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Numerical solution of complex modified Korteweg-de Vries equation by collocation method

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Abstract
The collocation method using quintic B-spline is derived for solving the complex modified Korteweg-de Vries (CMKdV). The method is based on Crank-Nicolson formulation for time integration and quintic B-spline functions for space integration. The von Neumann stability is used to prove that the scheme is unconditionally stable. Newton's method is used to solve the nonlinear block pentadiagonal system obtained. Numerical tests for single, two, and three solitons are used to assess the performance of the proposed scheme.

Author Keywords
CMKdV equation; Collocation method; Quintic B-splines; Solitons interaction

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