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Post-merger evolution of a neutron star-black hole binary with neutrino transport FRANCOIS FOUCART, Lawrence Berkeley National Laboratory; Einstein Fellow, EVAN O'CONNOR, North Carolina State University; Hubble Fellow, LUKE ROBERTS, Caltech; Einstein Fellow, MATTHEW DUEZ, Washington State University, LAWRENCE KIDDER, Cornell, CHRISTIAN OTT, Caltech, HARALD PFEIFFER, Canadian Institute for Theoretical Astrophysics, MARK SCHEEL, BELA SZILAGYI, Caltech, SXS COLLABORATION — We present a first simulation of the post-merger evolution of a black hole-neutron star binary in full general relativity using an energy-integrated truncated moment formalism for neutrino transport. The moment formalism is included as a new module in the SpEC code. We describe the implementation and tests of this new module, and its use to study the formation phase of an accretion disk after a black hole-neutron star merger. We discuss differences with simpler treatments of the neutrinos, the importance of relativistic effects, and the impact of the formation phase of the disk on its expected long-term evolution. We also show that a small amount of material is ejected in the polar region during the circularization of the disk and its interactions with fallback material, and discuss its effects on potential electromagnetic counterparts to the merger.

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