Contribution ID: **224** Type: **Poster**

Experimental study of the ^{29}Si(p,γ)^{30}P reaction for classical nova nucleosynthesis

Monday 16 September 2024 10:57 (1 minute)

^{29}Si is believed to be produced during classical nova events. The measurements of the isotopic ratios in primitive meteorites can represent precisely the amount of ^{29}Si produced by such events. However, there is no unambiguous evidence for the nova paternity of presolar stardust grains. Therefore, it is important to know precisely how much ^{29}Si is produced in classical novae.

To do reliable theoretical calculations, we need to know the cross section of the $^{29}\mathrm{Si}(\mathrm{p},\gamma)^{30}\mathrm{P}$ reaction at astrophysically relevant energies. The direct capture (DC) cross section of $^{29}\mathrm{Si}(\mathrm{p},\gamma)^{30}\mathrm{P}$ has not been measured so far and for the strengths of some low energy resonances ambiguous data can be found in the literature. Therefore, the aim of the present work was the experimental study of this reaction. The strength of the $E_\mathrm{p} = 416\,\mathrm{keV}$ resonance was measured as well as the DC cross section. For the measurements the proton beam was provided by the Tandetron accelerator of Atomki. The natural abundance of ^{29}Si is about 4%, so enriched targets are necessary for the DC experiments. For resonance strength natural isotopic composition SiO_2 thick targets were used.

In this poster I present the details of the experimental procedure and some results.

Primary authors: MÁTYUS, Zsolt (HUN-REN Institute for Nuclear Research); Dr GYÜRKY, György (HUN-REN Institute for Nuclear Research)

Presenter: MÁTYUS, Zsolt (HUN-REN Institute for Nuclear Research)

Session Classification: Poster Flashes