

Mortar coupling of hp-discontinuous Galerkin and boundary element methods for the Helmholtz equation

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In this talk, we present a way to couple a discontinuous Galerkin method with a boundary element method to solve the Helmholtz equation with variable coefficients. The focus is on the case of high wavenumbers. The coupling is realized with a mortar variable that is related to an impedance trace on a smooth interface. We prove wavenumber explicit quasi-optimality of the *hp*-version of the scheme, under a weak threshold condition on the approximability properties of the discrete spaces. The key ingredients are a novel discontinuous-to-continuous reconstruction operator on tetrahedral meshes with curved faces and a careful wavenumber explicit regularity analysis of the adjoint problem.

References:

[1] <https://link.springer.com/article/10.1007/s10915-022-01849-0>

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