

# A QUASI-OPTIMAL ADAPTIVE ALGORITHM WITH HIERARCHICAL B-SPLINES

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ABSTRACT. We present and analyze an adaptive algorithm for elliptic equations using hierarchical B-splines, of any (fixed) order and maximal regularity. We first set the framework of approximation with hierarchical B-splines, and next develop an a posteriori error estimator based on solutions of discrete local problems. These error estimators constitute local lower bounds and global upper bounds for the error. We next propose a refining method to increase the local resolution of the spaces and study a contraction property for Dörfler's marking strategy, which implies linear convergence of the adaptive method. These are the main ingredients to obtain an optimal adaptive method, which we address at the end of the talk.

**Keywords:** Hierarchical B-splines, adaptivity, optimality.

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