The Kohn-Luttinger superconductivity in idealized doped graphene

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The effect of the long-range Coulomb repulsion in an ensemble of Dirac fermions on the formation of the superconducting pairing in an idealized graphene monolayer is studied in the framework of the Kohn-Luttinger mechanism neglecting the van der Waals potential of a substrate and the role of the nonmagnetic impurities. The superconductive phase diagram of the system is constructed and it is shown that the Kohn-Luttinger renormalizations up to and including the second-order terms in the Coulomb interaction and the intersite Coulomb repulsion significantly affect the interplay between the superconducting phases with f-, $d+id$-, and $p+ip$-wave symmetries of the order parameter.

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