

Abstract Submitted
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Theory Of Dipolon-Phonon Interaction and Isotope Shift in Superconducting Cuprates RAM SHARMA, University of Illinois at Chicago — Quite recently we have deduced five principles of photoemission and not only we have explained the observed low energy kink but we have also predicted two more high energy kinks [1,2] in quasiparticle energy distribution which have now been observed experimentally, all by means of the dipolon theory [3,4]. Here, the Hamiltonian for the interaction of dipolons with phonons will be presented. The Hamiltonian requires the evaluation of phonon-generated dynamic polarization fields at the oxygen sites in the $Cu - O_2$ -planes. The quasi-dipolons (phonon-dressed dipolons) now play role as mediators of electron-electron pairing. Expression for the change in the transition temperature T_C due to change in oxygen isotopic mass has been derived. We have found a small decrease of about 1 per cent in T_C due to $^{16}O \rightarrow ^{18}O$, in agreement with experiments [5]. The change in dipolon frequencies owing to the interaction with phonons has been calculated. [1] R. R. Sharma, "Dipolon Theory of Kink Structure....", in *Superconducting Cuprates....*, Ed. K. N. Courtlandt, P. 81-100, Nova Sc, Pub., New York, 2009. [2] R. R. Sharma, *Physica C* **468**, 190 (2008). [3] R. R. Sharma, *Phy. Rev. B* **63**, 054506 (2001). [4] R. R. Sharma, *Physica C* **439**, 47 (2006). [5] J. p. Franck in *Physical Properties....IV*, Ed. D. M. Ginsberg, P. 189-293, World Scientific, Singapore, 1994.

Ram Sharma
University of Illinois at Chicago

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