Abstract Submitted
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**Nuclear Excitation via Electron Capture with TITAN**[1] JON RINGUETTE, KYLE LEACH, Colorado School of Mines, IRIS DILLMANN, ANIA KWIATKOWSKI, Triumf, ZACHARY HOCKENBERY, THOMAS BRUNNER, McGill University, CORINA ANDREOIU, Simon Fraser University, TITAN COLLABORATION — Nuclear Excitation via Electron Capture (NEEC) is the inverse process of internal electron conversion, where a free electron is captured into an atomic vacancy simultaneously exciting the nucleus to a higher-energy state. This process occurs naturally in hot astrophysical environments, and can excite nuclei in these isomeric states to shorter-lived states that would decay at a much faster rate than under terrestrial conditions, thus affecting reaction flows or survival rate of nuclei. Since NEEC is a resonant process, experimental access in the lab to study these cases requires strong atomic charge-state control over the sample, as well as careful selection and preparation of nuclear states that may be compatible with efficient electron recombination. Using an open-geometry electron beam ion trap (EBIT) in the TITAN experiment at the TRIUMF facility we are able to perform these studies with a high level of control and sensitivity. In this talk I will discuss the experimental concept, cases that we plan on studying in the near future, as well as current and ongoing upgrades being made to the TITAN system.

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