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Superconductivity in Ab initio Low-Energy Effective Model for Iron-Based Superconductor TAKAHIRO MISAWA, MASATOSHI IMADA, Univ. of Tokyo — To clarify microscopic mechanism of superconductivity in iron-based superconductors, we study the *ab initio* low-energy effective models for iron-based superconductor [1], particularly for LaFeAsO by using multi-variable variational Monte Carlo (mVMC) method, which properly takes into account both spatial and dynamical quantum fluctuations. The calculated magnetic order was shown to correctly reproduce the experimental material dependences [2,3]. By extending these normal state studies, we find that superconductivity emerges in the electron doped LaFeAsO in essential agreement with the experimental results. The pairing satisfies $s\pm$ symmetry. We discuss the role of antiferromagnetic correlations, Mott proximity, and charge and orbital fluctuations in stabilizing the superconductivity. The specific orbital ($d_{X^2-Y^2}$) is shown to play a role of orbital-selected doped Mott insulator in stabilizing the superconducting phase as well as the antiferromagnetic phase. We discuss similarity and dissimilarity to the cuprate superconductors. [1] T. Miyake *et al.*, J. Phys. Soc. Jpn. **79**, 044705 (2010). [2] T. Misawa *et al.*, J. Phys. Soc. Jpn. **80**, 023704 (2011). [3] T. Misawa *et al.*, Phys. Rev. Lett. **108**, 177007 (2012).

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