

Abstract Submitted
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Atomic-Position Tracking and Spectroscopy of $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ across T_c ¹ ABHAY PASUPATHY, KENJIRO GOMES, AAKASH PUSHUP, Princeton University, GENDA GU, BNL, SHIMPEI ONO, YOICHI ANDO, CRIEPI, Japan, ALI YAZDANI, Princeton University — The inhomogeneous nature of the pairing in the $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ system makes the precise characterization of the changes in the density of states at the superconducting transition difficult to measure. Thermal drift in a typical STM prevents the tracking of a specific area while varying the temperature. We have used a specially designed STM, as well as a controlled electrical and acoustic environment, to track the position of a single atomic site on the surface as the temperature is varied. Using this technique, we have been able to measure, for the first time, how the onset of superconductivity changes the local tunneling spectra at a specific site. These measurements enable us to extract changes to the local density of states at T_c independent of the normal state background. We will describe this technique and our measurements on the $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ system for different doping concentrations.

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