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Nuclear Network Calculations of Kilonova Ejecta JONAS LIPPUNER, Los Alamos Natl Lab

The temperatures, densities, and neutron fractions in kilonova ejecta are far beyond what we can achieve in a lab on Earth. And while the electromagnetic counterpart (if observed) provides us with important clues as to the composition and properties of the kilonova ejecta, we cannot (yet?) determine detailed abundances of the elements, let alone isotopes, present in the ejecta from the EM signal. This makes nuclear network calculations an essential tool for exploring and understanding the nucleosynthesis in kilonova ejecta. In this talk, I will give a brief overview of rapid neutron-capture (r-process) nucleosynthesis in kilonova ejecta, discuss how nuclear reaction networks work, and present some results of nuclear network calculations in kilonova ejecta.