



Contribution ID: 30

Type: **Parallel**

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

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 400-GeV 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 80-m 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.

Secondary track

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Session Classification: T09

Track Classification: T09 - Beyond the Standard Model