

Hierarchical refinement for adaptive isogeometric methods

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ABSTRACT

In the context of isogeometric analysis [1], the design of a fully adaptive method requires spline spaces that provide local refinement capabilities. One possibility relies on the hierarchical spline setting, a natural extension of the B-spline model that is able to preserve many key properties directly by construction. In addition, the refinement rules are simple and straightforward. The locally structured hierarchical approach, suitably combined with the truncated basis for hierarchical splines [2], facilitates the definition of an effective adaptive isogeometric method [3]. This method is based on a refine module that preserves a certain class of admissibility between two consecutive steps of the adaptive loop and generates meshes with bounded cardinality [4].

The talk will discuss the use of hierarchical splines in adaptivity, including the analysis of optimal convergence of hierarchical isogeometric methods.

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