

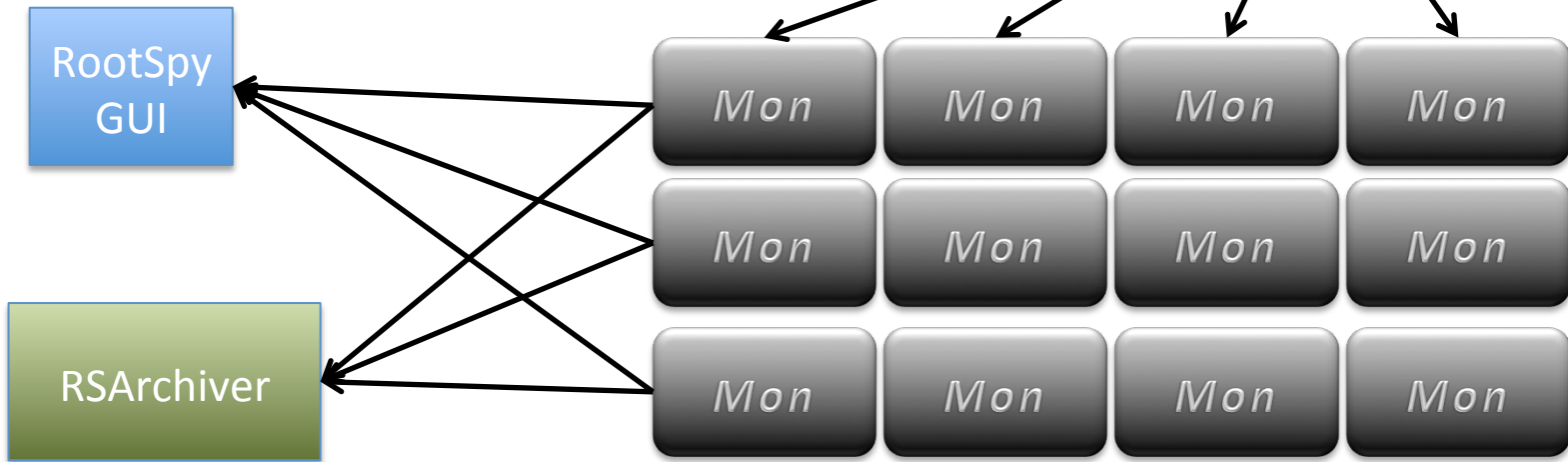
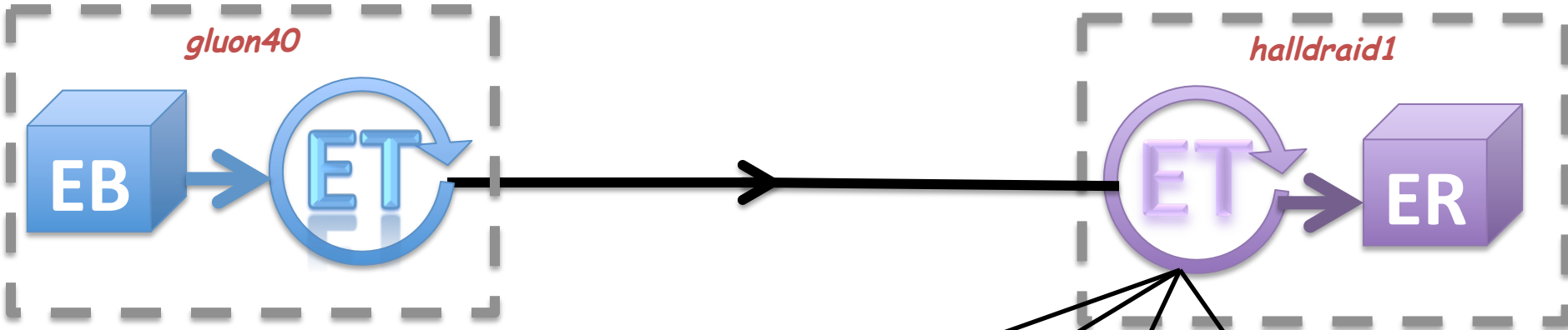
Online Monitoring Status

