

Abstract Submitted
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I-V characteristics of graphene quantum dots VENKATA CHAGANTI, APALKOV VADYM, Georgia State University — Quantum dots in graphene-like materials with honeycomb crystal structures are studied numerically within tight-binding model of graphene. The energy spectra and corresponding I-V characteristics are found for both isolated graphene islands, i.e., graphene “atoms,” and coupled graphene islands, i.e. graphene “molecules.” The results were obtained for different sizes of graphene quantum dot and different values of the coupling constants between the dot and the contacts. The current is found to increase with increase of the size of the graphene quantum molecule and increase of the value of the coupling constant. We also study the dependence of the I-V characteristics of graphene quantum dot on the size and the placement of the contacts. For the same size of graphene quantum “atom” and graphene quantum “molecule” the I-V characteristics is almost the same.

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