

The 21 Century COE Project
Exploring New Science by Bridging Particle-Matter Hierarchy

Short-term Foreign Researchers
Research Report

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Host Researcher in Tohoku University: **Atsuto Suzuki**

Your Stay Period in Japan: From **Jan 14, 2004** to **Jan 24, 2004**

Title of Research in Japan: **KamLAND data acquisition and data analysis**

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Please write a research report of one or more pages and submit it with this cover to your host researcher till the end of this March.

KamLAND is already a successful experiment, but it is also an evolving one. Following on the triumphant discovery of low energy electron antineutrino disappearance in late 2002, KamLAND continues to take data in order to find a unique allowed interval for the smallest neutrino mass-squared difference and to measure that important constant of nature with precision. Continuous progress in data acquisition and analysis are required to achieve our goals. Accordingly, I undertook the following research activities at the KamLAND Mozumi office and in Sendai in late January, 2004:

Detector operations shift

The period of January 14-22 was a busy one, including the installation of new high voltage supplies and the commissioning of new high voltage control software. With feedback from the operations shift workers, including myself, most bugs were worked out of the new high voltage system and associated software, and the detector live time had returned to >90% by January 22. Such work is only possible on-site.

Event builder version control

All software used for data acquisition and summary dataset production is supposed to be maintained and tracked in Code Version System (CVS), but while on shift I was able to discover some files in routine use which were not properly accounted for. Bringing our CVS repository up to date with on-site operations was greatly facilitated by my presence here.

Discussion with Tohoku analysis group and Tohoku reactor data handling group

Following the end of my operations shift in Mozumi, I travelled to Sendai, where I attended a RCNS group meeting, discussed analysis issues with several students and senior faculty, and discussed the handling of reactor data with the responsible parties in RCNS. Such face-to-face discussions can be invaluable. Unfortunately, my time in Sendai was less than I had planned, due to a snow storm in Toyama which delayed by

departure for Sendai by one day.

I am grateful for this opportunity to visit Japan and for all the progress in KamLAND research which resulted.