

Abundant New Exact Solutions of the Coupled Potential KdV Equation and the Modified KdV-Type Equation

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Exact solutions of nonlinear evolution equations (NLEEs) in soliton theory and their applications are studied. A powerful method is established to search for exact travelling wave solutions of NLEEs. We chose the coupled potential KdV equation and modified KdV-type equations presented by Foursov to illustrate the approach with the aid of Maple. As a result, eight families of exact solutions of the coupled potential KdV equation and nine families of exact solutions of the modified KdV-type equations are obtained, which contain new kink-like soliton solutions, kink-shaped solitons, bell-shaped solitons, periodic solutions, rational solutions and singular solitons. The properties of the solutions are shown in figures.

Key words: Coupled Potential KdV Equation, Modified KdV-type Equation; Soliton Solutions; Periodic Solutions; Rational Solutions.