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Confronting quark-lepton unification with LFUV

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Quark-lepton SU(4) symmetry is an appealing paradigm, a step towards grand unification. It has been identified decades ago that the minimal potentially realistic models with the quark-lepton symmetry have the $SU(4) \times SU(2) \times U(1)$ gauge structure and naturally contain both gauge and scalar leptoquarks. Such models have been thoroughly studied by several authors.

In recent years, a lot of interest have been aroused by the experimental hints of lepton flavour universality violation (LFUV) in the B-meson decays. These are often interpreted as signals of existence of leptoquarks. We will present the study of the capability of the minimal SU(4) models to accommodate the LFUV. In particular, we will argue that leptoquark interactions in the considered models can partially accommodate subsets of the anomalous B-meson decay data, unavoidably predicting lepton flavour violating processes which will be testable at Belle II during the next years. On the other hand, the models are unable to explain the current central values of the B-anomalies and, thus, will be disproved if these are confirmed as signals of New Physics.

I read the instructions

Secondary track (number)

03

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