hp-FEM for a Stabilized Three-field Formulation of the Biharmonic Problem

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In this talk, we present a stabilized three-field formulation of the biharmonic problem $\Delta^2 u = f$. The need for a discrete inf-sup-condition for the resulting saddle point problem is circumvented by least-squares-like consistent stabilization terms. A priori error estimates for appropriate norms are derived and a reliable and efficient residual error estimator based on an implicit H^2-reconstruction is shown. Several numerical examples confirm the applicability of the proposed techniques.

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