

Project 8 Phase III Design Progress

Authorship annotation

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Session and Location

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Abstract content

Project 8 is a tritium endpoint experiment to measure neutrino mass using the technique of Cyclotron Radiation Emission Spectroscopy (CRES). Early phases of Project 8 demonstrated CRES in small microwave waveguide volumes. An immediate challenge is to scale the detection scheme in size to accommodate sufficient tritium source intensity for a competitive neutrino mass measurement. We present progress on conceptual design work for CRES experiments in larger free space and resonant cavity radiation environments. Early simulation results motivate the development of advanced signal processing and data acquisition techniques that will need to be developed for Project 8. Details of the unique simulation framework are given, along with strategies designed to trap electrons and detect their cyclotron radiation for the next phase of Project 8. That phase, Phase III, is intended to demonstrate the receiver concept and its scalability to the much larger final phase of Project 8, Phase IV.

Poster included in proceedings:

yes

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