

# THE NEUTRON SOURCE FOR THE WEAK COMPONENT OF THE S-PROCESS: LATEST EXPERIMENTAL RESULTS

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The  $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$  reaction has been regarded as the main neutron source for the s-process in core He-burning massive stars and of relevance in He-shell burning in AGB stars. Its rate is one of the most important unsolved problems in the nucleosynthesis of heavy elements in stars. The determination of the reaction rate needs to be accompanied by the rate of the mechanism in competition with the neutron production: the  $^{22}\text{Ne}(\alpha, \gamma)^{26}\text{Mg}$  reaction. Currently the rates for these reactions still hold large uncertainties at temperatures of relevance to the weak component of the s-process.

I will discuss the sources of the current uncertainty in the rates and how the  $^{22}\text{Ne}({}^6\text{Li}, d)^{26}\text{Mg}$  reaction can be used to improve the situation. The latest experimental results from work at Yale University will be presented as well.

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