David Lawrence JLab

Oct. 2, 2014

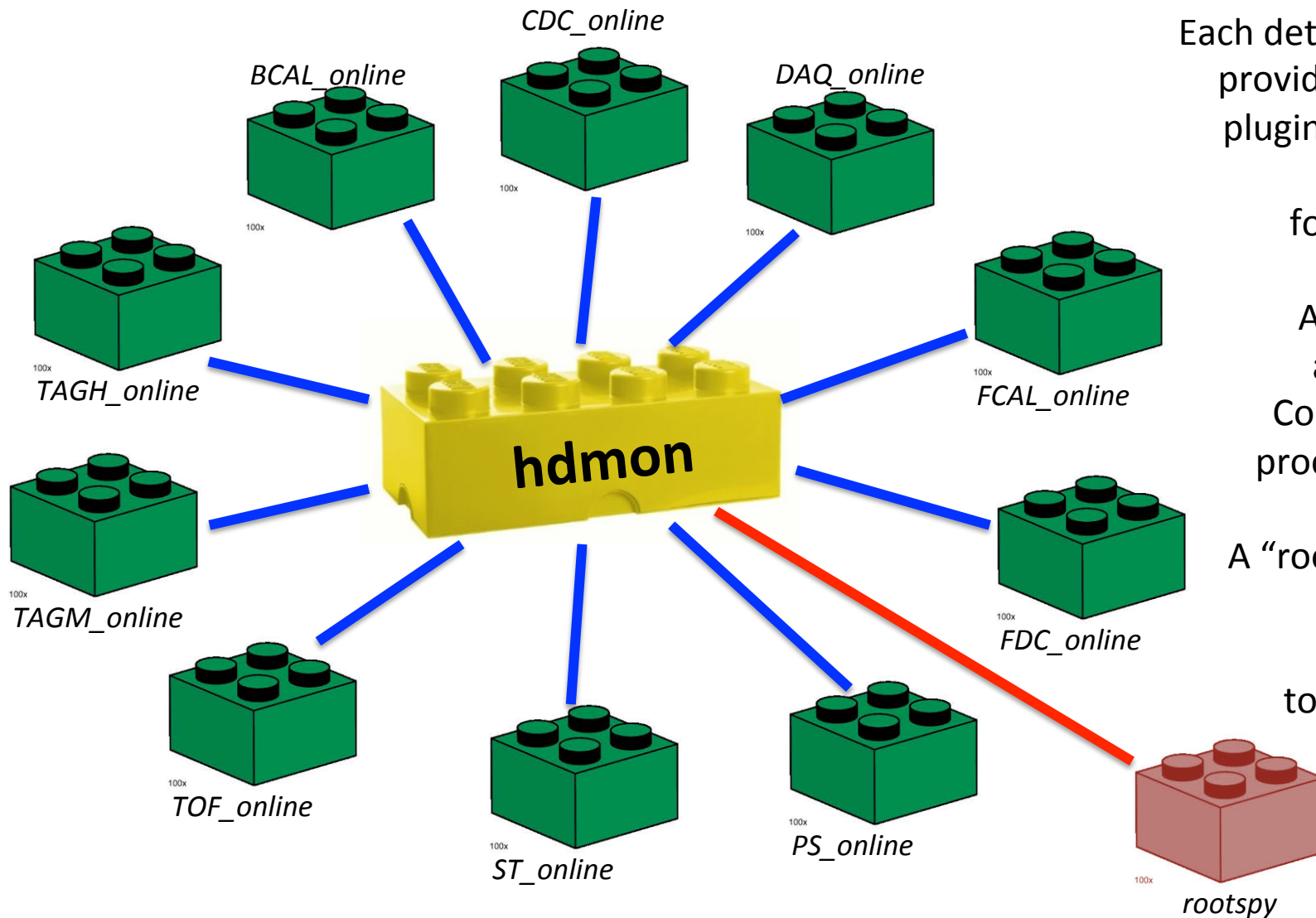
Monitoring architecture

(no L3 rejection)



gluon100 - gluon111

Monitoring Plugins



Each detector system provides 1 or more plugins that create histograms for monitoring

All plugins are attached to a Common DANA process (*hdmon*)

A "rootspy" plugin publishes all histograms to the network

hdmongui

Hall-D Data Monitoring Farm Status

UDL: cMsg://gluondb1/cMsg/janactl

name	node	Nthr	Nevents	rate (Hz)
gluon100.jlab.org_1064	gluon100.jlab.org	32	153946	675.7
gluon101.jlab.org_16938	gluon101.jlab.org	32	202377	930.9
gluon102.jlab.org_16954	gluon102.jlab.org	32	145899	683.8
gluon105.jlab.org_27603	gluon105.jlab.org	32	58545	264.9
gluon106.jlab.org_9217	gluon106.jlab.org	32	58579	273.7
gluon107.jlab.org_22081	gluon107.jlab.org	32	58563	272.2
gluon108.jlab.org_5593	gluon108.jlab.org	32	145867	655.7
gluon109.jlab.org_4445	gluon109.jlab.org	32	198906	904.5
gluon110.jlab.org_21543	gluon110.jlab.org	32	58539	262.8
gluon111.jlab.org_23740	gluon111.jlab.org	32	58567	273.8
gluon104.jlab.org_11666	gluon104.jlab.org	32	118622	686.0

