

Abstract Submitted  
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**The Effects of Impurities and Disorder on the ARPES lineshapes of Bi2212** STEPHEN PARHAM, THEODORE REBER, YUE CAO, JUSTIN WAUGH, HAOXIANG LI, University of Colorado, Z. XU, J. SCHNEELOCH, R.D. ZHONG, GENDA GU, Brookhaven National Lab, HIROSHI EISAKI, Tokyo University, DANIEL DESSAU, University of Colorado — We present a study of  $\text{Bi}_2\text{Sr}_2\text{CaCuO}_8$  doped with various magnetic impurities, Fe and Ni. Through the use of our Tomographic Density of States or TDoS technique, we show that these magnetic impurities decrease the lifetime of the Cooper pairs in this material, while leaving the superconducting gap essentially unchanged. These effects are masked using traditional MDC/EDC analyses and thus our results highlight the usefulness of the TDoS technique. Even without impurities, there is gap disorder in these materials that is readily seen in STM experiments. This gap disorder affects the TDoS lineshape, and we show that the disorder predicted from our TDoS technique is consistent with that measured through STM.

Stephen Parham  
University of Colorado

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