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Numerical Study of Blackness Factor Effect on Dark Solitons

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Abstract : In this paper, blackness of dark solitons is considered. The exact combination between nonlinearity and dispersion is responsible of solitons stability. Dark solitons get born when dispersion is abnormal and balanced by nonlinearity, at the opposite of brillant solitons which is born by normal dispersion and nonlinearity together. Thanks to their stability, dark solitons are suitable for transmission by optical fibers. Dark solitons which are a solution of Nonlinear Schrodinger equation are simulated with Matlab to discuss the influence of coefficient of blackness. Results show that there is a direct proportion between the coefficient of blackness and the intensity of dark soliton. Those gray solitons are stable and convenient for transmission.

Keywords : abnormal dispersion, nonlinearity, optical fiber, soliton
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