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Measuring astrophysically relevant ^{36}Cl production cross sections
TYLER ANDERSON, MICHAEL SKULSKI, KAREN OSTDIEK, WENTING LU, ADAM CLARK, AUSTIN NELSON, MARY BEARD, PHILIPPE COLLON, University of Notre Dame — The short-lived radionuclide ^{36}Cl ($t_{1/2}$ = 0.301 Ma) is known to have existed in the Early Solar System (ESS), and evaluating its production sources can lead to better understanding of the processes taking place in ESS formation and their timescales. The X-wind model is used to explain ^{36}Cl production via solar energetic particles from the young Sun, but is lacking empirical data for many relevant reactions. Bowers et al. (2013) measured the ^{33}S(α,p)^{36}Cl cross section at various energies in the range of 0.70-2.42 MeV/A, and found them to be systematically under predicted by Hauser-Feshbach statistical model codes TALYS and NON-SMOKER, highlighting the need for more empirical data for these cross sections. Recent results of the re-measurement of the ^{33}S(α,p)^{36}Cl reaction, providing greater coverage of the same energy range as Bowers et al., will be presented. Future plans for measurement of other ^{36}Cl producing reactions will also be discussed.

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