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## **r-Process nucleosynthesis in neutron star merger disk outflows**

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Neutron star mergers are the most promising site of heavy element synthesis via the rapid neutron-capture process (r-process). Just before the neutron stars merge, they tidally disrupt each other, which unbinds extremely neutron-rich material where nucleosynthesis can easily reach the third r-process peak. After the merger, an accretion disk forms around the central compact object, which is either a black hole or a hyper-massive neutron star (HMNS). Neutrino emissions from the disk (and HMNS if there is one) and angular momentum transport processes within the disk drive a neutron-rich outflow off the disk's surface where r-process nucleosynthesis can take place. In this work we investigate r-process nucleosynthesis in the disk outflow and we pay special attention to how the nucleosynthesis depends on the lifetime of the HMNS. Increasing the lifetime of the HMNS not only results in a significantly larger ejecta mass, but also makes the ejecta less neutron-rich thus preventing the r-process from reaching the third peak.

**Primary author:** Mr LIPPUNER, Jonas (Caltech)

**Co-authors:** Prof. METZGER, Brian (Columbia University); Prof. KASEN, Dan (UC Berkeley); Dr FOUCCART, Francois (Lawrence Berkeley National Laboratory); Prof. ROBERTS, Luke (NSCL); Prof. FERNANDEZ, Rodrigo (University of Alberta)

**Presenter:** Mr LIPPUNER, Jonas (Caltech)

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