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Quintic Spline Method for Variable Coefficient Fourth-Order Parabolic Partial Differential Equations

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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 proposed derived method. Numerical comparison with other existence methods shows the superiority of our presented scheme.

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