30th International Symposium on Lepton Photon Interactions at High Energies

Contribution ID: **168** Type: **Poster**

The SMEFT analysis of $\Lambda_b \to (\Lambda^*, \Lambda)\mu^+\mu^-$ and $\Lambda_b \to (\Lambda^*, \Lambda)\nu\bar{\nu}$ baryonic decays

Monday, January 10, 2022 4:17 PM (1 minute)

We study $\Lambda_b \to (\Lambda^*, \Lambda)\mu^+\mu^-$ and $\Lambda_b \to (\Lambda^*, \Lambda)\nu\bar{\nu}$ baryonic decays undergoing $b \to s\ell^+\ell^-$ and $b \to s\nu\bar{\nu}$ neutral transitions in a standard model effective field theory formalism. The $b \to sl^+l^-$ and $b \to s\nu\bar{\nu}$ transition decays are related in beyond the Standard Model physics by $SU(2)_L$ gauge symmetry and can be best exploited by using the Standard Model effective field theory which is based on an operator product expansion in inverse powers of the NP scale. We constrain the New physics parameter space by fitting the latest measurements of $R_{K^{(*)}}$, P_5', $\mathcal{B}(B_s \to \phi\mu^+\mu^-)$ and $\mathcal{B}(B_s \to \mu^+\mu^-)$ and give predictions of several observables pertaining to $\Lambda_b \to (\Lambda^*, \Lambda)\mu^+\mu^-$ and $\Lambda_b \to (\Lambda^*, \Lambda)\nu\bar{\nu}$ decays. Study of $b \to s\nu\bar{\nu}$ transition decays is well motivated because they are theoretically clean as they do not suffer from hadronic uncertainties beyond the form factors such as non-factorizable corrections and photon-penguin corrections. Simultaneous study of decays mediated via $b \to s\nu\bar{\nu}$ and $b \to sl^+l^-$ quark level transitions will provide valuable information about possible new flavor dynamics that is responsible for the anomalies present in $b \to sl^+l^-$ decays.

Primary authors: DAS, Nilakshi (NIT Silchar, Assam , India); DUTTA, Rupak (University of Kentucky); N, Rajeev

Presenter: DAS, Nilakshi (NIT Silchar, Assam , India)

Session Classification: Quark and charged lepton flavour

Track Classification: Flavour