RECENT ADVANCES IN MIXED AND HYBRID DISCONTINUOUS GALERKIN METHODS

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ABSTRACT

In recent years, mixed and hybrid formulations of discontinuous Galerkin (DG) methods have received great attention in the scientific community, spanning from computational solid and fluid dynamics to electromagnetics, plasmonics and photonics.

On the one hand, mixed formulations naturally provide approximations of stresses/fluxes without resorting to postprocessing procedures. On the other hand, hybridization allows to greatly reduce the number of degrees of freedom involved in DG approximations.

This minisymposium will provide an overview of modern DG techniques including, but not limiting to, mixed formulations, hybrid and hybridizable discontinuous Galerkin (HDG) and hybrid high-order (HHO) methods. Theoretical, computational and application-oriented contributions will address the latest developments of such methods.

A non-exhaustive list of topics includes stability and convergence analysis, novel formulations, high and lowest order discretizations, mesh and degree adaptivity, efficient parallel implementations, preconditioning, application to large-scale complex problems in computational science and engineering.