*processes run
multi-threaded*

Totals

Total Rate: **5884.2 Hz**

Total Events: 1,258,410

Total Nodes: 11

Total Threads: 352

Node Details

Name: gluon102.jlab.org_16954

Node: gluon102.jlab.org

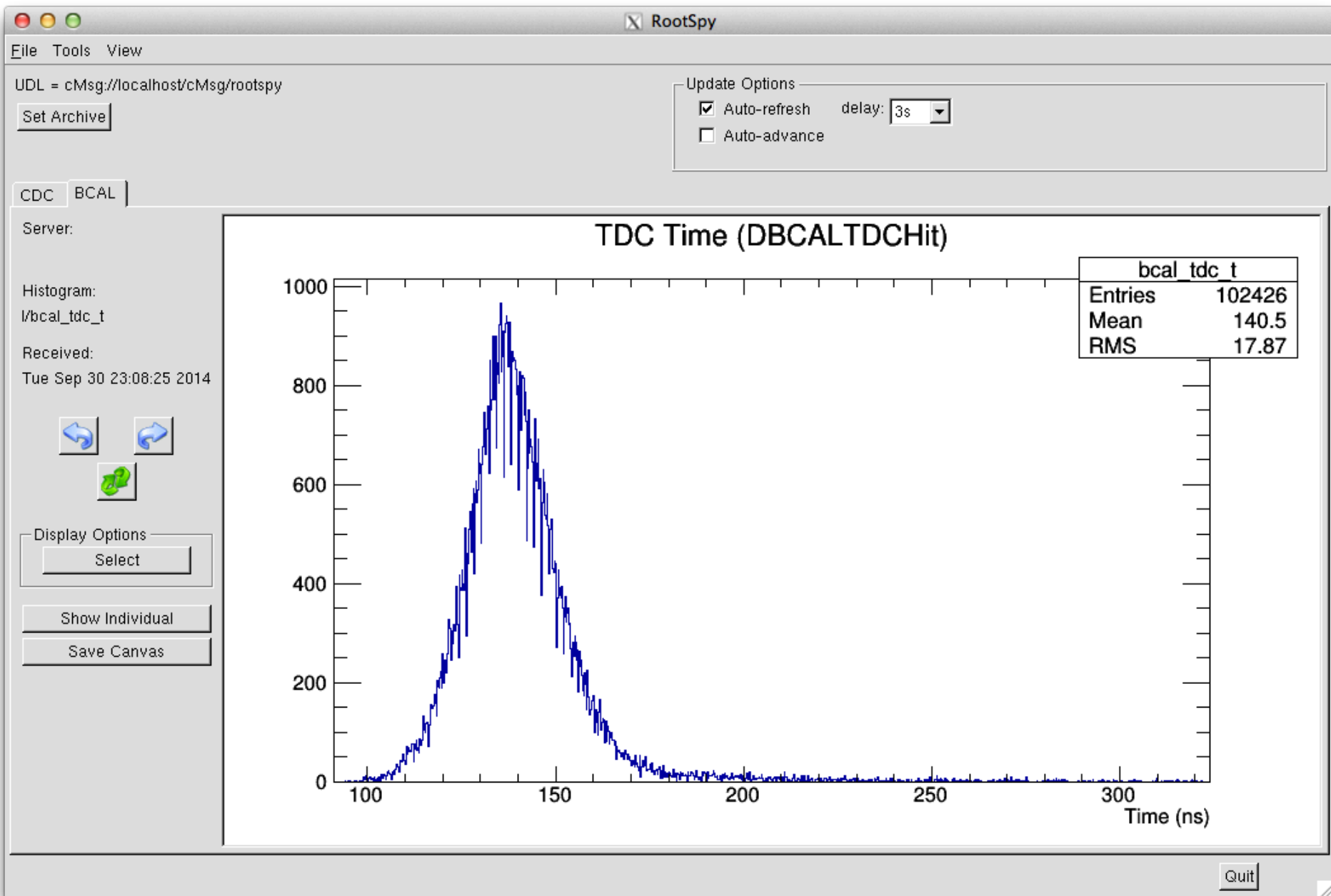
Threads: 32

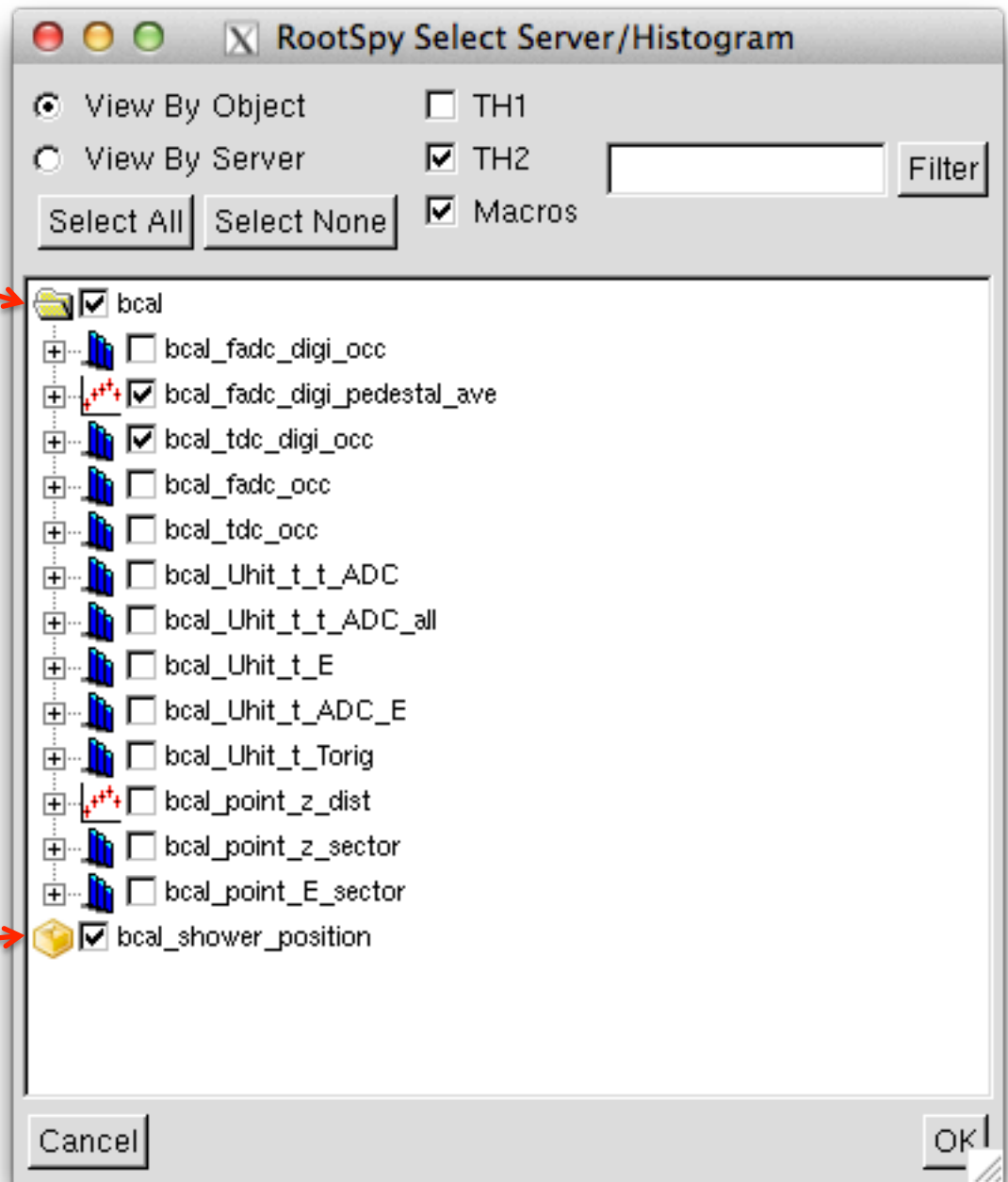
Event Source: ET:/tmp/
et_sys_davidl:MONTEST:gluonraid1
(type=JEventSource_EVIO)

command line: hdmmon --config=/home/davidl/HallID/ONLINE/daq_pro_vers/
daq/config/monitoring/hdmonTEST.conf ET:/tmp/
et_sys_davidl:MONTEST:gluonraid1

Event Source: COOL User specified: ET:/tmp/et_sys_davidl:MONTEST:gluonraid1

Level: TEST *multiple "levels" supported*





Detectors should place their histograms inside a folder to avoid namespace conflicts

RootSpy supports histograms with any depth of directory structure

Plugins may supply macros for drawing more complex displays using summed histograms

UDL = cMsg://gluondb1/cMsg/rootspy

Set Archive

Update Options

Auto-refresh delay: 4s

Auto-advance

BCAL CDC FCAL FDC ST PS Tagger TOF

Server:

(9 servers)

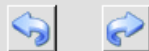
- gluon100.jlab.org_26476
- gluon101.jlab.org_21425
- gluon102.jlab.org_21441
- gluon104.jlab.org_16101
- gluon105.jlab.org_32360
- ...gluon106.jlab.org_29365
- ...gluon107.jlab.org_26549
- ...gluon108.jlab.org_10084
- ...gluon111.jlab.org_28459
- ...

