

Abstract Submitted
for the SES10 Meeting of
The American Physical Society

Characterization of pixilated Cadmium-Zinc-Telluride (CZT) Detector Sensitivity for Future Neutrinoless Double Beta ($0\nu\beta\beta$) Decay Searches KEVIN MACON, ALEXANDER LEDER, JUN MIYAMOTO, THOMAS KUTTER, Louisiana State University — The detection of $0\nu\beta\beta$ decay provides an opportunity to determine whether neutrinos are Majorana or Dirac particles. Detecting $0\nu\beta\beta$ decay requires very sensitive detectors with good energy resolution. Pixelization in CZT detectors promises to improve sensitivity by means of improving background rejection. Our studies focused on the response of a pixilated prototype CZT detector to evaluate improvements in sensitivity. We performed energy resolution measurements for a 16 pixel CZT detector in the 100keV to 1.3 MeV range. Common background sources were simulated and the measured energy resolutions were then incorporated to estimate detector sensitivities for a potential $0\nu\beta\beta$ Cd-116 decay signal. In this talk we present the status of our research, preliminary results and offer an outlook on future work and challenges.

Kevin Macon
Louisiana State University

Date submitted: 12 Aug 2010

Electronic form version 1.4