

MAS17-2017-000018

Abstract for an Invited Paper
for the MAS17 Meeting of
the American Physical Society

Monopole Harmonic Superconductivity in Doped Weyl Semimetals

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In this talk, I will present a dramatic effect of Fermi surface monopole structure on the superconducting pairing symmetry: When Cooper pairs acquire non-trivial two-particle Berry phases, their pairing phases cannot be globally well-defined in the momentum space. Therefore, the conventional description of superconducting pairing symmetries in terms of spherical harmonics (e.g. s-, p-, d-waves) ceases to apply. Instead, they are represented by monopole harmonic functions. These novel superconducting states can be realized in doped Weyl semi-metals. They exhibit topologically protected nodal gap functions and rich patterns of Majorana surface arcs regardless of concrete pairing mechanism.