

Abstract Submitted
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Characterization of ^{83}Kr gas source for the Project 8 neutrino mass experiment ARMAN BALLADO — Measurement of the final state electron energy in tritium beta decay provides a model independent probe of the neutrino mass. However, reaching sufficient electron energy resolution may be beyond the realm of current methods. Project 8 is a new experiment employing a novel, high-resolution non-destructive technique to measure the energy of single electrons via detection of the cyclotron radiation signal emitted by the electron in a magnetic field. The tritium endpoint energy of 18.6 keV in a 1T field corresponds to 26 GHz RF signal, and to test the sensitivity of this method, Project 8 will first attempt to demonstrate RF sensitivity to the 17.8 keV monoenergetic electrons as ^{83m}Kr decays to the stable ^{83}Kr . This project will explore the behavior of the krypton gas around liquid nitrogen temperatures to characterize the formation of a krypton monolayer on the surface of the vacuum chamber. The study hopes to find the optimal conditions to ensure minimal noise due to the electron-krypton scattering while still having enough concentration to produce a detectable signal.

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