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16. Applications

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A numerical study of the complex modified Korteweg-de Vries equation

The so-called complex modified Korteweg-de Vries (CMKdV) equation describes asymptotically the nonlinear interaction between two linearly polarized transverse waves propagating in a generalized elastic solid [1]. In this study, a numerical solution to the CMKdV equation is obtained using a pseudospectral method. Particular attention is paid to the behaviour of the conserved quantities, which provides an indicator of the accuracy of the numerical solution. The algorithm is validated by studying test problems concerned with the solitary wave solutions of the single modified Korteweg-de Vries equation.

[1] H. A. Erbay, Nonlinear transverse waves in a generalized elastic solid and the complex modified Korteweg-de Vries equation, *Physica Scripta* (1998) (in press).