

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Emergent Topological order from Spin-Orbit Density wave¹ GAURAV GUPTA, TANMOY DAS, Indian Institute of Science — We study the emergence of a Z_2 -type topological order because of Landau type symmetry breaking order parameter. When two Rashba type SOC bands of different chirality become nested by a magic wavevector $[(0, \pi)$ or $(\pi, 0)]$, it introduces the inversion of chirality between different lattice sites. Such a density wave state is known as spin-orbit density wave[1,2]. The resulting quantum order is associated with the topological order which is classified by a Z_2 invariant. So, this system can simultaneously be classified by both a symmetry breaking order parameter and the associated Z_2 topological invariant. This order parameter can be realized or engineered in two- or quasi-two-dimensional fermionic lattices, quantum wires, with tunable RSOC and correlation strength. [1] T. Das, PRL 109, 246406 (2012).[2] C. Brand, et al Nature Commun. 6, 8118 (2015).

¹The work is facilitated by the computer cluster facility at Department of Physics, Indian Institute of Science.

Gaurav Gupta
Indian Institute of Science

Date submitted: 11 Nov 2016

Electronic form version 1.4