

# Physics Seminar

## Physics Results from KamLAND, a Successful AntiNeutrino Detector

**Dr. Diane Markoff**

**Associate Professor**

**Department of Physics, North Carolina Central University**

**Date and Time : 24 July, 2015, 16:30-17:30**

**Place : Collaboration room, 3F, in the Collaboration building**



The Kamioka Liquid scintillator AntiNeutrino Detector (KamLAND) is located in the Kamioka mine in Gifu prefecture. The detector primary volume consists of about 1 kton of ultrapure liquid scintillator shielded by a 3.2 kton water Cerenkov detector. Since data production began in 2002, the KamLAND collaboration contributed to strict limits on the neutrino oscillation parameter space through the measurement of reactor antineutrinos and on the radiogenic heat production by isotopes in the Earth's interior through measurements of the geoneutrino flux. In addition, using the KamLAND detector, the collaboration measured the boron-8 and beryllium-7 solar neutrino fluxes, and measured radioactive isotope production from cosmic ray muon spallation which is an important source of background events in neutrino detectors, double beta decay experiments, and dark-matter searches. The current KamLANDZen collaboration has provided an upper limit of the zero neutrino double beta decay half life in xenon which constrains the Majorana mass range. In this seminar, we will discuss the KamLAND detector configurations, the measurements, and the major results over the lifetime of the detector.

Contact: Department of Physics, Hirokazu Ishino (7818)

