

Bar Ilan University , Condensed Matter Seminar

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Strong coupling superconductivity in FeSeTe

Abstract:

We have measured the electronic-structure of $\text{FeSe}_x\text{Te}_{1-x}$ above and below T_c using ARPES. In the normal state we find multiple bands with remarkably small values for the Fermi energy ϵ_F . Yet, below T_c we find a superconducting gap Δ that is comparable in size to ϵ_F , leading to a ratio $\Delta/\epsilon_F \approx 0.5$ that is much larger than found in any previously studied superconductor. We also observe an anomalous dispersion of the coherence peak which is very similar to the dispersion found in cold Fermi-gas experiments and which is consistent with the predictions of the BCS-BEC crossover theory.