Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

The Structure of Polarized Vortices in the Unitary Fermi Gas[1]
CHUNDE HUANG, MICHAEL FORBES, Washington State University, GABRIEL WLAZOWSKI, PIOTR MAGIERSKI, KONRAD KOBUSZEWSKI, Warsaw University of Technology — Fermionic superfluids do not generally support polarization, and the nature of the ground state of a slightly polarized unitary Fermi gas remains an open question. However, vortices naturally support polarization since the pairing gap vanishes in the core of superfluid vortices. The structure of a polarized vortex is not well understood, and may have some interesting properties. To study the microscopic structure of a vortex, we use a density functional theory called the asymmetric superfluid local density approximation (ASLDA) to simulate how vortexes interact, evolve and how energy transfers between paired and unpaired particles. In this talk, I will discuss the structure and properties of polarized vortices using the ASLDA, and how these related to polarized phases through the Thomas-Fermi (TF) approximation

[1]This work is supported by the National Science Foundation under Grant No. 1707691.

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Date submitted: 02 Feb 2019 Electronic form version 1.4