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Measurement of $^{72}\text{Ge}(p,\gamma)^{73}\text{As}$ cross section for the astrophysical p-process

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Most of the heavy nuclei in the Universe ($Z > 26$) are formed by neutron captures during the so-called s- or r-processes. However, 35 proton-rich nuclei imply the existence of another process of nucleosynthesis, the p-process, which takes place in explosive stellar events. The modeling of this process relies on theoretical calculations of nuclear reaction rates. One of the main uncertainties for light nuclei comes from the (γ,p) photodisintegration reactions occurring in this process.

To improve the reliability of the calculations, it is necessary to increase the amount of relevant nuclear data at energies as close as possible to the astrophysically relevant ones. Our collaboration has performed cross-section measurements of proton-induced reactions on several germanium isotopes, using the activation method. The main purpose was to measure the $^{72}\text{Ge}(p,g)^{73}\text{As}$ cross section in the astrophysical energy range, since this reaction has been identified as particularly important for the abundance of light p-nuclei.

In this talk, I will present the experiment that has been realized as well as some preliminary results from the data analysis of the $^{72}\text{Ge}(p,\gamma)^{73}\text{As}$ reaction.

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