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The IsoDAR Sterile Neutrino Search

IsoDAR is designed as an eV-scale sterile neutrino search motivated by anomalies in short-baseline oscillation experiments. Conceptually, IsoDAR is an intense neutrino source near a kton scale detector such as KamLAND or the planned LSC at Yemilab. $\bar{\nu}_e$'s are produced via ${}^8\text{Li}$ isotope decay-at-rest, which is driven by a high current cyclotron. With 5 years of runtime, IsoDAR@KamLAND could measure over 800,000 IBD events and definitively cover global best fit regions to 3+1 sterile neutrino models. Additionally, the high $\bar{\nu}_e$ flux would produce the world's largest data set of $\bar{\nu}_e - e$ elastic scattering events for a precision electroweak measurement sensitive to non-standard neutrino interactions. Extensive design work has been done on the cyclotron and target for the IsoDAR neutrino source and an H_2^+ ion source is currently being commissioned. I will cover the IsoDAR experimental design, the IsoDAR physics possibilities, and technology being developed for IsoDAR.

Primary author: SMOLSKY, Joseph (M.I.T.)

Presenter: SMOLSKY, Joseph (M.I.T.)

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