## Abstract Submitted for the DNP20 Meeting of The American Physical Society

Nuclear  $2\gamma$  decay of <sup>98</sup>Mo and <sup>98</sup>Zr at the TITAN-EBIT<sup>1</sup> ZACHARY HOCKENBERY, McGill University, TRIUMF, ERICH LEISTEN-SCHNEIDER, Michigan State University, TRIUMF, JON RINGUETTE, Colorado School of Mines, TRIUMF, CORINA ANDREOIU, Simon Fraser University, TRI-UMF, THOMAS BRUNNER, McGill University, TRIUMF, IRIS DILLMANN, ANIA KWIATKOWSKI, University of Victoria, TRIUMF, KYLE LEACH, Colorado School of Mines, TRIUMF, TITAN COLLABORATION — Nuclear  $2\gamma$  decay is a second-order electromagnetic interaction wherein two photons are simultaneously emitted during a nuclear de-excitation. This transition is uniquely sensitive to the electromagnetic polarizability of the nucleus and has been studied in noncompetitive cases for  $0_2^+ \longrightarrow 0_1^+$  transitions between the first excited and ground states of even-even nuclei. So far, observations have been limited to the closed-shell nuclei <sup>16</sup>O, <sup>40</sup>Ca, and <sup>90</sup>Zr. An important constraint to the theory can be provided through experimental observations of  $2\gamma$  transitions in nuclei that exist away from shell closures. However, such cases have eluded experimental observation, among other reasons, because of a strongly competing internal conversion (IC) branch. We propose to use the TITAN Electron Beam Ion Trap (EBIT) at TRIUMF to selectively block the IC branch by stripping the atom of all electrons which will allow the observation of  $2\gamma$  transitions in <sup>98</sup>Mo and <sup>98</sup>Zr. The experimental concept, status of development, and simulated results will be reported.

<sup>1</sup>This work is supported by the Natural Sciences and Engineering Research Council of Canada (NSERC)

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Date submitted: 01 Jul 2020

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