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Recovering band structure from quasiparticle interference patterns JACOB ALLDREDGE, E. M. CALLEJA, University of Colorado Boulder, G. GU, Brookhaven National Laboratory, KYLE MCELROY, University of Colorado Boulder — Spectroscopic Imaging Scanning Tunneling Microscopy (SI-STM) has opened up a new window into the world of local electronic structures. This is particularly true in the realm of High Temperature Superconductors where imaging of quasiparticle interference patterns (QPI) has allowed the underlying electronic structure in k -space to be inferred. This has led to information about the termination of the coherent states, as well as interesting revelations about the gap structure above T_c . However, current analysis techniques are based off a simplistic model which only works in a limited energy and doping range, and cannot be extended to other materials. Here we present a more general method for analyzing the QPI that allows us to infer the momentum space origin of the scattered states. This method requires fewer assumptions and allows us to image the momentum space states to higher energies and from lower signal to noise data sets. New insights into the momentum space origins of the scattered states gathered from this method will be discussed.

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