

Probing new physics with rare kaon decays at CERN SPS

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Summary

The kaon physics has a long standing tradition at CERN SPS and the rare kaon decays offer a unique possibility to probe a large variety of Standard Model extensions. The NA48/2 experiment at CERN SPS performed searches for the lepton number violating decay $K^\pm \rightarrow \pi^\mp \mu^p \mu^\pm$, for new heavy or Majorana neutrinos in $K^\pm \rightarrow \mu^\pm N$, $N \rightarrow \pi^\pm \mu^\mp$, and for new degrees of freedom in the channel $K^\pm \rightarrow \pi^\pm X$ with X decaying into two muons. The primary goal of the NA62 experiment is the measurement of the branching fraction of the ultra rare decay $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ with 10% precision. About 10^{13} kaon decays will be collected allowing a diverse programme of searches for rare and exotic processes. The obtained results from the NA48/2 experiment and the expected performance of the NA62 experiment will be presented and discussed.

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