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Spin polarization of the Fermi arcs in the Weyl semimetal TaAs¹ SU-YANG XU, ILYA BELOPOLSKI, DANIEL SANCHEZ, Princeton Univ, MAD-HAB NEUPANE, Princeton Univ; Los Alamos National Laboratory, GUOQING CHANG, National University of Singapore, KOICHIRO YAJI, University of Tokyo, ZHUJUN YUAN, CHENGLONG ZHANG, Peking University, KENTA KURODA, University of Tokyo, GUANG BIAN, Princeton Univ, TAY-RONG CHANG, National Hua University, NASSER ALIDOUST, HAO ZHENG, Princeton Univ, CHI-CHENG LEE, SHIN-MING HUANG, GUANG-HAN HSU, National University of Singapore, HORNG-TAY JENG, National Sting Hua University, ARUN BANSIL, Northeastern University, ARIS ALEXANDRADINATA, Yale University, TITUS NEUPERT, Princeton Univ, TAKESHI CONDO, SHIK SHIN, Institute of Solid State Physics (ISSP), HSIN LIN, National University of Singapore, SHUANG JIA, Peking University, M. ZAHID HASAN, Princeton Univ — In a Weyl semimetal, Weyl fermion quasiparticle excitations correspond to points of bulk band degeneracy separated in k-space and connected on the surface by Fermi arcs. Our spin-resolved ARPES measurements on the experimentally discovered Weyl semimetal TaAs have revealed that the Fermi arcs have spin polarization larger than 80% and that the spin texture is in-plane and does not match with that of the bulk Weyl cones where they meet.

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