Contribution ID: **1186** Type: **Parallel session talk**

Analyzing semileptonic $b \to u$ transitions with vector and scalar leptoquarks

Thursday 18 July 2024 18:00 (15 minutes)

Observed anomalies in the flavor sector as displayed by the LFU ratios $R_{D^{(*)}}$ in the tree level $b \to c\tau\nu_\tau$ transitions motivate the search for new physics beyond the standard model. The semileptonic tree level $b \to u$ sector may hide similar unexplored new physics. Considering a model-dependent approach, we explore the decay channel $B_c \to D\tau\nu_\tau$ within the framework of the U_1 and S_1 leptoquark models. As there are fewer experimentally measured observables in the $b \to u$ sector compared to the $b \to c$ sector, we correlate the new physics couplings of the two sectors within these leptoquark models. The parameter space of the new couplings is obtained using currently available experimental data. We then make predictions of some $B_c \to D\tau\nu_\tau$ observables, such as the branching fraction, the LFU ratio and the forward-backward asymmetry parameter within the two leptoquark models.

Alternate track

1. Beyond the Standard Model

I read the instructions above

Yes

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Session Classification: Quark and Lepton Flavour Physics

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