

Accepted Manuscript

Title: CUBIC-QUARTIC OPTICAL SOLITONS IN KERR  
AND POWER LAW MEDIA

Author: Anjan Biswas Houria Triki Qin Zhou Seithuti P.  
Moshokoa Malik Zaka Ullah Milivoj Belic



PII: S0030-4026(17)30817-3  
DOI: <http://dx.doi.org/doi:10.1016/j.ijleo.2017.07.008>  
Reference: IJLEO 59404

To appear in:

Received date: 11-4-2017  
Accepted date: 3-7-2017

Please cite this article as: Anjan Biswas, Houria Triki, Qin Zhou, Seithuti P. Moshokoa, Malik Zaka Ullah, Milivoj Belic, CUBIC-QUARTIC OPTICAL SOLITONS IN KERR AND POWER LAW MEDIA, *Optik - International Journal for Light and Electron Optics* (2017), <http://dx.doi.org/10.1016/j.ijleo.2017.07.008>

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.

# CUBIC-QUARTIC OPTICAL SOLITONS IN KERR AND POWER LAW MEDIA

Anjan Biswas <sup>1,2</sup>, Houria Triki <sup>3</sup>, Qin Zhou <sup>4</sup>,  
Seithuti P. Moshokoa <sup>1</sup>, Malik Zaka Ullah <sup>2</sup> & Milivoj Belic <sup>5</sup>

<sup>1</sup> Department of Mathematics and Statistics,  
Tshwane University of Technology, Pretoria-0008, South Africa

<sup>2</sup> Operator Theory and Applications Research Group, Department of Mathematics,  
Faculty of Science, King Abdulaziz University, PO Box-80203, Jeddah-21589, Saudi Arabia

<sup>3</sup> Radiation Physics Laboratory, Department of Physics, Faculty of Sciences,  
Badji Mokhtar University, P. O. Box 12, 23000 Annaba, Algeria

<sup>4</sup> School of Electronics and Information Engineering,  
Wuhan Donghu University, Wuhan 430212, People's Republic of China

<sup>5</sup> Science Program, Texas A & M University at Qatar,  
PO Box 23874, Doha, Qatar

## Abstract

In this paper, we present the exact bright and singular optical solitons of the nonlinear Schrödinger equation with third and fourth order dispersion terms. The method of undetermined coefficients is applied to obtain the reported solutions. The cases of Kerr law and power law nonlinearity are taken into account. We also find the conditions concerning the optical material parameters for the existence of these soliton structures. The results are useful in describing the propagation of optical solitons in highly dispersive media with Kerr and power law nonlinearity.

**Key Words:** solitons; higher-order dispersion; Kerr law; power law.

Download English Version:

<https://daneshyari.com/en/article/5024976>

Download Persian Version:

<https://daneshyari.com/article/5024976>

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