

Abstract Submitted
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Numerical study on electron-electron interaction and ferromagnetic fluctuation in graphene TIANXING MA, Max Planck Institute for the Physics of Complex Systems, Noethnitzer Str. 38, D-01187 Dresden, Germany, FEIMING HU, Department of Physics and the Institute of Theoretical Physics, the Chinese University of Hong Kong, ZHONGBING HUANG, Faculty of Physics and Electronic Technology, Hubei University, Wuhan 430062, People's Republic of China, HAI-QING LIN, Department of Physics and the Institute of Theoretical Physics, the Chinese University of Hong Kong — Within the Hubbard model on a honeycomb lattice, we investigate the effect of electron-electron interactions and ferromagnetic fluctuations in graphene numerically. We find that the system in the filling region $\langle n \rangle = 1.60-1.90$ shows a short-ranged ferromagnetic correlation, and the on-site Coulomb interaction tends to strengthen ferromagnetic fluctuation slightly. Furthermore, the ferromagnetic fluctuation is strengthened markedly as the next-nearest neighbor hopping energy increases, which indicate that the next-nearest neighbor hopping term plays an important role in graphene since it breaks the particle-hole symmetry.

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