

# PROTON-CAPTURE REACTIONS IN THERMONUCLEAR SUPERNOVAE AND THE P-PROCESS

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There are about 35 proton-rich nuclei whose production cannot be explained by neutron capture processes. The synthesis of these so-called p nuclei is thought to be realized in different astrophysical scenarios that are usually referred to as sites of p-process nucleosynthesis. The different approaches to determine the nuclear physics needed for their modelling will be briefly introduced. As a highlight, the production of the most abundant p nucleus  $^{92}\text{Mo}$  via proton capture reactions in thermonuclear supernovae will be presented. Two recent publications [1,2] found a significant contribution to the overall abundance by this mechanism which triggered already experiments on the  $^{90}\text{Zr}(p,\gamma)$  reaction [3]. First results of our experimental investigation of this reaction using high-resolution  $\gamma$ -spectroscopy will be shown. In addition, ongoing experimental developments for the determination of the cross section of the  $^{91}\text{Nb}(p,\gamma)$  reaction in direct kinematics will be explained.

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[1] C. Travaglio et al., *The Astrophysical Journal* 739, 93 (2011).

[2] M. Kusakabe et al., *The Astrophysical Journal* 726, 25 (2011).

[3] A. Spyrou et al., *Physical Review C* 88, 045802 (2013).