

Two Interacting Electrons in a Spherical Gaussian Confining Potential Quantum Well

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Abstract: Two-electron states of a three-dimensional spherical GaAs quantum dot (QD) with a Gaussian confining potential confinement are studied. Calculations are made by using the method of few-body physics within the effective-mass approximation. We have calculated the energy levels of single and triplet states as functions of the range and depth of the confining potential well in the spherical QDs. The same calculations performed with the parabolic approximation of the Gaussian potential lead to the results, which are qualitatively and quantitatively different.

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Key words: electron-electron interaction, quantum dot, few-body physics

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