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ARPES Study of the Electronic Structure of the Fe Pnictides
MING YI, DONGHUI LU, RUIHUA HE, Stanford University, SUNG-KWAN MO, Advanced Light Source, LBNL, JAMES ANALYTIS, JIUN-HAW CHU, ANN ERICKSON, Stanford University, DAVID SINGH, Material Science and Technology Division, Oak Ridge National Lab, ZAHID HUSSAIN, Advanced Light Source, LBNL, TED GEBALLE, IAN FISHER, Stanford University, XINGJIANG ZHOU, G.F. CHEN, JIANLIN LUO, NANLIN WANG, Institute of Physics, Chinese Academy of Science, ZHI-XUN SHEN, Stanford University — The iron-based layered superconductors have galvanized explosive interest in the field of high temperature superconductivity since its discovery early this year. With transition temperatures as high as 55K, this new family of compounds not only ended the monopoly of copper oxides in the high T_c field, but also provides us a new direction to better understand the phenomenon of high temperature superconductivity. Here we present recent angle-resolved photoemission results on these iron-based layered superconductors, including direct measurements of the electronic band structures and Fermi surface topology. This new class of superconductors is different from the cuprates in that they have a high density of states near the Fermi level and have multiple bands that cross the Fermi level, which make ARPES an ideal technique to study them because of its unique capability to resolve and capture the rich information on the electronic structure in momentum space.

Ming Yi
Stanford University

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