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Measurement of the 26Al(d,p)27Al Reaction to Constrain the 26Al(p,gamma) Reaction Rate STEVEN PAIN, ORNL, ORRUBA/RIBENS COLLABORATION — Detailed observations of the 1809-keV γ ray from the beta decay of ^{26}Al within the galaxy has provided an insight into ongoing nucleosynthesis. Understanding the abundance of ^{26}Al requires knowledge of the production and destruction rates for ^{26}Al. For temperatures where the ground-state and metastable state of ^{26}Al are decoupled, the ^{26}Al(p,γ)^{27}Si reaction, which is determined by states near the proton threshold in ^{27}Si, contributes to the destruction rate. Though the strength of many of these resonances have been measured directly, the information there remain uncertainties for the lowest resonances, which are relevant for giant star temperatures. We have measured mirror states in ^{27}Al to inform the ^{27}Si structure, via the ^{26}Al(d,p)^{27}Al reaction in inverse kinematics at the HRIBF. A beam of $\sim$5 million ^{26}Al per second impinged on a $\sim$150 μg/cm^2 CD_2 target. Proton ejectiles were detected in the SIDAR and ORRUBA silicon detector arrays. Details of the experimental setup and results will be presented. Work supported in part by U.S. Department of Energy and National Science Foundation.

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