Cornell University Library

We gratefully acknowledge supp
the Simons Fo
and member ins

High Energy Physics - Experiment

Measurement of the 8B Solar Neutrino Flux with the KamLAND Liquid Scintillator Detector

KamLAND Collaboration: S. Abe, K. Furuno, A. Gando, Y. Gando, K. Ichimura, H. Ikeda, K. Inoue, Y. Kibe, W. Kimura, Y. Kishimoto, M. Koga, Y. Minekawa, T. Mitsui, T. Morikawa, N. Nagai, K. Nakajima, K. Nakamura, M. Nakamura, K. Narita, I. Shimizu, Y. Shimizu, J. Shirai, F. Suekane, A. Suzuki, H. Takahashi, N. Takahashi, Y. Takemoto, K. Tamae, H. Watanabe, B.D. Xu, H. Yabumoto, E. Yonezawa, H. Yoshida, S. Yoshida, S. Enomoto, A. Kozlov, H. Murayama, C. Grant, G. Keefer, D. McKee, A. Piepke, T.I. Banks, T. Bloxham, J.A. Detwiler, S.J. Freedman, B.K. Fujikawa, K. Han, R. Kadel, T. O'Donnell, H.M. Steiner, L.A. Winslow, D.A. Dwyer, C. Mauger, R.D. McKeown, C. Zhang, B.E. Berger, C.E. Lane, J. Maricic, T. Miletic, M. Batygov, J.G. Learned, S. Matsuno, S. Pakvasa, M. Sakai, G.A. Horton-Smith, et al. (14 additional authors not shown) You must enabled JavaScript to view entire author list.

(Submitted on 4 Jun 2011 (v1), last revised 25 Aug 2011 (this version, v3))

We report a measurement of the neutrino-electron elastic scattering rate from 8B solar neutrinos based on a 123 kton-day exposure of KamLAND. The background-subtracted electron recoil rate, above a 5.5 MeV analysis threshold is 1.49+/-0.14(stat)+/-0.17(syst) events per kton-day. Interpreted as due to a pure electron flavor flux with a 8B neutrino spectrum, this corresponds to a spectrum integrated flux of 2.77+/-0.26(stat)+/-0.32(syst) x 10^6 cm^-2s^-1. The analysis threshold is driven by 208Tl present in the liquid scintillator, and the main source of systematic uncertainty is due to background from cosmogenic 11Be. The measured rate is consistent with existing measurements and with Standard Solar Model predictions which include matter enhanced neutrino oscillation.

Comments: 6 pages, 3 figures

Subjects: **High Energy Physics - Experiment (hep-ex)**; Solar and Stellar Astrophysics (astro-ph.SR); Nuclear Experiment (nucl-ex)

Cite as: **arXiv:1106.0861 [hep-ex]**

(or **arXiv:1106.0861v3 [hep-ex]** for this version)

Submission history

From: Lindley Winslow [view email]

[v1] Sat, 4 Jun 2011 21:45:46 GMT (22kb)

[v2] Fri, 1 Jul 2011 06:21:14 GMT (21kb)

[v3] Thu, 25 Aug 2011 20:45:20 GMT (21kb)

Which authors of this paper are endorsers?

Download:

- PDF
- PostScript
- Other formats

Current browse cont

hep-ex

< prev | next >

new | recent | 1106

Change to browse b

astro-ph

astro-ph.SR

nucl-ex

References & Citatio

- INSPIRE HEP (refers to | cited by)
- NASA ADS

Bookmark(what is this?)