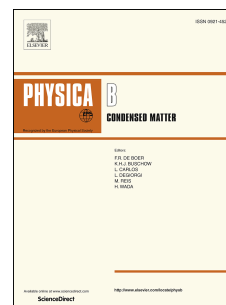


Accepted Manuscript

The Rashba and Dresselhaus spin-orbit interactions effects on the optical properties of a quantum ring

Seyed Ebrahim Pourmand, Ghasem Rezaei



PII: S0921-4526(18)30319-3

DOI: [10.1016/j.physb.2018.04.046](https://doi.org/10.1016/j.physb.2018.04.046)

Reference: PHYSB 310862

To appear in: *Physica B: Physics of Condensed Matter*

Received Date: 13 February 2018

Revised Date: 16 April 2018

Accepted Date: 30 April 2018

Please cite this article as: S.E. Pourmand, G. Rezaei, The Rashba and Dresselhaus spin-orbit interactions effects on the optical properties of a quantum ring, *Physica B: Physics of Condensed Matter* (2018), doi: 10.1016/j.physb.2018.04.046.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The Rashba and Dresselhaus spin-orbit interactions effects on the optical properties of a quantum ring

Seyed Ebrahim Pourmand^{a 1} and Ghasem Rezaei^b

^a*Department of Optics and Laser Engineering, Estahban Branch, Islamic Azad University, Estahban, Iran*

^b*Department of Physics, College of Sciences, Yasouj University, Yasouj, 75914-353, Iran.*

Abstract

Influence of Rashba and Dresselhaus spin orbit interactions (SOIs) as well as external magnetic and electric fields on optical behaviors of quantum rings (QRs) were studied. To achieve this purpose, the matrix diagonalization method was exerted to compute energy eigenvalues of the system in the presence of electric and magnetic fields. Besides, the compact density matrix approach was used to calculate the refractive index (RI) and absorption coefficient (AC) of $1 \rightarrow 2$, $1 \rightarrow 3$, $1 \rightarrow 6$ and $3 \rightarrow 5$ transitions. Moreover, by increasing the magnetic (B) and electric (F) fields, energy splitting of intersubband energy levels was increased and thus the RIs and ACs of the system are changed. The results clearly show that, position and peak value of total RIs and ACs curves of all transitions experienced significant change

¹E-Mail: se-pourmand@iauest.ac.ir.

Download English Version:

<https://daneshyari.com/en/article/8160368>

Download Persian Version:

<https://daneshyari.com/article/8160368>

[Daneshyari.com](https://daneshyari.com)