

Abstract Submitted
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Experimental discovery of a topological Weyl semimetal state in TaP¹ SU-YANG XU, ILYA BELOPOLSKI, DANIEL SANCHEZ, Princeton Univ, CHENG GUO, Peking University, GUOQING CHANG, National University of Singapore, CHENGLONG ZHANG, Peking University, GUANG BIAN, Princeton Univ, ZHUJUN YUAN, HONG LU, YIYANG FENG, Peking University, TAY-RONG CHANG, National Tsing Hua University, PAVEL SHIBAYEV, Princeton Univ, MYKHAILO PROKOPOVYCH, Paul Scherrer Institute, NASSER ALI-DOUST, HAO ZHENG, Princeton Univ, CHI-CHENG LEE, SHIN-MING HUANG, National University of Singapore, RAMAN SANKAR, National Taiwan University, HORN-TAY JENNY, National Tsing Hua University, ARUN BANSIL, Northeastern University, TITUS NEUPERT, Princeton Univ, VLADIMIR STROCOV, Paul Scherrer Institute, HSIN LIN, National University of Singapore, SHUANG JIA, Peking University, M. ZAHID HASAN, Princeton Univ — We observed Weyl fermion cones and nodes in the bulk and the Fermi arcs on the surface of Weyl semimetal TaP. Also, we found that the surface states show an unexpectedly rich structure, including both topological Fermi arcs and topologically trivial closed contours in the vicinity of the Weyl points. A rigorous scheme for directly demonstrating the bulk-boundary correspondence and, hence, establishing the Weyl semimetal state in TaP is discussed.

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