

FINAL REPORT

**Study of Nuclei and Elementary Particles
At Low and Intermediate Energies**

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Publications

[Measurement of the 8B Solar Neutrino Flux with the KamLAND Liquid Scintillator Detector](#)

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[A study of extraterrestrial antineutrino sources with the KamLAND detector](#)

[A. Gando](#), [Y. Gando](#), [K. Ichimura](#), [H. Ikeda](#) ([RCNS, Sendai](#)), [K. Inoue](#) ([RCNS, Sendai](#) & [Tokyo U., IPMU](#)), [Y. Kibe](#), [Y. Kishimoto](#) ([RCNS, Sendai](#)), [M. Koga](#) ([RCNS, Sendai](#) & [Tokyo U., IPMU](#)), [Y. Minekawa](#), [T. Mitsui](#) ([RCNS, Sendai](#)) *et al.*.

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Final Report

The primary activity associated with this DOE grant was the construction, commissioning, operation, and analysis of results of the KamLAND experiment. KamLAND is a large (1kT) liquid scintillator neutrino detector located deep underground in the Kamioka mine in Japan. This effort was a spectacular scientific success, with a major discovery of neutrino oscillations in the “solar” sector and the pioneering measurement of geoneutrinos due to radioactive decay within the earth. During the final year of the grant period, effort was devoted to developing the new Daya Bay reactor neutrino experiment in China.

The participation of young scientists was a major part of the activity supported by this grant. Postdoctoral scientists Andreas Piepke, K. B. Lee, Johannes Ritter, Glenn Horton-Smith, Bryan Tipton, Christopher Jillings, Christopher Auger, and Daniel Dwyer were participants on KamLAND supported by this grant. In addition, Ph.D. student Chao Zhang received his Ph.D. in 2010.

Theoretical work was also supported under the supervision of Dr. Petr Vogel (Senior Research Associate emeritus) and Dr. Michael Ramsey-Musolf (Senior Research Associate).