Exciton States in Spherical Gaussian Potential Wells

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Abstract: The exciton L=0 and L=1 states of a spherical GaAs quantum dot with a Gaussian confining potential are calculated by using the matrix diagonalization method. The size dependence of the exciton levels and the influence of the depth of the confining potential well in the spherical quantum dots are investigated. 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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