Subject: prespec git updates
Posted by miree on Mon, 11 Aug 2014 17:51:44 GMT
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I've done some slight changes (updates, correction of mistakes) to the prespec-tutorial that you can find in the prespec/doc/PreSPEC_Tutorial directory of the package. Some while ago, I also added a FAQ section, describing things like: making logical AND/OR of different conditions and how to define and use gates.

Michael

Subject: Re: prespec git updates
Posted by mlcortes on Thu, 14 Aug 2014 11:43:33 GMT
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I pushed the following changes in Frs Id processor

- Calculation of AoQ without correcting the Rho included
- A new way to get charged states based on P. Mayet PhD thesis and J. Benlliure, Nucl. Phys A660 87 (1999)
- A parameter to indicate if there is S1 degrader in the settings. This is useful when calculating the BRho of the first half of FRS and charged states

Subject: Re: prespec git updates
Posted by mlcortes on Mon, 18 Aug 2014 09:21:20 GMT
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I have pushed a change in the position correction of the musics.
Instead of

dE=dE+x*value/dE

i take

dE=dE-x*value

Where value is the slope of the line one fits to the dE_geo vs position in the musics plot.

Subject: Re: prespec git updates
Posted by miree on Tue, 19 Aug 2014 15:18:37 GMT
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Added two small programs to the repository.
They extract the first and last GTS timestamp in an lmd file (written by MBS system) or from

the set of all psa_*.adf files in a NARVAL run folder. These tools can be used to verify if you're pairing the correct lmd file with a given NARVAL run.

they are located in the prespec/tools subdirectory and are installed when typing "make install" together with the preplay program.

use like this (for lmd files)

gts_timestamps_mbs /d/rising02/feb_14/data/Fe56_coulex_ar3_0106.lmd > /dev/null

outputs:

/d/.../Fe56_coulex_ar3_0106.lmd < Mon Feb 24 07:12:56 2014> 23270254723987 23375015876804

use like this (for adf files)

gts_timestamps_adf /SAT/hera/gamma/AGATAdata/040414_bentley/run_0011_46Ti_coulex/Data/

outputs:

/SAT/../Data/ <Sat Apr 5 03:50:07 2014 > 5630037697086 7425940419075

The first/last number is the first/last GTS timestamp in the file/folder.
Yes, these numbers are large! They count the number of 10ns GTS time-ticks since the start of the GTS system.
By looking at them you can see if time ranges of two event sources do overlap or not.

Subject: Re: prespec git updates
Posted by miree on Fri, 14 Nov 2014 13:53:46 GMT
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Recent, notable additions to the prespec package:

1) A new preplay option to change the name of the TTree in the root file
2) simplification of the MGT tracking processor
3) some new processors in the UTILS plugin (see git for details)

Subject: Re: prespec git updates
Posted by miree on Thu, 27 Nov 2014 20:26:52 GMT
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There is a new processor for the mutual alignment of correlated signals. It can determine a set of offsets, such that all differences between pairs of signals will be zero.

One possible application of this: Consider the time signals of a LYCCA ToF detector. These signals have an offset with respect to each other, because of slightly different cable length (and maybe other reasons). As a consequence, if a particle hits the detector, Then signal from PMT_a will come not exactly at the same time as the signal from PMT_b, even if both signals were induced by the same particle. This offset is of course the same for each event. The processor CircularMembraneScintillator takes these offsets into account. But in practice, these offsets tend to induce difficulties in the calibration. Therefore, it might make sense to align the time signals before feeding them into the final processing.

```
processor ToFstart/SignalAlignment UTILS.InterSignalAlignment
 INPUT[0:15]     <-   LyccaTargetTofCrate.mhtdc0[0:15]
 INPUT[16:31]    <-   LyccaTargetTofCrate.mhtdc1[16:31]

 display INPUT_DIFFERENCES  10000,-5000,5000
 display OUTPUT_DIFFERENCES 10000,-5000,5000
end

# use output of the time alignment instead of the raw data
processor Lycca/ToFStart/Preproc   UTILS.MhTdcPreprocessor
 input[0:31]     <-   ToFstart/SignalAlignment.OUTPUT[0:31]
end
```

The parameter file for the InterSignalAlignment might look like this:

```
NUM_SIGNALS             32
NUM_BINS               8000
BIN_WIDTH               1
CALIBRATE               1
WRITE_INTERVAL              1000
```

Where the most important parameter is NUM_SIGNALS (32 PMTs in this case). The other parameters are for tuning the automatic determination of the offsets. Look into the header file for detailed description.

I've tried out a new style of writing the processor code: I wrote every in/output,parameter,etc. in CAPITAL letters. The reasoning behind this: Trying to avoid the common mistake, that one accidentally writes num_signals when actually parameter(num_signals) would be correct. The capitals are clearly enums and no normal variables.

Subject: Re: prespec git updates
Posted by miree on Fri, 12 Dec 2014 12:39:39 GMT
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Hello,

A severe problem in the so called "Core Tracking" algorithm was discovered by Liliana (the name of the processor is "GammaTrackingCore" in the AGATA plugin) .
First, the algorithm was throwing out all events with only one PSA hit the full array. That reduces the statistics.
Second, it produced one additional "nonsense gamma". The second point increases the gamma multiplicity by one, but does not affect the gamma spectra.

I have rewritten the algorithm and copied the old one to "GammaTrackingCoreWithBug", in case you want to quantify the losses you had in your spectra. The changes are already pushed to the git repository.

