

Abstract Submitted  
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**Status of the Project 8 Detector Prototype** JARED KOFRON, University of Washington, THE PROJECT 8 COLLABORATION — Efforts to measure the electron neutrino mass require measuring a distortion in the beta decay spectrum produced by the kinematics of the 3 body decay. The Project 8 experiment employs a novel approach to electron energy measurement using radio frequency techniques which promises a unique combination of scalability, superb resolution, and low background. A beta decay electron trapped in a strong magnetic field will emit cyclotron radiation (27 Ghz at B=1T), where the frequency of that cyclotron radiation depends on the total energy of the electron due to relativistic effects. Therefore, observing the emitted radiation provides a non-destructive method for measuring the total electron energy and therefore determining the neutrino mass. Results from a prototype experiment in which  $^{83m}\text{Kr}$  is used as an electron source will be presented, as well as an estimate of the sensitivity achievable with this technique. Project 8 research is supported in part by the Department of Energy.

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