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Constraining the astrophysical ^{23}Mg(p,γ)^{24}Al reaction rate using the ^{23}Na(d,p)^{24}Na reaction E. A. BENNETT, Texas AM University, W. N. CATFORD, University of Surrey, G. CHRISTIAN, S. DEDE, Texas AM University, S. HALLAM, G. LOTAY, University of Surrey, S. OTA, A. SAASTAMOINEN, Texas AM University, R. WILKINSON, University of Surrey — The ^{23}Mg(p,γ)^{24}Al reaction provides an escape from the Ne-Na cycle in classical novae and is therefore important in understanding nova nucleosynthesis in the $A > 20$ mass range. Although several resonances may contribute to the overall rate at novae temperatures, the resonance at $\sim$475 keV is thought to be dominant. The strength of this resonance has been directly measured using a radioactive ^{23}Mg beam impinging on a windowless H_2 gas target; however, recent high-precision ^{24}Al mass measurements have called this result into question. Here we make an indirect measurement using the ^{23}Na(d,p)^{24}Na reaction in inverse kinematics to study the mirror state of the $\sim$475 keV resonance in ^{24}Na. The experiment, performed at the Texas A&M Cyclotron Institute, utilized the TIARA silicon array, four HPGe detectors, and the MDM spectrometer to measure the excited states of the ^{24}Na nucleus. Preliminary results from the experiment will be presented along with progress from the ongoing analysis.

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