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Poster Session - Submission of Abstract

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Title of the poster: Towards the study of $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ at LUNA in Gran Sasso

Abstract text:

$^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ is a reaction of the NeNa cycle. This cycle is active in the Red Giant Branch and Asymptotic Giant Branch stars, as well as in novae explosions. In particular, it rules the abundance of the elements between ^{20}Ne and ^{27}Al . Furthermore, the proton capture on ^{22}Ne may have an impact on the production of ^{23}Na in type Ia supernovae, with a possible link to the ^{56}Ni yield. The amount of ^{56}Ni determines the light curve of these supernovae, used as standard candles in cosmology.

The $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ reaction rate is highly uncertain because of a large number of yet unobserved resonances in the energy region of the Gamow peak.

A study of the $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ is on-going at LUNA in Gran Sasso. The poster will illustrate the characteristics of the experimental setup and the results of the first test run.

Summary:

The poster summarizes the astrophysical motivation and the experimental setup of the $^{22}\text{Ne}(p,\gamma)^{23}\text{Na}$ cross section measurement at LUNA. Preliminary results of the test run are also shown.