

AX-PET DAQ/Analysis meeting
14/10/09

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Agenda:

Status of measurements Mod2 (bld 304)

Next suggested actions

Simulations

Status of measurements Mod2 (bld 304)

- 2 modules configuration: a setup with both Mod1 and Mod2 fully working is finally obtained (using a GP5 chip board taken from Jacques setup). Presently only one module at the time is used.
- mapping of the module: verified and correct, there's no mismatch between Mod1 and Mod2. Two different mapping files - one for each module - will be needed anyway, because of the repairing of one GP5 board used for Mod2 (one broken channel, moved to a new one). The problem originally observed in the mapping is purely a software problem (still to be understood).
- new mechanics: new mechanics available, with reproducible positions of the tagger / source; larger source holder, where the source can be inserted more comfortably. The sticker on the source cannot be removed, if needed in the future we will enlarge the source holder even more.
- module alignment: tested with the laser from the upper to the lower reference point. A small tilting angle is observed, but a better answer will come from the data. Still some action can be taken from the mechanical point of view.
- first measurements with "big" tagger: we realized that the so called 'big' tagger used also in the past for the energy calibration is indeed the 10x2x12mm³(LYSO) crystal and not the 10x10x10mm³ (YAP). This explains the non uniform illumination of the WLS in the calibration data (as already shown in the last collaboration meeting) as well as the misalignment in the vertical direction.
The 10x10x10mm³ (YAP) crystal - which is mounted to a glass light guide with some optical grease and not glue - has anyhow a much smaller counting rate [~ 200 Hz] if compared with the 10x2x12mm³(LYSO) crystal [~ 4.5 kHz, in the same position]. This makes it not useful for the energy calibration. Some work on the optical coupling must be done on the YAP crystal.
- data for energy calibration: data files for the energy calibration have been taken, now the software can be used (and checked) for the study of the energy calibration.

Next suggested actions

- recover YAP crystal (optical coupling)
- recently a missing channel (L2.3) was observed. Need to understand / recover it.
- for the next calibration runs, use a low threshold (<63 keV) on the GP5 to be able to see the Lu escape line in the LYSO spectra and possibly include the peak in the calibrations (RLO $\sim 10\%$ at energies <100 keV)
- repeat the calibration in different conditions :
 - both with 10x2x12mm³(LYSO) and 10x10x10mm³ (YAP) in a central position
 - with 10x2x12mm³(LYSO) in different positions on the vertical axis
- systematic check of all the spare GP5 boards in the module setup (in the LYSO position)
- Jacques' setup in Bld28: reestablish a 'minimal' setup with the remaining components, according to Thomas' schedule

Simulations (Paola)

- new simulations available with different LYSO compositions
- Lu escape line now included and reproduced by the simulations
- still needed (before we can judge the agreement btw data and simulations): the exact LYSO composition of the crystals used (is there any difference btw the 2 batches of crystal received?)