Abstract Submitted
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Measurement of the electron shake-off in the β-decay of laser-trapped ^{6}He atoms[1] RAN HONG, YELENA BAGDASAROVA, ALEJANDRO GARCIA , DEREK STORM, MATTHEW STERNBERG, ERIK SWANSON, FREDERIK WAUTERS, DAVID ZUMWALT, Department of Physics, University of Washington, KEVIN BAILEY, ARNAUD LEREDDE, PETER MUELLER, THOMAS OCONNOR , Physics Division, Argonne National Laboratory, XAVIER FLECHARD, ETIENNE LIENNARD, Laboratoire de Physique Corpusculaire, ANDREAS KNECHT, Paul Scherrer Institute, OSCAR NAVILIAT-CUNCIC, National Superconducting Cyclotron Laboratory, Michigan State University — Electron shake-off is an important process in many high precision nuclear β-decay measurements searching for physics beyond the standard model. ^{6}He being one of the lightest β-decaying isotopes, has a simple atomic structure. Thus, it is well suited for testing calculations of shake-off effects. Shake-off probabilities from the 2^3S_1 and 2^3P_2 initial states of laser trapped ^{6}He matter for the on-going beta-neutrino correlation study at the University of Washington. These probabilities are obtained by analyzing the time-of-flight distribution of the recoil ions detected in coincidence with the beta particles. A β-neutrino correlation independent analysis approach was developed. The measured upper limit of the double shake-off probability is 2×10^{-4} at 90% confidence level. This result is $\sim$100 times lower than the most recent calculation by Schulhoff and Drake[2].

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[2]Eva E. Schulhoff and G. W. F. Drake, Phys. Rev. A **92** 05070 (2015)

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