

Constraining (a,n) cross sections with indirect measurements

Tuesday, 9 November 2021 15:25 (25 minutes)

The efficacy of the *s*-process in the production of heavy elements is influenced by a number of factors, including the number of neutrons available for neutron-capture reactions. Neutrons are produced by the $^{13}\text{C}(\alpha, n)^{16}\text{O}$ and $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ reactions, neutrons can be absorbed by ^{16}O to make ^{17}O from which neutrons may be recycled through the $^{17}\text{O}(\alpha, n)^{20}\text{Ne}$ reaction or lost permanently through the $^{17}\text{O}(\alpha, \gamma)^{21}\text{Ne}$ reaction.

In this talk, the utility of indirect measurements in constraining (α, n) cross sections will be discussed, with particular focus on the $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ and $^{17}\text{O}(\alpha, n)^{20}\text{Ne}$ reactions and their application in *s*-process nucleosynthesis.

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Session Classification: Session 2