

Analysis of the rare $K^+ \rightarrow e^+ \nu^{+-}$ decay in the NA62.

Monday, 9 November 2020 17:30 (15 minutes)

The main goal of the NA62 experiment at CERN is to measure the probability of the ultra-rare $K^+ \rightarrow e^+ \nu \nu$ decay. The collected statistics for 2016-2018 years allow us to analyze other rare decays, in particular, $K^+ \rightarrow e^+ \nu^{+-}$. Since the inner bremsstrahlung (IB) for $K^+ \rightarrow e^+ \nu^{+-}$ decay is suppressed (0.03%), this decay is well suited for measuring form factors (F_V , F_A , and R). The chiral perturbative theory (ChPT) prediction of the decay probability $K^+ \rightarrow e^+ \nu^{+-}$ with a value of $1.12 * 10^{-8}$ is known. The previous experimental result is $(1.7 \pm 0.5) * 10^{-8}$.

We present the research methodology, the first results of signal selection, and the study of the background sources for the decay.

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Session Classification: High energy physics

Track Classification: HEP I - physics on accelerators