

Accepted Manuscript

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PII: S0749-6036(16)31310-6

DOI: [10.1016/j.spmi.2016.11.051](https://doi.org/10.1016/j.spmi.2016.11.051)

Reference: YSPMI 4686

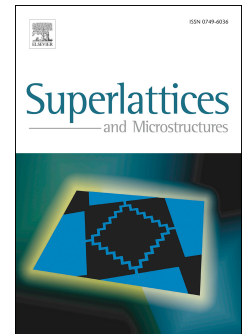
To appear in: *Superlattices and Microstructures*

Received Date: 24 October 2016

Accepted Date: 25 November 2016

Please cite this article as: D.-W. Zuo, H.-X. Jia, Dynamics of the optical solitons for a (2+1)-dimensional nonlinear Schrödinger equation, *Superlattices and Microstructures* (2016), doi: 10.1016/j.spmi.2016.11.051.

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Dynamics of the optical solitons for a $(2 + 1)$ -dimensional nonlinear Schrödinger equation

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Abstract

In this paper, a nonlinear Schrödinger equation (NLS) has been studied, which can describe the propagation and interaction of optical solitons in a material with x -directional localized and y -directional nonlocal non-linearities. By the aid of variable separation and transformation, bilinear forms and multi-soliton solutions of the NLS equation are attained. Propagation and interaction of the solitons are discussed. As a special case of the optical solitons, Hermite-Gaussian vortex solitons are studied: the numbers of wave crests are increase with the order of the Hermite polynomial.

Keywords: Optical solitons, nonlinear Schrödinger equation, Hermite-Gaussian vortex solitons

PACS numbers: 05.45.Yv, 52.35.Mw, 52.35.Sb

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