

Abstract Submitted
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Fluctuating Bond Model of cuprate superconductivity. JENHAO HSIAO, NTHU, R.A. NISTOR, Columbia University, G.J. MARTYNA, D.M. NEWNS, C.C. TSUEI, IBM Watson Research Center — The fluctuating bond model(FBM),an empirical model based on a strong,local coupling of electrons to the square of the planar oxygen vibrator amplitudes, provides explanations of the d-wave pairing mechanism¹ and the pseudogap² of cuprate superconductivity. The d-wave pairing is mediated by the anharmonic phonon (planar oxygen vibrator) which is also responsible for the pseudogap when the C4 symmetry of the oxygen vibrator is broken. Here we present calculations of gap and T_c in a unitary framework involving pseudogap as a competing order parameter, with the help of ab initio simulations.

¹Nature phys. 3, 184-191 (2007)

²Phys. Rev. B 83, 144503 (2011)

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