Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Signature of Type-II Weyl Semimetal Phase in $MoTe_2$ JUAN JIANG, ZHONGKAI LIU, HAIFENG YANG, ShanghaiTech University, LEXIAN YANG, Tsinghua University, CHENG CHEN, HAN PENG, Oxford University, CHAN-CUK HWANG, Pohang University of Science and Technology , SUNG-KWAN MO, Lawrence Berkeley National Lab, YULIN CHEN, Oxford University, SHANGHAITECH UNIVERSITY COLLABORATION, OXFORD UNIVERSITY COLLABORATION, LAWRENCE BERKELEY NATIONAL LAB COLLABORATION, POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY COLLABORATION — Topological Weyl semimetal (TWS) is a new state of quantum matter, which has sparked enormous research interest recently. Possessing unique Weyl fermions in the bulk and Fermi arcs on the surface, TWSs offer a rare platform for realizing many exotic physical phenomena. Here, by using angle-resolved photoemission spectroscopy, we directly visualize the electronic structure of $MoTe_2$, a recently proposed type-II TWS, which do not respect Lorentz symmetry compared with type-I TWS. Furthermore, we unravel the unique surface Fermi arcs, in good agreement with our ab-initio calculations, which have non-trivial topological nature. Our work not only leads to new understandings of the unusual properties discovered in this family of compounds, but also allows for the further exploration of exotic properties and practical applications of type-II TWSs, as well as the interplay between superconductivity and their topological order.

Juan Jiang
Lawrence Berkeley National Lab

Date submitted: 10 Nov 2016 Electronic form version 1.4