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Recent Progress of EGADS

Evaluating Gadolinium's Action on Detector Systems (EGADS) is a facility to test the feasibility of anti-electron neutrino detection by a gadolinium (Gd)-doped water Cherenkov detector. It is located in the Kamioka mine near Super-Kamiokande (SK). The addition of Gd allows a large background reduction, taking a coincidence of positron and gamma cascade of 8.0 MeV total energy from a captured neutron on Gd in the inverse beta decay reaction. The addition of Gd in SK can enable us to observe supernova relic neutrino signals for the first time.

We have installed 240 photo-sensors in the EGADS detector tank in the summer of 2013, after confirming that the attenuation length of the purified Gd-water in the empty stainless steel tank is maintained high. First with pure water only, the detector took data with various calibration sources. Gd has recently been loaded, making EGADS a fully functional anti-electron neutrino detector. The effects of Gd on the detector materials will also be studied. We present the recent status and progress of EGADS including the calibration results.

Primary author: KIBAYASHI, Atsuko (Okayama University)

Presenter: KIBAYASHI, Atsuko (Okayama University)

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