

Cyclotron Colloquium, Tuesday, March 2, 2010 at 3:45 pm

"Determining the stellar origin of the cosmic γ -ray emitting nucleus ^{26}Al "

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Abstract:

Radioactive species produced in stellar interiors represent potential sources of cosmic γ rays. During the last decade, a new generation of telescopes has allowed for the observation of several cosmic γ -ray emitters throughout the interstellar medium (ISM), providing a versatile tool for studies of nucleosynthesis in stellar environments. In particular, observations of characteristic γ rays, associated with the decay of ^{26}Al , provided the first direct evidence of ongoing nucleosynthesis in our Galaxy. However, uncertainties in the nuclear reactions responsible for the destruction of ^{26}Al in stellar environments have hindered comparisons between astrophysical models of nucleosynthesis and observational data. Recently, new results on the structure of excited states in ^{27}Si relevant for the determination of the $^{26g}\text{Al}(p,\gamma)^{27}\text{Si}$ and $^{26m}\text{Al}(p,\gamma)^{27}\text{Si}$ destruction reaction rates have been obtained and will be presented here.

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