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Hamiltonian Formulation of Hydrodynamics for Numerical Relativity JOHN RYAN WESTERNACHER-SCHNEIDER, Univ of Arizona — We present progress towards validation and implementation of a Hamiltonian formulation of hydrodynamics for numerical relativity. This formulation can be used to enforce the conservation of circulation in barotropic flows using the method of constraint damping. For irrotational flows, this formulation is genuinely flux-conservative and well-balanced. We hope this formulation will be useful in numerical simulations for generating binary neutron star inspiral waveforms with the accuracy required for third-generation gravitational wave detectors.

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