



Contribution ID: 126

Type: **Parallel Flash talk**

Search for exotic pion decays

Wednesday, 24 February 2021 11:35 (5 minutes)

The PIENU experiment was performed to measure the $\pi^+ \rightarrow e^+ \nu_e$ branching ratio with precision of $< 0.1\%$ and search for rare pion decays. Recently many new and improved results of the rare decay searches involving heavy neutrinos $\pi^+ \rightarrow l^+ \nu_H$ ($l = e, \mu$), weakly interacting neutral bosons $\pi^+ \rightarrow l^+ \nu X$, and three neutrinos $\pi^+ \rightarrow l^+ \nu_l \nu \bar{\nu}$ have been obtained. Search for exotic muon decay $\mu^+ \rightarrow e^+ X$ was also performed. Results of the searches will be presented.

Collaboration name

PIENU collaboration

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Session Classification: New Facilities

Track Classification: Neutrino Masses and Mixings