

Documentation for L1CalIIB_TTMon.py

This is the original note by Darien:

To run this script from an online node, type

```
setup d0online  
/projects/D0I1/l1cal2b/l1cal2b_monitor/py/L1CalIIB_TTMon.py &
```

After a moment, you should see a gui displaying one quarter of all of the trigger towers of the calorimeter. The tabs at the top allow you to see any of the four quarters. The units are ADC counts, where the scale is 0.25 GeV of ET per count, with a pedestal of 8 counts for all channels (except for the Inter-Cryostat Region channels which have a pedestal of 0 counts).

The information display is captured from the ADF system by the TCC (trigger control computer) about every five seconds. The gui receives one full turn of data each time it is updated. You can use the vertical tick bar at the right to select which of the 36 active crossings you wish to look at. The purple column shows you the value (in case you want to look at the crossing with the highest energy deposit). Keep in mind that generally the turn will contain only one crossing which triggered.

There are three "status lights" at below the "take mean" button. These give the status of the event as defined by the TCC:

1. Op (green)/nOp(red)

If this light is red, the TCC does not consider the L1cal system to be in operational mode, and there is no real hardware information displayed (usually all zeros). After an initialization of the system, the TCC should declare it to be in operational mode, and this light should go green.

2. Cur(green)/Old(red)

If this light is red, no new data was collected from the hardware on the last query. Note that this is independent of the gui's ability to freeze the data.

3. Trg(green)/Rnd(yellow)

In ordinary operations, the TCC should capture a real triggered crossing (and the rest of the turn that goes with it). It should

be the first crossing after the TFW sends a "Collect_status" qualifier bit. If this has occurred, this status light should be green, and the crossing number of the triggered crossing will appear above in black. If no triggered data is available, the TCC captures a random turn of data, and assigns a random crossing as the triggered crossing. In this case, the status light will be yellow, and the triggered crossing will appear in yellow (if it happens to be one of the 36 live crossings).

There is a "TAKE MEAN" button, which serves as an option menu allowing options for viewing the data. "Take Mean" gives the option of looking at average values of the 36 crossings rather than looking at individual crossings. To get a running average, selecting "Run Mean x10" will give the mean of the averages of 50 turns of data. This value is multiplied by 10 for a more precise reading. The "Std Dev x100" option gives the standard deviation of the 36 crossings in one turn of data. The values displayed are multiplied by 100 for more precisions.

In "fresh data" mode, the gui will update with a new turn of data every 5 seconds or so. You can freeze on the current turn by pushing "Freeze GUI data". You can get a new (single) turn by pushing "Get new stale data", and you can return to automatic refreshing mode by pushing "Get new fresh data." The status bar at the bottom should indicate when the gui last got new data.

The gui has no control functions. The TCC serves data continuously, whether or not any instances of the gui are running. It should be possible to run multiple instances.