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Search for tensor-like couplings in the β-decay of laser trapped ^{6}He ARNAUD LEREDDE, KEVIN BAILEY, PETER MUELLER, TOM O'CONNOR, Argonne National Lab, YELENA BAGDASAROVA, ALEJANDRO GARCIA, RAN HONG, MATTHEW STERNBERG, DEREK STORM, ERIK SWANSON, FREDERIK WAUTERS, DAVID ZUMWALT, University of Washington, XAVIER FLECHARD, Laboratoire de physique corpusculaire de Caen, OSCAR NAVILIAT-CUNCIC, Michigan State University — The beta-neutrino angular correlation in nuclear beta decay can reveal the nature of the weak interaction. The case of ^{6}He is particularly sensitive to test for tensor contributions by measuring the corresponding angular correlation parameter $a_{\beta\nu}$. Trapping techniques such as magneto-optical traps (MOT) combined with recoil ion momentum spectroscopy are powerful tools which allow to measure $a_{\beta\nu}$ with high precision. The experiment, located at the University of Washington, takes advantage of the tandem Van de Graaff accelerator to produce up to 2x10^{10} ^{6}He/s. A double-MOT setup has been optimized to trap and detect beta-recoil-ion coincidences at a rate of a few Hertz. Systematic effects have been investigated in details and major effort has been put to limit their contribution to less than 1% of $a_{\beta\nu}$. The first goal of this experiment is to measure $a_{\beta\nu}$ with this 1% uncertainty and use this set of data to guide further improvements with the goal to bring the uncertainty to the 0.1% level. The performances of the trap setup, preliminary coincidence data, and studies of systematic uncertainties will be presented. This work is supported by DOE, Office of Nuclear Physics, under contract nos. DE-AC02-06CH11357 and DE-FG02-97ER41020.

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