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Strong coupling theory of phonons in the Hubbard Model SHILADITYA CHAKRABORTY, Univ. of Illinois, Urbana-Champaign, TUDOR STANESCU, Univ. of Illinois, Urbana-Champaign, PHILIP PHILLIPS, Univ. of Illinois, Urbana-Champaign — The role of phonons in strongly correlated electronic systems including the high Tc cuprates has not been completely well understood. Recent experimental results, notably those of Lanzara et. al reveal the existence of a kink in the quasiparticle dispersion data for various classes of cuprate superconductors including BiSCO , LSCO and NCCO at an energy scale of around 50 meV to 70 meV using ARPES techniques. Direct comparison of ARPES and neutron scattering data has also been done for LSCO. One of the possible explanations for this kink is believed to be coupling of electrons with phonon modes of the above energy scale. We obtain the electron spectral function as a function of electron-phonon coupling strength using Cluster Dynamic Mean Field Theory (CDMFT on the 2-D Hubbard Model with phonons and compare it with the experimental data.

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