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Observation of surface states derived from topological Fermi arcs in the Weyl semimetal NbP[1] ILYA BELOPOLSKI, SU-YANG XU, DANIEL SANCHEZ, Princeton University, GUOQING CHANG, National University of Singapore, CHENG GUO, Peking University, MADHAB NEUPANE, Los Alamos National Laboratory, HAO ZHENG, Princeton University, CHI-CHENG LEE, SHIN-MING HUANG, National University of Singapore, GUANG BIAN, NASSER ALI-DOUST, Princeton University, TAY-RONG CHANG, National Tsing Hua University, BAOKAI WANG, National University of Singapore, XIAO ZHANG, Peking University, ARUN BANSIL, Northeastern University, HORNG-TAY JENG, National Tsing Hua University, HSIN LIN, National University of Singapore, SHUANG JIA, Peking University, ZAHID HASAN, Princeton University — The recent experimental discovery of the first Weyl semimetal (WSM) provides the first observation of a Weyl fermion in nature and demonstrates a novel type of anomalous surface state band structure, consisting of Fermi arcs. NbP may realize the first WSM in the limit of weak spin-orbit coupling. Here we study the surface states of NbP by ARPES and we find that we cannot show Fermi arcs based on our experimental data alone. However, the excellent agreement between our data and calculations suggests that NbP is a WSM and that we observe trivial surface states which evolve continuously from topological Fermi arcs above the Fermi level.

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