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Latest results on rare decays with NA62

Tuesday 6 September 2022 15:50 (20 minutes)

The NA62 experiment at CERN took data in 2016–2018 with the main goal of measuring the $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ decay.

The NA62 dataset is also exploited to search for light feebly interacting particles produced in kaon decays. Searches for $K^+ \rightarrow e^+ N$, $K^+ \rightarrow \mu^+ N$ and $K^+ \rightarrow \mu^+ \nu X$ decays, where N and X are massive invisible particles, are performed by NA62. The N particle is assumed to be a heavy neutral lepton, and the results are expressed as upper limits of $O(10^{-8})$ of the neutrino mixing parameter $|U_{\mu 4}|^2$. The X particle is considered a scalar or vector hidden sector mediator decaying to an invisible final state. Upper limits of the decay branching fraction for X masses in the range 10–370 MeV/ c^2 are reported. An improved upper limit of 1.0×10^{-6} is established at 90% CL on the $K^+ \rightarrow \mu^+ \nu \nu \nu$ branching fraction.

Dedicated trigger lines were employed to collect dilepton final states, which allowed establishing stringent upper limits on the rates lepton flavor and lepton number violating kaon decays. Upper limits on the rates of several K^+ decays violating lepton flavour and lepton number conservation, obtained by analysing this dataset, are presented.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

<https://na62.web.cern.ch/>

Is the speaker for that presentation defined?

No

Details

N/A

Internet talk

Maybe

Authors: CENCI, Patrizia (INFN Perugia (IT)); PIANDANI, Roberto (Univ. Autonoma de San Luis Potosi)

Presenter: PIANDANI, Roberto (Univ. Autonoma de San Luis Potosi)

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