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## The KamLAND-Zen experiment - a decade after the first result

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The KamLAND-Zen experiment provided new stringent constraints on the neutrinoless double-beta ( $0\nu\beta\beta$ ) decay half-life in Xe-136 using a xenon-loaded liquid scintillator. Improved search was based on an upgraded detector with almost double the amount of enriched xenon and an ultra-low radioactivity container, corresponding to an exposure of 970 kg yr of Xe-136. This new data provides valuable insight into backgrounds, especially from cosmic muon spallation of xenon, and has required the use of novel background rejection techniques. We obtained a lower limit for the  $0\nu\beta\beta$  decay half-life of  $T_{1/2} > 2.3 \times 10^{26}$  yr at 90% C.L., corresponding to upper limits on the effective Majorana neutrino mass of 36 – 156 meV using commonly adopted nuclear matrix element calculations.

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