On Embedded Trefftz discontinuous Galerkin methods

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The central idea of Trefftz discontinuous Galerkin (DG) methods is to construct optimal discretization spaces that minimize the number of unknowns in a system while retaining optimal approximation properties. We discuss an approach aimed at reducing the system size in more general discontinuous Galerkin methods for partial differential equations (PDEs), drawing inspiration from Trefftz methods. Only the simplest (differential) operators operate suitably on discrete polynomial spaces. Other operators cause additional challenges. We discuss how to deal with these challenges, extending the scope in which the Trefftz DG method can be applied.

References:

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