

Abstract Submitted
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Fermi Surface Topology of $Ca_{2-x}Sr_xRuO_4$ Determined by Angle-Resolved Photoelectron Spectroscopy HONGBO YANG, SHANCAI WANG, A.K.P. SEKHARAN, ZIQIANG WANG, HONG DING, Boston College, Chestnut Hill, MA 02467, S. SOUMA, H. MATSUI, T. SATO, T. TAKAHASHI, Tohoku Univ. Sendai, Japan, CHENXI LU, JIANDI ZHANG, Florida International Univ., Miami, FL 33199, R. JIN, D. MANDRUS, E. W. PLUMMER, Oak Ridge National Lab, Oak Ridge, TN 37831 — We report angle-resolved photoelectron spectroscopy results of the Fermi surface of $Ca_{1.5}Sr_{0.5}RuO_4$, which is at the boundary of magnetic/orbital instability in the phase diagram of the Ca-substituted Sr ruthenates. Three t_{2g} energy bands and the corresponding Fermi surface sheets are observed, which are also present in the Ca-free Sr_2RuO_4 . We find that while the Fermi surface topology of the $\alpha, \beta(d_{yz, zx})$ sheets remains almost the same in these two materials, the $\gamma(d_{xy})$ sheet exhibits a holelike Fermi surface in $Ca_{1.5}Sr_{0.5}RuO_4$ in contrast to being electronlike in Sr_2RuO_4 . Our observation of all three volume conserving Fermi surface sheets clearly demonstrates the absence of orbital-selective Mott transition, which was proposed theoretically to explain the unusual transport and magnetic properties in $Ca_{1.5}Sr_{0.5}RuO_4$. We will also report recent ARPES results on the samples with different Ca concentration.

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