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Theory of Kink Structure of Quasi-Particle Energy Dispersion in Photoemission Spectra of High Temperature Superconducter $Bi_2Sr_2CaCu_2O_{8+\delta}$ via Dipolon Mediated Electron-Electron Pairing Mechanism RAM SHARMA, University of Illinois at Chicago, IL — We have made use of the four-momenta space diagrams in the dressed particle picture to write the self-energy $\Sigma(p)$ by taking the sum of the exchange diagrams involving dipolon propagator, electron Green's function and electron-electron Coulomb interaction to obtain single quasi-particle energy dispersion in high T_C \ $Bi_2Sr_2CaCu_2O_{8+\delta}$ superconductors. The theory contains Mott renormalization and all important and necessary electron correlations. This constitutes an extension of the strong-coupling dipolon theory [1,2] which explains [3] also the peak-dip-hump structure of the line shape of the photoemission spectra of high T_C superconductors. Our calculations of the single quasi-particle energy dispersion for \ $Bi_2Sr_2CaCu_2O_{8+\delta}$ show a strong kink at the binding energy near 60 meV which has already been identified in the experiments [4] and predicts two additional weak kinks at binding energies close to 100 and 160 meV, yet to be identified experimentally. The Migdal vertex correction does not change our results drastically. [1] R. R. Sharma, Phys. Rev. **B 63**, 054506 (2001). [2] R. R. Sharma, Physica **C 439**, 47 (2006). [3] R. R. Sharma, Physica **C**, in press. [4] P. V. Bogdanov et al., Phys. Rev. Lett. **85**, 2581, 2000.

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