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Weak interaction studies with trapped ^{6}He in a double-MOT apparatus ARNAUD LEREDDE, KEVIN BAILEY, PETER MUELLER, THOMAS P. O'CONNOR, Argonne National Lab., YELENA BAGDASAROVA, ALEJANDRO GARCIA, RAN HONG, MATTHEW STERNBERG, DEREK STROM, ERIK SWANSON, FREDERIK WAUTERS, DAVID ZUMWALT, University of Washington, XAVIER FLECHARD, ETIENNE LIENARD, LPC-Caen, OSCAR NAVILIAT CUNCIC, Michigan State University — The short-lived isotope ^{6}He (half-life 0.8s) is an interesting atom to search for exotic tensor-like contributions to the weak interaction. A double-MOT apparatus has been set up to capture 6He and to precisely measure the beta-neutrino angular correlation parameter $a_{\beta\nu}$ in its radioactive decay with the aim to search for or constrain potential physics beyond the Standard Model. $a_{\beta\nu}$ is extracted from an analysis of momentum distribution of the ^{6}Li daughter nuclei detected in coincidence with the β particles. ^{6}He atoms are produced on-line by nuclear reactions at a rate of $2\text{x}10^{10}$ atoms/s using the Tandem Van de Graaff accelerator at the University of Washington in Seattle. To achieve the precision goal of measuring $a_{\beta\nu}$ to 0.1%, high trapping and detection efficiency are required along with low background rates from untrapped atoms. Our setup is optimized to overcome these technical challenges; its details will be presented along with preliminary results. This material is based upon work supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics, under contract numbers DE-AC02-06CH11357 and DE-FG02-97ER41020

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