Schemes of the finite element method with separation of singularity for a two-point boundary-value problem of the 4th order with degenerate coefficients

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Abstract

In this paper we construct a high accuracy variant of the finite element method for an ordinary differential equation of the fourth order whose coefficients are degenerate on the boundary. The proposed technique is based on the multiplicative and additive-multiplicative separation of singularity. We prove that the convergence rate of the proposed technique is optimal in a given class of smoothness of right-hand sides. © Allerton Press, Inc., 2011.

Keywords

Finite element schemes, Multiplicative and additive-multiplicative separation of singularity, Two-point boundary value problem, Weight function spaces