

Abstract Submitted
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Competition between the pseudogap and superconductivity and its critical point¹ MAKOTO HASHIMOTO, SLAC, ELIZABETH NOWADNICK, Stanford Univ., RUI-HUA HE, Boston College, INNA VISHIK, Stanford Univ., BRIAN MORITZ, SLAC, YU HE, Stanford Univ., KIKYOHISA TANAKA, Osaka Univ., ROB MOORE, DONGHUI LU, SLAC, YOSHIYUKI YOSHIDA, AIST, MOTOYUKI ISHIKADO, CROSS, TAKAO SASAGAWA, Tokyo institute of Technology, KAZUHIRO FUJITA, Cornell Univ., SHIGEYUKI ISHIDA, SHINICHI UCHIDA, Univ. of Tokyo, HIROSHI EISAKI, AIST, ZAHID HUSSAIN, LBNL, TOM DEVEREAUX, ZHI-XUN SHEN, Stanford Univ. — In high-temperature cuprate superconductors, the nature of the pseudogap remains unresolved. Recently, there have been increasing evidence that the pseudogap is a distinct order from superconductivity, but it has not been completely understood how the pseudogap affects the superconductivity. To reveal the interplay between the pseudogap and superconductivity, we have performed ARPES measurement on a wide doping range of Bi2212. From the analysis of the spectral weight, we found a singular behavior at T_c at the antinode, indicating the competition between the order parameters for the pseudogap and superconductivity. This signature for the competition at T_c becomes weaker with hole doping, and disappears at $\sim 22\%$ hole doping. Together with spectroscopic evidence for the ground-state critical point at 19%, our result reveals the non-trivial termination of the interplay between the pseudogap and superconductivity.

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