## Phenomenology 2025 Symposium



Contribution ID: 188

Type: not specified

## **Energy Reconstruction for the Project 8 Experiment**

Tuesday 20 May 2025 17:15 (15 minutes)

Project 8 is designed to directly measure the electron neutrino mass using cyclotron radiation emission spectroscopy (CRES). Using cyclotron frequency as a proxy for kinetic energy, the  $\beta$ -decay electron endpoint spectrum for magnetically-trapped electrons produced by a gaseous tritium source can be measured with high precision using CRES. Following the successful demonstration of CRES with waveguides, the upcoming phase of Project 8 will demonstrate the first realization of the CRES technique in cylindrical cavities using Cavity CRES Apparatus (CCA) with the goal to further improve energy resolution by an order of magnitude. Further, a cubic-meter scale volume apparatus called Low-Frequency Apparatus (LFA) is planned to increase statistics. This talk will describe the development of CRES energy reconstruction techniques for the upcoming Project 8 detectors.

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.

## Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

Author: KARIM, Ehteshamul (University of Pittsburgh)

Presenter: KARIM, Ehteshamul (University of Pittsburgh)

Session Classification: Neutrino

Track Classification: Neutrino Physics