Subject: Re: Position calculations on start/stop scintillators
Posted by miree on Mon, 11 May 2015 11:12:15 GMT
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Hi, here comes the code (sorry for the delay)

This is taking not the particle time from the Membrane as reference
for the time-distance correlation plot, but the time from Sc41.
Advantages:

the calibration procedure is simplified
easyer to detect fautly PMTs, etc.
Disadvantages:

the correlation is not that precise (because of the inferior time resolution of Sc41).
One cannot determine the intrinsic PMT resolution (for the same reason).

Of course one can first do the simplified version and later the other method to fine-tune the parameters and determine the intrinsic detector resolution.

```
##############################################################################
# The following two processors extract the Sc41 time
# Don't forget to set the gates around the peak in the preprocessing
##############################################################################
processor Lycca/ToFfrs/SciPreproc   UTILS.MhTdcPreprocessor
 input[0]     <-   LyccaTargetTofCrate.mhtdc0[16] // Sci21
 input[1]     <-   LyccaTargetTofCrate.mhtdc0[18] // Sci21
 input[2]     <-   LyccaTargetTofCrate.mhtdc0[20] // Sci41
 input[3]     <-   LyccaTargetTofCrate.mhtdc0[22] // Sci41
 display diff   1,0.1,4096,200  | diff_gate   in Preproc/diff
 display output 1,0.1,4096,200               in Preproc/output
end
processor Lycca/ToFfrs/Sc41  UTILS.Pair
 first  <- Lycca/ToFfrs/SciPreproc.output[2]
 second <- Lycca/ToFfrs/SciPreproc.output[3]
 display average
end
##############################################################################
# The following two processors do the normal ToFStart Membrane processing
##############################################################################
processor Lycca/ToFStart/Preproc   UTILS.MhTdcPreprocessor
 input[0:15]     <-   LyccaTargetTofCrate.mhtdc0[0:15]
 input[16:31]    <-   LyccaTargetTofCrate.mhtdc1[16:31]
 display diff 1,0.1,4096,200  | diff_gate   in Preproc/diff
 display output 1,0.1,4096,200             in Preproc/output
end
processor Lycca/ToFStart/Membrane        LYCCA.CircularMembraneScintillator
 pmt_time[0:31]  <-    Lycca/ToFStart/Preproc.output[0:31]
 x_hit           <-    Frs/S4tracking.xs[5]
 y_hit           <-    Frs/S4tracking.ys[5]
 display   x:y             256,-150,150:256,-150,150
```

```
 display x_hit:x
 display y_hit:y
end
#############################################################################
# Do the correlation of  Sc41-PMTi vs. PMTdistance and determine the
# slope of the line the 2d histograms
#############################################################################
for $i in [0:31]
 processor Lycca/ToFStart/Diagnostics/TSc41_diff$i       UTILS.Pair
  first   <- Lycca/ToFStart/Membrane.pmt_time[$i]
  second  <- Lycca/ToFfrs/Sc41.average
 end
 processor Lycca/ToFStart/Diagnostics/TSc41_dist$i     UTILS.Pair
  first   <-   Lycca/ToFStart/Membrane.dist[$i]
  second  <-   Lycca/ToFStart/Diagnostics/TSc41_diff$i.difference
  display first:second  100,0,300:200,-15,15  in   TofStart_TSc41_dist_corrlation
 end
end
```