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Observation of the spin-polarized surface state in a noncentrosymmetric superconductor BiPd[1] MADHAB NEUPANE , University of Central Florida, N. ALIDOUST, Princeton University, M. M. HOSEN, University of Central Florida, J.-X ZHU, Los Alamos National Laboratory, K. DIMITRI, University of Central Florida, S.-Y. XU, Princeton University, N. DHAKAL, University of Central Florida, R. SANKAR, National Taiwan University, I. BELOPOLSKI, D.S. SANCHEZ, Princeton University, T.-R. CHANG, H.-T. JENG, National Tsing Hua University, K. MIYAMOTO, T. OKUDA, Hiroshima University, H. LIN, National University of Singapore, A. BANSIL, Northeastern University, D. KACZOROWSKI, Polish Academy of Sciences, F.-C. CHOU, National Taiwan University, M. Z. HASAN, Princeton University, T. DURAKIEWICZ, Los Alamos National Laboratory — Recently, noncentrosymmetric superconductor BiPd has attracted considerable research interest due to the possibility of hosting topological superconductivity. Here we report a systematic high-resolution angle-resolved photoemission spectroscopy (ARPES) and spin-resolved ARPES study of the normal state electronic and spin properties of BiPd. Our experimental results show the presence of a surface state at higher-binding energy with the location of Dirac point at around 700 meV below the Fermi level. The detailed photon energy, temperature-dependent and spin-resolved ARPES measurements complemented by our first-principles calculations demonstrate the existence of the spin-polarized surface states at high-binding energy. The absence of such spin-polarized surface states near the Fermi level negates the possibility of a topological superconducting behaviour on the surface.

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