

# Author's Accepted Manuscript

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PII: S0022-2313(15)30365-3  
DOI: <http://dx.doi.org/10.1016/j.jlumin.2015.09.031>  
Reference: LUMIN13617

To appear in: *Journal of Luminescence*

Received date: 9 August 2015  
Accepted date: 29 September 2015

Cite this article as: Duo Zhang, Zhaoyu Sun, Chunling Ding, Rong Yu and Xiaoxue Yang, Controllable optical bistability and multistability in a graphene monolayer system, *Journal of Luminescence* <http://dx.doi.org/10.1016/j.jlumin.2015.09.031>

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# Controllable optical bistability and multistability in a graphene monolayer system

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(Dated: October 6, 2015)

## Abstract

We theoretically investigate the behaviour of optical bistability (OB) and optical multistability (OM) in a graphene monolayer system driven by an elliptically polarized control field and a right-hand circularly polarized probe field. Our numerical results show that it is easy to realize the transition from OB to OM or vice versa by adjusting the frequency detunings of the probe field and the control field, as well as the polarization-dependent phase difference between the two components of the control laser field. The influences of the intensity of the control field and the cooperation parameter on the OB behavior are also discussed in detail. These results may provide some new possibilities for technological applications in optoelectronics and solid-state quantum information science.

Keywords: graphene monolayer; Optical bistability and multistability, Elliptically polarized light

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