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Extended s-wave superfluid of repulsively interacting three-component fermionic atoms in optical lattices[1] SEI-ICHIRO SUGA, University of Hyogo, KENSUKE INABA, NTT Basic Research Laboratories, CREST — We investigate pairing symmetry of the superfluid state in repulsively interacting three-component (colors) fermionic atoms in optical lattices. This superfluid state appears, when two of the color-dependent three repulsions are much stronger than the other close to half filling [1]. We evaluate the effective pairing interaction by collecting random-phase-approximation-type diagrams and ladder diagrams, and solve the Eliashberg equation within weak-coupling theory in square optical lattices. We find that pairing symmetry is an extended s-wave, although in the phase diagram the superfluid state is adjacent to the color-density wave or paired Mott insulator at half filling. The k-dependence of the superfluid order parameter is caused by quantum fluctuations of the staggered color-density wave. When the difference in the three repulsions is decreased, paring symmetry changes from an extended s-wave to a d-wave. We expect ^{6}Li, ^{171}Yb, ^{173}Yb atoms and their mixtures in optical lattices to be possible candidates for observing this superfluid state.
[1] K. Inaba and S. Suga, *Phys. Rev. Lett.* **108** (2012) 255301.

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