

Precision measurements of kaon decays at NA62 experiment

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During the years 2016-2018 the NA62 experiment at CERN collected the world's largest dataset of charged kaon decays. This led to the observation of the $K^+ \rightarrow^+ \nu \bar{\nu}$ decay and the leading measurement of its branching fraction at the level of $\sim 10^{-10}$. In this talk the NA62 experiment reports recent results from analyses of $K^+ \rightarrow^0 e^+ \nu \gamma$ (Ke3g), $K^+ \rightarrow^{+-} \pi^+ \pi^-$ (Kpimm) and $K^+ \rightarrow^+ \gamma \gamma$ (Kpigg) decays, using a data sample recorded in 2017–2018. The radiative Ke3g decay has a data sample of $O(100k)$ candidates with a sub-percent background contamination. Published results with the most precise measurement of Ke3g branching fractions and T-asymmetry are presented. The Kpimm sample consists of $\sim 27k$ signal events with negligible background contamination. The recently published results include the most precise measurement of branching fraction and the decay form factor. The Kpigg sample consists of 4k signal events with 10% background contamination. The presented Kpigg analysis improves the precision of the branching fraction measurement by a factor of 3 with respect to the previous measurements.

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