

Quintic Spline Solution of Fourth-Order Parabolic Equations Arising in Beam Theory

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Abstract : We develop a method based on polynomial quintic spline for numerical solution of fourth-order non-homogeneous parabolic partial differential equation with variable coefficient. By using polynomial quintic spline in off-step points in space and finite difference in time directions, we obtained two three level implicit methods. Stability analysis of the presented method has been carried out. We solve four test problems numerically to validate the derived method. Numerical comparison with other methods shows the superiority of presented scheme.

Keywords : fourth-order parabolic equation, variable coefficient, polynomial quintic spline, off-step points

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