AX-PET DAQ/Analysis meeting
7/7/10

Present: E.Chesi, V.Fanti, P.Weilhammer, P.Beltrame, W.Lustermann, C.Casella, P.Solevi (Skype),
M.Rafecas, C.Joram

Agenda:
DAQ Status: A20 controller / scaler / plan
Angular / Linear movement of 2nd module
Measurements with sources, EFOV
Hardware electronics status (scaler, clock, MPPC current measurement, low mult. trg)
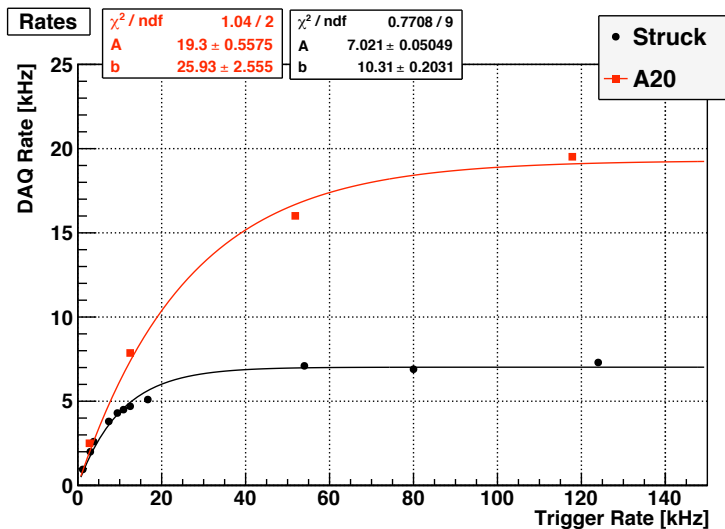Phantoms
AAA measurements preparation
New comers

DAQ Status: A20 controller
- A20 controller is promising in terms of rate (~ x3 wrt Struck):

- Verified that the quality of the data is identical with Struck and A20: done for pedestals,
  internal trigger, external trigger. <u>The results with the 2 controllers are totally identical</u>. (For
  these data the A20 has been used in "default" mode, with network booting and operation)

- Problems with the <u>stand alone booting</u> of the controller + data writing space: The
  question is under study (with the help of people from the accelerator division). The
  planned solution is to boot the A20 controller through pcaxpet2.

- <u>Following steps</u> to be verified, once the booting problem is solved :
        - check that the DAQ system works (A20 + pcaxpet2: data taking and writing)
        - build the full local network, including pcaxpet1
        - check DIM functioning

- To be done: <u>increase the VME board clock speed</u>, check the performance in terms of rate
  (possible further improvement?) and check the data quality at higher clock rates.

DAQ Status: Scaler
- Basically working (except a few items e.g. test pulse - maybe faulty module?)
- Still under test with a stand alone software
- To be integrated into the DAQ (+ "bintodat" equivalent)
- Macro to display the rate plots: under development.

Angular / Linear movement of the 2nd module:
- DAQ development postponed after the DAQ controller / network matters are solved.
- Arrange half day with Niel Dixon (Romer Arm) to check the alignment of the modules and measure the linear position corresponding to a few desired angular positions

Hardware electronics (scaler, clock, MPPC current measurement, low mult. trg?) :
- Reported by Viviana : 2 PCB in preparation, and probably ready by next week
- Need Alan (in Bari now) to get a clear picture of the status / deadlines

Measurements plans:
- Magdalena will provide a measurement plan for EFOV, both for the measurements with sources at CERN and for the measurements at AAA with phantoms.

Phantoms:
- NEMA commercial standard phantom: ordered, not yet delivered
- micro Derenzo from PSI: received
- capillaries from ETH-Z: received
- mini DeLuxe (constructed at CERN): half ready

Supports from phantoms : to be constructed (at CERN), for horizontal and vertical arrangement of the phantom in the FOV (axially at the center). It will always be possible to move in X,Y all the phantoms supports (with 7.5 mm pitch).

Magdalena volunteers to play with the filling of the phantoms with water / alcohol / ink, before we move to AAA.

AAA measurements preparation:
- contract sent from AAA to CJ: insurance policy still under investigation
- dates :
    - Moving in and setting up : Wed 21 July
    - Measurements with phantoms : Th22 - Fr23 - Mo25 - Tu26 -We27 July
    - Contingency: Th28 - Fr29 July
- transport dates :
    - Wed 21 July , 9:00 : from CERN-304 to AAA
    - Mon 2 Aug: from AAA to CERN-304
- 22Na source will NOT be available.
- personal dosimetries will be provided.

New comers (short term):
- PhD student (inside Marie Curie network project) from Lubjana, working on a PET scanner as well : 2 weeks stay, participating to the measurements
- PhD student: 1 day visit at AAA, during the measurements with phantoms
- one student (partially working on AXPET) to be the new DAQ responsible when Viviana will leave (option suggested by Markus Joos).

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Summary:
TO-DO LIST (not necessarily in this order) before moving to AAA
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1. Have A20 controller fully working in the DAQ + local network
2. VME Scaler : working / tested / integrated into the DAQ / macro to read the scaler files
3. DAQ controlled angular + linear movement
4. HW electronics implementation (scaler / clock / bias current meas / low mult trigger?)
5. Mechanical verification of alignment + angle precise measurement (for the few fixed angular positions defined by Magdalena)
6. Prepare a measurement plan
    a. for measurements with sources (@ CERN)
    b. for phantoms (@AAA)
7. Develop / purchase phantoms and their supports
8. Organize transport to AAA
9. EFOV measurements with sources at CERN