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Neutrinoless Double Beta Decay : the creation of matter without antimatter partners

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Neutrinoless Double Beta Decay is a hypothetical nuclear process in which two neutrons simultaneously decay into two protons plus two electrons and no antineutrino emission. If this decay were observed, it would point to new physics beyond the Standard Model of Particle Physics and it would allow us to establish the nature of neutrinos.

Today, the lower limits on the half-life of this process exceed 10^{25} - 10^{26} yr.

I will review the current status of the searches for Double Beta Decay and the perspectives to enhance the experimental sensitivity in the next years.

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