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Scalar wave and shock propagation tests with the Nmesh code[1]
ANANYA ADHIKARI, WOLFGANG TICHY, Florida Atlantic University — We present several tests that we have performed with the new Nmesh code. They include the propagation of simple scalar waves, as well as blast wave tests in relativistic hydrodynamics. We apply an exponential filter to the propagation of the scalar wave when using the discontinuous Galerkin (DG) method. The aim was to perform a preliminary test for stable wave propagation using DG method, with the help of the filter. For the hydrodynamics tests, we propagate a relativistic blast wave using both DG method and finite volume (FV) methods. In the DG case we apply two types of limiters (the minmodB limiter and the MRS limiter) to the propagation and study the efficiency of these limiters on the propagation of the blast wave. In the FV case we use a WENO scheme. We present and compare results from both DG and FV cases. The aim of these tests is to perform stable and accurate propagation of shock waves in relativistic hydrodynamics.

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