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Vortex-core structure in d-wave superconductors with weak triplet pairing attraction MIKAEL FOGELSTRÖM, Chalmers University of Technology, ANNICA BLACK-SCHAFFER, NORDITA — The quasiparticle states found in the vortex core of an d-wave high- T_c cuprate superconductor may be probed by STM experiments. Results of such experiments have revealed typical spectra that are quite different from what is seen in conventional low- T_c 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. We explore the possibility of nucleating a vortex-core state that locally breaks inversion symmetry. The vortex-core orderparameter is of mixed parity, in our case a (d + ip)-wave, and the quasiparticle spectra in the core center lacks the $E = 0$ states. We compare our results with available experimental data.

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