

PhyStat- ν Workshop

Study of Neutrino Oscillation at Short Baseline

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on behalf of NEOS Collaboration

May 30, 2016

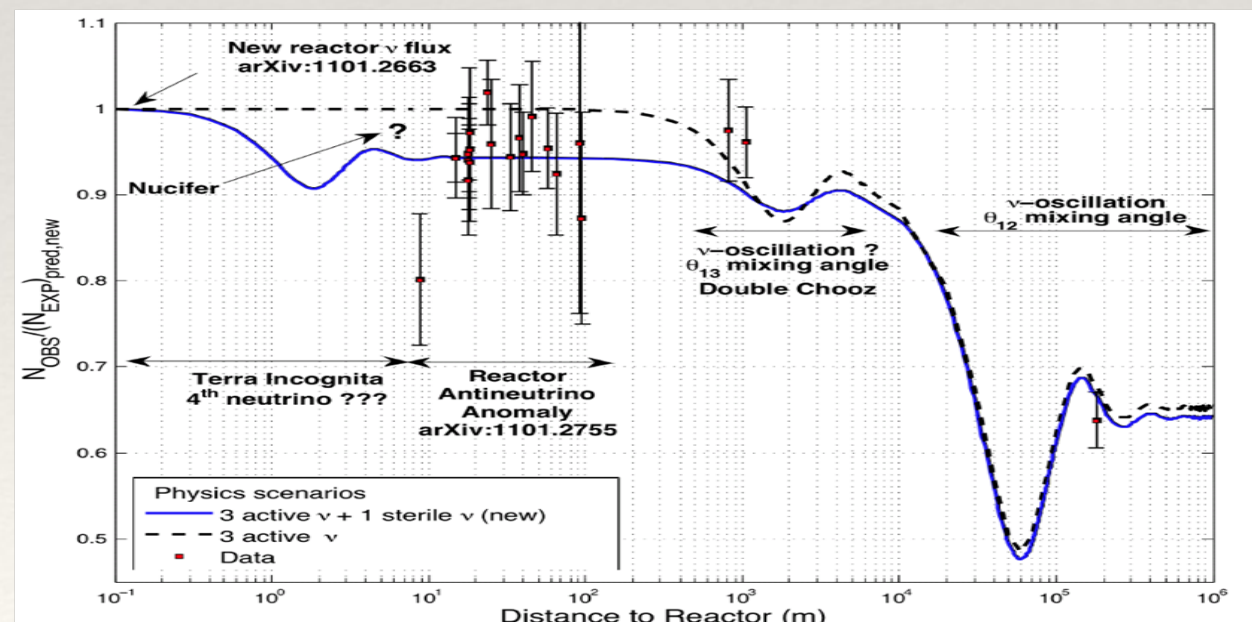
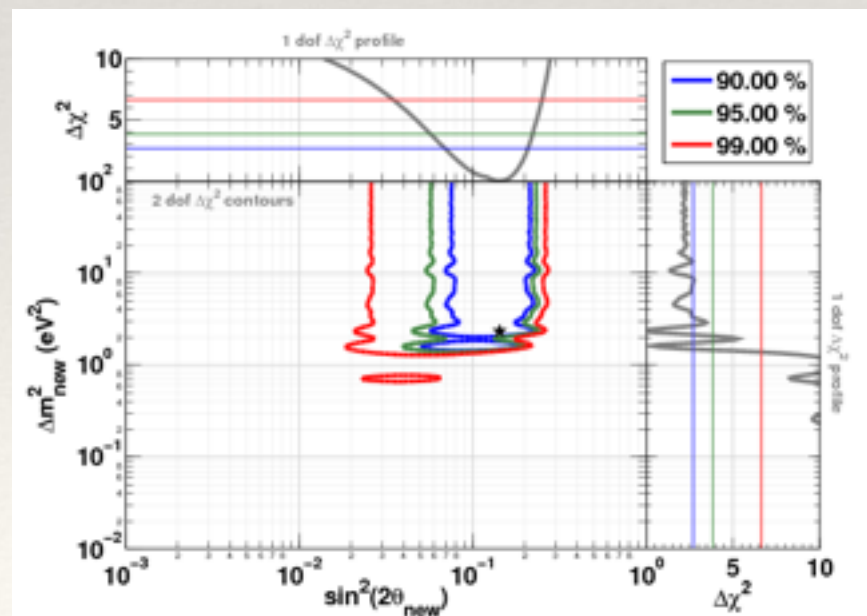
NEOS Experiment

NEOS ?

