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## **【307】 Search for the $B^+ \rightarrow K^+ \tau^+ \tau^-$ decay**

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We search for the  $B^+ \rightarrow K^+ \tau^+ \tau^-$  decay using data collected by the LHCb experiment, reconstructing the  $\tau$  leptons in  $\tau^+ \rightarrow \pi^+ \pi^- \pi^+ (\pi^0) \bar{\nu}_\tau$ .

This decay is produced in electroweak penguin loop transitions, highly suppressed in the standard model.

New models explaining the tensions observed in  $b \rightarrow sl^+ l^-$  and  $b \rightarrow cl\bar{\nu}$  transitions also predict enhancements of the  $b \rightarrow s\tau\tau$  branching fractions of up to  $\mathcal{O}(10^3)$  over the standard model prediction.

We present initial studies of the reconstruction of this decay, the analysis of potential background sources and a preliminary estimate of our sensitivity to this channel.

### **Theoretical Work**

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