

# Latest results from KamLAND-Zen on neutrinoless double beta decay

*Friday, 8 November 2024 12:00 (20 minutes)*

Neutrinoless double beta decay ( $0\nu\beta\beta$ ) is an undetected rare nuclear process with significant implications for understanding the nature of neutrinos, their mass, and physics beyond the Standard Model. The most stringent limit on the  $0\nu\beta\beta$  half-life is established by KamLAND-Zen, an extension of the KamLAND neutrino detector in Japan, utilizing the isotope xenon-136 dissolved in a liquid scintillator. In this talk, I will present the latest results from KamLAND-Zen, submitted this summer. Backgrounds continue to challenge sensitivity to the  $0\nu\beta\beta$  process. The nature of these backgrounds will be discussed, with a particular focus on the long-lived isotopes created through muon spallation on xenon. Finally, I will provide an overview of potential future improvements, including the upcoming KamLAND2 upgrade.

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