

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Topological solitons in three-band superconductors with broken time reversal symmetry JULIEN GARAUD, UMass Amherst and KTH Stockholm, JOHAN CARLSTROM, KTH Stockholm and UMass Amherst, EGOR BABAEV, UMass Amherst and KTH Stockholm — We report that three-band superconductors with Broken Time Reversal Symmetry allow magnetic field-induced topological solitons. When time reversal symmetry is broken, ground state exhibits $U(1) \times Z_2$ symmetry. Domain-wall, are natural solutions when theories exhibit such a discrete symmetry. Closed domain-walls are unstable to collapse because of their line tension. We show that closed domain-walls can be stabilized by confining vortices. The resulting topological solitons are stable and can be induced by fluctuations or quenching the system through a phase transition. This new kind of solitons can provide an experimental signature of the Time Reversal Symmetry Breakdown. Based on : J. Garaud, J. Carlström, and E. Babaev, Phys. Rev. Lett. 107, 197001 (Nov 2011).

Julien Garaud
University of Massachuset, Amherst

Date submitted: 01 Dec 2011

Electronic form version 1.4