

Analysis software update

Analysis strategy for the beam test

- Online monitor:
 - billboard style, waveform distributions event by event
 - useful to check if signal is there for each channel as it's supposed to be (e.g., missing signal from the neighboring channels next to a large pulse is a good indication something is not right)
- Fast offline (near-online) analysis:
 - creates a root output including TTree and some histograms
 - mainly to be done at RCF

Running analysis from BNL machines

- Data transfer to sdcc storage; set up rsync, script available from last year.
- Martin mentioned that data transfer should be fairly quick
- The online monitor (t14xxmon) runs ok from a rcas machine IF one uses nx (see demonstration).

Fast offline analysis

- Software repository (you need BNL sdcc account):
<https://git.racf.bnl.gov/gitea/EIC/mpgd4eic/>
- “feature_offana” branch includes recent development of the offline analysis scripts (see t14xxana). To be merged into master ultimately.
- Current analysis saves some cluster information into TTree and one histogram as a test output

```
// Set Cluster Tree  
T2->Branch("nclus", &ncluster, "nclus/I"); // number of clusters  
T2->Branch("x", cl_x, "x[nclus]/D"); // xpos, center-of-gravity method  
T2->Branch("y", cl_y, "y[nclus]/D"); // ypos, center-of-gravity method  
T2->Branch("amp", cl_amp, "amp[nclus]/D"); // amplitude  
T2->Branch("led", cl_led, "led[nclus]/D"); // amplitude
```

What's in my to-do list...

