

Effect of Control Lasers Polarization on Absorption Coefficient and Refractive Index of a W-Type 4- Level Cylindrical Quantum Dot in the Presence Of Electromagnetically Induced Transparency (ETI)

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Abstract : In this paper, electromagnetically induced transparency (EIT) is investigated in a cylindrical quantum dot (QD) with a parabolic confinement potential. We study the effect of control lasers polarization on absorption coefficient, refractive index and also on the generation of the double transparency windows in this system. Considering an effective mass method, the time-independent Schrödinger equation is solved to obtain the energy structure of the QD. Also, we study the effect of structural characteristics of the QD on refraction and absorption of the QD in the presence of EIT.

Keywords : electromagnetically induced transparency, cylindrical quantum dot, absorption coefficient, refractive index

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