Glassey, R. T.

Convergence of an energy-preserving scheme for the Zakharov equations in one space dimension. (English) Zbl 0746.65066

Math. Comput. 58, No. 197, 83-102 (1992).

An energy-preserving, linearly implicit finite difference scheme is presented for approximating solutions to the problem: $iE_t+E_{xx}=NE$, $N_{tt}-N_{xx}=(|E|^2)_{xx}$, $E(x,0)=E^0(x)$, $N(x,0)=N^0(x)$, $N_t(x,0)=N^1(x)$. First- order convergence estimates are obtained in a standard "energy" norm in terms of the initial errors and usual discretization errors.

Reviewer: L.G.Vulkov (Russe)

MSC:

65M12 Stability and convergence of numerical methods for initial value and initial-boundary value problems involving PDEs

65M06 Finite difference methods for initial value and initial-boundary value problems involving PDEs

35L70 Second-order nonlinear hyperbolic equations

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