Contribution ID: **719** Type: **Parallel session talk**

Neutrino masses and $0\nu\beta\beta$ decays in leptoquark models

Thursday 18 July 2024 09:38 (17 minutes)

We explore the potential of neutrinoless double-beta ($0\nu\beta\beta$) decays to probe scalar leptoquark models that dynamically generate Majorana masses at the one-loop level. By relying on Effective Field Theories, we perform a detailed study of the correlation between neutrino masses and the $0\nu\beta\beta$ half-life in these models. We describe the additional tree-level leptoquark contributions to the $0\nu\beta\beta$ amplitude with higher-dimensional operators, which can overcome the ones from the standard dimension-five Weinberg operator for leptoquark masses as large as $\mathcal{O}(10^3\ \mathrm{TeV})$. In particular, we highlight a possibly ambiguity in the determination of neutrino mass ordering by only using $0\nu\beta\beta$ decays in this type of models. The interplay between $0\nu\beta\beta$ with other flavor measurements is also explored and we discuss the importance of properly accounting for the neutrino and charged-lepton mixing matrices in our predictions.

Alternate track

1. Neutrino Physics

I read the instructions above

Yes

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