Turkish Journal of Physics

@

phys@tubitak.gov.tr

The Energy Spectra of GaAs/Al$_x$Ga$_{1-x}$As Quantum Dots

Mohammad EL-SAID, M. ABU SAA
Department of Physics, Eastern Mediterranean University,
Gazi Magosa, N. Cyprus, 10 Mersin - TURKEY

Abstract: The energy expressions for QD presented in high- and low-magnetic fields are calculated. An interpolation formula between the energies of the quantum dot in both limits is proposed. The formula is implemented to produce the energy spectra of the parabolic quantum dot in the presence of a magnetic field of arbitrary strength. The transitions in the angular momenta of the ground state energy of interacting electrons confined in the quantum dot as a function of magnetic field strength is studied. A good agreement is obtained when our results are tested against exact numerical work.