

STEREO status

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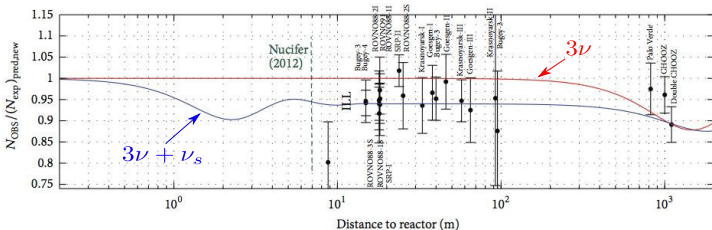
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- Reactor outgoing $\bar{\nu}_e$ flux predictions revised : +3 to 6%.
- Neutron lifetime updated : $\sigma_{IBD} \simeq 1/\tau_n \rightarrow +1.5\%$.
- ν experiments revisited + Daya Bay result :
 - ▶ $\bar{\nu}_e$ deficit : $R = N_{\bar{\nu}}^{\text{det}} / N_{\bar{\nu}}^{\text{pred}} = 0.933(21)$.

- Reactor Antineutrino Anomaly (RAA) at 3.1σ + Gallium anomaly.
- New physics at short baseline ?

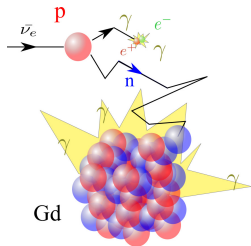
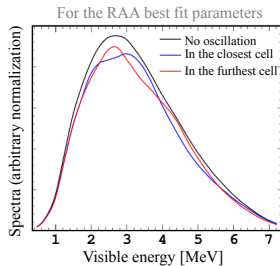
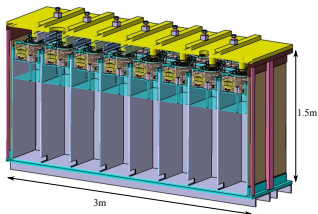


- An extra sterile ν with a mass $O(\text{eV})$ could explain the RAA.

Goal :

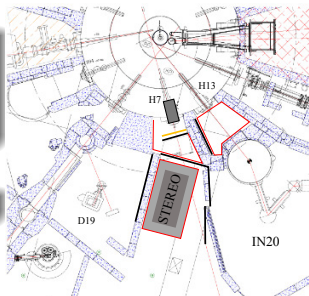
Unambiguous oscillation pattern in energy and distance observation @ short baseline.

- Close to the reactor core : ILL @ 10m.
- Relative spectrum distortions with distance : segmented detector.
- Accurate detector response : Gd-loaded liquid scintillator time-honored technology.

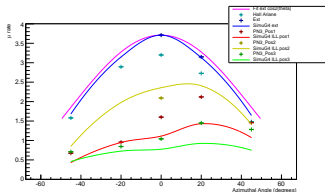


Background / Shielding status

- H7 concrete plug + 10 cm Pb installed.
 - Fast neutron H13 shield installed.
 - On site background measurements (γ , n, μ).
- Front and sides lead walls to be installed.



- Magnetic shielding to ensure PMT stable operation required!

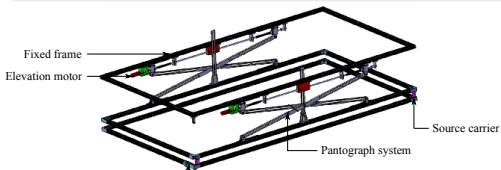
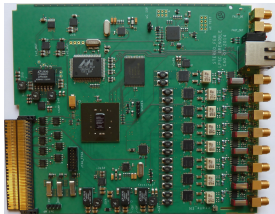


Detector developments

- Detector final geometry validated by simulation.

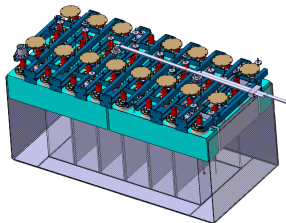
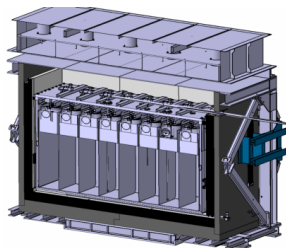
Prototypes

- Half a detector cell being tested.
 - 8 channels front-end board based on μ TCA technology (LPSC).
 - Veto counter : $3 \times 2 \times 0.25 \text{ m}^3$ (LPSC).
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- Radioactive source calibration system components received : being built (LAPP).



Technical design and construction

- Design of the mechanical structure and shielding well advanced (LAPP).
 - STEREO will be mounted off-line and moved using air cushions (LAPP).
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- PMTs and scintillating liquid components purchased.
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- **Unexpected safety requirement :**
 - ▶ Revision of the detector vessel concept.
 - ▶ New concept validated.
 - ▶ Schedule delayed compared to the original one.



- **Design phase ending. Starting the construction phase.**
- End 2014 : call for tenders.
- Winter 2015 : site preparation, shielding installation.
- Spring/Summer 2015 : shielding validation.
- Summer 2015 : detector vessel delivery.
- End 2015 - Beginning 2016 : detector installation and commissioning.
- April 2016 : beginning of data taking.

- STEREO : experiment with a high discovery potential.
- Prototypes under test to validate the detector response.
- Call for tenders in the next months.
- Tight schedule but start taking data in 2016 !

Thanks for your attention !