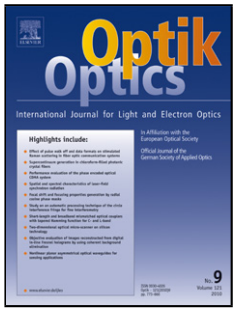

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CHIRPED W-SHAPED OPTICAL SOLITONS OF CHEN-LEE-LIU EQUATION

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Abstract

Propagating chirped soliton solutions for the Chen-Lee-Liu equation also called the derivative nonlinear Schrödinger II equation are investigated by application of the ansatz method. The model incorporating self-steepening term has many applications in nonlinear optical fibers and plasma physics. A nonlinear differential equation describing the evolution of the wave amplitude in the nonlinear media is derived by means of the coupled amplitude-phase formulation. Special exact chirped soliton solution that takes the shape of "W" is determined for the first time in presence of all physical effects. It is shown that the nonlinear chirp associated with this type of solitons is crucially dependent on the wave intensity and related to self-steepening and group velocity dispersion parameters. Parametric conditions on system parameters for the existence of the chirped soliton structure are also presented. This soliton solution exist due to a balance among group velocity dispersion and self-steepening effect solely.