Histogram:

aI_shower_position

Received:

Wed Oct 1 17:00:34 2014

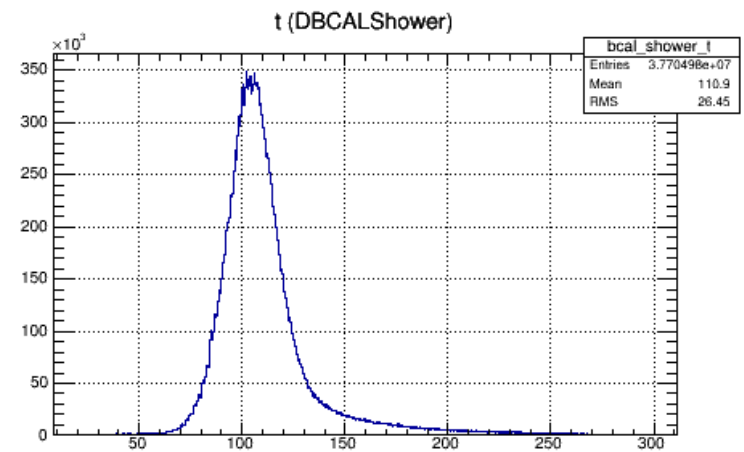
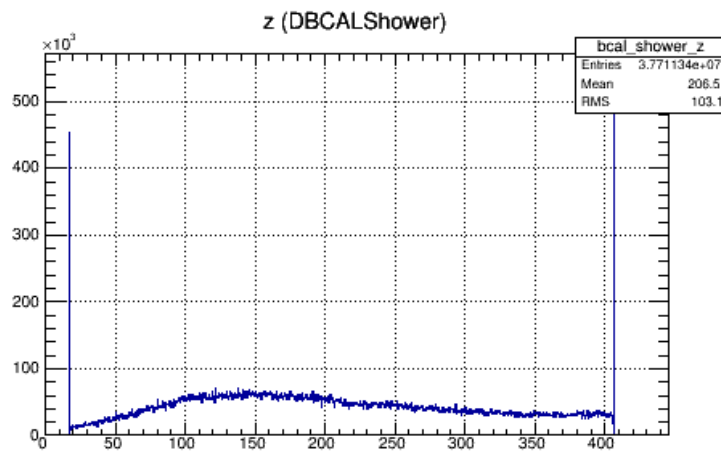
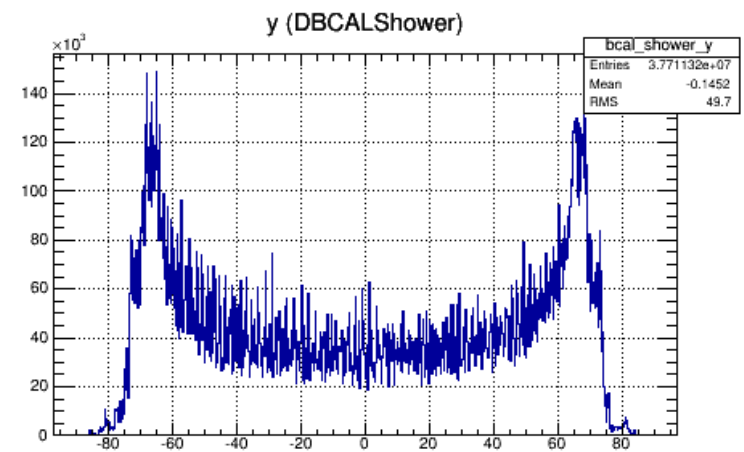
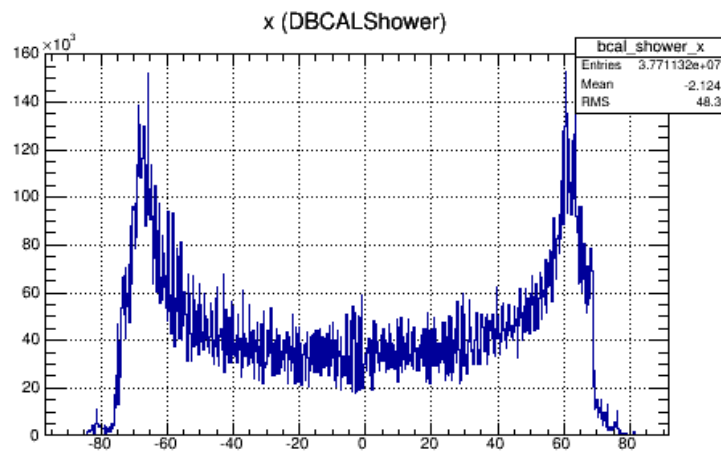


