Subject: Trigger OR
Posted by a_boso on Mon, 23 Mar 2015 13:34:20 GMT
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Dear all,

during the experiment we run with an OR of different triggers.

According to FRS runsheets the different possibilities are:

1-Clock
2-Lycca Calibration
3-Agata Calibration
4-Hector Calibration
5-FRS trigger box
6-Particle+Hector
7-Particle+Agata
8-Particle+Hector+Lycca
9-Particle+AGATA+LYCCA
10-Particle reduced

What happens if an event satisfies more than one trigger condition? is it labeled with both trigger or only one?

For example: our trigger was an OR of triggers 3,8,9,10. If we have an event which is detect by FRS, AGATA and LYCCA (trigger number 9) and it satisfies also the FRS downscaled trigger (number 10), is it marked with both triggers or only one? And if the latter is the case, which trigger is chosen?

We need this information to estimate the number of incoming ions; can we just multiply the number of events with trigger 10 (properly gated) by the down scaling factor or do we have to take into account also the events labeld with other triggers?

Thank you very much! =)

Alberto

Subject: Re: Trigger OR
Posted by Damian Ralet on Mon, 23 Mar 2015 13:49:55 GMT
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Hi Alberto,

There is a priority encoder on the trigger. The trigger with the highest number have the priority over the lower number. For example, if you have two accepted triggers, 8 and 9, the trigger 9 will be the one triggering the data read-out, and the event will be labelled with a trigger 9.

For each trigger, you have a hit-pattern that allows you to check coincidences, and see if you had more than one trigger option.

For your second question, the number of particle can be estimated with the trigger 10, multiply by the scaling factor. It has the priority. You could also look into the particle scaler module, but I am afraid that this number is not reliable. If I remember properly, we observed a lot of variations when we were looking at the scaler estimation. (Maybe someone else could comment on this?)

Cheers,
Damian

PS:If you want to read more about the trigger generation, I would suggest to check the publication:
http://www.sciencedirect.com/science/article/pii/S0168900215003332

Subject: Re: Trigger OR
Posted by SMilne on Tue, 24 Mar 2015 11:40:55 GMT
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Hi Damian,

Is there a chance the downscalar could be wrong, the run sheets say this number is 8. Does this sound reasonable to you? The reason I ask is because I obtain a Coulomb cross section of ~15,000mb for 46Ti, which is much larger than the ~100mb value we would expect to observe.

Thanks,
Scott

Subject: Re: Trigger OR
Posted by Damian Ralet on Wed, 25 Mar 2015 09:05:58 GMT
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Hi Scott,

Sorry for the delay in answering.
The reduction number might indeed be wrong, or wrongly written inside the file-sheet.
During the 2012 and 2014 beam time we used two reduction factor: 8 and 10. It might be that for your experiment it was set at 10.
I would suggest you to check in the AGATA-logbook a printout of the trigger configuration for your experiment. If you need an explanation on what you find there, just put a picture of the ASCII table you will fin in the book, and I can have a look.

There should also be a way to check if scalers numbers, hit-pattern, and T10 are agreeing. But this might be a bit more tricky, and no garantee that it would help.

They are also the trigger-logic log that I could check, but for this, I need the day of your experiment (day, month, year) and more important the time when we start to acquire data (run number (and if possible lmd number) , and time associated to its start).

Cheers,
Damian

PS: just to avoid misunderstanding, the reduction factor given, let say 8, mean that only 1 trigger 10 out or 2^8 are recorder on disk.

Subject: Re: Trigger OR
Posted by SMilne on Thu, 26 Mar 2015 21:16:50 GMT
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Hi Damian,

Thanks for your response, I checked in the AGATA log book and indeed the reduction factor is 8, also the real confusion was cleared up in your final comment where I'd mistakenly used 8 and not 2^8. Anyways, using this reduction factor as well as applying a gate on the scattering angle in Lycca to ensure only genuine Coulex events, I now obtain more sensible cross sections of 88(4)mb @177MeV/u for 46Ti and 100(15)mb @180MeV/u for 46Cr. I might add there has also been no sign of the 'loss factor' in this analysis, though the statistics we do have are probably too low for the science story we wanted to get out of this experiment!

Thanks,
Scott
