

## Latest results of KamLAND-Zen: the most stringent limit on the half-life of neutrinoless double beta decay.

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There is currently no proof that neutrinos and antineutrinos are different particles, contributing to the theory that neutrinos are in fact Majorana. We hope to verify the theory through neutrinoless double beta decay ( $0\nu\beta\beta$ ), which could possibly take place in xenon. However, this process is extremely rare and therefore requires a super sensitive detector. The world leading experiment at the moment is KamLAND-Zen: a detector situated in a mine 1000m underground in Japan, where xenon-loaded liquid scintillator is used. In this talk it will become clear why KamLAND-Zen is the most sensitive detector today and what the main backgrounds are that still obscure the signal. In particular, I will treat the cosmic muon spallation background which is a problem in many experiments. Finally, I will present the recent findings of KamLAND-Zen where the inverted mass ordering region is probed for the first time.

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