

Abstract Submitted
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The effects of asymmetric configurations on electronic properties of bilayer graphene nanoribbons¹ Y. -C. HUANG, Center for General Education, Kao Yuan University — Low-energy electronic properties of bilayer graphene nanoribbons subject to the effects of asymmetric configurations are studied by using the tight-binding model. They are strongly dependent on the interlayer interactions, the ribbon edges, the ribbon width (N_y), and the upper ribbon displacement (N_D). The interlayer interactions significantly modify the energy dispersions, alter the subband spacing, change the subband curvature, produce the new edge state, and induce asymmetry of energy bands. There are partial flatbands at the Fermi level and one-dimensional parabolic bands at others. These make density of states (DOS) exhibit delta- function-like structure and asymmetric prominent peaks, respectively. Energies of the extra band-edge states can be tuned by varying the upper ribbon displacement. As N_D grows from zero, the new edge states show a tendency to increase near low energy, while the curvature of the extra band-edge states display bold change about Fermi level E_F . The above- mentioned effects are completely reflected in the features of DOS, such as the generation of special structures, the shift of peak position, and the change in peak height. The predicted electronic properties could be examined by the experimental measurements on absorption spectra.

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