

Local projection for the Navier-Stokes equations on quadrilateral anisotropic meshes

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It is well known that the classical local projection method as well as residual-based stabilization techniques, as for instance streamline upwind Petrov-Galerkin, are optimal on isotropic meshes. Here we extend the local projection stabilization for the Navier-Stokes system to anisotropic quadrilateral meshes in two spatial dimensions. We describe the new method and prove an a priori error estimate. This method leads on anisotropic meshes to qualitatively better convergence behavior than other isotropic stabilization methods. The capability of the method is illustrated by numerical test problems.