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Constraining Calcium Production in Novae[1] PRANJAL TIWARI, National Superconducting Cyclotron Laboratory, C. FRY, C. WREDE TEAM, A. CHEN, J. LIANG COLLABORATION[2], S. BISHOP, T. FAESTERMANN, D.SEILER COLLABORATION[3], R. HERTENBERGER, H. WIRTH COLLABORATION[4] — Calcium is an element that can be produced by thermonuclear reactions in the hottest classical novae. There are discrepancies between the abundance of Calcium observed in novae and expectations based on astrophysical models. Unbound states 1 MeV above the proton threshold affect the production of Calcium in nova models because they act as resonances in the $^{38}K(p,\gamma)^{39}Ca$ reaction present. This work describes an experiment to measure the energies of the excited states of ^{39}Ca. We will bombard a thin target of ^{40}Ca with a beam of 22 MeV deuterons, resulting in tritons and ^{39}Ca. We will use a Q3D magnetic spectrograph from the MLL in Garching, Germany to momenta analyze the tritons to observe the excitation energies of the resulting ^{39}Ca states. Simulations have been run to determine the optimal spectrograph settings. We decided to use a chemically stable target composed of CaF_2, doing so resulted in an extra contaminant, Fluorine, which is dealt with by measuring the background from a LiF target. These simulations have led to settings and targets that will result in the observation of the ^{39}Ca states of interest with minimal interference from contaminants. Preliminary results from this experiment will be presented.

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