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Investigating the Reactor Antineutrino Anomaly with Beta Spectroscopy[1] STEPHEN PADGETT, NICK SCIELZO, GREG KEEFER, NATHANIEL BOWDEN, Lawrence Livermore National Laboratory, GUY SAVARD, JASON CLARK, ADRIAN PEREZ GALVAN, SHANE CALDWELL, Argonne National Laboratory, AGNIESZKA CZESZUMSKA, RYAN YEE, ERIC NORMAN, University of California at Berkeley — The Reactor Antineutrino Anomaly is a discrepancy between the expected flux of antineutrinos from nuclear reactors and the detected flux. This anomaly is often explained by either the existence of a fourth, sterile neutrino or by incorrect calculations of the predicted number of reactor antineutrinos. Calculations of the expected flux assume that all the fission product β decays have spectral shapes that are nearly identical to the allowed shape. However, many of the highest energy transitions are first forbidden and may have a different spectral shape, which could alter the predicted antineutrino flux and explain the anomaly. We will perform measurements of the shapes of β decay spectra on the isotopes that have the biggest impact on the Reactor Antineutrino Anomaly. Those nuclei, starting with ^{92}Rb, will be produced at the CARIBU facility at Argonne National Laboratory and the β spectra will be measured in plastic scintillators. The energy response of the plastic scintillators will be calibrated by studying the allowed β decay of ^{8}Li.

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