

New Generalized Transformation Method and Its Application in Higher-Dimensional Soliton Equation

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Abstract: A new generalized transformation method is presented to find more exact solutions of nonlinear partial differential equation. As an application of the method, we choose the (3+1)-dimensional breaking soliton equation to illustrate the method. As a result many types of explicit and exact traveling wave solutions, which contain solitary wave solutions, trigonometric function solutions, Jacobian elliptic function solutions, and rational solutions, are obtained. The new method can be extended to other nonlinear partial differential equations in mathematical physics.

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Key words: new generalized transformation method, exact solution, (3+1)-dimensional breaking soliton equation, KdV equation, mKdV equation, cubic nonlinear Klein-Gordon equation

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