عنوان مقاله:

Effect of Relative Phase on the Stability of Temporal Bright Solitons in a PT- Symmetric NLDC

نویسندگان:

Lida Safaei - *Department of Physics, Yazd University, Yazd, Iran*

mahmood Borhani Zarandi - *Department of Physics, Yazd University, Yazd, Iran*

Mohsen Hatami - *Department of Physics, University of Shiraz Technology, Shiraz, Iran*

خلاصه مقاله:

In this paper we numerically investigate the effect of relative phase on thestability of temporal bright solitons in a Nano PT- Symmetric nonlinear directionalcoupler (NLDC) by considering gain in bar and loss in cross. We also study the effect ofrelative phase on the output perturbed bright solitons energies, in the range of ۰ to ۱۸۰ . By using perturbation theory three eigenfunctions and correspondingeigenvalues were derived analytically. These eigenvalues behave like equilibrium pointsand are not stable in all cases. Stability of these perturbed solitons under the effect ofrelative phase are examined and show that temporal bright solitons are almost unstable inthe range of ۰ to ۹۰ , but they keep their solitary shapes in the range of ۹۰to ۱۸۰ . In addition the evolution of normalized energies in these ranges areinvestigated.Output pulse energy at bar and cross strongly depend on the relative phase. This effectin a PT-Symmetric NLDC can be used for designing all-optical ultrafast self-switchesand logic gates and Nano structures.

کلمات کلیدی:

Fiber Couplers, Nonlinear Optics, Photonics, Solitons, PT-Symmetry, Nano structures