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Black hole-neutron star mergers at realistic mass ratios FRANCOIS FOUCART, Canadian Institute for Theoretical Astrophysics, BRETT DEATON, MATTHEW DUEZ, Washington State University, LAWRENCE KIDDER, Cornell University, ILANA MACDONALD, Canadian Institute for Theoretical Astrophysics, CHRISTIAN OTT, Caltech, HARALD PFEIFFER, Canadian Institute for Theoretical Astrophysics, MARK SCHEEL, BELA SZILAGYI, Caltech, SAUL TEUKOLSKY, Cornell University, SXS COLLABORATION — Black hole-neutron star mergers resulting in the disruption of the neutron star and the formation of an accretion disk and/or the ejection of unbound material are prime candidates for the joint detection of gravitational-wave and electromagnetic signals. Whether the disruption of the neutron star occurs or not depends on the parameters of the binary, and particularly on the mass ratio, the black hole spin, and the neutron star equation of state. The characteristics of the merger remnant, and thus of any post-merger electromagnetic signal, also vary widely with the parameters of the binary. Numerical simulations of black hole-neutron star mergers have generally considered fairly low mass black holes ($M<7M_{sun}$), even though higher masses are favored by both population synthesis models and observations of X-ray binaries. In this talk, we will discuss numerical results for higher mass black holes ($M\sim10M_{sun}$), and in particular the conditions under which the neutron star disrupts, the ejection of unbound material, and the effects of both the neutron star radius and the black hole spin on the gravitational wave signal and the characteristics of the post-merger remnant.

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