

PHYSICS BEYOND SM WITH KAONS AT NA62

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The NA62 experiment at CERN SPS was designed to measure $BR(K^+ \rightarrow \pi^+ \nu \bar{\nu})$ with in-flight decays, a novel technique for this channel. NA62 took its first physics data in 2016, reaching the sensitivity to the decay at the Standard Model BR. The experiment collected 10 times more statistics in 2017 and a similar amount of data is expected from the 2018 run.

The final result on $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ from the full 2016 data set and the expected improvement and background evaluation from the analysis on 2017 data will be presented.

A large sample of charged kaon decays into final states with multiple charged particles was also collected in 2016-2018. The sensitivity to a number of Lepton Flavour and Lepton Number violating K^+ decays provided by this data set is an order of magnitude beyond the current state of the art. Results of the search for these processes with a partial NA62 data sample are available for presentation.

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