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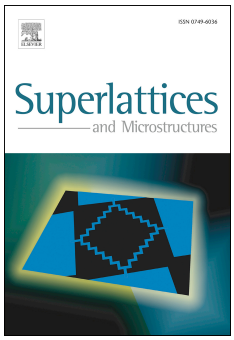

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Dynamics of the optical solitons for a $(2+1)$-dimensional nonlinear Schrödinger equation

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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

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