Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Analyzing properties from black hole-neutron star merger outflows and modeling r-process nucleosynthesis[1] TERESITA RAMIREZ, California State University, Fullerton, FRANCOIS FOUCART, University of New Hampshire, SXS COLLABORATION COLLABORATION, LIGO VIRGO COLLABORATION COLLABORATION — The LIGO and Virgo observatories have made over 35 gravitational wave detections thus far. Most of the signals detected have been confidently identified as either black-hole binaries, neutron-star binaries, or black hole-neutron star binaries. Near the time of merger, the only known way to solve Einsteins equations to model these strongly gravitating systems is to use numerical relativity because then all pencil-and-paper approximations fail. Using the SXS Collaborations numerical relativity code, the Spectral Einstein Code (SpEC), I completed a hydrodynamic black hole-neutron star merger simulation to test and model the creation of heavy elements in a process called r-process nucleosynthesis to estimate the outflows of the merger. Investigating the ejected matter from BHNS mergers has been done before; however, for this project, we explored how r-process heating affects our estimations of how much matter is ejected from the merger.

[1]This work was supported in part by NSF grants PHY-1806278 , PHY-1654359, AST-1559694, DOE grant DE-SC0020435, The Dan Black Family Trust and by Nicholas and Lee Begovich.

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Date submitted: 07 Jan 2021 Electronic form version 1.4