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Exploring the Use of Discontinuous Galerkin Methods for Numerical Relativity FRANCOIS HEBERT, LAWRENCE KIDDER, SAUL TEUKOLSKY, Cornell University, SXS COLLABORATION — The limited accuracy of relativistic hydrodynamic simulations constrains our insight into several important research problems, including among others our ability to generate accurate template waveforms for black hole-neutron star mergers, or our understanding of supernova explosion mechanisms. In many codes the algorithms used to evolve the matter, based on the finite volume method, struggle to reach the desired accuracy. We aim to show improved accuracy by using a discontinuous Galerkin method. This method's attractiveness comes from its combination of spectral convergence properties for smooth solutions and robust stability properties for shocks. We present the status of our work implementing a testbed GR-hydro code using discontinuous Galerkin.

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