

Abstract Submitted
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Evolution of the structure of vortex core across the BCS-BEC crossover induced by a synthetic non-Abelian gauge field¹ NABYENDU DAS, JAYANTHA P. VYASANAKERE, VIJAY B. SHENOY, Indian Institute of Science Bangalore — We study the evolution of the structure of vortex core of fermionic superfluids with increasing strength of a non-Abelian gauge field which induces a spin-orbit interaction. Using the Bogoliubov de-Gennes formulation, we study the spectrum of core states both in the BCS limit (small gauge coupling) and in the rashbon BEC limit where the superfluid is a condensate of rashbons. We show that the novel features of rashbon dispersion, the vanishing of the bound state at finite centre of mass momentum, result in a larger core region for vortices in the rashbon BEC.

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