

Quasiparticle interference in the High Tc superconductors

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In this talk I am going to introduce the quasiparticle interference (QPI) as a new probe for studying the gap symmetry in High Tc superconductors. Specially I will focus on Iron-based superconductors where the phase diagram exhibits an antiferromagnetic phase at low doping and an unconventional superconducting phase at larger carrier concentration. Some compounds are even believed to have a microscopic coexistence regime of both orders. We systematically calculate QPI signatures for the whole phase diagram of iron-based superconductors. Impurities inherent in the sample together with ordered phases lead to distinct features in the QPI images that are believed to be measured in spectroscopic imaging-scanning tunneling microscopy (SI-STM).