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r-process nucleosynthesis in several astrophysical scenarios

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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, The 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 discuss nucleosynthesis yields on the dynamical ejecta and neutrino-driven ejecta separately. I also discuss the possibility of r-process in magneto-rotational driven supernovae, as an alternative r-process scenario in the early galaxies.

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