Subject: FINGER ToF detector
Posted by thuyuk on Tue, 05 Aug 2014 10:13:51 GMT
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Hi All,

Has anybody done any improvement recently in the FINGER processors of the prespec data analysis program?

Thanks,
tayfun

Subject: Re: FINGER ToF detector
Posted by mlcortes on Thu, 07 Aug 2014 15:57:30 GMT
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Hi Tayfun,

Well, you have to define "recently"
I have tried a lot of different things, so to be sure to give you a correct answer please let me know which processors are you using and which version of the repository you have (when was the last time you pulled it and compiled).
Also, let me know the dates of your experiment.. the Finger settings were changed at some point, so the checks to make and the best approach may depend on which settings you have

Subject: Re: FINGER ToF detector
Posted by thuyuk on Fri, 08 Aug 2014 14:13:18 GMT
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Hi Liliana,

I tried with FingerGainMatching but it seems that the algorithm is not so great. Using this processor I calculated the time of flight between Sc41 and the finger detector and the result does not make any sense to me.

I saw in the "old fashion" new_prespec_Go4 code, the finger data is treated very nice, because the result is somehow good enough. So, I was in the middle of transferring the algorithm there into the prespec code. But I could make use of any other good algorithm, of course.

I've got the prespec code around April, 2014, and never updated it. Our experiment was done in October 2012.

Thank you!
Tayfun

Subject: Re: FINGER ToF detector
Posted by mlcortes on Mon, 11 Aug 2014 09:11:04 GMT
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Hi again Tayfun,

Well, the FingerGainMatching is basically the same as the analysis code use in the new_prespec_Go4. I would say that any difference come from the calibration parameters. Have you made the calibration for the Finger detector for your experiment?
In principle, with any code that you use, if you use the approach of checking the maximum charge deposited you need to calibrate the gain of each PMT. By October 2012 I believe that the voltages of the Finger were set correctly to allow for a proper calibration. You can check this by looking how the raw data of the Finger QDC looks like (If you have not make the calibration and you want to give it a try let me see how this raw spectra look). Of course, if the calibration that is in the new_prespec_Go4 works, you can try to put it in the FingerGainMatchig processor and see how it looks.

There is other approach you can try, based entirely on the timing of the signals, and not in the total energy. The idea is to select the "correct time hit" of each strip per event and then make the average of all the hits, instead of selecting one. This of course affects the time resolution you can achieve, but as you don't need to gain match is an easier starting point. Here I attach my config file for this approach. It has 3 stages: First a preprocessor of each MhTDC involved, then a HitSelection and finally an average of the times. After that you can find a calculation of beta and Tof (that in any case needs calibration). I think I wrote some of this processors in May-June, so maybe is better if you pull from the repository and compile. If you want to give it a try to this idea and you have any question or any problem just let me know.

File Attachments

1) Finger_tof.config, downloaded 506 times

Subject: Re: FINGER ToF detector
Posted by thuyuk on Tue, 12 Aug 2014 10:56:59 GMT
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Hi Liliana,

Thank you very much for response. I have calibrated the raw QDC spectra of the Finger detectors. But, somehow, I couldn't make it work.

I wanted to give a try to the new approach to find the times in the Finger detector, i.e. the one based on the timing of the signals. I downloaded the new processors written for this purpose and compiled them. So they are ready to use.

But I have some issues with some of the parameters:

1- time_gate is put to select the peak of the time difference between one side of Sci41 and each strips of the finger detector, if I'm not wrong. Is that correct what I figured out?

2- After getting the differences mentioned above, a hit_cal calibration is applied. I have concerns to find these calibration coefficients. In which way it has to be done? Do you use the calibration runs?

Thank you!
Tayfun

Subject: Re: FINGER ToF detector
Posted by mlcortes on Wed, 13 Aug 2014 08:12:44 GMT
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Hi Tayfun,

Yes, time_gate is applied to select the peak of the difference between each PMT and a reference, in this case one side Sc41. The processor will check all the combinations of hits and take as a valid hit the first one that is inside the gate. About the hit_cal parameters, you can leave the default values of 0 for the offset and 1 for the slope. This parameters are there to make a fine calibration in case the time of each hit slightly shifts, nevertheless I think is not really necessary, at least in first approximation.
Let me know if you get some results from the Finger time and if you need anything else.

Subject: Re: FINGER ToF detector
Posted by thuyuk on Wed, 13 Aug 2014 10:34:06 GMT
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OK Liliana, thank you for your support!
