

Non-standard Mechanisms of Double Beta Decay

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Neutrinoless double beta decay is a crucial probe for physics beyond the Standard Model. While it is usually interpreted as being mediated by the exchange of light Majorana neutrinos, non-standard contributions to neutrinoless double beta decay arise in many well-motivated scenarios of New Physics that aim to explain the lightness of neutrinos, such as sterile neutrinos, Left-Right Symmetry and R-parity Violating Supersymmetry. I will highlight such scenarios, the relevant formalism to calculate the decay rate of neutrinoless double beta decay in such a context and results on the constraints on New Physics from existing as well as expected sensitivities from future experimental efforts. While the neutrinoless mode is of main interest, I will also discuss non-standard mechanisms for the Standard Model allowed two-neutrino double beta decay mode and I illustrate how it can provide complementary information on neutrinos and physics beyond the Standard Model.

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