Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Understanding the Measurement of the K-Space Gap Using Spectroscopic Imaging Scanning Tunneling Microscopy[1] EDUARDO CALLEJA, JIXIA DAI, University of Colorado, GENDA GU, Brookhaven National Laboratory, KYLE MCELROY, University of Colorado — Two of the many tools used to probe the High Tc cuprates are Angle Resolved Photo Emission (ARPES) and Spectroscopic Imaging Scanning Tunneling Microscopy (SI-STM). While the two probes have had many qualitative agreements recently there has been a movement in the field to strive for quantitative agreement in order to better understand the phase diagram of the cuprates. When looking for quantitative agreement we are met with striking disagreements such as, the measurement of the super conducting gap by both probes and the observation of Fermi arcs. We have generated a preliminary simulation based on a superconducting tight binding model where we can tune different parameters in order to begin exploring some of these issues. With our STM just beginning to take data our simulation is allowing us to understand the type of data we need to shed some light on these issues.

[1]Alfred P. Sloan Foundation

Eduardo Calleja
University of Colorado

Date submitted: 30 Dec 2010 Electronic form version 1.4