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

Short-term Foreign Researchers

Research Report

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Your Stay Period in Japan: From February 10, 2004 to February 22, 2004
Title of Research in Japan:

The first thing I did on this trip was to take a KamLAND operation shift. KamLAND operates twenty-four hours a day year-round. All collaborators share the responsibility for operating the detector and monitoring the quality of incoming data through a shift system.

I participated in two important meetings regarding the operation of the KamLAND detector. One meeting focused on the operating trigger conditions. We reviewed the tests of a recent trigger system upgrade and made changes to the trigger mode for supernova. The second meeting concerned the structure of KamLAND operation shifts, and what changes we might make to improve them. Our discussion resulted in several recommendations to the collaboration to save manpower and improve KamLAND operations.

I also worked on several other projects during this trip. I did several maintenance jobs on the KamLAND front-end electronics: I installed current limits on the VME power supplies to avoid certain failure modes; I made several tests to check for cabling errors; and I ran and analyzed a baseline test to verify the correct functioning of the electronics.

My trip coincided with a firmware upgrade to the KamLAND trigger system. I ran several electronics checks to help verify that the updated trigger software functions correctly. I also participated in the review of trigger tests, as mentioned above.

Finally, I assisted with several tests, measurements and installations related to the planned KamLAND “4pi” system. This system is a new calibration tool that will allow up to position calibration sources at many points within the detector fiducial volume. It will be a significant upgrade over our current “z-axis” calibration system, which can only access the central vertical axis of the detector.