

Abstract Submitted
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A Computational Study of Parabolic Encounters of Black Holes and Neutron Stars¹ LINDA HOLYOKE², ERIK SCHNETTER³ — There is still uncertainty regarding the progenitors of Short Gamma-Ray Bursts (SGRB). One of the many proposed models is based on parabolic encounters between black holes and compact stars (such as neutron stars) within globular clusters. A recent Newtonian computational study supports this SGRB mechanism (Lee et al., ApJ 720, 953 (2010)). With the motivation that accuracy will increase when general relativity is taken into account, we present a study where we perform fully relativistic simulations. We compare results to the Newtonian study and assess the validity of the proposed mechanism. Our current results indicate a potential SGRB production; we observe formation of a neutron star accretion disk with a mass and estimated lifetime not inconsistent with the requirements for an SGRB. Future work will improve our initial setup generation, will follow the simulated system for a longer time, and will explore a larger set of initial parameters such as masses and spins to be able to estimate event rates.

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