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Observation of possible topological in-gap surface states in the Kondo insulator SmB_6 by photoemission JUAN JIANG, Fudan Univ, SHENG LI, Nanjing Univ, TONG ZHANG, Fudan Univ, ZHE SUN, FEI CHEN, University of Science and Technology of China, ZIRONG YE, MIN XU, QINGQIN GE, SHIYONG TAN, XIAOHAI NIU, MIAO XIA, BINPING XIE, Fudan Univ, YUFENG LI, Nanjing Univ, XIANHUI CHEN, University of Science and Technology of China, HAIHU WEN, Nanjing Univ, DONGLAI FENG, Fudan Univ, FUDAN UNIVERSITY COLLABORATION, NANJING UNIVERSITY COLLABORATION, UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA COLLABORATION — SmB_6 , a well known Kondo insulator, exhibits transport anomaly at low temperature which is usually attributed to some “in-gap” states. While recent theoretical calculations and transport measurements suggest that these in-gap states could be ascribed to topological surface states. SmB_6 thus might be the first realization of topological Kondo insulator (TKI). Here by performing angle-resolved photoemission spectroscopy (ARPES), we directly observed several dispersive states within the hybridization gap of SmB_6 , which show negligible k_z dependence, indicative of their surface origin. Furthermore, the photoemission circular dichroism of the in-gap states suggests the chirality of the orbital angular momentum, and these states vanish simultaneously with the hybridization gap around 150 K. These all strongly suggest their possible topological origin.

Juan Jiang
Fudan Univ

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