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Recent Results from the KamLAND-Zen Experiment

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The decade-old KamLAND neutrino detector entered a new phase two years ago, with the goal of studying neutrinoless double beta decay in ^{136}Xe. To achieve this goal, the detector was augmented with a small balloon at the center of the detector, filled with liquid scintillator loaded with about 400\,kg of 91\% enriched ^{136}Xe. The KamLAND-Zen collaboration recently reported on new neutrinoless double beta decay search results with an exposure of 89.5\,kg-yr to this ^{136}Xe target. These findings, together with results reported by EXO-200, allow to perform the most stringent test to date on the claimed observation of $0\nu2\beta$ in ^{76}Ge. An unanticipated background, most likely due to ^{110m}Ag, limited KamLAND-Zen's ability to further study $0\nu2\beta$ and the collaboration embarked on a purification campaign to reduce this background. I will describe our latest $0\nu2\beta$ and $2\nu2\beta$ results, give a status of the detector and provide an outlook for the future of KamLAND-Zen.

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