

Precision measurements of charged pion decays with the PIONEER Experiment

Thursday 18 July 2024 17:00 (15 minutes)

PIONEER is a next-generation precision experiment proposed at PSI to perform high precision measurements of rare pion decays. By improving the precision on the experimental result of the charged pion branching ratio to electrons vs. muons and the pion beta decay by an order of magnitude, PIONEER will provide a pristine test of Lepton Flavour Universality and the Cabibbo angle anomaly. In addition, various exotic rare decays involving sterile neutrinos and axions will be searched for with unprecedented sensitivity.

This presentation will cover the theoretical motivations for PIONEER, as well as the ongoing simulations efforts to precisely determine the detector performance and inform decisions on the experiment design. It will show results from recent beam test campaigns on the pion beamline itself and various sensor candidates. In addition, new developments on the path to a multi-layer prototype Active Target detector system with sensor and readout electronics will be presented.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

I read the instructions above

Yes

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Session Classification: Quark and Lepton Flavour Physics

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