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"Hierarchical spline methods: from theory to applications"

Abstract: Hierarchical B-spline constructions are currently widely used in several studies and applications connected to adaptive spline approximation and isogeometric analysis. Being defined as a multi-level extension of the B-spline model, the standard spline representation in Computer Aided Design (CAD), the hierarchical approach naturally provides an elegant solution to perform adaptivity, while simultaneously preserving a local tensor-product structure. The talk will discuss recent advances in the design of adaptive spline refinement and coarsening by focusing on related application algorithms for scattered data approximation, CAD model (re-)construction, and adaptive isogeometric methods.