Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Extraction of the pairing glue spectra of high Tc superconductors HAN-YONG CHOI, JAEHYUN YOON, SungKyunKwan Univ, TAKESHI KONDO, ADAM KAMINSKI, Iowa State Univ, CHANDRA VARMA, UC Riverside — We report the current progress of extracting the "pairing glue" spectra of high Tc superconductors. This is done by inverting the d-wave Eliashberg equation, which is an extension of the McMillan-Rowell analysis of the tunneling conductance for conventional s-wave superconductors. A major difference is that there are two distinct α^2F functions for the d-wave superconductors. Consequently, we need twice more experimental inputs to perform this analysis; the pairing function $\Delta(\omega)$ and self-energy $\Sigma(\omega)$. This experimental information is currently not available. We therefore first generate $\Delta(\omega)$ and $\Sigma(\omega)$ theoretically using the marginal Fermi liquid like glue spectra. Then, using the generated functions as "experimental inputs" we invert the Eliashberg equation to extract the glue spectra. We will compare the input and extracted glue spectra to demonstrate the applicability of the approach. We will next describe how to obtain experimental $\Delta(\omega)$ and $\Sigma(\omega)$ from ARPES data. Then, using the obtained experimental inputs we invert the Eliashberg equation to extract the glue spectra. The results will be reported for several temperatures above and below Tc.

Han-Yong Choi
SungKyunKwan Univ

Date submitted: 26 Nov 2007 Electronic form version 1.4