

Abstract Submitted
for the NWS19 Meeting of
The American Physical Society

Two Leg Ladder of Interacting Majorana Fermions ETHAN COHEN, ARMIN RAHMANI, Western Washington University — Majorana fermions possess a multitude of fascinating qualities. They are their own antiparticle and obey non-abelian exchange statistics, which places them at the forefront of topological quantum computing research. The phases of matter emerging from interacting Majorana fermions are also of considerable interest because the Majorana fermions are the real counterparts of interacting complex electrons. A phase diagram specific to the interacting Majorana fermion system is necessary for understanding their low energy behavior. In this talk, we analyze a two-leg ladder of Majorana fermions and calculate energy gaps and entanglement entropy using the density matrix renormalization group method.

Ethan Cohen
Western Washington University

Date submitted: 10 Apr 2019

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