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Measuring ^8B Solar Neutrino Elastic Scattering with KamLAND
LINDLEY A. WINSLOW, University of California, Berkeley, KAMLAND COLLABORATION — The precision measurement of ^8B solar neutrinos elastic scattering in Super KamiokaNDE is one of the key measurements supporting the LMA + MSW solution to the solar neutrino problem. Though much smaller than Super KamiokaNDE, KamLAND is sensitive to ^{8}B elastic scattering events and would expect to detect 3.3 ± 0.5 events per kilo-ton day above 5.5 MeV in the case of no oscillations. Since KamLAND uses scintillation light instead of Cerenkov light to detect these events the backgrounds and experimental methodology is different. The main backgrounds are natural radioactivity in the liquid scintillator, external high energy gammas, and light radioactive nuclei from muon spallation. The radiogenic backgrounds from natural U and Th above 5.5 MeV are negligible. The background from high energy gamma rays from the stainless steel supporting KamLAND and the surrounding rocks can be shielded by choosing an appropriate fiducial volume. The most problematic background is from short lived light nuclei made by muon spallation mainly ^{11}Be which has a $\tau_{1/2} = 13.6s$ and an endpoint of 11.5 MeV. The production rate of ^{11}Be is not well understood but preliminary analysis shows that the measurement of ^8B neutrinos elastic scattering is possible with KamLAND. I will describe how KamLAND can be used to measure the solar neutrino flux from the decay of ^8B

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