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Direct measurement of ^{38}K$(p,\gamma)^{39}$Ca in inverse kinematics GAVIN LOTAY, TRIUMF, GREGORY CHRISTIAN, University of Surrey, DEVIN BURKE, ALAN CHEN, McMaster University, DEVIN CONNOLLY, Colorado School of Mines, BARRY DAVIDS, JENNIFER FALLIS, TRIUMF, ULRIKE HAGER, Colorado School of Mines, DAVE HUTCHEON, TRIUMF, ADAM MAHL, Colorado School of Mines, ALEX ROJAS, CHRIS RUIZ, XUAN SUN, TRIUMF —
Sensitivity studies have identified ^{38}K$(p,\gamma)^{39}$Ca as one of a handful of significant reactions in ONe novae, with the potential to change ^{38}Ar, ^{39}K, and ^{40}Ca abundances in ONe ejecta by factors of $\sim$18, $\sim$17 and $\sim$24, respectively. We have performed the first ever measurement of this reaction using the DRAGON recoil mass separator at TRIUMF. The experiment was performed in inverse kinematics using a beam of radioactive ^{38}K. To date, this is the most massive projectile ever used in a radiative capture experiment. The astrophysical reaction rate is expected to be dominated by low-ℓ resonances inside the Gamow window. Hence we have focused our efforts on the resonances at $E_{\mathrm{c.m.}} = 386$, 515, and 689 keV. In this talk, I will present an overview of the experiment and data analysis and show preliminary resonance strengths (or upper limits) measured at each of the three energies. Finally, I will discuss the astrophysical implications of the measurements as they relate to ONe novae.

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