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Overview of Pienu results and the PIONEER project

Thursday, October 20, 2022 3:00 PM (30 minutes)

A next-generation rare pion decay experiment, PIONEER, is motivated by several inconsistencies between Standard Model predictions and data pointing towards the potential violation of lepton flavor universality. PIONEER will measure the charged-pion branching ratio to electrons vs muons (R_{π}), a quantity which is very sensitive to a wide variety of new physics effects - including those at very high mass scales- and which is theoretically predicted to a precision 15 times better than current experimental results. PIONEER will use a combination of new detector technologies based on LGAD silicon tracking target, a deep calorimeter with high solid angle coverage and high-speed electronics to optimize its energy and time resolution in view of matching the theoretical precision.

I'll discuss recent results from previous measurements of R_{π} , in particular from the PIENU experiment at TRIUMF, and present PIONEER's experimental goals.

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