Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Sorting Category: 09. (E)

Recent ARPES study on extremely underdoped LSCO system YU HE, Department of Applied Physics, Stanford University, MAKOTO HASHIMOTO, SLAC National Accelerator Laboratory, SUNG-KWAN MO, RUIHUA HE, Advanced Light Source, LBNL, YOICHI ANDO, Department of Quantum Functional Materials, Institute of Scientific and Industrial Research, SEIKI KOMIYA, Central Research Institute of Electric Power Industry, ZHI-XUN SHEN, Department of Applied Physics, Stanford University — It has been widely accepted that Mott physics plays an important role in how superconductivity develops in high Tc cuprates. However, only a few in the family can reach to deeply underdoped region where Mott physics truly dominates, where the "pseudogap" is entirely disentangled from superconducting gap. Being an important compound to tackle this issue, extremely underdoped $La_{2-x}Sr_xCuO_4$ samples were systematically investigated through ARPES experiments. The doping dependence of Gaussian envelope at higher binding energy suggests strong polaronic contribution to the near Fermi level coherent feature. In complementary to previous observation of nodal gap in semiconducting LSCO, we found the Fermi surface to be fully gapped over wide range in the phase diagram in accordance with transport measurements. By comparing the marginal Fermi liquid model with momentum/temperature dependent MDC width analysis, we will extend our discussion on the intriguing connections between the nodal gap, polaronic excitation and "pseudogap" in this system.

Yu He
YUHE@STANFORD.EDU
Department of Applied Physics, Stanford University

[X] Prefer Oral Session
[ ] Prefer Poster Session

Date submitted: 03 Jan 2012 Electronic form version 1.4