



Tuesday 5 July, 09:45 – 10:10

Session 5: Reactor neutrinos

(invited) **Results from RENO and prospects with RENO-50**

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The Reactor Experiment for Neutrino Oscillation (RENO) is a reactor based neutrino oscillation experiment to measure the neutrino mixing, θ_{13} , using antineutrinos emitted from the Hanbit nuclear power plant in Korea. RENO has made a definitive measurement of θ_{13} in 2012. Recently more precise measurements have been obtained and presented on the mixing angle and the reactor neutrino spectrum, using about 500 live days of data to observe an energy dependent disappearance of reactor ($\bar{\nu}_e$) by comparison of prompt signal spectra measured in two identical near and far detectors.

A large liquid scintillator and multi-purpose neutrino experiment, RENO-50, is proposed to be built for playing a leading role in neutrino physics and neutrino astronomy. The detector will be located at the underground of Mt. Guemseong in Naju, 50 km distant from the Hanbit nuclear power plant. It will make an unprecedentedly high precision measurement of neutrino oscillation parameters of θ_{12} , Δm_{21}^2 , and Δm_{2e}^2 , and explore the neutrino mass ordering using reactor antineutrinos. The large neutrino telescope is expected to observe $\sim 6,000$ neutrino burst events from a galactic supernova, providing a revolutionary information on the supernova explosion and cooling mechanisms. The detector can also play the role of a geo-telescope to measure the geo-neutrino flux from the Earth and will shed new light on the heat generation mechanism of the Earth. This will result in the first observational step on geo-science. In this talk, latest RENO results and current status of RENO-50 will be presented.