Abstract Submitted
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Searching for Tensor Current in ^{6}He β-Decay[1] RAN HONG, YELENA BAGDASAROVA, CENPA, University of Washington, KEVIN BAILEY, Physics Division, ANL, XAVIER FLÉCHARD, LPC, CAEN, France, ALEJANDRO GARCIA, CENPA, University of Washington, ANDREAS KNECHT, Paul Scherrer Institute, ARNAUD LEREDDE, Physics Division, ANL, ETIENNE LIENARD, LPC, CAEN, France, PETER MUELLER, Division, ANL, OSCAR NAVILIAT-CUNCIC, NSCL, Michigan State University, THOMAS O'CONNOR, Physics Division, ANL, MATTHEW STERNBERG, DEREK STORM, ERIK SWANSON, FREDERIK WAUTERS, DAVID ZUMWALT, CENPA, University of Washington
— Precision measurement of the $\beta - \bar{\nu}_e$ angular correlation coefficient a can be used for searching for the Beyond-Standard-Model tensor-type weak currents. We produce 10^{10} ^{6}He atoms per second using the Van de Graaff accelerator at CENPA, and deliver them to a magneto-optical trap (MOT) in a low background experiment hall. We measure the time-of-flight spectrum of the recoiling ^{6}Li ions from ^{6}He β-decay and then extract the $\beta - \bar{\nu}_e$ angular correlation coefficient a. The β-particles are detected by a multi-wire proportional chamber and a plastic scintillator, while the recoil ions are guided by an electric field and detected by a micro-channel plate. We developed a Monte Carlo simulation program to construct the fitting templates of the time-of-flight spectrum and study the systematic effects. We currently acquire coincidence data with the short term goal of reaching a 1% uncertainty for a.

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