- Neutrino Experiment for **O**scillation at **S**hort baseline
- To verify the existence of sterile neutrino

Why at a short distance ?

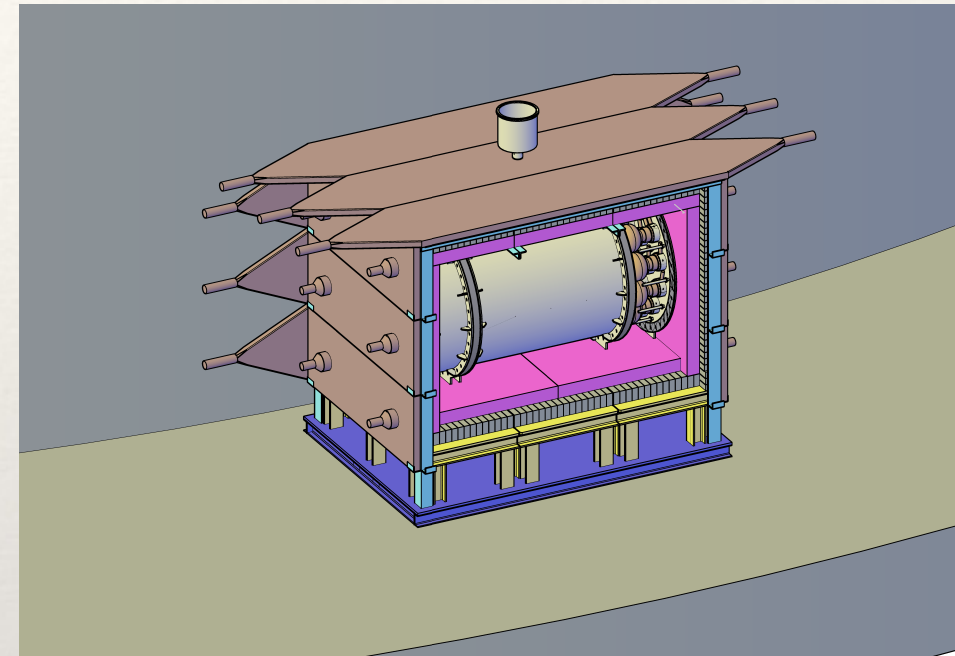
- Mass square difference Δm_{41}^2 is expected to be larger than Δm_{31}^2 .
- For large mass square difference



NEOS Experiment

The NEOS detector

- A cylindrical homogeneous target of 1000 L of 0.5 Gd-loaded liquid scintillator
- 38 8-inch PMTs (Hamamatsu R5912).
- Shieldings: Borated polyethylene, lead, and active muon veto dectector



Experimental site ?



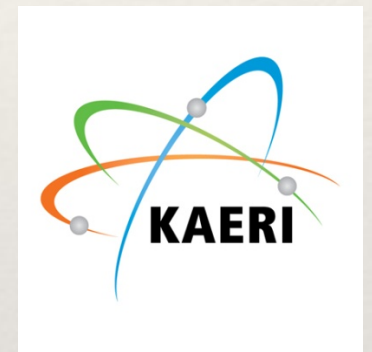
Tendon gallery at Habit reactor unit 5 in Korea

- Tendon gallery at reactor unit 5 of Hanbit nuclear power plant in Young-Gwang
- 3GWth power, 24 m baseline

NEOS Experiment

NEOS Collaborators ?

- 19 collaborators from 6 institutions.

