



Contribution ID: 93

Type: **Talk**

First NA62 search for long-lived new physics particle hadronic decays

Thursday, 19 September 2024 10:25 (20 minutes)

The NA62 experiment at CERN, designed to measure the highly-suppressed decay $K^+ \rightarrow \pi^+ \nu \bar{\nu}$, has the capability to collect data in a beam-dump mode, where 400GeV protons are dumped on an absorber. In this configuration, New Physics (NP) particles, including dark photons, dark scalars and axion-like particles, may be produced and reach a decay volume beginning 80m downstream of the absorber. A search for NP particles decaying in flight to hadronic final states is reported, based on a blind analysis of a sample of 1.4×10^{17} protons on dump collected in 2021.

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Session Classification: Morning 4