

An Imperative study of the angular observables in $\Lambda_b^0 \rightarrow \Lambda_c^+(\rightarrow \Lambda\pi^+)\tau\bar{\nu}_\tau$ decay in SM and in new physics

Friday 19 July 2024 12:00 (15 minutes)

We do the complete 4-body angular distribution for the decay of $\Lambda_b^0 \rightarrow \Lambda_c^+(\rightarrow \Lambda\pi^+)\tau\bar{\nu}_\tau$. We provide form factor for BGL parametrization and update the SM prediction for angular observables with the LFUV ratio $R(\Lambda_c)$ which we find consistent with the Lattice. For the first time, the CP violating (CPV) observable are analyzed. Using the recent LHCb result of $R(\Lambda_c)$ and $F_L(D^*)$ along with the current HFLAV average of $R(D)$, $R(D^*)$, we have performed a fit with one and two parameters. We found that a scenario $\mathcal{R}[C_{V_2}]$, can explain $R(D^*)$ and $R(\Lambda_c)$ but can't explain $R(D)$ marginally though all 1-operator scenarios can explain all the observable within 2σ . In two-parameter scenario $C_{S_1} - C_T$ is best-fit scenario for explaining all the observable within 1σ . We extensively studied correlations between observables in the presence of both one and two-operator NP scenarios.

Alternate track

1. Beyond the Standard Model

I read the instructions above

Yes

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Session Classification: Quark and Lepton Flavour Physics

Track Classification: 05. Quark and Lepton Flavour Physics