

Localized pointwise Error Estimates of Finite Element Approximations to the Stokes Problem on Convex Polyhedra and Polygons

Abstract. We show new stability and localization results for the finite element solution of the Stokes system in $W^{1,\infty}$ and L^∞ norms under standard assumptions on the finite element spaces on quasi-uniform meshes in two and three dimensions. Although interior error estimates are well-developed for the Laplace equation, they appear to be new for the Stokes system on unstructured meshes. To obtain these results we extend previously known stability estimates for the Stokes system using regularized Green's functions.

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