

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Multi-orbital Fermi surfaces in metallic layered nickelate** MASAKI UCHIDA, Cornell University, K. ISHIZAKA, M. SAKANO, R. ARITA, S. SHIN, Y. TOKURA, University of Tokyo, P. HANSMANN, A. TOSCHI, K. HELD, Vienna University of Technology, X. YANG, Nanyang Technological University, J. MIYAWAKI, Y. TAKATA, M. OURA, A. CHAINANI, RIKEN SPring-8 Center, Y. KANEKO, RIKEN CMRG and CERG, O. ANDERSEN, Max-Planck-Institut — The three-dimensional Fermi surface structure of hole-doped metallic layered nickelate  $\text{Eu}_{2-x}\text{Sr}_x\text{NiO}_4$  ( $x = 1.1$ ), an important counterpart to the isostructural superconducting cuprate  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ , is investigated by energy-dependent soft-x-ray angle-resolved photoemission spectroscopy. In addition to a large cylindrical hole Fermi surface analogous to the cuprates, we observe a Gamma-centered  $3z^2 - r^2$ -derived small electron pocket. This finding demonstrates that in the layered nickelate the  $3z^2 - r^2$  band resides close to the  $x^2 - y^2$  one in energy. The resultant multi-band feature with varying orbital character as revealed may strongly work against the emergence of the high-temperature superconductivity.

Masaki Uchida  
Cornell University

Date submitted: 07 Nov 2012

Electronic form version 1.4