
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.