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Intersoliton forces and magnetic response of three band superconductors with broken time reversal symmetry¹ JOHAN CARLSTROM, JULIEN GARAUD, EGOR BABAIEV, KTH, University of Massachusetts — The recent discovery of iron pnictide superconductors has resulted in a rapidly growing interest in multiband models with more than two bands. The three-band Ginzburg-Landau model does in part of the parameter space exhibit broken time reversal symmetry and degenerate ground states. As was shown in Phys. Rev. Lett. 107, 197001 (2011) these systems possess topological defects in the form of bound states of fractional vortices that are different from ordinary vortices, and lack rotational symmetry. We discuss intersoliton forces, and show that they exhibit a strong orientational dependence and thus can result in nontrivial structures appearing in an applied external field. Such structures can be detected by surface magnetic probes such as scanning SQUID, magnetic force microscopy etc.

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