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## Search for rare electroweak decay $B^+ \rightarrow K^+$ in early Belle II dataset

*Thursday, 29 July 2021 10:15 (15 minutes)*

In the recent years, several measurements of  $B$ -decays with flavor changing neutral currents (FCNC), i.e.  $b \rightarrow s\ell\ell$  transitions, hint at deviations from the Standard Model (SM) predictions.

A search for the flavor-changing neutral current decay  $B^+ \rightarrow K^+ \nu \bar{\nu}$  is performed with data sample corresponding to  $63 fb^{-1}$  collected at the  $Y(4S)$  resonance by the Belle II experiment. A novel measurement method is developed, which exploits topological properties of the decay that differ from both generic B-meson decays and light-quark pair-production. This inclusive tagging approach has the benefit of a higher signal efficiency compared to previous searches for this rare decay. As no significant signal is observed, an upper limit on the branching fraction of  $B^+ \rightarrow K^+ \nu \bar{\nu} = 4.1 \times 10^{-5}$  is set at the 90% confidence level. We will talk about this novel analysis technique and the result.

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### Collaboration / Activity

Belle II

**Presenter:** KURZ, Simon (BELLE (BELLE II Experiment))**Session Classification:** T08: Flavour Physics and CP Violation**Track Classification:** Flavour Physics and CP Violation