

Accepted Manuscript

Superradiant phase transition with graphene embedded in one dimensional optical cavity



Benliang Li, Tao Liu, Daniel W. Hewak, Qi Jie Wang

PII: S0749-6036(17)32520-X

DOI: 10.1016/j.spmi.2017.11.020

Reference: YSPMI 5355

To appear in: *Superlattices and Microstructures*

Received Date: 20 October 2017

Accepted Date: 13 November 2017

Please cite this article as: Benliang Li, Tao Liu, Daniel W. Hewak, Qi Jie Wang, Superradiant phase transition with graphene embedded in one dimensional optical cavity, *Superlattices and Microstructures* (2017), doi: 10.1016/j.spmi.2017.11.020

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.

Highlights of the paper

In this paper, we present a microscopic theory to describe the physics of graphene imbedded in a one dimensional (1D) optical cavity under a perpendicular magnetic field. There are two points we need to highlight for our paper.

1. We, for the first time, calculate out the complete excitation spectrum in both the normal phase and superradiant phase regimes.
2. The dispersion relation of polaritons show that the multimode coupling of cavity photon with the cyclotron transition, in contrast to the single mode case, can greatly reduce the critical vacuum Rabi frequency required for quantum phase transition, and dramatically enhance the superradiant emission by fast modulating the Hamiltonian.

Download English Version:

<https://daneshyari.com/en/article/7939346>

Download Persian Version:

<https://daneshyari.com/article/7939346>

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