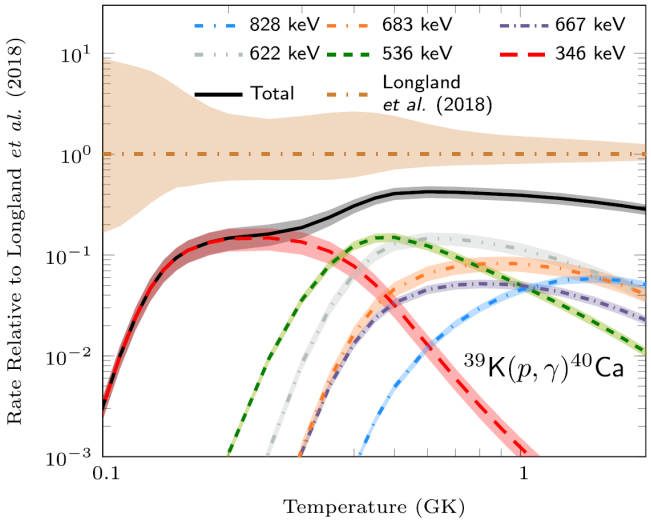
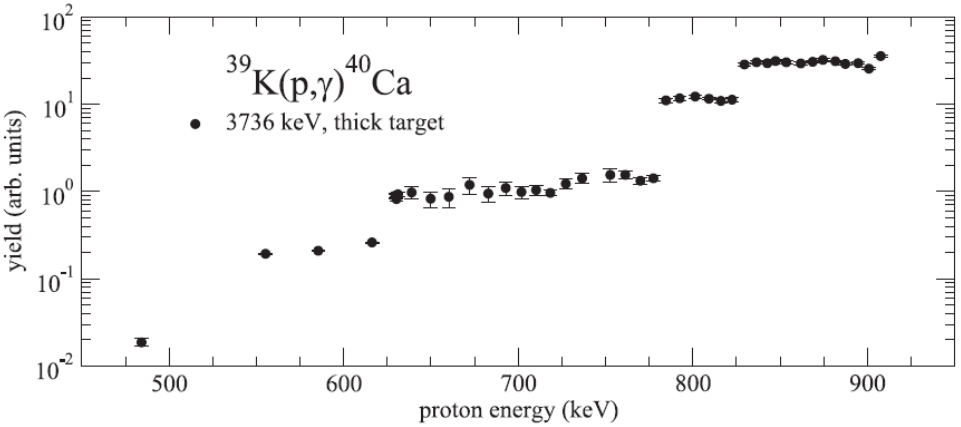
# Measurement of $^{39}$K($p$, $\gamma$)$^{40}$Ca resonance strengths below 900 keV for nucleosynthesis in classical novae

Classical novae are one of the most frequent explosive nucleosynthesis events in our universe but are still not sufficiently understood. To this day, nuclear astrophysics cannot explain the endpoint of the nucleosynthesis networks that drive them. This is mainly due to a scarce experimental database of nuclear reaction rates for proton induced reactions in the mass region above silicon at temperatures between 0.1 and 0.4 GK.




Because some nova ejecta hint at the production of elements in the calcium range (Centauri V1065), and some possibly even up to the iron region (Cygni V1974), it is of utmost interest to investigate possible paths towards heavier elements. Here we report on new measurements of resonance strengths for the $^{39}$K($p$,$\gamma$)$^{40}$Ca reaction below 900 keV. Measurements were performed at the 5U accelerator at the University of Notre Dame. The implications of these new strengths for the $^{39}$K($p$,$\gamma$)$^{40}$Ca reaction rate are discussed.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