Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Soliton Defects in One-dimensional Topological Three-band Hamiltonian GYUNGCHOON GO, KYEONG TAE KANG, JUNG HOON HAN, Sungkyunkwan University — Defect formation in the one-dimensional topological three-band model is examined within both lattice and continuum models. Classic results of Jackiw-Rebbi and Rice-Mele for the soliton charge is generalized to the three-band model. The presence of the central flat band in the three-band model makes the soliton charge as a function of energy behave in a qualitatively different way from the two-band Dirac model case. Quantum field-theoretical calculation of Goldstone and Wilczek is also generalized to the three-band model to obtain the soliton charge. Diamond-chain lattice is shown to be an ideal structure to host a topological three-band structure.

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Date submitted: 14 Nov 2013 Electronic form version 1.4