ABSTRACT

Approximation techniques plays an important role for the numerical solution of second order hyperbolic partial differential equation in one space variable. These parallel splittin--g methods possess appropriate stability properties and are implemented on a hyperbolic partial differential equation (PDE) in one space variable. The partial differential equation (PDE) is approximated by a central difference approximation via the Method of Lines (MOL) semi-discretization approach gives system of differential equations. The solution of this system satisfies a recurrence relation, which involves matrix exponential function, this matrix exponential function is approximated by different Pade approximations to get higher order accuracy. For the Mathematical calculations we use Visual Basic (VB) com--puter language and with the help of Active- X control we link Matlab with Visual Basic to get more accurate results. The calculations are performed up to 25 decimal places and the numerical results obtained are given in chapter 3.