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Adaptive wavelets and relativistic magnetohydrodynamics ERIC HIRSCHMANN, DAVID NEILSEN, Brigham Young University, MATTHE ANDERSON, JACKSON DEBUHR, BO ZHANG, Indiana University — We present a method for integrating the relativistic magnetohydrodynamics equations using iterated interpolating wavelets. Such provide an adaptive implementation for simulations in multidimensions. A measure of the local approximation error for the solution is provided by the wavelet coefficients. They place collocation points in locations naturally adapted to the flow while providing expected conservation. We present demanding 1D and 2D tests including the Kelvin-Helmholtz instability and the Rayleigh-Taylor instability. Finally, we consider an outgoing blast wave that models a GRB outflow.

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