ARPES on iron-based superconductors: leading role of $3d_{xz,yz}$ orbitals

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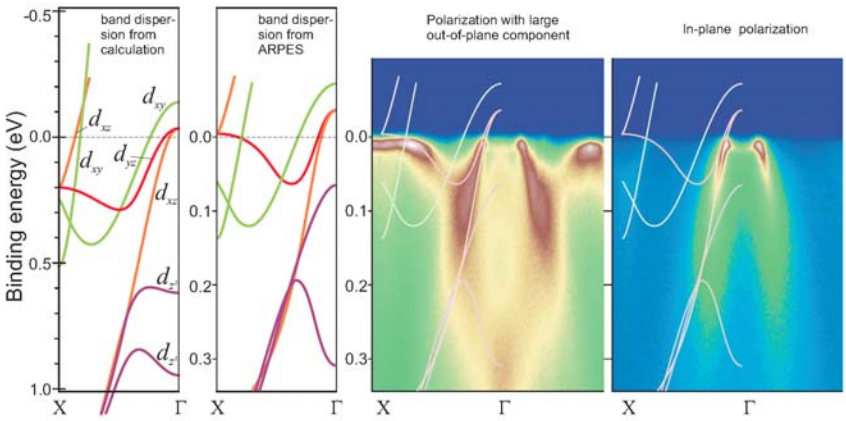
I will start with a short overview of the available ARPES results on iron-based superconductors. Despite of the large variety of the observed Fermi surfaces [1-6], phenomenologically one can point out several common tendencies for iron high temperature superconductors — namely, band renormalization of factor of three at the Fermi level [3,6-8], often a two-gap behavior [2,7-10], noticeable electronic coupling to low-energy bosonic modes. Our recent results indicate clear correlation between the superconducting gap magnitude and orbital origin of the electronic states, with the largest gap solely for iron $3d_{xz,yz}$ orbitals. Interestingly, the electron coupling to bosonic modes was found to be stronger also for $3d_{xz,yz}$ bands. Further analysis of the electronic structures of differently doped iron arsenides consistently points to the significance of $3d_{xz,yz}$ bands for superconductivity in these materials.



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