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Project 8: A Neutrino Mass Experiment at Radio Frequencies MICHELLE LEBER, University of California Santa Barbara, THE PROJECT 8 COLLABORATION — Although the neutrino mass affects the spectral shape of tritium beta decay electrons, experiments have yet to observe this distortion and provide only an upper limit on the neutrino mass. The Project 8 Experiment proposes to measure this spectral distortion in a novel way: through coherent cyclotron emission of the beta electrons confined in a magnetic field. The relativistic frequency shift of emitted radiation depends on the total energy of the electron and may provide greater resolution than other techniques. This presentation covers the status of a prototype to demonstrate single-electron detection and energy measurement at energies near the tritium endpoint, 18.6 keV, through cyclotron emission. Results from the prototype experiment are expected to be of value in estimating the scale and sensitivity of a neutrino mass experiment based on this technique.

Michelle Leber
University of California Santa Barbara

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