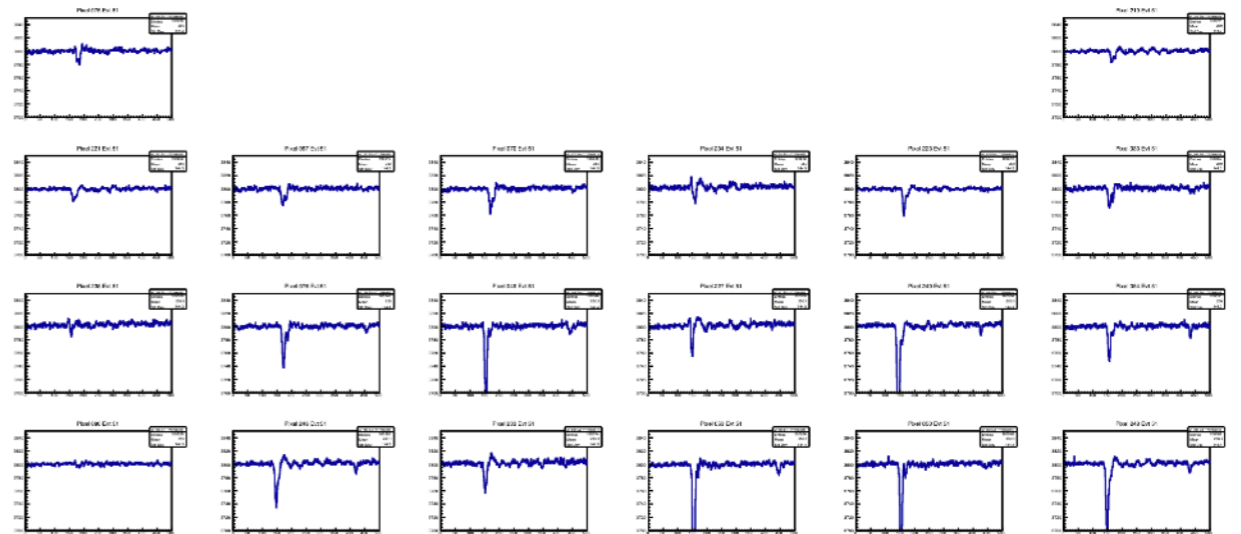
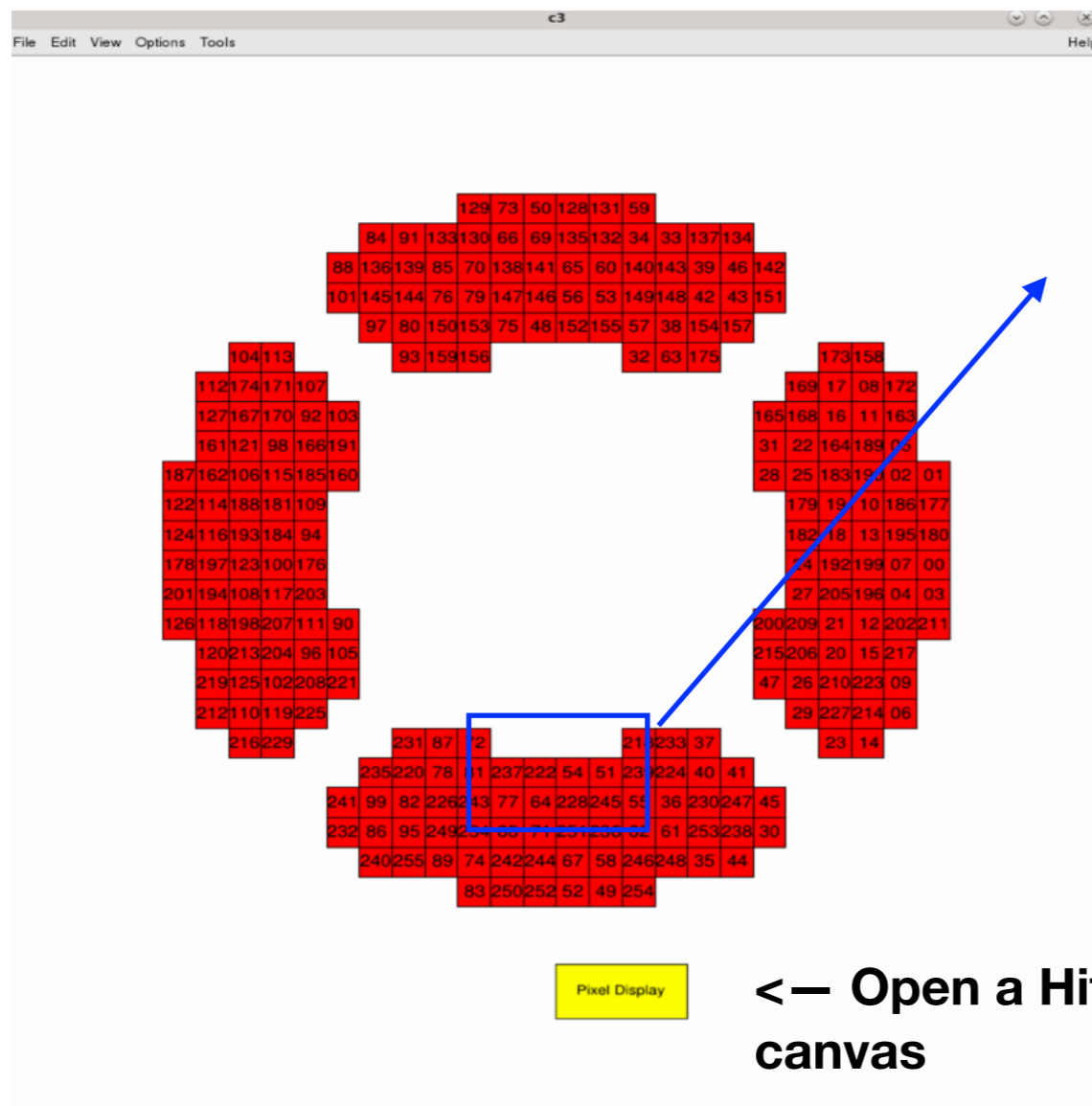
- ▶ LAPPD analysis:
 - Initial analysis function written, now need to add more output we want, sanity check
 - Revisit clustering
- ▶ Reference Tracker:
 - Check output of Barak's script from last year
- Running macro
- Plotting macro: will run with analysis output rootfile and produce plots
- Output check (need a couple of runs with details about conditions we had such as pattern, pixel size, rotation)

- Action items:
 - Priorities:
 - Need this software to be available from rcas machine for compiling DREAM analysis codes:
`/home/eic/Feu/FirmwareV2/Distribution/Sources/Software`
 - Alexander sends a couple of good runs for output check to Sanghwa
 - Output check with good runs from last year
 - Diagnostic tool: stability check of peak position
 - Check CFD, LED functions (available somewhere already), use it for timing measurement

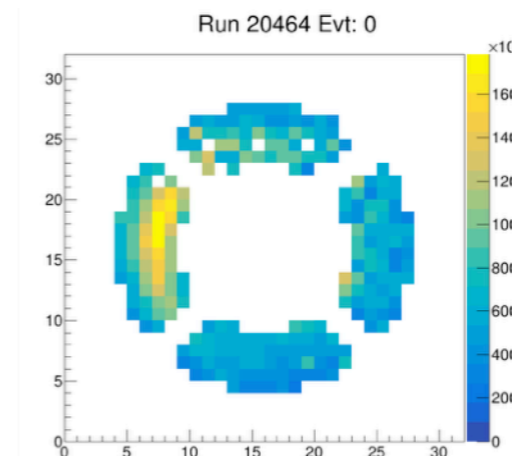
Backup

Online monitoring/fast offline analysis for 2022 Test Beam

- Online monitor from last year



Select area with a mouse opens up a canvas with waveform distributions, update periodically



* Note: waveform plots and hitman here are from two different runs