

SYNERGIES TOWARDS THE FUTURE STANDARD MODEL

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Disentangling left and right-handed neutrino effects in $B \rightarrow K^{(*)}\nu\nu$

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The first observation of $\mathcal{B}(B^+ \rightarrow K^+\nu\nu)$ by the Belle II experiment lies almost 3σ away from the Standard Model expectation. In this work we study this result in the SMEFT, extended by a light right-handed neutrino. We explore the correlations between the measured decay rate and other observables, such as $\mathcal{B}(B \rightarrow K^*\nu\nu)$ and $F_L(B \rightarrow K^*\nu\nu)$, showing that they could disentangle among scenarios involving left-handed neutrinos and those with the right-handed ones. Furthermore, we find that the high- p_T tails of Drell-Yan processes studied at LHC provide important constraints that help us exclude some of the scenarios consistent with the Belle II result.

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