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Local electronic structure near a vortex in LiFeAs within self-consistent BdG KYUNGMIN LEE, MARK FISCHER, EUN-AH KIM, Cornell University — A major question in Fe-based superconductors is whether the pairing is of an unconventional nature with a sign change. The electronic structure in the presence of vortices can serve as a platform for phase sensitive measurements to answer this question. However as Fe-based superconductors are in the intermediate regime of correlation strength, a delicate balance between band structure effects and interaction effects may challenge a simple guess. We perform a microscopic self-consistent BdG calculation for LiFeAs in the presence of a perpendicular magnetic field and calculate the energy-dependent local electronic structure near a vortex. We use a band structure in agreement with recent experiments and compare different gap-symmetry possibilities. We find the low-energy local density of states to be dominated by the geometry of the Fermi surface, with tails along the directions perpendicular to the flat portions of the Fermi surface. These are the directions of the gap *maxima* on the square-like hole pocket around the Γ point according to recent observations. We discuss how the gap symmetry affects high-energy local density of states.

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