Visio/phone meeting
AGET architecture agreement
CoBo-MuTanT poll
14 May, 2009

Minutes

Present : W. Mittig N. Usher, F. Druillole, B. Raine, G. Wittwer, F. Saillant,T. Murakami,J. Pibernat, <u>JL Pedroza.</u>

Agenda :
Discussion on the proposed architecture for AGET :
- Number of channels per AGET
- Hit channel address protocol
- Channel trigger inhibition
- Processing of 2 consecutive events

CoBo-MuTanT: Discussion of the poll results MTCA-NIM-custom

I) AGET
   a. Number of channels par AGET
   Discussions were held with P. Baron on the optimal number of channels per AGET. (see note from F. Druillole at the end of this document). The conclusion is that 64 is the right number, everyone is in agreement with thiis proposal.

   b. Hit channel address protocol
   Refer the proposal of P. Baron on the wiki (Hit Channel Address protocol, proposal 1.0). The protocol is OK excepted if a SCA read phase is not achieved after the SCA write phase, but this problem is not critical. The simulation shows that the readout works up to 100 MHz.
   Since the devices accessible via slow control on AsAd can not make a readout faster than 20 MHz, it is proposed (CENBG) to split into two parts AsAD control.
   - A slow control (20 MHz SPI clock frequency) for the devices (ADC, DAC, monitoring..)
   - A fast control (100MHz SPI clock frequency) for AGET control AND hit channels readout.
   Everyone agree this proposal. Note that slow and fast control operate in parallel.

   c. Channel trigger inhibition
   Refer the proposal of P. Baron on the wiki (Channel trigger inhibition, proposal 1.0). In the case where one or several channels are statistically often hit by the effect of the beam for example, it is important that these channels do not

participate to the trigger signal by keeping the possibility to know if they have been hit or not. Everyone is in agreement.

d. Processing of 2 consecutive events.

Refer the proposal of P. Baron on the wiki (Processing of 2 consecutive events,proposal 1.0) and Ion and radioactivity CENBG point of view April 9th, 2009 (B . Blank, J. Pibernat, JL Pedroza).

Everyone is in agreement but 2 questions were asked:

- Should we change the gain between the implantation and radioactivity? The minimum trigger threshold is set at 15000 e-, which is sufficient for the 2 types of events. Therefore the gain should not be changed
- Should there be 1 or 2 channels hit registers?

Have 2 registers reduces the dead time after the radioactivity, but this time is not critical, only one register is sufficient.

In cases where there is no production of radioactivity, it must complete the full cycle Ion / radioactivity after a delay. A watch dog implemented in MuTanT must complete the cycle on timeout.

II) CoBo-MuTanT discussion of the poll results MTCA-NIM-custom

	NIM	MicroTCA	Custom
JL pedroza		OK	
DRUILLOLE Frederic		OK	
Patrick Coleman-Smith		OK	
J. PIBERNAT		OK	
W. Lynch	OK		
W.Mittig	OK		
N. Usher	OK		
T. Murakami		OK	
Riccardo		OK	
Frédéric SAILLANT		OK	
A. Bickley	OK		
Gilles WITTWER		OK	
Shebli Anvar		OK	
Bruno Raine		OK	
Nombre	4	10	0

The poll clearly shows that all are in favour of MTCA (Hard, Soft, Physicists) except MSU.
Arguments for MTCA :
- Cables reduction between Cobos and MuTanT.
- Local switch on MTCA MCH modules
- Data flow from each CoBo to MCH via MTCA backplane
- MCH (10 Gbits) to Global switch connection
- Standard is being widely used in the industry (multiple manufacturers)
- Possibility of optical link

MSU main points of view:
- Global switch will still be required to coordinate the data transfer from the individual crates.

- It is not prohibitive and therefore there is no pressing need to reduce the number of cables accessing each CoBo.
- 3 months would be needed to fully assess the viability of the technology. This will have implications on the timeline of the GET project.
- Additional software development would be required to control and communicate with the MTCA crate.
- Due to the need for multiple MTCA crates to accommodate the number of channels in each detector, crate synchronization will be required.
- Longevity of the technology in the nuclear science community.
- Support for the standard will not be available locally.

III Conclusion

Full agreement for AGET architecture: 64 channels per AGET, hit channels address protocol, Channel trigger inhibition and 2 consecutive events processing without change in gain and one hit channel register.
For MicroTCA, should be discussed again for hardware and software aspects. GANIL continues its investigations.
Need to relaunch the debate on data reduction in order to have a reasonable figure on the data flow.