2003 Vol.40 No.1 pp.113-116 DOI:

The Electron-Hole Pair in a Single Quantum Dot and Thatin a Vertically Coupled Quantum Dot

XIE Wen-Fang[1,2] and ZHU Wu[1]

[1] Science School, Guangzhou University, Guangzhou 510405, China
[2] Department of Physics, Shanxi University, Taiyuan 030006, China
(Received: 2002-10-22; Revised:)

Abstract: The energy spectra of low-lying states of an exciton in a single and a vertically coupled quantum dots are studied under the influence of a perpendicularly applied magnetic field. Calculations are made by using the method of numerical diagonalization of the Hamiltonian within the effective-mass approximation. We also calculated the binding energy of the ground and the excited states of an exciton in a single quantum dot and that in a vertically coupled quantum dot as a function of the dot radius for different values of the distance and the magnetic field strength.

PACS: 71.35.-y, 73.20.Dx, 36.10.Dr

Key words: exciton, quantum dot, few-body physics