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Formation of Miniband Structure in Dimer Fibonacci GaAs/Ga1-XAlXAs Superlattices

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Abstract : The effect of a uniform electric field across multibarrier systems (GaAs/AlxGa1-xAs) is exhaustively explored by a computational model using exact Airy function formalism and the transfer-matrix technique. In the case of biased Dimer Fibonacci Height Barrier superlattices (DFHBSL) structure a strong reduction in transmission properties was observed and the width of the miniband structure linearly decreases with the increase of the applied bias. This is due to the confinement of the states in the miniband structure, which becomes increasingly important (Wannier-Stark effect).

Keywords : Dimer Fibonacci Height Barrier superlattices, singular extended states, exact Airy function, transfer matrix formalism
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