

Accepted Manuscript

Title: Theoretical Investigation of Incoherently Coupled Solitons in Centrosymmetric Photorefractive Crystals

Authors: Aavishkar Katti, R.A. Yadav, D.P. Singh

PII: S0030-4026(17)30120-1

DOI: <http://dx.doi.org/doi:10.1016/j.ijleo.2017.01.099>

Reference: IJLEO 58802

To appear in:

Received date: 8-11-2016

Accepted date: 29-1-2017

Please cite this article as: Aavishkar Katti, R.A.Yadav, D.P.Singh, Theoretical Investigation of Incoherently Coupled Solitons in Centrosymmetric Photorefractive Crystals, *Optik - International Journal for Light and Electron Optics* <http://dx.doi.org/10.1016/j.ijleo.2017.01.099>

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.



# Theoretical Investigation of Incoherently Coupled Solitons in Centrosymmetric Photorefractive Crystals

Aavishkar Katti<sup>1</sup>, R.A. Yadav<sup>2\*</sup> and D.P.Singh<sup>3</sup>

<sup>1,2,3</sup>Department of Physics, Institute of Science,  
Banaras Hindu University, Varanasi(U.P),India

\*Corresponding Author: R.A. Yadav , e-mail:ray1357@gmail.com,rayadav@bhu.ac.in

## Abstract

A theory on incoherently coupled soliton pairs for photorefractive solitons is developed that gives rise to incoherently coupled soliton pairs and multi-component spatial solitons in biased centrosymmetric photorefractive crystals in all three realizations, bright-bright, dark-dark and grey-grey. The properties and characteristics of these soliton pairs are studied under different conditions like the bias field strength, external and internal resistance, and the intensity of the beams. This theory is extended to incorporate incoherently coupled multicomponent solitons. The stability of the soliton pairs is investigated by the modulation instability theory. A quantitative assessment is made out for the MI gain in all three realizations of the incoherently coupled soliton pairs. These can be established provided the incident beams have the same polarization, wavelength and are mutually incoherent. Relevant examples are also provided to illustrate our results.

Keywords: Photorefractive Effect, Optical spatial solitons, Incoherently coupled solitons, Modulation Instability

Keywords: Photorefractive Effect;  
Optical spatial solitons;  
Incoherently coupled solitons;  
Modulation Instability

Download English Version:

<https://daneshyari.com/en/article/5026059>

Download Persian Version:

<https://daneshyari.com/article/5026059>

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