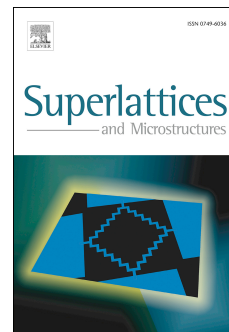


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Phonon-induced Renormalization of the Electron Spectrum of Biased Bilayer Graphene

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Abstract

The effect of the electron-phonon interaction on the electron subsystem of the bilayer graphene has been investigated in the case when there is a potential bias between the graphene layers. The electron-phonon interaction has been shown to lead to increasing of the curvature of the lower dispersion branch of the conduction band of the bigraphene in the vicinity of the Dirac point. The latter corresponds to the decreasing of the absolute value of the electron effective mass. The corresponding correction to the effective mass has been calculated. Dependence of this correction on the bias has been investigated. Influence of such effect on the bigraphene conductivity is discussed.

Keywords: Bigraphene, Electron-Phonon Interaction, Polaron

1. Introduction

The modern possibilities of the creation and processing of the low-dimensional systems [1] induce the high attention of researchers and engineers to graphene materials [2, 3, 4, 5]. The interest to the graphene and its bilayer modification (bigraphene) is connected with their unique transport properties. Particularly, graphene is characterized by the high values of the charge mobility and thermal conductivity.

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