Contribution ID: **500** Type: **Parallel talk**

Cross section measurement of the $^{12}C(p,\gamma)^{13}N$ reaction at the Felsenkeller underground ion accelerator

Wednesday 30 August 2023 17:00 (15 minutes)

The CNO-cycle is the dominant hydrogen burning process in stars above a temperature of 17 million Kelvin. The $^{12}C(p,\gamma)^{13}N$ reaction rate is dominating the rate of this cycle in the initial phase and in the outer shells of the burning zone. Furthermore, this reaction affects the abundance ratios of ^{12}C to ^{13}C in stars with masses slightly above solar mass. The cross section of the $^{12}C(p,\gamma)^{13}N$ reaction has been re-measured, leading to an improved extrapolation to astrophysically relevant energies.

The methods and results of two measurements of this cross section will be presented: First, at 130 keV to 450 keV in inverse kinematics overground. Second, at 330 keV to 640 keV at the Felsenkeller underground laboratory.

Submitted on behalf of a Collaboration?

No

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Session Classification: Underground laboratories

Track Classification: Underground laboratories