

LABORATORI NAZIONALI DEL GRAN SASSO

SEMINAR ANNOUNCEMENT

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***Recent Results from
KamLAND and
KamLAND-Zen***

The KamLAND-Zen experiment is a new application of the Kam-LAND detector running in parallel with the ongoing antineutrino program at KamLAND. While KamLAND studies mainly reactor and geo-neutrinos, KamLAND-Zen searches for neutrinoless double beta ($0\nu\beta\beta$) decay of ^{136}Xe using a target of Xe-loaded liquid scintillator placed at the center of KamLAND. KamLAND-Zen recently completed its first phase of running, yielding a lower limit for the $0\nu\beta\beta$ decay half-life of ^{136}Xe : $T_{1/2}^{0\nu} > 1.9 \times 10^{25}$ yr at 90% C.L. Combining limits from KamLAND-Zen and EXO-200 gives: $T_{1/2}^{0\nu} > 3.4 \times 10^{25}$ yr at 90% C.L. Based on available nuclear matrix element calculations, this result is in tension with the neutrinoless double-beta decay detection claim in ^{76}Ge reported by a part of the Heidelberg-Moscow collaboration. In this talk I will describe the KamLAND/KamLAND-Zen experiments, the $0\nu\beta\beta$ results, as well results from the latest antineutrino dataset at KamLAND which includes the recent protracted shutdown of Japanese nuclear reactors.

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