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Measurement campaign for astrophysically relevant ^{36}Cl production cross sections TYLER ANDERSON, MICHAEL SKULSKI, KAREN OST-DIEK, WENTING LU, 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 production 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 cross section of $^{33}\text{S}(\alpha, p)^{36}\text{Cl}$ at various energies in the range of 0.70-2.42 MeV/A, and found them to be systematically under predicted by statistical Hauser-Feshbach model codes TALYS and NON-SMOKER, highlighting the need for more empirical data for these cross sections. A recent paper by Mohr (2013) called these results in to question, prompting the re-measurement of the cross section for $^{33}\text{S}(\alpha, p)^{36}\text{Cl}$ at new energies in the same energy range as Bowers et al. This talk will also discuss two further planned measurements of cross sections suggested by Bowers et al. to be the next most significant in ^{36}Cl production.

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