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Searches for hidden sectors and lepton flavour violation in kaon decays at the NA62 experiment

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Rare kaon decays are among the most sensitive probes of both heavy and light new physics beyond the Standard Model description thanks to high precision of the Standard Model predictions, availability of very large datasets, and the relatively simple decay topologies. The NA62 experiment at CERN is a multi-purpose high-intensity kaon decay experiment, and carries out a broad rare-decay and hidden-sector physics programme. NA62 has collected a large sample of K^+ decays in flight during Run 1 in 2016-2018, and the ongoing Run 2 which started in 2021. Recent NA62 results on searches for hidden-sector mediators and searches for violation of lepton number and lepton flavour conservation in kaon decays based on the Run 1 dataset are presented. Future prospects of these searches are discussed.

Secondary track

T09 - Beyond the Standard Model

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