

Abstract Submitted  
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**IsoDAR - A Definitive Search for Sterile Neutrinos** WILLIAM BARLETTA, USPAS and Department of Physics, MIT, DAEDALUS/ISODAR COLLABORATION — The steady development of high power cyclotrons, mostly in industry, is making possible a definitive, highly cost effective approach to the search for sterile neutrinos. In the proposed IsoDAR experiment a 600 kW beam of protons from a 60 MeV, H<sub>2</sub><sup>+</sup> cyclotron will impinge on a lithium target to generate copious Li-8. The Li-8 then decays at rest to yield a powerful source of anti-neutrinos that can be located ~20 m from a hydrogenous detector. In particular our collaboration has been designing the accelerator / target system to be consistent with installation in the Kamioka mine to use the Kamland detector to record inverse beta decay events. We show that this source / detector combination can reveal or exclude the global-fit allowed region at 5 sigma in four months and differentiate between 1 and 2 sterile neutrinos with a few years of continued running. Our studies also show that high power cyclotrons will provide the most cost effective source for such an experiment. In addition, the 60 MeV IsoDAR cyclotron would be an ideal injector for DAEdALUS, our approach to measuring CP violation in the neutrino sector with decay-at-rest experiment.

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