Superconducting Microcosmic Theory of high-Tc cuprates (I)

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A valid high-Tc superconducting microcosmic theory must concretely use various physics parameters from cuprates to perform theoretic calculations, which must accord with the relevant tested results. Here report we pursue the cuprate superconducting attributes in foundation of many key experimental observations, through the deep logic analyses, "Electric Coupling and Phonon Driving" are concluded as the necessary and sufficient condition for cuprate superconductivity. This article, as Part (I) of our theory, discusses "Electric Coupling" how to self-organize Electron Pairs and how to establish a series of formulas, which concretely use the parameters from cuprates to perform theoretic calculations, for example, the theoretical energy of pair breaking for Tl2223, Tl2212, (BiPb)2223 and Y123, and the highest temperature of pseudogap appearing for LSCO, Y123 and Bi2212. These data are well accordant to the relevant experiments. Especially, the T_c tested values confirm precisely our T_c calculations for Tl2223, Tl2212, Tl2201, Bi2223 and Bi2212. Besides, we can determine the $\Theta_D$from the tested T_c, for example, Hg1223 theoretical $\Theta_D \approx 290K$($T_c = 135K$),Hg1212 theoretical $\Theta_D \approx 278K$ ($T_c = 124K$), and Hg1201 theoretical $\Theta_D \approx 243K$ ($T_c = 94K$).Many theoretical calculations are waiting for the experimental validation. Moreover, we identify the microcosmic origins of such experimental observations as the stripe phase, pseudogap, beforehand pairing, the T_c suppressed by the curved CuO_2 planes, and even Y123 double T_c etc. More relevant contents will be expounded in "Phonon Driving" as Part (II) of our theory.