A RESIDUAL MINIMIZATION METHOD ONTO BUBBLE ENRICHMENT

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Abstract. The Adaptive Stabilized Finite Element method (AS-FEM) introduced in [1] combines the idea of the residual minimization method with the inf-sup stability offered by the discontinuous Galerkin (DG) frameworks. Consequently, the discretizations deliver stabilized conforming approximations and residual representative spaces that can drive automatic adaptivity. In this talk, we will present an extension of the AS-FEM by considering a residual minimization method on a stable Continuous Interior Penalty (CIP) formulation. This formulation, developed in [2], utilizes a C^0-conforming trial FEM space and a test space enriched with bubble functions derived from the trial space. Numerical experiments show that the test space choice significantly reduces the total degrees of freedom compared to the DG test spaces of [1], while recovering the expected convergence rate for the error in the corresponding trial space norm.

Keywords: adaptivity, stabilized finite element methods, residual minimization, Continuous Galerkin, Continuous Interior Penalty

Mathematics Subject Classifications (2010): 65N12, 65N15, 65N22, 65N30, 65N50.

References

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