I did the comparison for one of the 80Kr Coulex runs (everything else in the analysis is identical).
The counts in the 80Kr peak (at 616 keV):
old: 569.95 +- 45.1105
new: 688.684 +- 48.2208

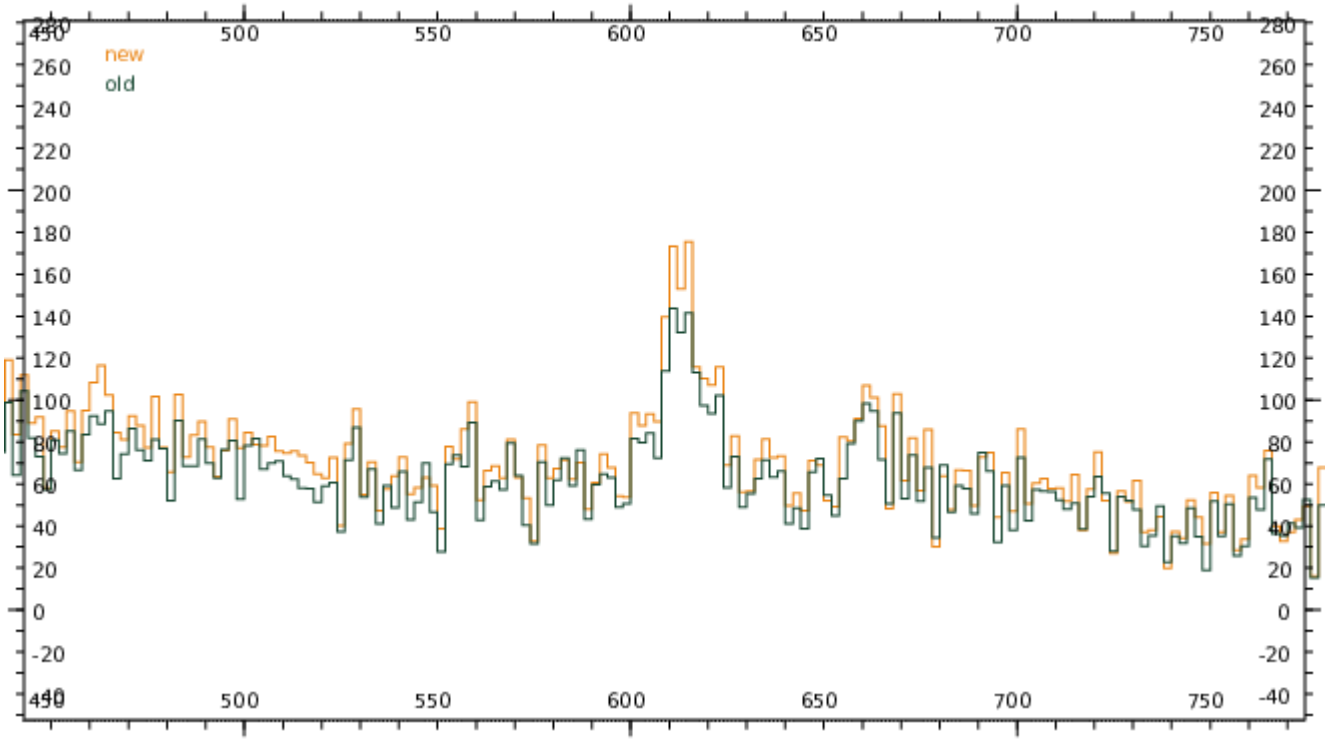
(the histograms are background subtracted. That is why some of the bins may contain fewer counts after correcting the mistake.)

So 20% of the counts were lost because of that mistake.
I don't know if under different conditions (higher/lower rate, heavier particles, etc.) the loss is bigger or smaller.

I'm sorry for that mistake!
Michael

File Attachments

1) old_new.png, downloaded 881 times



Subject: Re: prespec git updates
Posted by miree on Wed, 21 Jan 2015 10:49:14 GMT
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Fixed the uncorrected A/Q output "AoQ_uncorrected" of FRS Id Processor.
(The uncorrected A/Q does not depend on the x-coordinates at S2 and S4.)

Subject: Re: prespec git updates
Posted by mlcortes on Thu, 22 Jan 2015 13:42:56 GMT
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I included a new processor to get the ToF from the MhTDCs. Is called TofSystemMhTDCSc and is in the UTILS plugin.
It calculates differences between hits for ToF left and Tof right and takes the first combination which gives ToF inside a window.
Using this hits time left - right for each scintillator is also given

Subject: Re: prespec git updates
Posted by Michael Reese on Mon, 01 Aug 2016 11:35:20 GMT
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There is a new feature in the config file parser.
It can evaluate integer expressions now.
If it finds curly braces, it will evaluate the expression inside and replace the complete string (including the curly braces) with the result of that expression. It supports common operator

priority ('^' binds more than '*' or '/' which bind more than '+' and '-') and parentheses '(' and ')'.
Example:

"{2+2*3}"   -> "8"
"{(2+2)*3}" -> "12"

It is in particular meant to be used in for loops, for example:

```
processor even_channels UTILS.SingleArray
  for $i in [0:15]
    array[$i] <- AdcCrate.adc[{2*$i}]
  end
end

processor odd_channels UTILS.SingleArray
  for $i in [0:15]
    array[$i] <- AdcCrate.adc[{2*$i+1}]
  end
end
```
