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Impact of $\Lambda_b \to \Lambda_c \tau \nu$ measurement on New Physics in $b \to c\, l \nu$ transitions

Wednesday 12 April 2023 18:40 (5 minutes)

Measurements of the branching ratios of $B \to D^{(*)}\tau\bar{\nu}/B \to D^{(*)}\ell\bar{\nu}$ and $B_c \to J/\psi\,\tau\bar{\nu}/B_c \to J/\psi\,\ell\bar{\nu}$ by the BaBar, Belle and LHCb collaborations consistently point towards an abundance of taus compared to channels with light leptons. However, the ratio $\Lambda_b \to \Lambda_c\tau\bar{\nu}/\Lambda_b \to \Lambda_c\ell\bar{\nu}$ shows a relative deficit in taus. The aim of this talk is to critically address whether data still points towards a coherent pattern of deviations, in particular in light of the sum rule relating these decays in a model-independent way. We find that no common new physics explanation of all ratios is possible within 2σ or 1.5σ, depending on the $calR(\Lambda_c)$ normalization to light lepton channels.

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