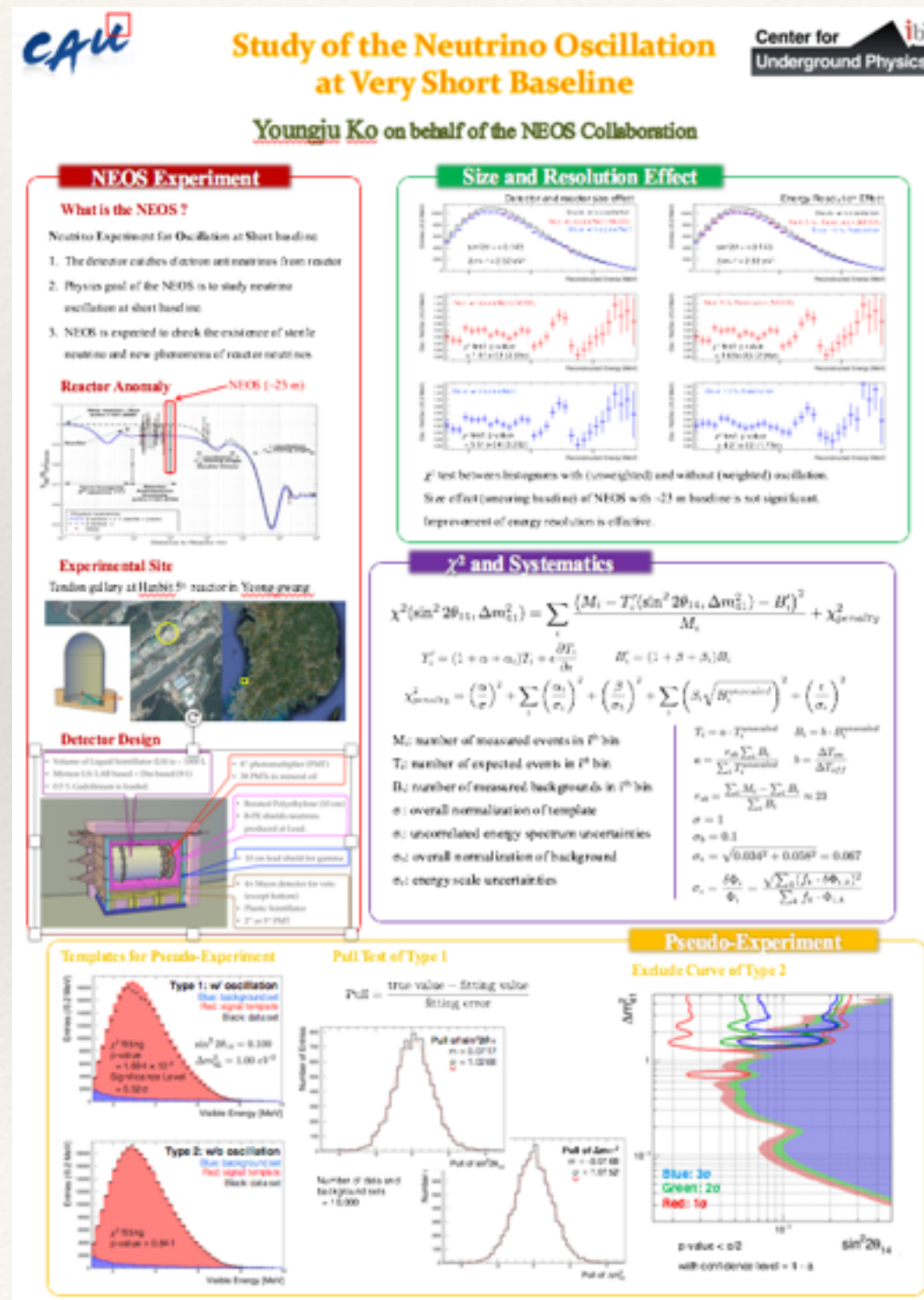


Timeline

- Data taking from August 2015 to May 2016 (1.5 month reactor off, 7 month reactor on)
- Spectral shape analysis is in finalization

Result Coming Soon !!

In this poster presentation



Motivation of NEOS Experiment

Detector size dependency

- Smearing effect due to the short distance of about 24 meters

Resolution comparison

- NEOS detector's 5 % / $\sqrt{E}$ resolution is compared with others.

Systematics and χ^2 including energy scale.

Pseudo-Experiment

- We developed our own fitting software for NEOS, and pull test has been done.
- Exclusion curves with toy MC are presented.

Thank you for your attention