Single hole dynamics in the CuO_2 plane at half filling

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Abstract: We present a k-dependent study of the single hole states in $Sr_2CuO_2Cl_2$. We demonstrate that the controversial "1 eV peaks" in the high T_c's are quasiparticles derived from the same O 2p states as the Zhang-Rice (ZR) singlets, but of different symmetry and intensity in those regions of the Brillouin zone where the hybridization with the correlated Cu 3d states vanishes by symmetry. We use this new source of information to estimate the quasiparticle weight of the ZR singlets, discuss the quasiparticle line shape, and suggest a strong k dependence of the self-energy.

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