Vortex-core structure in d-wave superconductors with a subdominant triplet pairing

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The quasiparticle states found in the vortex core of a high-T_c cuprate superconductor may be probed by scanning tunneling spectroscopy. Results of such experiments have revealed typical spectra that are quite different from what is seen in conventional low-Tc superconductors. In particular the Caroli-deGennes-Matricon state at $E \sim 0$ in the core center is not seen. Instead, in a high-T_c vortex core, quasiparticle states are found at energies that are at a sizable fraction of the gap energy. One explanation for this could be that a finite amplitude of a competing orderparameter stabilizes in the vortex-core center. Here I will explore the possibility of nucleating a vortex-core state that locally breaks inversion symmetry. The vortex-core orderparameter is of mixed parity, with p-wave orderparameter established in the core of the d-wave vortex. The resulting quasiparticle spectra lacks the zero-energy states in the core center. They are found at a finite energy set by the amplitude of the core orderparameter.