Optical properties of a spherical quantum dot with two ions of hydrogenic impurity

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Abstract

Spectrum and wave functions of the quantum dot (QD) with two diametrically located ions of impurity have been studied. The case of the impurity location on the surface of the quantum dot has been considered. The calculation of the energy of the interlevel transition, dipole momentum, and oscillator strength has been done. The linear absorption coefficient (AC) and the change in the refractive indices (RIs) have been defined as functions of the photon energy, the QD size and the impurity location in the QD. © 2013 Elsevier B.V.

Author keywords

Absorption coefficient; Oscillator strength; Quantum dot; Two ions of hydrogenic impurity

Indexed keywords

Engineering controlled terms

Ions; Refractive index

Engineering uncontrolled terms

Absorption co-efficient; Hydrogenic impurities; Inter-level transitions; Linear absorption coefficient; Oscillator strengths; Photon energy; Quantum dot; Spherical quantum dot

Engineering main heading

Semiconductor quantum dots

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