Influence of astrophysical and nuclear physics uncertainties on the nucleosynthesis in core-collapse supernova neutrino-driven winds

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Neutrino-driven winds emerging after a successful core-collapse supernovae can produce the lighter heavy elements between Fe and Ag depending on the properties of the ejecta. However, despite the fast progress in supernovae simulations in the last decades, there are still large uncertainties in the astrophysical conditions. We rely on a steady-state neutrino-driven wind model to systematically study the influence of astrophysical uncertainties on the nucleosynthesis evolution in neutrino-driven ejecta. Furthermore, uncertainties in the nuclear physic input to the nucleosynthesis calculation have an impact the abundance patterns. In order to identify key reactions, we perform sensitivity studies based on a Monte Carlo approach for a variety of astrophysical conditions in neutron- and proton-rich ejecta.

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