Doping dependence of the Fermi Surface in the electron doped superconductor $Nd_{2-x}Ce_xCuO_{4\pm\delta}$

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Using the mean field spin density wave (SDW) formalism augumented with self-consistent renormalization (SCR) computations within the framework of the one-band $t-t'-t''-U$ Hubbard model Hamiltonian, we explain the doping dependence of the Fermi surface (FS) maps and spectral intensities determined recently in the electron doped compound $Nd_{2-x}Ce_xCuO_{4\pm\delta}$ (NCCO) via high resolution ARPES measurements[1].

The crossover of the FS from small electron pockets centered at $(\pi, 0)$ at low dopings, to large sheets at optimal doping is a consequence of the collapse of the correlation induced Mott pseudogap just above optimal doping. This collapse reflects in part a reduction of the effective Hubbard coupling constant U with increasing electron doping.

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[1] N.P. Armitage, *et al.*, Phys. Rev. Lett. 88, 257001 (2002).