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Theoretical study of FFLO phases and related phases in non-centrosymmetric superconductors ZHICHAO ZHENG, DANIEL AGTERBERG — Superconducting order can break translational invariance, leading to a phase in which the Cooper pairs develop a coherent periodic spatially oscillating structure, such as in a FFLO phase. Some such superconductors break inversion symmetry, leading to helical and multiple-q (FFLO-like) phases. We study these related phases with and without vortices. We show that for a FFLO phase, a criss-crossing lattice solution arises from the decay of conventional Abrikosov vortices into pairs of fractional vortices. We further show that the fractional vortex solution can also exist in the multiple-q phase of non-centrosymmetric superconductors.

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