Contribution ID: **58** Type: **Talk**

# Search for K+ decays to a lepton and invisible particles

*Wednesday, 25 August 2021 12:30 (30 minutes)*

The NA62 experiment at CERN reports searches for K+ ⟶ e+N, K+⟶μ+N and K+⟶μ+νX decays, where N and X are massive invisible particles, using the 2016-2018 data set.
The N particle is assumed to be a heavy neutral lepton, and the results are expressed as upper limits of O(10−9) and O(10−8) of the neutrino mixing parameter |Ue4|2 and |Uμ4|2, improving on the earlier searches for heavy neutral lepton production and decays in the kinematically accessible mass range.
The X particle is considered a scalar or vector hidden sector mediator decaying to an invisible final state, and upper limits of the decay branching fraction for X masses in the range 10-370 MeV/c2 are reported for the first time, ranging from O(10−5) to O(10−7).
An improved upper limit of 1.0 10−6 is established at 90% CL on the K+⟶μ+νν branching fraction.

## Internet talk

No

## Details

Prof. Paolo Massarotti

## Is the speaker for that presentation defined?

Yes

## Is this abstract from experiment?

Yes

## Name of experiment and experimental site

NA62 Experiment at CERN, https://na62.web.cern.ch/

**Primary authors:** MASSAROTTI, Paolo (Universita e sezione INFN di Napoli (IT)); OTHER AUTHOR; CENCI, Patrizia (INFN Perugia (IT))

**Presenter:** MASSAROTTI, Paolo (Universita e sezione INFN di Napoli (IT))

**Session Classification:** A High Energy Particle Physics