Display Options

Select

Show Individual

Save Canvas



Quit

Macros

```
bcal_shower_position.C
No Selection
1
2
3 // hnamepath: /bcal/bcal_shower_x
4 // hnamepath: /bcal/bcal_shower_y
5 // hnamepath: /bcal/bcal_shower_z
6 // hnamepath: /bcal/bcal_shower_t
7
8 {
9     TDirectory *dir = (TDirectory*)gDirectory->FindObjectAny("bcal");
10    if(dir) dir->cd();
11
12    TH1I *h_x = (TH1I*)gDirectory->FindObjectAny("bcal_shower_x");
13    TH1I *h_y = (TH1I*)gDirectory->FindObjectAny("bcal_shower_y");
14    TH1I *h_z = (TH1I*)gDirectory->FindObjectAny("bcal_shower_z");
15    TH1I *h_t = (TH1I*)gDirectory->FindObjectAny("bcal_shower_t");
16
17    // Just for testing
18    if(gPad == NULL){
19        TCanvas *c1 = new TCanvas("c1");
20        c1->cd(0);
21        c1->Draw();
22        c1->Update();
23    }
24
25    if(!gPad) return;
26    TCanvas *c1 = gPad->GetCanvas();
27    c1->Divide(2, 2);
28
29    c1->cd(1);
30    gPad->SetTicks();
31    gPad->SetGrid();
32    if(h_x) h_x->Draw();
33
34    c1->cd(2);
35    gPad->SetTicks();
36    gPad->SetGrid();
37    if(h_y) h_y->Draw();
38
39    c1->cd(3);
40    gPad->SetTicks();
41    gPad->SetGrid();
42    if(h_z) h_z->Draw();
43
44    c1->cd(4);
45    gPad->SetTicks();
46    gPad->SetGrid();
47    if(h_t) h_t->Draw();
48 }
49
50
```

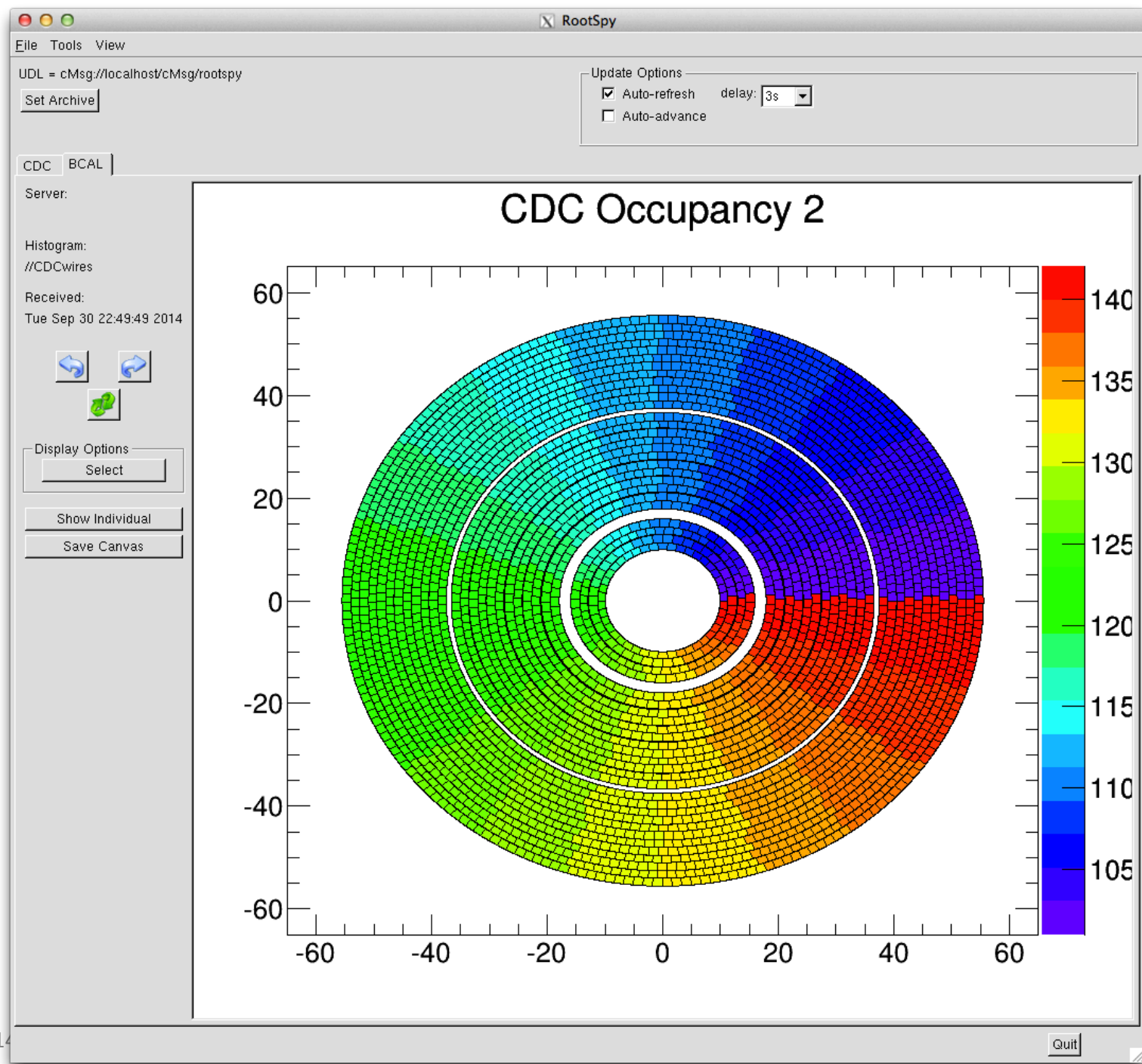
Special comments allow instructions to be passed to RootSpy. In this case, which histograms this macro needs

