

Weak r-process in the blue-kilonova of double neutron-star mergers

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The r-process nucleosynthesis has been considered to occur in explosive astronomical phenomena relevant to neutron stars, e.g. core-collapse supernovae and mergers of compact-object (neutron stars/black holes) binaries. However, detailed quantitative properties in astrophysical models for the r-process are not completely understood yet. In this talk, I will show recent results of r-process nucleosynthesis in neutron star mergers, based on our collaboration. As mass ejection through neutron star mergers has several phases with different nucleosynthesis composition, I will focus on nucleosynthesis yields on neutrino-driven ejecta in the post-merger phase, based on the hydrodynamical models by Fujibayashi et al. (2018), ApJ (in press, arXiv:1711.02093). The neutrino irradiated ejecta in the later phase is expected to be less neutron-rich and produce lighter and medium mass r-process nuclei. I will our results basically agree with the recent observation for the early blue component of kilonova associated with GW170817.

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