

Rashba Spin Orbit Interaction Effect on Multiphoton Optical Transitions in a Quantum Dot for Bioimaging

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Abstract : We demonstrate in this work the effect of Rashba spin orbit interaction on multiphoton optical transitions of a quantum dot in the presence of THz laser field and external static magnetic field. This combination is solved by accurate non-perturbative Floquet theory. Investigations are made for the optical response of intraband transition between the various states of the conduction band with spin flipping. Enhancement and power broadening observed for excited states probabilities with increase of external fields are directly linked to the emission spectra of QD and will be useful for making future bioimaging devices.

Keywords : bioimaging, multiphoton processes, spin orbit interaction, quantum dot

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