Prediction of Properties of Pseudo-(Symmetric) State of High Temperature Superconductors
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Recently the dipolon theory [1-4] has predicted [5] new very low energy excitations in HTSCs due to transition of quasiparticles (QPs) from anti-symmetric ("as") to symmetric ("s") state (or vice versa) which creates (annihilates) the quantum ("asson") of energy \( \hbar \omega (\vec{q}_a) = E^s(\vec{k}^s) - E^{as}(\vec{k}^s) \); "a" stands for "asson" and \( E^s(\vec{k}^s) \) and \( E^{as}(\vec{k}^s) \) are QP energies in "s" and "as" states, respectively. Here we point out that if the QPs acquire energy equal to or greater than asson energy, they get transited from "s" to "as" state reducing the population of "s" state thereby making its observable properties vague. This is evident if the temperature of the system increases above \( T_a \) where \( (3/2)k_B T_a = \hbar \omega_a \) and then one finds that the energy gap and \( I^* \) become vague consistent with experiments. Since the "asson" energy is about 10 meV, \( T_a \) is about 77 K.