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**Dynamical Cluster Approximation results for the effect of long range hoppings on  $T_c$  in Cuprates** EHSAN KHATAMI, ALEXANDRU MACRIDIN, MARK JARRELL, University of Cincinnati — The Dynamical Cluster Approximation along with the Quantum Monte Carlo (QMC) algorithm are employed to study the effect of long-range hoppings on the superconducting critical temperature of Cuprates. A two-dimensional  $t - t' - t'' - U$  Hamiltonian describes the physics of copper oxide planes in this model. We perform calculations on 4-site and 16-site clusters. The results show a weak dependence of the maximum  $T_c$  on the long-range hoppings. We see a suppression of  $T_c$  due to  $t'$  in the hole-doped systems.  $t'$  increases the critical doping (the doping beyond which the superconducting phase disappears) in the hole-doped regime, but this doping value is decreased by including  $t''$ .

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