

Abstract Submitted  
for the DNP19 Meeting of  
The American Physical Society

**Modeling Transmitting Antennas to Simulate Phase-III of the Project 8 Experiment**<sup>1</sup> PRANAVA TEJA SURUKUCHI, Yale University, PROJECT 8 COLLABORATION — Project 8 is an experiment designed to measure the mass of the electron neutrino using cyclotron radiation emission spectroscopy (CRES). Using the cyclotron frequency as a proxy for kinetic energy, the experiment aims to observe the end point of the electron spectrum of tritium beta-decay in an effort to reach neutrino mass sensitivity of  $40 \text{ meV}/c^2$ . Following the successful demonstration of CRES with a waveguide in Phase I and II, the Phase III of Project 8 will utilize a larger experimental volume instrumented with a phased array of antennas. Room temperature lab measurements using antennas for both transmission and reception can be used to test the Phase III design and make a comparison with numerical predictions using the Locust simulation software. We discuss the simulation work on modeling the transmission and detection using antenna of radiation near 26 Ghz for the successful reconstruction of the beta decay electron kinematics in Phase III.

<sup>1</sup>This work is supported by the US DOE Office of Nuclear Physics, the US NSF, the PRISMA+ Cluster of Excellence at the University of Mainz, and internal investments at all institutions.

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Date submitted: 01 Jul 2019

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