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Artificial entropy viscosity in numerical relativistic hydrodynamics

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Artificial entropy viscosity in numerical relativistic hydrodynamics Large scale numerical simulations are one of the most useful tools to shed light on the physics of neutron stars, but due to their high computational cost and great accuracy requirements the research for better numerical methods is constantly ongoing. We present a new fast and accurate numerical scheme called artificial entropy viscosity which offers several advantages over the currently used high-resolution shock-capturing techniques. We discuss the theoretical background of the method, its implementation and application to the simulation of binary neutron star systems and results thereof.

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