

Hybrid Finite Element Methods for Interface Problems

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We propose a family of hybrid finite element methods for interface problems with possibly non-matching meshes. As the a-priori error analysis shows, these methods are very robust with respect to the choice of spaces used for the discretization. The hybrid methods allow for assembling on the subdomain level, as well as for elimination of the interior unknowns on the subdomains, which are desired features of any domain decomposition method. We also try to clarify the relation to mixed and discontinuous Galerkin methods, as well as to Nitsche-type mortaring, and confirm our theoretical results by presenting numerical tests.

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