

Galerkin and streamline diffusion finite element methods on a Shishkin mesh for a convection-diffusion problem with corner singularities

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ABSTRACT

An error analysis of Galerkin and streamline diffusion finite element methods for the numerical solution of a singularly perturbed convection-diffusion problem is given. The problem domain is the unit square. The solution contains boundary layers and corner singularities. A tensor product Shishkin mesh is used, with piecewise bilinear trial functions. The error bounds are uniform in the singular perturbation parameter. Numerical results supporting the theory are given.

A full description of this work appears in [1].

References

- [1] S.Franz, R.B.Kellogg, M.Stynes: *Galerkin and streamline diffusion finite element methods on a Shishkin mesh for a convection-diffusion problem with corner singularities*, submitted for publication.

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