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Talk announcement

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Reliable and efficient a posteriori error estimate for BEM-based FEM on polygonal meshes

Only a few numerical methods can treat boundary value problems on polygonal and polyhedral meshes. The BEM-based Finite Element Method is one of the new discretization strategies, which make use of and benefits from the flexibility of these general meshes that incorporate hanging nodes naturally.

The presentation addresses the residual based error estimate for high order BEM-based FEM. Its reliability and efficiency is discussed on general meshes involving non-convex elements, where important analytical tools are quasi-interpolation operators and uniform bounds for the Poincaré constant for patches of star-shaped elements.

Such a posteriori error estimates can be used to gauge the approximation quality and to implement adaptive FEM strategies. Numerical experiments show optimal rates of convergence for meshes with non-convex elements on uniformly as well as on adaptively refined meshes.