Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Towards a more complex superconducting state of cuprates[1] RUIHUA HE, Stanford & SIMES, MAKOTO HASHIMOTO, J.P. TESTAUD, Stanford & SIMES & ALS, H. YAO, Stanford & SIMES, K. TANAKA, Stanford & SIMES & ALS & Osaka, W. MEEVASANA, R.G. MOORE, D.H. LU, Stanford & SIMES, Y. YOSHIDA, AIST, M. ISHIKADO, JAEA, H. EISAKI, AIST, T.P. DEVEREAUX, S.A. KIVELSON, Stanford & SIMES, Z. HUSSAIN, ALS, Z.-X. SHEN, Stanford & SIMES — Compared with the mysterious normal (pseudogap) state of high-Tc superconductivity, the superconducting state itself is generally deemed much better understood. Being most relevant and intensively characterized in momentum-space, its lowest-lying excitations are conceived to concentrate on and exhibit d-wave-like Bogoliubov dispersions along the entire underlying Fermi surface. By using angle-resolved photoemission spectroscopy, here we unveil an elevated complexity of the superconducting state of Bi2201 beyond this picture, which points to a highly non-trivial interplay between coherent superconductivity and coexisting pseudogap of distinct symmetry. We show simulations which assume simple density-wave nature of the pseudogap provide a good starting point to understand this more complex superconducting state.

[1]This work is supported by the Department of Energy, Office of Basic Energy Science under contract DE-AC02-76SF00515.

Ruihua He
Stanford & SIMES

Date submitted: 29 Nov 2009 Electronic form version 1.4