Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Black Hole - Neutron Star Binary Mergers: The Imprint of Tidal Debris PABLO LAGUNA, University of Texas at Austin, BHAVESH KHAMESRA, Georgia Institute of Technology, MIGUEL GRACIA, University of Texas at Austin — The increase in the sensitivity of gravitational wave interferometers will bring more detections of binary black hole and double neutron star mergers. It will also very likely add many merger events of black hole - neutron star binaries. Distinguishing mixed binaries from binary black holes mergers for high mass ratios could be challenging because the neutron star coalesces with the black hole without experiencing significant disruption. To investigate the transition of the behavior of a mixed binary merger into one like a black hole binary, we present results from a series of merger simulations for different mass ratios. We show how the degree of disruption of the neutron star impacts the inspiral and merger dynamics, the properties of the final black hole, the accretion disk formed from the circularization of the tidal debris, the gravitational waves, and the strain spectrum and mismatches. The simulations use initial data constructed with a method that generalizes the Bowen-York initial data for black hole punctures to the case of neutron stars.

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Date submitted: 08 Jan 2021 Electronic form version 1.4