

Abstract Submitted  
for the APR12 Meeting of  
The American Physical Society

**Testing the Validity of an Antineutrino Anomaly with High Precision Beta Spectra**<sup>1</sup> GREGORY KEEFER, TIMOTHY CLASSEN, Lawrence Livermore National Lab — In January 2011 Mueller, T.A., et al. published a new method for predicting the antineutrino spectra which is derived from a complex fit to the fission beta spectra. They take into account many more beta spectra and nuclear effects than what was originally performed independently in the early 1980s by Vogel, P. and Schreckenbach, K. As a result of the improved prediction, Mueller and colleagues then published a re-analysis of the reactor fission beta spectra and the resultant antineutrino spectrum. They found that there is an uncertainty in the flux normalization of about 3% from the early calculations and their much more elaborate approach. This has been dubbed the “antineutrino anomaly.” The current work is aimed to independently cross-check the methods, assumptions, and underlying beta theory in which the new calculation from Mueller, et al. heavily rely. The normalization uncertainty in the flux could be interpreted as a large mass splitting sterile neutrino and opens the venue for a profound amount of new physics, as well as casts doubt onto many years of previous work. As such, it is very important that we have a precise and independent cross-check of the elaborate method. I will present an overview of the problem and the status of the current work.

<sup>1</sup>This work was performed under the auspices of the U.S. Department of Energy (DOE) by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. This work was supported by the DOE, Nuclear Physics Division, Grant number SCW-1234.

Gregory Keefer  
Lawrence Livermore National Lab

Date submitted: 10 Jan 2012

Electronic form version 1.4