

Turkish Journal of Physics

Turkish Journal

of



Physics

The Effect of Spatially Dependent Screening On the Donor Ionization Energy in a Quantum Wire

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Abstract: The effect of the spatially dependent screening on the ionization energy of a shallow donor in a 1D quantum well wire made of $\text{Ga}_{1-x}\text{Al}_x/\text{GaAs}$ superlattice is presented. A variational approach is used to obtain ionization energy of the on-centre impurity at the origin of the well and the results obtained are compared with the existing values.



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Turk. J. Phys., **22**, (1998), 1117-1122.

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