

Superconductivity: Gaps in the Cuprates

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Abstract: Despite the excitement of high temperature superconductivity in the cuprates, still 20 years after their discovery some fundamental issues remain unsettled. One of the most prominent is the lack of consensus on the nature of “gaps” observed in their excitation spectra. In this talk I will review some of the issues on “pseudo-gaps” and “superconducting gaps”, highlight results from scanning-tunneling spectroscopies (STM), electronic Raman scattering, and angle-resolved photoemission in the cuprates. In particular I will discuss recent theoretical work on the role of dopants observed via STM, which can be a very useful probe of local electronic structure, electron-phonon coupling, and gap spectroscopy.