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**Relativistic magnetohydrodynamics with adaptive mesh refinement** MATTHEW ANDERSON, Louisiana State University, ERIC HIRSCHMANN, Brigham Young University, STEVE LIEBLING, Long Island University, DAVID NEILSEN, Brigham Young University — Simulations involving relativistic fluids frequently require the numerical treatment of a large range of time and length scales. Parallel adaptive mesh refinement (AMR) techniques can greatly reduce the computational expense of such simulations by adaptively placing greater mesh resolution where needed in order to control error size. We present several relativistic magnetohydrodynamic simulations in 3+1 dimensions using parallel, vertex centered AMR. We focus on several special relativistic tests: the relativistic rotor, spherical shock, and Komissarov shocktube. Performance measures and speedups are also presented.

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