Subject: Lycca mh-TDC scintillators analysis
Posted by RiccardoAvigo on Mon, 17 Nov 2014 17:19:39 GMT
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Dear all,

I am checking Lycca ToF using prespec code. Till now I used MhTdcPreprocessor class to catch times from PMTs and select the hit using a proper gate. I used the output of this class as input for CirculaMembraneScintillator class and, in the end, I used ToF class to have the calibrated ToF.
Now I saw that also a TimeHitSelectionMembrane class exists.
Therefore I wondered if MhTdcPreprocessor is a good class to select the hit and which is the improvement of this TimeHitSelectionMembrane class.

thanks in advance for the help,

cheers,

Riccardo

Subject: Re: Lycca mh-TDC scintillators analysis
Posted by miree on Mon, 24 Nov 2014 09:43:59 GMT
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Hi Riccardo,

The MhTdc Preprocessor is selecting the hits using a simple gate.
I think TimeHitSelectionMembrane is selecting a hit if the PMT on the other side of the detector also has a hit at a similar time.
I've no experience with that one. Maybe someone can report about its performance.

Michael

Subject: Re: Lycca mh-TDC scintillators analysis
Posted by mlcortes on Wed, 14 Jan 2015 08:54:53 GMT
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Hi Ricardo!
Sorry for the late reply

If you are still interested, the TimeHitSelectionMembrane selects the hit in the Mh to used based on difference in time between opposite PMTs.
The way I am using it is:
First I put the preprocesor as it was before. I use as reference the common trigger signal and I use it mainly to shift the scale of the time histograms. Then I use the HitSelection processor like this:

processor Lycca/HitSelectionStart UTILS.TimeHitSelectionMembrane

```
        input_array[0:30] <-  Lycca/TofStartPreproc0.output[0:30]
        input_array[31] <-  Lycca/TofStartPreproc0.output[0]
        display all_diff
        display diff_visu | time_gate
        display hit_mult  20,0,20  in HitSelectionStart/multiplicity
        display output_array  in HitSelectionStart/output
        display input_array   in HitSelectionStart/input
end
```

The processor takes oppopsite PMTs and make all the possible differences between hits in each one of them. In the output all_diff you can see the difference of all the hits in one of them minus the first hit in the second. The output diff_visu, is an output of all the differences, where you can put a gate. This gate should ne around zero. The processor will then select as a valid time the two PMT combination the first hit that make a difference inside the gate.
There are still some precaution to take into account: I have been using this processor for some time, but is still a bit in a "experimental stage". In principle, the sum of the times should be a constant, but it didn't work for me and I still don't understand why. The fact that the difference is around zero means that the beam was around the center (I think), and then is still a good condition to apply.
You can play around with it a bit if you want, and see if you can improve your results. If you do, please also post it so we know that it is working for more people than me

Liliana