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Further Exploration of the ^{33}S(α,p)^{36}Cl Reaction Cross Section
MICHAEL SKULSKI, TYLER ANDERSON, MARY BEARD, PHILIPPE COLLON, WENTING LU, KAREN OSTDIEK, University of Notre Dame — Short-lived radionuclides (SLRs) are extant from the Early Solar System (ESS) and useful for dating products of ESS processes. The SLR ^{36}Cl was potentially produced by solar energetic particles incident on gas and dust in the protoplanetary disk. Measurement of the cross section of the reaction ^{33}S(α,p)^{36}Cl, which contributes significantly to the abundance of ^{36}Cl, is an important input in solar irradiation models regarding the determination of elemental abundances, and is thus of great interest. In a previous measurement performed by Bowers et al. (2013), the cross section of this reaction was studied using a combination of activation of a ^{4}He gas cell and analyzing the produced ^{36}Cl via Accelerator Mass Spectrometry (AMS) over an energy range of 0.7 – 2.42 MeV/A. The result of this measurement was a significantly higher yield of ^{36}Cl than predicted by Hauser-Feshbach cross section calculations. In light of the paper by Mohr (2013), the same activation was repeated at the University of Notre Dame at intermediate energies to study the cross section further, using the same combination of activation and AMS. The results of this measurement will be presented.

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