

Abstract Submitted
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Fulde-Ferrell-Larkin-Ovchinnikov and topological superconducting phase in one dimensional optical lattice RUILIN CHU, The University of Texas at Dallas, AN ZHAO, University of Hong Kong, MING GONG, The University of Texas at Dallas, SHUNQING SHEN, University of Hong Kong, CHUANWEI ZHANG, The University of Texas at Dallas — The recent experimental realization of spin-orbit coupling in ultracold atom systems provides new arena for us to explore new quantum states. In this work, we explore the Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) phase and topological superconducting phase of spin-orbital coupled Fermions in one dimensional optical lattice using the Density matrix renormalization group (DMRG) method. We demonstrate that the FFLO phase is energetically favored for in-plane Zeeman field while the topological superconducting phase is favored for out-of-plane Zeeman field. The entanglement entropy for these two phases are also examined.

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