Abstract:

The ^{6}He-CRES experiment at the University of Washington CENPA aims to precisely measure beta spectra of ^{6}He, ^{14}O, and ^{19}Ne to search for exotic currents in the weak interaction, representing a violation of SM physics. Typical techniques, such as calorimetry using semiconductor detectors or scintillators, or magnetic spectrometry, present limitations due to systematic uncertainties. The ^{6}He-CRES experiment is based on Cyclotron Radiation Emission Spectroscopy (CRES), a technique developed by the Project8 collaboration to improve sensitivity to the neutrino mass in Tritium decay. The basic idea is a determination of the beta energy by measuring the cyclotron frequency of betas in a magnetic field. The ^{6}He-CRES collaboration is working on applying the CRES technique to determine beta spectra up to several MeV, with a method that could be applied to a wide variety of nuclei at FRIB. The talk would present an overview of the apparatus and analysis tools and show the first recently-accomplished measurements with a bandwidth approximately 4 times that shown previously by Project8, confirming the viability of the method for nuclei with higher beta endpoints.