

## Pairing Glue for Superconductivity: Review and Outlook

Han-Yong Choi

*Sungkyunkwan University, Suwon, Korea*

I plan to report current understanding of “pairing glue” for high  $T_c$  superconductors. For conventional s-wave superconductors, the mechanism of electron-phonon interaction for superconductivity was strongly suggested by the isotope effect and confirmed by the McMillan-Rowell inversion of the tunneling conductance. A natural question is then whether we can carry out an analogous analysis for the high  $T_c$  superconductors (HTS). I will briefly review what has been done and report what my own group is doing in this “glue hunting”. Underlying assumption is that the Eliashberg type equation is valid for HTS. A distinctive feature of our approach, on the other hand, is that we consider two boson spectral functions. 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 for HTS. We will describe how to obtain the experimental  $\Delta(\omega)$  and  $\Sigma(\omega)$  inputs from ARPES experiments and demonstrate that the pairing glue spectra can reliably be extracted. This will help settle down the long-sought mechanism of HTS.

Collaborators: Jae-Hyun Yoon (SKKU), Takeshi Kondo, Adam Kaminski (Iowa State Univ), Chandra Varma (UC Riverside).