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MORTAR-BASED HIGH ORDER ENTROPY STABLE DISCONTINUOUS GALERKIN SCHEMES ON NON-CONFORMING QUADRILATERAL AND HEXAHEDRAL MESHES

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High order discontinuous Galerkin (DG) methods provide improved accuracy and low numerical dispersion/dissipation for simulations of nonlinear conservation laws. However, these methods also tend to suffer from instability in practice, requiring filtering, limiting, or artificial dissipation to prevent solution blow up. *Entropy stable* nodal DG methods based on summation-by-parts (SBP) operators and flux differencing address this instability by ensuring satisfaction of a semi-discrete entropy inequality. Entropy stable DG methods typically utilize Lobatto quadrature points; however, recent work has extended such methods to more general nodal points [1, 3]. In this talk, we will present entropy stable DG methods based on Gauss points, which can improve accuracy on warped and non-conforming meshes [2].

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