

Polynomial-degree-robust liftings in H^1 and $H(\text{div})$

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We study liftings of piecewise polynomial data prescribed on faces and elements of a patch of simplices sharing a vertex in the H^1 and $H(\text{div})$ settings. We show stability in the sense that the minimizers over piecewise polynomial spaces of the same degree as the data are subordinate in the broken energy norm to the minimizers over the whole broken H^1 and $H(\text{div})$ spaces. Our proofs are constructive and yield constants independent of the polynomial degree. One important application of these results is in a posteriori error analysis. This is joint work with M. Vohralik (INRIA).