
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
easier to detect faulty 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_correlation
end
end

```
