

## **( $\alpha$ ,n) reaction cross section measurements on Mo isotopes for $\gamma$ -process**

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On the neutron deficient side of the valley of stability there are  $\sim 35$  stable nuclei which cannot be synthesized by neutron capture reactions. According to our knowledge these — so-called p — isotopes are mainly synthesized by the  $\gamma$ -process [1] which takes place during the collapse of a type II supernovae or during the explosion of a type Ia supernovae.

Modeling the  $\gamma$ -process requires the use of an extended nuclear reaction network involving ten thousands of reactions on thousands of mostly radioactive nuclei. The necessary cross sections are taken from the Hauser-Feshbach (H-F) statistical model. To improve the predictive power of the H-F model, precise knowledge on the nuclear inputs — like optical potentials, level densities,  $\gamma$ -strength functions etc. — are necessary. By carrying out precise ( $\alpha$ ,n) cross section measurements the uncertainty of the  $\alpha$ -nucleus optical potential can be reduced and the reliability of the model can be improved [2].

[1] T. Rauscher et al., Rep. Prog. Phys. **76**, 066201 (2013).

[2] P. Mohr et al., PRC **94**, 035801 (2016).