

Abstract Submitted  
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**Upgrade of a Right-Handed Current Search Using Highly-Polarized, Laser-Cooled  $^{37}\text{K}$**  S. BEHLING, D. MELCONIAN, Texas A&M University, A. GORELOV, J.A. BEHR, K.P. JACKSON, T. KONG, M.R. PEARSON, O. THÉRIAULT, TRIUMF, D. ASHERY, Tel Aviv University — The TRIUMF Neutral Atom Trap facility is able to provide  $^{37}\text{K}$  that is laser-cooled and highly polarized. This will be used to search for new physics via studies of the angular distributions of its decay products. The first planned experiment will measure the  $\beta$  asymmetry parameter,  $A_\beta$ , using back-to-back detectors placed along the polarization axis. One key aspect of the upgraded system is the addition of a shake-off electron detector which, used in coincidence with the  $\beta$  detectors, will minimize the background from untrapped depolarized atoms. The other major improvement is the conversion of our traditional magneto-optical trap (MOT) to an AC-MOT [1] to allow us to switch between trapping and polarizing much more quickly. Our goal is to measure  $A_\beta$  to  $\lesssim 1.0\%$  of its value and to estimate systematics as we work towards a  $\approx 0.1\%$  experiment. An overview of the experiment and our expected sensitivity to physics beyond the Standard Model based on GEANT4 simulations will be presented.

[1] M. Harvey and A. Murray PRL **101**, 173201 (2008).

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