

Timing Logic Updates

My understanding of Hanjie's Code was flawed.

Hanje, Hanje is looking at two separate events

Pre	Cur
-----	-----

Pre - starts off at zero, runs through logic, then sets
pre-data = curr-data. Since Pre - is initialized as a
static variable, it is initialized once and is persistent throughout
the lifetime of the program.

Hanje's Code:

She is looking at a cluster of bits → 
Pre-fade-bit → Data from previous run (static var)
Cur-fade-bit → Data from current run

She then fills two arrays

pre-hits[7] ie  Note that it

Cur-hits[7]  pre-hits[i]=1, cur-hits[i]=0
if cur-hits[j]=1, pre-hits[j]=0

Cluster center

Then she checks if prehit[0] > seed threshold, if it is, the
cluster is from a prev data run. If not, then its a cluster of curr data

Then the timing data is only reported as the time of
the cluster center.

Jimmy Question:

1) Why do we care about pre-hit window for MOLLER?

I get for HNLIC, you want to make sure you don't count a cluster that is actually from a previous run... but for MOLLER?

2) The Fadde reports 3-bit hit time (time offset in 32ns clock). Why are we reporting $[-16, -12, -8, -4, 0, 4, 8, 12]$ (for 32 cycle = 0; first cycle?).

Ok, I think I see, we are continuously streaming data so each iteration (or 32ns clock), we decrease our offset by +32ns ($+32ns++$): So

First clock cycle: $[-16, -12, -8, -4, 0, 4, 8, 12]$
 $(+32ns=0)$ $\underbrace{~~~~~}_{\text{Should be } 0.}$

2nd Clock cycle:

$(+32ns=1)$ $[16, 20, 24, 28, 32, 36, 40, 44]$

3rd Clock cycle:

$(+32ns=2)$ $[48, 52, 56, 60, 64, 68, 72, 76]$

In a cont. line

$-16, \dots, -4 | 0, 4, 8, 12 | 16, 20, 24, 28 | 32, 36, 40, 44 | 48, 52, 56, 60 | \dots$

Window

Wands

Window

But what is the advantage of this?

Refactoring:

I want to create a temporary array that stores the data

→ Add up all energy

→ If total summed energy is \geq my-threshold don't care

2 we

→ I want to add the data that goes into the firing data.

makeEvent();

takes in 1 pre-hit-cur-hit data,
fills an array of data we want,
calls the necessary logic.

about a
my threshold
(diff hits on
the same day
are uncorrelated)

→ Implemented ✅

Needs to be ported to VXS-Crate-2