Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Role of phonons and of finite temperature on the spectral function of a single hole in a 2D quantum antiferromagnet SATYAKI KAR, Department of Physics, FSU & MARTECH, EFSTRATIOS MANOUSAKIS, Department of Physics, FSU & MARTECH, Department of Physics, University of Athens, Greece — We study thermal broadening of the hole spectral function of the two-dimensional $t-J$ and $t-t'-t''-J$ modela within the non-crossing approximation (NCA) with and without the contribution of optical phonons. We have also studied the range of validity of the NCA by including the role of vertex corrections. The broadening of the quasiparticle peak as well as the transfer of spectral weight as a function of momentum to higher energy string excitations is found to be in reasonably good agreement with experimental angle resolved photo-emission spectroscopy(ARPES) results using a rather large electron-phonon coupling.

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Date submitted: 29 Nov 2008 Electronic form version 1.4