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Mott gap collapse in electron- and hole-doped cuprates within a four-band Hubbard Model HSIN LIN, R.S. MARKIEWICZ, A. BANSIL, Northeastern U. — We discuss the issue of Mott gap collapse within a selfconsistent mean field framework using a four-band Hubbard model which includes Cu $4s$ orbitals. The evolution with doping of the Fermi surface of $Nd_{2-x}Ce_xCuO_4$ (NCCO) has been investigated previously by Kusko, et al.[1] in a one-band t-t′-t″-U Hubbard model using related ARPES results[2]. The four-band model in this work confirmed the findings of the one-band model that it is necessary to employ a doping-dependent U, where U decreases with increasing doping. We also consider the hole-doped case in order to understand the doping- dependence of the peak-dip-hump structure in $Bi_2Sr_2CaCu_2O_{8+\delta}$. Work supported in part by the USDOE.
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