

Abstract Submitted  
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**Upgrading KamLAND-Zen for improved sensitivity to neutrinoless double-beta decay** EMMETT KRUPCZAK, Massachusetts Institute of Technology, KAMLAND-ZEN COLLABORATION — KamLAND is a 1 kton liquid scintillator antineutrino detector located underground in Kamioka, Japan. The KamLAND-Zen experiment began in 2011, using KamLAND to search for neutrinoless double-beta decay ( $0\nu\beta\beta$ ). This process, if observed, would indicate that neutrinos are their own antiparticle and thus are Majorana fermions, a discovery that could help explain the matter-antimatter discrepancy in our universe. Currently, KamLAND-Zen is one of the most sensitive experiments to  $0\nu\beta\beta$ . In order to improve upon the present limits for  $0\nu\beta\beta$ , KamLAND is undergoing a series of upgrades to reduce background. This includes the construction of a new inner nylon chamber (“mini-balloon”). The current results and design considerations for the mini-balloon will be discussed.

Emmett Krupczak  
Massachusetts Institute of Technology

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