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## Status of the $K_L \rightarrow \pi^0 \nu \bar{\nu}$ number study at the J-PARC KOTO experiment

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The KOTO experiment studies the CP-violating rare decay  $K_L \rightarrow \pi^0 \nu \bar{\nu}$ , conducting with the 30-GeV Main Ring Proton Synchrotron at J-PARC in Japan. In the previous analysis on data taken in 2016-18, we found three candidate events in the signal region with a single event sensitivity of  $7 \times 10^{-10}$ , which is statistically consistent with the background expectation. The dominant background source then was the charged kaon contamination in the neutral beam.

Since 2020, we have accumulated data with a new detector that detects the charged kaon in the beam to suppress such backgrounds. We are analyzing data, taken in 2021 in particular, whose statistics corresponds to a similar sensitivity. We will report the status of the analysis and plans for the next run.

### In-person participation

No

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