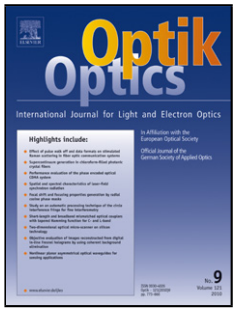

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PII: S0030-4026(17)30770-2
DOI: http://dx.doi.org/doi:10.1016/j.ijleo.2017.06.101
Reference: IJLEO 59364

To appear in:

Received date: 1-4-2017
Accepted date: 23-6-2017

Please cite this article as: Elsayed M.E. Zayed, Khaled A.E. Alurrfi, Solitons and other solutions for two nonlinear Schr*ddoto*dinger equations using the new mapping method, *<![CDATA[Optik - International Journal for Light and Electron Optics]]>* (2017), http://dx.doi.org/10.1016/j.ijleo.2017.06.101

Solitons and other solutions for two nonlinear Schrödinger equations using the new mapping method

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Abstract

Zayed and Al-Nowehy have recently employed the extended auxiliary equation method proposed by Xu for finding the solitons and other solutions for two nonlinear evolution equations in mathematical physics , namely the higher-order nonlinear Schrödinger equation with derivative non-kerr nonlinear terms and the higher -order dispersive nonlinear Schrödinger equation. In this article, we apply a different method called the new mapping method proposed by Zeng and Yong for constructing many new solitons and other solutions of the same two nonlinear evolution equations mentioned above. Comparing our new solutions of these two evolution equations obtained in this article with the well-known solutions are given.The obtained solutions yielding from these two different methods confirm that they are efficient techniques for analytic treatments of a wide variety of other nonlinear evolution equations.

Keywords: A new mapping method; exact solutions; Solitary wave solutions; Periodic solutions; Higher-order nonlinear Schrödinger equations.

PACS numbers: 02.30.Jr; 02.70.Wz; 05.45.Yv; 94.05.Fg

1 Introduction

The propagation of the optical solitons is usually governed by the nonlinear Schrödinger equations (NLS). Optical solitons have promising potential to become information carriers in telecommunication due to their capability of propagating long distance without attenuation and changing their shapes. Considerable attentions are being paid theoretically and experimentally to analyze the dynamics of optical solitons in optical waveguide. The waveguides used in the picosecond optical

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