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Latest results from the NA62 experiment at CERN.

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The NA62 experiment at the CERN SPS is designed to measure the branching ratio of the $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ decay, one of the best candidates to reveal indirect effects of new physics at the highest mass scales with a very precisely predicted branching ratio of less than 10^{-10} .

NA62 took data in 2016-2018.

Data statistics collected in 2016 allowed NA62 to reach the Standard Model sensitivity for $K^+ \rightarrow \pi^+ \nu \bar{\nu}$, entering the domain of 10^{-10} single event sensitivity and showing the proof of principle of the experiment. Thanks to the statistics collected in 2017, NA62 surpasses the present best sensitivity. The analysis strategy is reviewed and the preliminary result from the 2017 data set is presented.

The sensitivity to a range of lepton flavour and lepton number violating kaon decays provided by the NA62 data set improves over the previously reported measurements. Results from the searches for these processes with a partial NA62 data sample are presented.

A high-intensity fixed-target setup and detector performance make the NA62 experiment particularly suited for searches of new physics from faintly interacting particles in the MeV–GeV mass range: heavy-neutral leptons, axion-like particles, and others. The results from the analysis of data taken with dedicated setup and triggers developed to this purpose will be highlighted.

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