

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**The Realization of 3D Weyl Semimetal Phase in Optical lattice and its Detection** WEN-YU HE, Department of Physics, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong, China, SHI-ZHONG ZHANG, Department of Physics and Center of Theoretical and Computational Physics, The University of Hong Kong, Hong Kong, China, KAM TUEN LAW, Department of Physics, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong, China — We describe a method to realize 3D Weyl semimetal phase in multilayer-coupled honeycomb optical lattices, with energy offset between two sublattices turned on. Two Raman beams are utilized to assist coupling between neighbor sites and generate synthetic magnetic flux both vertically and horizontally. Both one and two pairs of Weyl points can be achieved by tuning the unconventional interlayer coupling strength and the detuning in the Raman processes. We demonstrate that the detection for the emergence of Weyl points can be done through measuring the Landau Zener transitions of atoms from the lower occupied bands to the upper unoccupied bands.

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Date submitted: 09 Nov 2014

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