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Controlled superfluid pairing symmetry of repulsively interacting three-component fermionic atoms in optical lattices[1] SEI-ICHIRO SUGA, University of Hyogo — We investigate the pairing symmetry of the superfluid state in repulsively interacting three-component (colors) fermionic atoms in optical lattices. When two of the three color-dependent repulsions are much larger than the other, pairing symmetry is an extended s wave although the superfluid state appears adjacent to the paired Mott insulator in the phase diagram [1]. As the difference between the three repulsions is decreased in square optical lattices, the extended s-wave pairing changes into a nodal s-wave pairing, a d_{xy}-wave pairing, and then into a d_{x2-y2}-wave pairing. This change in pairing symmetry is attributed to the competition among the density fluctuations of unpaired atoms, the quantum fluctuations of the color-density wave, and those of the color-selective antiferromagnet [2]. This phenomenon can be studied in ^{6}Li atoms and ^{171}Yb-^{173}Yb mixtures in optical lattices using existing experimental techniques.

[1] K. Inaba and S. Suga, *Phys. Rev. Lett.* **108** (2012) 255301.
[2] K. Inaba and S. Suga, arXiv:1408.6582.

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Sei-ichiro Suga
University of Hyogo

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