

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

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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  $\mathcal{O}(10^3 \text{ TeV})$ . 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

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**Primary authors:** PIERRE SANTOS LEAL, Luighi (University of São Paulo, IFUSP / Université Paris-Saclay, IJCLab); Dr SUMENSARI, Olcyr (IJCLab); FAJFER, S; ZUKANOVICH FUNCHAL, renata (Universidade de São Paulo)

**Presenter:** PIERRE SANTOS LEAL, Luighi (University of São Paulo, IFUSP / Université Paris-Saclay, IJCLab)

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