Questions about the Daya Bay experiment on anti-ν_e disappearance

1. How does one obtain equation (1) of the paper? – **Shamim**
2. Equation 1 uses $\Delta m^2_{31} = m_{32}^2 \pm m^2_{21}$. What does that mean? Which value is used (+ or -) for the extraction of $\sin^2(2\theta_{13})$? - **Youngshin**
3. What is the purpose of the resistive plate chamber (RPC) array? How does it work? - **Bijaya**
4. Why do neutrons have to thermalize first in Gd detector before being detected? Why is there delayed neutron capture in Gd? - **Brian**
5. How does a Cherenkov detector work ? - **Andrea**
6. What is CP violation? - **Sushil**
7. How does one measure the efficiency of detecting antineutrino in the detectors? Why do you need to know this value? – **Dilu**
8. Can we distinguish neutrinos from the reactors and neutrinos from other sources? (space, atmosphere etc.) - **Azamat**
9. The paper states "the best-fit value is $\sin^2(2\theta_{13})$=0.092± … with a χ^2/NDF of 4.26/4". Why 4? What are the 4 degrees of freedom? – **Cody**
10. 105% efficiency, how is that possible? **Anthony**
11. Why did they choose gadolinium doped liquid scintillators (Gd-Ls) as a target in this experiment? **Arbin**
12. What is the energy distribution of anti-ν produced by the reactors? **Bing**
13. What is χ^2 ? What does it tell us? **Alina**

Open for discussion if time permits

14. How effective is H_2O shield being underground on reducing background due to cosmic rays?
15. What are masses and flavor Eigen states? How are they different? Why do we normally expect them to be the same?
16. Does it matter how the particles enter the detector? Can they enter from above? Below? On the sides?
17. Suppose two identical detectors looking at a point like source, one is close and the other is far from the source. Is the difference in solid angle taken into account in equation (1)?