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**Testing Formulations with Binary Neutron Star Simulations** PEDRO MARRONETTI, Florida Atlantic University — New formulations for the evolution of gravitational fields in numerical relativity are continuously presented to the scientific community. Their main goal is to achieve stable and reliable evolutions of compact-object binaries. However, due to the complexity of the required numerical work, few of the many formulations found in the literature have been tested on binary evolutions. We introduce in this paper a new testing ground for numerical methods based on the simulation of binary neutron stars (BNS). Our objective is to benchmark new formalisms against the currently most stable simulations. BNS simulations usually require extensive computational resources and the length of the runs could, in principle, render these tests impractical. Here we show how small, low resolution grids can be used to gain insight into the stability of different numerical schemes, with runs that only take a few hours on single-processor workstations.

Pedro Marronetti  
Florida Atlantic University

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