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# Quartic Spline Method for Numerical Solution of Self-Adjoint Singularly Perturbed Boundary Value Problems

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**Abstract :** Using quartic spline, we develop a method for numerical solution of singularly perturbed two-point boundary-value problems. The purposed method is fourth-order accurate and applicable to problems both in singular and non-singular cases. The convergence analysis of the method is given. The resulting linear system of equations has been solved by using a tri-diagonal solver. We applied the presented method to test problems which have been solved by other existing methods in references, for comparison of presented method with the existing methods. Numerical results are given to illustrate the efficiency of our methods.

**Keywords :** second-order ordinary differential equation, singularly-perturbed, quartic spline, convergence analysis
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