

6100 Main St,  
Houston, TX 77005

February 5, 2019

Journal of Scientific Computing

Dear editor,

Please find enclosed the manuscript,

Jesse Chan

*Skew-symmetric entropy stable modal discontinuous Galerkin formulations,*

which we would like to submit for publication as a research paper in the Journal of Scientific Computing (JSC).

The submitted manuscript introduces a new modal formulation for discretely entropy stable discontinuous Galerkin (DG) methods. Previous work by the author has constructed discretely entropy stable high order DG methods using operators which obey a summation-by-parts (SBP) property. These operators are constructed using numerical quadrature, and sufficiently accurate quadrature rules are a necessary condition for the SBP property to hold. The submitted work introduces a skew-symmetric formulation which achieves entropy stability under relaxed quadrature conditions, which appear in couplings on hybrid meshes between different types of elements. The stability and accuracy of the new formulation is tested on 2D meshes consisting of both quadrilateral and triangular elements.

We hope that the method and results discussed in this manuscript would appeal to the readership of JSC. The author confirms that this manuscript has not been published elsewhere and is not under consideration by another journal. We look forward to hearing from you at your earliest convenience.

Best regards

Jesse Chan