ARPES study of the YBCO phase diagram by in-situ K evaporation


University of British Columbia — The study of the YBCO phase diagram by ARPES has become of central interest since the observation of quantum oscillations in high-magnetic field [1]. However, until recently accessing the various electronic phases by photoemission has been hampered by the so-called polar catastrophe [2]. In this work, the overdoped metal (OD, p=0.37, Tc=0), the superconducting phase (OP, T<Tc), and the normal state of the pseudogap regime (UD, Tc<T<T*) have been successfully explored by surface doping (i.e., in-situ K evaporation). This reveals that the dispersion, as well as the arc topology of the low energy excitations of the normal state, are universal [3]. While no traces of an electronic reconstruction have been observed in YBCO, we are able to identify the doping value at which the Luttinger description breaks down upon underdoping.


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