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Non-uniform superconducting states in Nematic Electronic Liquid Crystal Phases RODRIGO SOTO GARRIDO, EDUARDO FRADKIN, University of Illinois at Urbana-Champaign — We study the possible superconducting states that arise in a nematic Fermi fluid state in the spin-triplet channel. First, we study the nematic α phase in the $l = 2$ state, which is invariant under a $\pi/2$ rotation followed by a spin flip. In this phase the only infinitesimal superconducting instability is in the spin-triplet p-wave channel. However, close enough to the nematic transition both a uniform d-wave superconducting state and a non-uniform state (pair density wave or checkerboard), also with d-wave symmetry, can arise. In addition, we study the nematic β phase, in which the spin polarization winds around the Fermi surface, and we also find that it is possible to have a non-uniform superconducting state above a critical value of the coupling constant, which is controlled by the order parameter of nematic phase.

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