  are discussed.

<sup>1</sup>Work supported by NSERC, CIFAR, Canada Council Killam programs (CK) and the National Science Foundation (CK)

Wen Huang  
McMaster University

Date submitted: 08 Nov 2014

Electronic form version 1.4