Abstract Submitted
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Spritz: general relativistic magnetohydro-dynamics with neutrinos[1] FEDERICO CIPOLLETTA, Rochester Institute of Technology — I will present our newly developed GRMHD code aimed to the study of compact binary mergers with finite temperature equations of state and neutrino emission. Numerical modeling of compact binaries is now one of the most important fields of study in theoretical astrophysicsbecause it allows extracting physical information from thegravitational wave and electromagnetic signals by comparing simulations with observations. In the NS-NS and NS-BH cases, only a fully general relativistic treatment taking into account accurate magnetic field's evolution and microphysic's effects may give a complete picture of this scenario. I will summarize the main features of our code, namely: the evolution of a staggered vector potential that automatically satisfies the magnetic field's divergence-free condition; the general treatment for the NS Equation Of State allowing for the use of either analytical or tabulated one; a neutrino leakage scheme that provides a useful tool for the study of the post-merger phase. I will also present all the tests that we performed, including TOV taking into account temperature and electron fraction evolutions. Our future plan is to perform BNS merger simulations within the NASA TCAN 80NSSC18K1488 grant.

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