Norms in the analysis of the DPG method with optimal test functions

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ABSTRACT

Standard analysis of the discontinuous Petrov-Galerkin method (DPG) with optimal test functions is based on a direct relationship between trial and test spaces, and their norms. Depending on the particular problem under consideration, theoretical and practical requirements imply different conditions both for the selection of spaces and for the definition of norms. In this talk, we discuss several cases (like convection-dominated diffusion, non-conforming trace approximation, hypersingular boundary integral operators, and transmission problems) and show how problem-dependent objectives force the selection of norms.