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Observation of orbital governed surface selection of superconducting gap in iron Pnictides with low temperature STM/S JIAXIN YIN, Institute of Physics, Chinese Academy of Sciences, ANG LI, ZHENG WU, JIHUI WANG, JIAN LI, CHIN-SEN TING, Department of Physics and Texas Center for Superconductivity, University of Houston, CHENGLIN ZHANG, PENGCHENG DAI, Physics Department, University of Tennessee, CHANGQING JIN, HONG DING, Institute of Physics, Chinese Academy of Sciences, SHUHENG H. PAN, Institute of Physics, Chinese Academy of Sciences.Department of Physics and Texas Center for Superconductivity, University of Houston — The strong anisotropy of orbitals plays important roles in strongly correlated electron systems. For iron pnictides, due to their layered structure, overlaping of iron 3d with arsenic 4p orbitals is essential in the pairing mechanism. To reveal such physics, Ba(K)Fe2As2 and LiFeAs are the ideal candidates owing to their integrity in the Fe-As layer. We have used low temperature scanning tunneling microscopy/spectroscopy (STM/STS) to investigate the orbital physics in Ba0.6K0.4Fe2As2 and LiFeAs at atomic level. By comparing the STM/S results on these two materials and referring to the results of angle resolved photoemission spectroscopy (ARPES), we found the phenomenon of surface dependent selection of superconducting gaps. We discuss the implications of these observations with the orbital physics in these materials.

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