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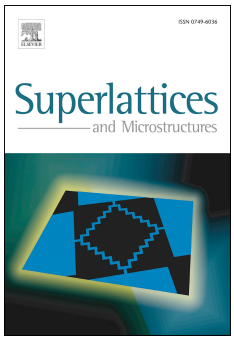

Role of interlayer spacing in electrical transport of bilayer graphene nanoribbon: Perpendicular and armchair direction

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Role of interlayer spacing in electrical transport of bilayer graphene nanoribbon: perpendicular and armchair direction

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Abstract

The electrical conductance of bilayer zigzag graphene nanoribbon is numerically investigated taking advantage of Green's function. The calculations are performed within the tight binding model, which describes the interaction between carbon atoms within a layer via nearest neighbor and carbon atoms of different layers using continuum model. Our findings reveal sensitivity of the bilayer graphene conductance to changes in its relative displacement of two layers in perpendicular and armchair directions. We find that the conductance oscillates as a function of system width , and finally reduces rapidly as the relative distance of two layers becomes larger than half the system width. The results show that the conductance of the bilayer graphene could be tuned via displacement of two layers. Moreover, we obtain different results for conductance of narrow and wide bilayer nanoribon.

Keywords: Bilayer graphene nanoribbon, Electronic transport, Surface Green's function

1. introduction

The experimental discovery of graphene via exfoliation in 2004 by Novoselov et al. [1] have been sparked tremendous interest of scientists in possibilities

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