# New Class Of Bright Spatial Solitons Obtained By Hirota's Method From Generalized Coupled Mode Equations Of Nonlinear Optical Bragg Grating

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**Abstract:**

We have demonstrated by Hirota's bilinear method the existence of a new class of bright spatial soliton solutions from the same model of nonlinear optical Bragg grating considered previously by another group of researchers. The explicit expressions obtained from these soliton profiles are distinctly different from the previous results and offer a much more flexible choice of physical parameters for device design. It was further shown that the present formulation provides a classification scheme incorporating previous results as special cases of different parameter sets. Finally, due to the diffraction effect, these solitons were shown to exhibit a certain degree of instability in their perturbed profiles as they propagate along the grating.

**Keywords :** Bragg grating; spatial soliton; Hirota's method