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Subjects : Data Reduction (June 2006), Calibration (February 2006), Gain

Data Reduction

Last tests made by Philipp in Perugia : in the worst case of number of bad channels greater than 32 on each VA, the complete time of calculation stays under 280 microseconds. The version of June is faster with 50 or 75 microseconds less (depending of proportion of bad channels) than the version of April.
The new version is fast and efficient in Common Noise Calculation and Cluster identification (Philipp), even if some others tests will be made on the "clusterization".

Next issue : integrate in only one step the "strips identification + cluster construction + output writing" to test the gain in time calculation (proposition from Paolo, which will be implemented by Claude).
It could be the last way to gain time… In case of bug discovering on fly, it could be important to fix the bug without constraint of CPU time (Daniel).

In the output, we will use the 16 bits word specifying the length of the event to transport on two upper bits the information about the power supply. This information is stored in the 1024th word of the event read in the reduction module. But we still need to identify (also with Andrei) where exactly we can/should transfer this information, putting it into the high bits of the overall event length could eventually corrupt his event building at a later stage.

Calibration

The four main steps of the calibration module are validated (Paolo) : Pedestals calculation, Sigma Raw calculation, Sigma Final calculation, non-gaussian calculation.

The discussion concerned mainly the best way to identify the flags of bad channels and the best way to change parametres.

Flags

Remind : the last version of calibration introduced a calculation of the mediane value to extract the Common Noise VA by VA and to calculate the thresholds for flags (noisy or dead channels).

We have to select one of the three ways to calculate the thresholds for flags :

- on a VA base (present solution)
- on a ADC base (3 ADC for S and K side)
- on a VA base but with an extrapolation of the VA to the ADC level

The discussion is still current. We convinced also of the possibility to fix by hand the table of flags. So, in the program of calibration we need to verify if the flag value for a channel need to be re-calculate or not (a bit position to 1 means no computing). We discussed the option to add a 'Overrule'-Flag to be able to overwrite the calculated flags with pre-defined flags from a file (you mentioned the setting of flags, but the precise implementation still needs to be discussed/done in November).

To gain time

Claude will study the code to identify possibilities to gain time of calculation (in the present version time is around 4 seconds). It wil be perhaps possible to reduce the number of events read for the different steps : 1024 for pedestals, 1024 for sigma raw, 1024 for sigma final and 2048 for non-gaussian.

The calibration command needs to be implemented as a 'slow' command; if we test in November, we should involve Andrei Kounine to help for that (it is not yet implemented on his side, but needed), we can't do this without his input.

How to change parameters of thresholds ?

Claude will present a summary of all the parameters managed by the calculation and reduction programs. Then we will choice the best way to change on fly parameters : writing directly in memory, or re-loading a new version of program (this way could be the less difficult to manage).

Implementation

The two modules will be prepared for next November. Tests will be managed in Genova (with the presence of Claude as long as necessary) and with synchronization with Perugia at the beginning of November.

Readout/Write of calibration data: The commands 'Read Calibration', 'Read Calibration from Flash', 'Write Calibration to Flash' still need to be implemented

The DAC calibration

Philipp is testing, but maybe some fixes are needed from your side in a later stage.
