

Characteristics of rogue waves on a soliton background of the vector Lakshmanan-Porsezian-Daniel equation

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Abstract

In this paper, the semi-rational solutions that causes vector rogue waves and breathers can be obtained by using the Darboux dressing transformation. We studied vector rogue waves and the interaction between rogue waves and light-dark solitons, and observed that during the interaction, due to the interference between the light-dark components of the solitons, a respiration-like structures appears. Besides, it can be observed that the rogue waves and soliton merge together. Moreover, the main characteristics of the interactions between the breathers and bright-dark solitons are displayed with some graphics.

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