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The Pairing of Rashba Spin-orbit Coupled Fermi Gas in Optical Lattice XIAOSEN YANG, HO-KIN TANG, JINHUA SUN, HAI-QING LIN, Beijing Computational Science Research Center — We make an urgent advance using determinant quantum Monte Carlo (DQMC) simulations on Rashba spin-orbit coupled Fermi gases in square optical lattice, which is free of the sign-problem. We show that the Berezinskii-Kosterlitz-Thoules phase transition temperature is firstly enhanced and then suppressed by Rashba spin-orbit coupling at strong attraction region. At weak attraction region, Rashba spin-orbit coupling always suppresses the transition temperature. We also show that the spin susceptibility becomes anisotropic and retain finite at zero temperature.

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