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A hybridizable discontinuous Galerkin method for dissimilar meshes

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Abstract

We propose and analyze a hybridizable discontinuous Galerkin (HDG) method for dissimilar meshes. This type of meshes are common, for instance, when different parts of the domains are triangulated independently, which may generate gaps or overlaps between these triangulations. The method considers an HDG discretization on separate meshes and "tie" them together through appropriate transmission conditions. These transmission conditions are based upon transferring the numerical flux from the first mesh to the second one, and the numerical trace from the second mesh to the first one. Stability and error analysis are shown, where the size of the gap is explicitly written in the estimates. We also present numerical results to validate the theory.

Joint work with:
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References

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