Spin-Triplet Superconductivity in Sr_2RuO_4 due to Orbital and Spin Fluctuations: 2D fRG Analysis MASAHISA TSUCHIIZU, YOUICHI YAMAKAWA, Department of Physics, Nagoya University, SEIICHIRO ONARI, Department of Physics, Okayama University, HIROSHI KONTANI, Department of Physics, Nagoya University — We study the mechanism of the triplet superconductivity in Sr_2RuO_4, by applying the functional renormalization group (fRG) method to the multi-orbital Hubbard model [1]. Thanks to the vertex correction, we observe the strong spin and orbital fluctuations at $Q \approx (2\pi/3, 2\pi/3)$ in the quasi-one-dimensional Fermi surfaces (which are composed of d_{xz} and d_{yz} orbitals). Moreover, due to the cooperation of spin and orbital fluctuations, the triplet superconductivity emerges where the superconducting gap is given by the linear combination of $(\Delta_x(k), \Delta_y(k)) \approx (\sin 3k_x, \sin 3k_y)$ [2]. These results can also be confirmed by a diagrammatic calculation of the vertex correction.
[1] M. Tsuchiizu, Y. Ohno, S. Onari, and H. Kontani, PRL **111**, 057003 (2013).
[2] M. Tsuchiizu, Y. Yamakawa, Y. Ohno, S. Onari, and H. Kontani, arXiv:1405.2028.

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