

Towards establishing New Physics in $B^0 \rightarrow K^{*0} \ell^+ \ell^-$ decays

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Rare semileptonic $b \rightarrow s \ell^+ \ell^-$ transitions provide some of the most promising framework to search for New Physics effects.

Recent analyses have indicated an anomalous pattern in measurements of lepton-flavour-universality observables.

We propose a novel approach to independently and complementary clarify the nature of these effects by performing a simultaneous amplitude analysis of $B^0 \rightarrow K^{*0} \mu^+ \mu^-$ and $B^0 \rightarrow K^{*0} e^+ e^-$ decays.

This method allows the direct determination of the difference of the Wilson Coefficients $calC_9$ and $calC_{10}$ between electrons and muons,

and are found to be insensitive to both local and non-local hadronic contributions.

We show that considering the current preferred New Physics scenario a first observation of LFU breaking in a single measurement is possible with LHCb Run-II dataset.

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