Numerical Wave Solutions for Nonlinear Coupled Equations Using Sinc-Collocation Method

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Abstract : In this paper, numerical solutions for the nonlinear coupled Korteweg-de Vries, (abbreviated as KdV) equations are calculated by Sinc-collocation method. This approach is based on a global collocation method using Sinc basis functions. First, discretizing time derivative of the KdV equations by a classic finite difference formula, while the space derivatives are approximated by a $\theta-$weighted scheme. Sinc functions are used to solve these two equations. Soliton solutions are constructed to show the nature of the solution. The numerical results are shown to demonstrate the efficiency of the newly proposed method.

Keywords : Nonlinear coupled KdV equations, Soliton solutions, Sinc-collocation method, Sinc functions
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