

Riemann Solutions for Spacetime Discontinuous Galerkin Methods

Scott Miller

Applied Research Lab, Penn State University
scott.miller@psu.edu

Reza Abedi

The University of Tennessee, Space Institute
rabedi@utsi.edu

Abstract

Spacetime discontinuous Galerkin finite element methods [1–3] rely on ‘target fluxes’ on element boundaries that are computed via local one-dimensional Riemann solutions in the direction normal to element face. In this work, we demonstrate a generalized solution procedure for linearized hyperbolic systems based on diagonalisation of the governing system of partial differential equations. We show that source terms do not influence the Riemann solution in the spacetime setting. We provide details for implementation of coordinate transformations and Riemann solutions. Exact Riemann solutions for some linear systems of equations are provided as examples.

References

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