Abstract Submitted
for the MAS20 Meeting of
The American Physical Society

Z_2 Topologically Obstructed Superconducting Order[1] CANON SUN, YI LI, Johns Hopkins University — We propose a class of topological superconductivity in which the pairing order is Z_2 topologically obstructed in a time-reversal invariant system in three dimensions. When two Fermi surfaces are related by time-reversal and mirror symmetries, such as those in a Z_2 Dirac semimetal, the inter-Fermi-surface pairing in the weak-coupling regime inherits the band topological obstruction. As a result, the pairing order cannot be well-defined over the entire Fermi surface and forms a time-reversal invariant generalization of U(1) monopole harmonic pairing. A tight-binding model of the Z_2 topologically obstructed superconductor is constructed based on a doped Z_2 Dirac semimetal and exhibits nodal gap function. At an open boundary, the system exhibits a time-reversal pair of topologically protected surface states.

[1]C.S. and Y.L. are supported by the U.S. Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering, Grant No. DE-SC0019331. This work was supported in part by the Alfred P. Sloan Research Fellowships.

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Date submitted: 29 Oct 2020 Electronic form version 1.4