

Pressure-robust discretisations for the generalised Stokes problem on non-affine meshes

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Based on inf-sup stable finite element pairs of arbitrary order with discontinuous pressure approximation, we present a modified discretisation of the generalised Stokes problem which provides pressure robustness and maintains optimal error estimates. The approach uses a reconstruction operator mapping discretely divergence-free functions to divergence-free ones. In particular, we consider non-affine meshes and discuss the impact of the Piola transform for defining appropriate discrete function spaces.

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