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

Short-term Foreign Researchers

Research Report

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Affiliation: Louisiana State Universiy

Host Researcher in Tohoku University:

Your Stay Period in Japan: From 18/03/04 to 30/03/04

Title of Research in Japan:

Neutrino Measurements using Nuclear Reactors

Notes:

I departed from the US March 18 and arrived in Japan March 19. I travelled from Tokyo to Niigata by train in order to attend the 3rd Workshop on Future Low-Energy Neutrino Experiments. This meeting is the third in a series discussing the possibility of measuring the third (and unknown) neutrino mixing angle using the neutrino flux from nuclear reactors. This three day workshop (March 20-22) was held in Sendai in order to visit the Kashiwazaki Nuclear Power Generating Station on the last day. This station is a possible site for such an international experiment.

After the meeting and the visit to the power plant, I travelled by car with one of my KamLAND collaborators to the Kamioka Observatory. From March 23 to March 30 I worked at the KamLAND experiment in Mozumi. During this time, an Americium Beryllium gamma and neutron source that was manufactured by my research group at LSU arrived on-site. I discussed how to perform initial testing on mechanical strength of the electron-beam welded capsule. A pressure test was then performed in a test chamber using liquid scintillator as a pressure medium. This simulates the conditions near the bottom of the KamLAND tank. By precisely weighing the source before and after it was determined that the hermetic seal was still intact after the trip from the United States. In addition, the scintillator used for testing was counted in the low-background facility at KamLAND to check for any Americium surface contamination. It was determined that there was no such contamination and the source was certified for deployment.

I would like to express my appreciation of the support of the 21st Century COE project for making my visit to the Kashiwazaki Nuclear Power Plant and my on-site work on the KamLAND calibration source possible.