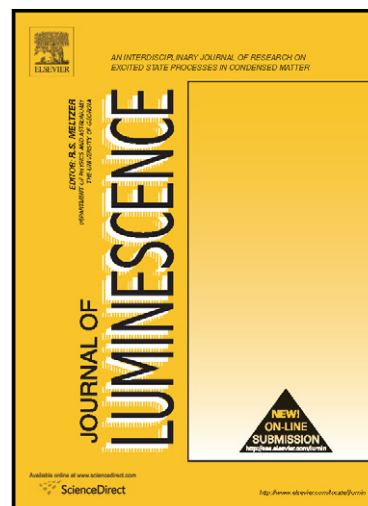


# Author's Accepted Manuscript

Exciton effects on dipole-allowed optical absorptions in a two-dimensional parabolic quantum dot

Jian-Hui Yuan, Yan Zhang, Daizheng Huang, Jianjun Zhang, Xin Zhang



[www.elsevier.com/locate/jlumin](http://www.elsevier.com/locate/jlumin)

PII: S0022-2313(13)00357-8  
DOI: <http://dx.doi.org/10.1016/j.jlumin.2013.06.019>  
Reference: LUMIN11968

To appear in: *Journal of Luminescence*

Received date: 7 March 2013  
Revised date: 27 March 2013  
Accepted date: 5 June 2013

Cite this article as: Jian-Hui Yuan, Yan Zhang, Daizheng Huang, Jianjun Zhang, Xin Zhang, Exciton effects on dipole-allowed optical absorptions in a two-dimensional parabolic quantum dot, *Journal of Luminescence*, <http://dx.doi.org/10.1016/j.jlumin.2013.06.019>

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 galley proof before it is published in its final citable 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.

# Exciton effects on dipole-allowed optical absorptions in a two-dimensional parabolic quantum dot

Jian-Hui Yuan<sup>a,\*</sup>, Yan Zhang<sup>a</sup>, Daizheng Huang<sup>a</sup>, Jianjun Zhang<sup>b</sup>, and Xin Zhang<sup>c</sup>

<sup>a</sup>*The department of Physics, Guangxi medical university, Nanning, Guangxi, 530021, China*

<sup>b</sup>*School of Physics, Huazhong University of Science and Technology, Wuhan 430074, China*

<sup>c</sup>*The 34th Institute of China Electronics and Technology*

*Group Corporation, Guilin Guangxi 541004, China*

(Dated: June 13, 2013)

## Abstract

**Abstract:** Exciton effects on the linear and nonlinear optical absorptions (the transition from the S state ( $L = 0$ ) to the P state ( $L = 1$ )) in two-dimensional quantum dots are theoretically studied by using the configuration-integration methods (CI) and the compact density-matrix approach. The results show that the optical absorption coefficient, which can be controlled by the confinement potential strength and the incident optical intensity, is enhanced obviously when the exciton effect is taken into account. We find that both a trapped electron-hole pair and the incident optical intensity can bleach the exciton absorption and the appearance of the new absorption may be due to biexciton.

PACS numbers: 42.65.-k, 73.21.La, 71.35.-y

Keywords: nonlinear optics; quantum dots; excitons

Download English Version:

<https://daneshyari.com/en/article/5400504>

Download Persian Version:

<https://daneshyari.com/article/5400504>

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