Lumps, breathers and interaction solutions of a (3+1)-dimensional generalized Kadomtsev-Petviashvili equation

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Abstract

In this paper, we use the Hirota bilinear method to find the N-soliton solution of a (3+1)-dimensional generalized Kadomtsev-Petviashvili equation. Then, we obtain the T-order breathers of the equation, and combine the long-wave limit method to give the M-order lumps. Resorting to the extended homoclinic test technique, we obtain the breather-kink solutions for the equation. Last, the interaction solution composed of the K-soliton solution, T-breathers and M-lumps for the (3+1)-dimensional generalized KP equation is constructed.

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