

Cumulative effects of temperature, magnetic field and Spin orbit Interaction (SOI) on the properties of magnetopolaron in RbCl quantum well

Abstract

We investigate in this work, the temperature, magnetic field and Spin orbit Interaction (SOI) effects on properties of magnetopolaron in RbCl quantum well. Ground state binding energy (GSBE) of magnetopolaron in RbCl quantum well is evaluated using the Lee Low Pines Unitary Transformation (LLPUT) and linear Combination Operation (LCO) methods. Numerical results show that the spin orbit interaction affect considerably the GSBE of magnetopolaron and the transition behavior at threshold values of the temperature as well as for cyclotron frequency is due to the effect of SOI. This study reveals that the spin orbit interaction can't be neglected during the investigation of nanostructure system.

Keywords: *Spin Orbit Interaction, Magnetopolaron, Linear Combination Operation, Lee Low Pines Unitary Transformation, Quantum well*