Macro starts in TDirectory mirroring structure of plugin(s), but containing summed histograms from all servers

Testing outside of RootSpy will need a TCanvas

Main macro content.

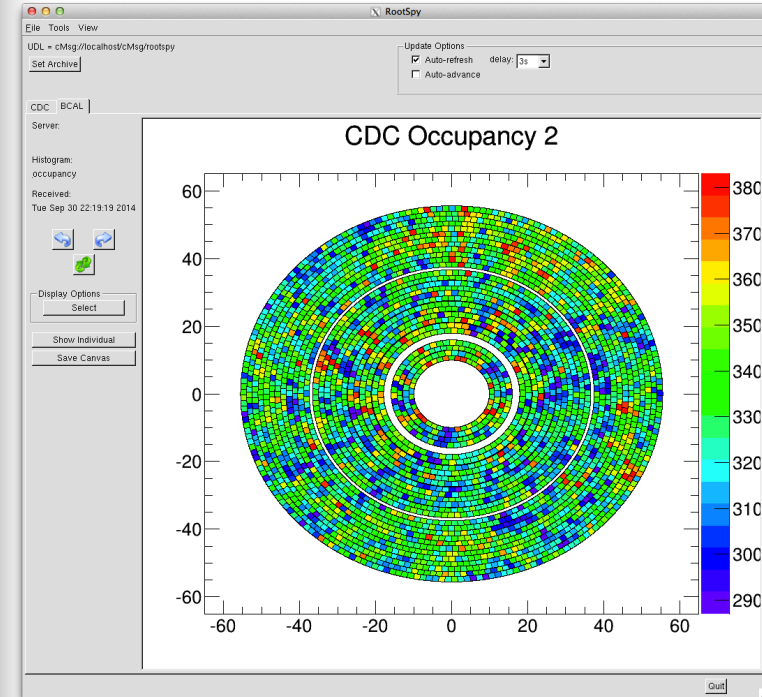
Files ending with a ".C" suffix are automatically detected by build system and compiled as strings into plugins. They are automatically transported to RootSpy at run time.



