

Abstract Submitted
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Stable Fulde-Ferrell-Larkin-Ovchinnikov pairing states in 2D and 3D optical lattices¹ ZI CAI, The department of Physics, Univeristy of California, San Diego, YUPENG WANG, Institute of Physics, Chinese Academy of Sciences, Beijing, P. R. China, CONGJUN WU, The department of Physics, Univeristy of California, San Diego — We present the study of the Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) pairing states in the p -orbital bands in both two and three-dimensional optical lattices. Due to the quasi one-dimensional band structure which arises from the unidirectional hopping of the orthogonal p -orbitals, the pairing phase space is not affected by spin imbalance. Furthermore, interactions build up high dimensional phase coherence which stabilizes the FFLO states in 2D and 3D optical lattices in a large parameter regime in phase diagram. These FFLO phases are stable with imposing the inhomogeneous trapping potential. Their entropies are comparable to those of the normal states at finite temperatures.

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