Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Laser-ARPES studies on Bi-2212 I.M. VISHIK, W.-S. LEE, F. SCHMITT, Stanford University, T. SASAGAWA, Tokyo Institute of Technology, S. ISHIDA, University of Tokyo, K. FUJITA, Cornell University, S. UCHIDA, University of Tokyo, T.P. DEVEREAUX, Z.-X. SHEN, Stanford University — Temperature-dependent ARPES measurements of the gap function in $Bi_2Sr_2CaCu_2O_{8+\delta}$ (Bi-2212) have given support for a 'two-gap' picture, where superconductivity and the pseudogap represent competing states, but the dichotomy between these gaps in momentum space and temperature is subtle. For instance, the pseudogap is observed by spectroscopy even below T_c, and ARPES observes superconducting quasiparticles in Bi-2212 even in the antinodal region, where the pseudogap is dominant. Thus, the gap measured at a particular momentum may contain contributions from both states. We have performed laser ARPES measurements on underdoped Bi-2212, using the superior energy resolution of this technique in conjunction with a detailed doping-and-temperature-dependence study, to elucidate the relative contributions of the pseudogap and superconducting gap at different temperatures and momenta. We report our findings on how the superconducting gap evolves into the pseudogap for various dopings.

Inna Vishik
Stanford University

Date submitted: 23 Dec 2010 Electronic form version 1.4