

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Interplay of topological charge density waves and superconductivity in a two-dimensional topological superconductor¹ K. TANAKA, University of Saskatchewan, YUKI NAGAI, Japan Atomic Energy Agency, S. L. GOERTZEN, EVAN D. B. SMITH, University of Saskatchewan — We perform microscopic mean-field studies of topological order in a two-dimensional *s*-wave topological superconductor with Rashba spin-orbit coupling and Zeeman field in the Bogoliubov-de Gennes formalism. By solving for the spin-dependent Hartree potential self-consistently along with the superconducting order parameter, we show that topological charge density waves (TCDW) can coexist with topological superconductivity (TSC) at half filling just as in a conventional *s*-wave superconductor. Furthermore, we examine the effects of a nonmagnetic impurity, which tends to create spin-polarised midgap excitation and pin the phase of charge density modulations, on possible interplay of TCDW and TSC.

¹Natural Sciences and Engineering Research Council of Canada

K. Tanaka
University of Saskatchewan

Date submitted: 11 Nov 2016

Electronic form version 1.4