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Measurement of reactor neutrinos with neutron captures on hydrogen at RENO

RENO has been taking data since August, 2011 and successfully measured the smallest neutrino mixing angle, θ_{13} . This measurement was based on reactor neutrino events with neutron captures on gadolinium and thus quite low backgrounds. RENO can also measure the θ_{13} in the reactor neutrino sample with neutron captures on hydrogen, due to manageable accidental-background. This is possible because of ultra-low radioactivity in the photomultiplier tubes, and successful purification of liquid scintillator and detector materials. By employing this neutron-capture-on-hydrogen detection method, we can make use of ~ 2.7 times more target protons than earlier gadolinium measurement. This independent measurement provides a valuable cross-check on the systematic uncertainties of the earlier θ_{13} results. In this poster, we present the results from the hydrogen capture analysis.

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