APS move to poster.

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Discovery of the first Weyl fermion semimetal and topological Fermi arcs in TaAs[1] SUYANG XU, ILYA BELOPOLSKI, NASSER ALIDOUST, MADHAB NEUPANE, GUANG BIAN, Princeton University, CHENGLONG ZHANG, Peking University, RAMAN SANKAR, National Taiwan University, GUOQING CHANG, National University of Singapore, ZHUJUN YUAN, Peking University, CHI-CHENG LEE, SHIN-MING HUANG, National University of Singapore, HAO ZHENG, JIE MA, DANIEL SANCHEZ, Princeton University, BAOKAI WANG, ARUN BANSIL, Northeastern University, FANGCHENG CHOU, National Taiwan University, PAVEL SHIBAYEV, Princeton University, HSIN LIN, National University of Singapore, SHUANG JIA, Peking University, M. ZAHID HASAN, Princeton University — Weyl semimetals have opened a new era in condensed matter physics and materials science. They host Weyl fermions as emergent quasiparticles and admit a topological classification that protects Fermi arc surface states on the boundary. This unusual electronic structure has deep analogies with particle physics and leads to unique topological properties. We report the experimental discovery of the first Weyl semimetal, TaAs. We directly observe the Weyl fermions and the Fermi arcs in a TaAs single crystal and demonstrate its topological character. Our work opens the field for studying of Weyl fermions in table-top experiments.

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