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Correlation Energy of Graphene VALERI KOTOV, A. H. CASTRO NETO, Boston University — We discuss the ground state energy of an electron gas on a honeycomb lattice (graphene), where the quasiparticle spectrum has Dirac structure, i.e. linear energy-momentum relation. The correlation energy, due to electron-electron interactions, is calculated in the two-loop approximation, which is the first correction to the Hartree-Fock energy. The possibility of inhomogeneous states is discussed.

Valeri Kotov
Boston University

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