

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Low energy kink in the band dispersions of Sr_2RuO_4 studied by ARPES CHUL KIM, Institute of Physics and Applied Physics, Yonsei University, CHOONGHYUN KIM, Department of Physics and Astronomy, Seoul National University, Y.Y. KOH, Institute of Physics and Applied Physics, Yonsei University, JAEJUN YU, Department of Physics and Astronomy, Seoul National University, M. ARITA, K. SHIMADA, Hiroshima Synchrotron Radiation Center, Hiroshima University, Y. YOSHIDA, National Institute of Advanced Industrial Science and Technology, C. KIM, Institute of Physics and Applied Physics, Yonsei University — In Sr_2RuO_4 , incommensurate antiferromagnetic fluctuations (IAF) were reported to have 4 - 10 meV energy with $\mathbf{q} = (0.6\pi, 0.6\pi)$ while the lowest optical phonon is at 12meV. If an electron is coupled to AIF in Sr_2RuO_4 , the electronic band dispersions will kink below 10meV. Then, one can attribute the low energy kinks below 10meV to the electron-IAF coupling. In spite of the fact that multiple kink energies were recently reported in Sr_2RuO_4 , kinks below 10meV has not been observed. To look for the so far unobserved electron-IAF coupling in Sr_2RuO_4 , we performed ultra high resolution angle resolved photoemission (ARPES) experiments on Sr_2RuO_4 with clean surfaces. In the results, we observe kinks in the band dispersions at energies below 10 meV which show strong momentum dependence. To elucidate the origin of these new kinks, we compare ARPES results with inelastic neutron scattering and band calculation results.

Chul Kim
Institute of Physics and Applied Physics, Yonsei University

Date submitted: 27 Dec 2010

Electronic form version 1.4