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^{26}Al,^{30}P(d,n) transfer reaction studies of key hydrogen burning resonances relevant for cosmic γ-ray emission and heavy element production in novae ANU KANKAINEN, PHIL WOODS, University of Edinburgh, E12010 COLLABORATION — ^{26}Al(d,n)^{27}Si and ^{30}P(d,n)^{31}S transfer reactions have been studied in inverse kinematics to study key astrophysical resonances in ^{27}Si and ^{31}S. These are relevant for abundance calculations of the cosmic γ-ray emitter ^{26}Al, and for the abundances of heavy elements (e.g. silicon), highly dependent on the ^{30}P(p,γ)^{31}S reaction, observed in novae ejecta. A primary beam of ^{36}Ar (150 MeV/A) impinging on a Be target produced around 30 MeV/u beams of ^{26}Al and ^{30}P which bombarded a 10 mg cm^{-2}-thick CD_2 target (CH_2 for background). The ^{27}Si/^{31}S ions were analyzed by the S800 spectrometer and identified by energy loss and time-of-flight measurements. γ rays from the decays of excited states in ^{27}Si/^{31}S were detected in coincidence with the recoiling ^{27}Si/^{31}S ions using GRETINA. By measuring the number of coincident events, and correcting for the angular distributions of the γ rays, this provides an angle integrated measurement of the (d, n) cross-sections, and a measure of the proton partial widths for the key astrophysical resonances in ^{27}Si and ^{31}S.

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