

1109-65-199

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The local extrapolation of first order locally one-dimensional exponential time differencing scheme is introduced for numerical solution of system of multidimensional time dependent PDEs. The stability, monotonicity, and convergence of the scheme have been examined. The performance of the novel scheme has been investigated by testing it on system of multidimensional nonlinear time dependent PDEs. The numerical experiments demonstrate that the present scheme provides better accuracy in comparison with the existing schemes. (Received February 01, 2015)