

Improved Search for Heavy Neutrinos and a Test of Lepton Universality in the Decay $\pi \rightarrow e\nu$

Tuesday, 29 May 2018 17:30 (20 minutes)

Data from the PIENU experiment at TRIUMF have been examined for evidence of a heavy neutrino coupled to the positron in the decay $\pi \rightarrow e\nu$. Limits on the mixing of neutrinos in the mass range 60–135 MeV/ c^2 with the electron neutrino, which are up to an order of magnitude improvement over previous results, will be presented.

The PIENU experiment was also designed to make a high-precision measurement of the $\pi \rightarrow e\nu$ branching ratio: $R_\pi = \frac{\Gamma(\pi \rightarrow e\nu + \pi \rightarrow e\nu\gamma)}{\Gamma(\pi \rightarrow \mu\nu + \pi \rightarrow \mu\nu\gamma)}$, which provides a sensitive test of lepton universality and places tight constraints on many new physics scenarios. The branching ratio analysis is in the final stages, and the status will be presented, as well as a summary of published results based on a subset of the data.

E-mail

mischke@triumf.ca

Collaboration name

PIENU Collaboration

Primary author: MISCHKE, Richard (TRIUMF)

Presenter: MISCHKE, Richard (TRIUMF)

Session Classification: HFCKM / PPHI

Track Classification: PPHI