

# Phenomenology 2021 Symposium



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## Measurement of the very rare $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ decay

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The NA62 experiment at CERN reports the branching ratio measurement  $BR(K^+ \rightarrow \pi^+ \nu \bar{\nu})$  at 68% CL, based on the observation of 20 signal candidates with an expected background of 7.0 events from the total data sample collected at the CERN SPS during 2016-2018. This provides evidence for the very rare  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  decay, observed with a significance of  $3.4\sigma$ . The experiment achieves a single event sensitivity of  $(0.839 \pm 0.054) \times 10^{-11}$ , corresponding to 10.0 events assuming the Standard Model branching ratio of  $(8.4 \pm 1.0) \times 10^{-11}$ . The result represents the most accurate measurement achieved so far of this ultra-rare decay. Future prospects and plans for data taking from 2021 will also be presented.

### Summary

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