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New Measurement of the $K^+ \to \pi^+ \nu\bar{\nu}$ Branching Ratio by the CERN NA62 Experiment

Wednesday 11 June 2025 16:15 (30 minutes)

The $K^+ \to \pi^+ \nu\bar{\nu}$ decay is a highly suppressed flavor-changing neutral current dominated by short distance dynamics. The predicted Standard Model (SM) branching ratio is (8.4 ± 1.0) × 10-11. Given its properties, this process is often called a "golden mode" for New Physics searches.

The CERN SPS NA62 experiment has now achieved a signal significance above five sigmas. The branching ratio agrees with the SM predictions within 1.7 σ.

In this talk, I will review the NA62 $K^+ \to \pi^+ \nu\bar{\nu}$ searches based on data collected in 2016–2018 and 2021–2022.

Keyword-1

rare kaon decays

Keyword-2

flavor physics

Keyword-3

Author: VELGHE, Bob (TRIUMF (CA))

Presenter: VELGHE, Bob (TRIUMF (CA))

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