

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

The overdoped region of the high T_c superconducting Bi2212 revisited¹ N. ZAKI, H-B. YANG, J. D. RAMEAU, P.D. JOHNSON, Brookhaven National Laboratory, H. CLAUS, D.G. HINKS, Argonne National Laboratory — High-resolution angle-resolved photoemission (ARPES) is used to probe the temperature dependence of the gaps observed in the antinodal region of the Fermi surface (FS) in overdoped Bi2212. In particular we study samples with doping levels greater than 0.19, the latter having previously been determined to be the doping level associated with a Fermi surface reconstruction.[1-3] Careful simulation of the measured ARPES spectra indicates that any gap observed in this region of the FS at these doping levels is a reflection of the range of superconducting gaps associated with inhomogeneities observed in STM studies of the same systems. With this observation we are able to reexamine the phase diagram associated with the Bi2212 system and discuss the origin of the pseudogap associated with the underdoped region. [1] Yang et al., Phys. Rev. Lett. 107, 047003 (2011) [2] Fujita et al., Science 344, 612 (2014) [3] Badoux et al., Nature 531, 7593 (2016)

¹This work is supported in part by the Center for Emergent Superconductivity (CES), an EFRC funded by the U.S. DOE. The work is also supported in part by the U.S. DOE under Contract No. DE-AC02-98CH10886 at BNL and Contract No. DE-AC02-06CH11357 at ANL.

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Date submitted: 11 Nov 2016

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