Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Characterization of the Weyl semimetal via the "Fermi arc" of Wannier-Stark ladder KUN WOO KIM, WOO-RAM LEE, Korea institute for advanced study, YONG BAEK KIM, University of Toronto, KWON PARK, Korea institute for advanced study — Weyl semimetals have been characterized unequivocally by the Fermi-arc spectrum of the surface states in photoemission experiments. While successful, such a method reveals the topological nature of the Weyl phase in the bulk indirectly via the surface spectrum. In this talk, we propose an alternative method to characterize the Weyl phase via the bulk spectrum of the Wannier-Stark ladder (WSL) emerging under an electric field. Specifically, we show that, for weak-to-moderate strengths of electric field, the WSL exhibits its own "Fermi arc" precisely corresponding to the surface spectrum counterpart, which can be used to characterize the Weyl phase directly in the bulk spectrum.

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Date submitted: 25 Nov 2015 Electronic form version 1.4