

Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Parity violating superfluidity in ultra-cold atoms with artificial non-Abelian gauge fields¹ LI HAN, KANGJUN SEO, CARLOS SÁ DE MELO, Georgia Institute of Technology — We discuss the creation of parity violating Fermi superfluids in the presence of non-Abelian gauge fields realized by artificial spin-orbit coupling and crossed Zeeman fields. Unlike the case in particle physics where the parity violation is driven by weak interaction, the parity breaking is due to the effects of non-Abelian gauge fields on the kinetic energy in our system. We analyze the signatures of parity violation on the excitation spectrum of the system in normal and superfluid phases, as well as ground state properties such as the spin-resolved momentum distribution, and excitation properties such as the spin-dependent spectral function and density of states.

¹We thank ARO (W911NF-09-1-0220) for support.

Li Han
Georgia Institute of Technology

Date submitted: 11 Jan 2013

Electronic form version 1.4