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f-wave triplet superconductivity in a twisted triangular Hubbard tube as a model of $A_2Cr_3As_3$[1] SAHINUR REJA, Indiana University Bloomington, USA, SATOSHI NISHIMOTO, IFW Dresden, Germany — Triplet superconductivity (SC) recently has been one of the active research topics partly due to its intrinsic connection to quantum computations. In this contex, we study the ground state properties of a twisted triangular Hubbard tube using the perturbation theory and density-matrix renormalization group method. We show that two electrons in an odd-site Hubbard ring always form a spin-triplet pair, and subsequently a polarized ferromagnetic (FM) order is stabilized in a wide range of electron filling (n) when these rings are weakly coupled. By calculating the binding energy and spin gap, we confirm the presence of the spin-triplet SC after melting of the FM order with increasing the inter-triangle couplings (t_2). We show that triplet SC pair correlations are consistent with the f-wave channel. We present a detailed n-t_2 phase diagram which features also singlet SC at $n \sim 1$ and $t_2 \sim 1$. Finally we argue that this model has possible relevance to the f-wave SC observed in alkali chromium arsenides $A_2Cr_3As_3$ (A=K,Rb,Cs).

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