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Magnetic fluctuation and Gap symmetry in Iron-Pnictide Superconductors HIROAKI IKEDA, Department of Physics, Kyoto university, RYOTARO ARITA, Department of Applied Physics, University of Tokyo, JST-TRIP, JST-CREST — Since the recent discovery of high- T_c superconductivity in $\text{LaFeAsO}_{1-x}\text{F}_x$, the Fe-based superconductors have been intensively investigated. In order to understand the overall feature of the phase diagram, we investigate the unfolded 5-band Hubbard model, which can describe the band structure near the Fermi level in LaFeAsO , within the fluctuation-exchange approximation. We find the enhancement of the antiferromagnetic (AF) spin fluctuation in the hole-doped region and the pseudogap behavior of $\text{NMR-}1/T_1$ in the electron-doped region. Evaluating the Eliashberg equation, we find that the sign-reversing s_{\pm} -wave pairing state appears in close proximity to the AF phase. Roughly speaking, the gap function is fully-gapped in the hole-doped region, and remarkably anisotropic in the electron-doped region. The eigenvalue λ is relatively small, and insensitive to carrier doping for small Hund coupling J . On the contrary, for large J , it is relatively large, and sensitive to carrier doping and the presence of the AF phase.

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