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Two-Particle Self-Consistent Analysis for the Electron-Hole Asymmetry of Superconducting Transition Temperature in High-T_c Cuprates DAISUKE OGURA, KAZUHIKO KUROKI, Osaka University — The striking electron-hole doping asymmetry in the doping dependence of T_c is among unsolved issues in the study of the high-T_c cuprate superconductors. It is well-known that in the hole-doped case, T_c exhibits a dome-like feature against the doping rate. On the other hand, T_c in the electron-doped systems monotonically increases as the doping is reduced, at least down to a very small doping rate [1,2]. To understand the origin of this electron-hole asymmetry of T_c, we perform the Two-Particle Self-Consistent (TPSC) analysis [3] for the three-band $d-p$ model constructed from the first principles calculation [4]. The obtained doping dependence reproduces the asymmetric behavior of T_c. This is explained as a combined effect of the intrinsic electron-hole asymmetry in systems comprising Cu3d and O2p orbitals and the band-filling-dependent vertex correction. References: [1] M. Brinkmann, et al., Phys. Rev. Lett. **74**, 4927 (1995). [2] A. Tsukada, et al., Solid State Commun. **133**,427 (2005). [3] Y. Vilk and A.-M. Tremblay, J. Phys. I (France) **7**, 1309 (1997). [4] A. A. Mostofi, et al., Phys. Commun. **178**, 685 (2008).

Daisuke Ogura
Osaka University

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