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Event Reconstruction in the Project 8 Free Space CRES Demonstrator[1] PRANAVA TEJA SURUKUCHI, Yale University, PROJECT 8 COLLABORATION — Project 8 is designed to directly measure the electron-weighted neutrino mass using cyclotron radiation emission spectroscopy (CRES). Using the cyclotron frequency as a proxy for kinetic energy, the experiment aims to measure the tritium beta-decay electron endpoint spectrum of electrons trapped in a 1T magnetic field to reach a mass sensitivity of 40 meV/c^2. Following the successful demonstration of CRES with waveguides, the upcoming Phase III of Project 8 will demonstrate CRES in free space by utilizing a larger volume instrumented with antennas. This talk will give an overview of the detector design and describe the development of event reconstruction techniques for observing cyclotron radiation in the Project 8 free space CRES demonstrator.

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