Abstract Submitted
for the APR20 Meeting of
The American Physical Society

The ^{17}F$(\alpha,p)^{20}$Ne reaction rate through properties of states in ^{21}Na[1] J.C. BLACKMON, C.M. DEIBEL, A.A.D. HOOD, LSU, L. BABY, D. CAUSSYN, V. TRIPATHI, I. WIEDENHOEVER, FSU, K.A. CHIPPS, S.D. PAIN, ORNL — Sensitivity studies have identified the $^{17}\mathrm{F}(\alpha,p)^{20}\mathrm{Ne}$ reaction as being among the most important reactions affecting the X-ray burst light curve in some cases, but this reaction rate has been based on statistical model predictions with large uncertainties. We used existing information and an R matrix analysis of ^{20}Ne+p reaction data to determine the $^{17}\mathrm{F}(\alpha,p)^{20}\mathrm{Ne}$ reaction rate at X-ray burst temperatures. We characterized the uncertainties in the reaction rate arising from limitations in existing data. Experimental efforts are aimed at providing new data to reduce the uncertainty in the reaction rate arising from the uncertain properties of resonant states in ^{21}Na. We will present results from a recent measurement of the $^{20}\mathrm{Ne}(p,\alpha)^{17}\mathrm{F}$ reaction performed at the Fox Laboratory at FSU. A proton beam bombarded a ^{20}Ne gas cell, and positron annihilation was measured to determine the $^{20}\mathrm{Ne}(p,\alpha)^{17}\mathrm{F}$ cross section by the activation technique. Results will be compared to earlier measurements. We will also discuss future plans for measurements performed in inverse kinematics using beams of ^{20}Ne and the importance they have in constraining the $^{17}\mathrm{F}(\alpha,p)^{20}\mathrm{Ne}$ reaction rate.

[1]Supported by the US DOE Office of Nuclear Physics and the NSF Office of Physics

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Date submitted: 10 Jan 2020 Electronic form version 1.4