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Constraints on New Physics in $b \rightarrow ul\nu_\ell$ Transitions

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The experimental measurements of the LFU ratios $R_{D^{(*)}}$, $R_{K^{(*)}}$ and $R_{J/\psi}$ strongly hint the presence of new physics beyond the standard model in $b \rightarrow cl\nu_\ell$ and $b \rightarrow sl\ell$ transitions, as these values show a tension of about $(2-3)\sigma$ from their standard model predictions. In this work, we investigate the possible manifestation of new physics in $b \rightarrow ul\nu_\ell$ transitions and its effects on various semileptonic q^2 -spectra. In particular, we analyse the decay modes $B^+ \rightarrow \eta^{(\prime)}\ell^+\nu_\ell$, within a standard model effective field theory approach. We use the available experimental data on various leptonic and semileptonic decays to constrain the parameter space of the relevant new physics couplings.

Session

Beyond the Standard Model

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