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New periodic solitary wave solutions for the (3+1)-dimensional Jimbo-Miwa equation.

(English) [Zbl 1265.35323](#)

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Summary: The homoclinic test technique proposed by *Z. Dai* et al. [Chaos Solitons Fractals 26, No. 4, 1189–1194 (2005; [Zbl 1070.35029](#))] for finding the periodic solitary wave solutions is further improved by expressing the quasi-solution as a nonlinear combination of trigonometric function and hyperbolic function. The effectiveness of the improved method is demonstrated by application to the well known (3+1)-dimensional Jimbo-Miwa equation with physical interest. As a result, a series of new periodic solitary wave solutions are obtained. Additionally, the propagation of the periodic solitary waves is illustrated by using the method of figure analysis.

MSC:

[35Q53](#) KdV equations (Korteweg-de Vries equations)

[35B10](#) Periodic solutions to PDEs

[35C08](#) Soliton solutions

Keywords:

Jimbo-Miwa equation; bilinear form; periodic solitary wave