Another macro example

```
CDC_occupancy.C
CDC_occupancy.C > No Selection

1 // The following are special comments used by RootSpy to know
2 // which histograms to fetch for the macro.
3 //
4 //
5 // hnamepath: /CDC/occ_rings/cdc_occ_ring[1]
6 // hnamepath: /CDC/occ_rings/cdc_occ_ring[2]
7 // hnamepath: /CDC/occ_rings/cdc_occ_ring[3]
8 // hnamepath: /CDC/occ_rings/cdc_occ_ring[4]
9 // hnamepath: /CDC/occ_rings/cdc_occ_ring[5]
10 // hnamepath: /CDC/occ_rings/cdc_occ_ring[6]
11 // hnamepath: /CDC/occ_rings/cdc_occ_ring[7]
12 // hnamepath: /CDC/occ_rings/cdc_occ_ring[8]
13 // hnamepath: /CDC/occ_rings/cdc_occ_ring[9]
14 // hnamepath: /CDC/occ_rings/cdc_occ_ring[10]
15 // hnamepath: /CDC/occ_rings/cdc_occ_ring[11]
16 // hnamepath: /CDC/occ_rings/cdc_occ_ring[12]
17 // hnamepath: /CDC/occ_rings/cdc_occ_ring[13]
18 // hnamepath: /CDC/occ_rings/cdc_occ_ring[14]
19 // hnamepath: /CDC/occ_rings/cdc_occ_ring[15]
20 // hnamepath: /CDC/occ_rings/cdc_occ_ring[16]
21 // hnamepath: /CDC/occ_rings/cdc_occ_ring[17]
22 // hnamepath: /CDC/occ_rings/cdc_occ_ring[18]
23 // hnamepath: /CDC/occ_rings/cdc_occ_ring[19]
24 // hnamepath: /CDC/occ_rings/cdc_occ_ring[20]
25 // hnamepath: /CDC/occ_rings/cdc_occ_ring[21]
26 // hnamepath: /CDC/occ_rings/cdc_occ_ring[22]
27 // hnamepath: /CDC/occ_rings/cdc_occ_ring[23]
28 // hnamepath: /CDC/occ_rings/cdc_occ_ring[24]
29 // hnamepath: /CDC/occ_rings/cdc_occ_ring[25]
30 // hnamepath: /CDC/occ_rings/cdc_occ_ring[26]
31 // hnamepath: /CDC/occ_rings/cdc_occ_ring[27]
32 // hnamepath: /CDC/occ_rings/cdc_occ_ring[28]
33
34
35 {
36   TDirectory *dir = (TDirectory*)gDirectory->FindObjectAny("occ_rings");
37   if(!dir) return;
38
39   dir->cd();
40
41   // Draw axes
42   TH2D *axes = (TH2D *)dir->Get("axes");
43   if(!axes) axes = new TH2D("axes", "CDC Occupancy 2", 100, -65.0, 65.0, 100, -65.0, 65.0);
44
45   axes->SetStats(0);
46   axes->Draw();
47
48   bool drew_colz = false;
49   for(unsigned int iring=1; iring<=28; iring++){
50     char hname[256];
51     sprintf(hname, "cdc_occ_ring[%d]", iring);
52     TH1 *h = (TH1*)(dir->Get(hname));
53     if(h){
54       h->SetStats(0);
55       if(!drew_colz)
56         h->Draw("same colz pol"); // draw color palette with first histo we find
57       else
58         h->Draw("same col pol"); // draw remaining histos without overwriting color palette
59
60       drew_colz = true;
61     }
62   }
63 }
64
```



hd_dump

Terminal — hd_dump — 87x42

```
=====  
Event: 6  
Registered factories: (168 total)
```

Name:	nrows:	tag:
Df250Config	23	
Df250PulseIntegral	164	
Df250TriggerTime	308	
Df250PulseTime	164	
Df250PulsePedestal	164	
Df125Config	14	
Df125TriggerTime	194	
Df125PulseIntegral	272	
Df125PulseTime	272	
Df125PulsePedestal	272	
DF1TDCHit	20	
DF1TDCCConfig	9	
DF1TDCTriggerTime	98	
DCAEN1290TDCHit	7	
DTranslationTable	1	
DBCALDigiHit	146	
DBCALHit	146	
DBCALGeometry	1	
DBCALCluser	1	"SINGLE"
DBCALPoint	2	
DBCALUnifiedHit	146	
DCDCDigiHit	179	
DCDCHit	179	
DCDCTrackHit	179	
DFDCCathodeDigiHit	93	
DFDCWireDigiHit	13	
DFDCHit	106	
DFDCCathodeCluser	24	
DFDCIntersection	11	
DFDCPseudo	22	"WIRESONLY"
DFCALDigiHit	4	
DFCALHit	4	
DFCALCluser	2	
DFCALShower	2	

Terminal — hd_dump — 87x42

```
URL: sqlite:///Users/davidl/HalID/calib/ccdb_pro.sqlite  
context: default  
Reading translation table from calib DB: Translation/DAQ2detector ...  
22817 channels defined in translation table
```

```
=====  
Event: 1
```

```
--- Configuration Parameters ---  
PLUGINS = DAQ, TTab  
THREAD_TIMEOUT = 30 seconds
```

```
=====  
Event: 2
```

```
DFDCWireDigiHit:
```

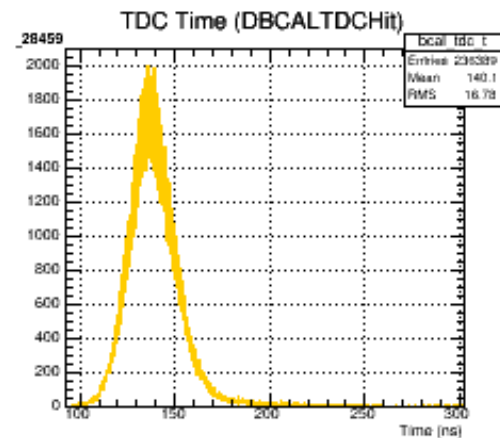
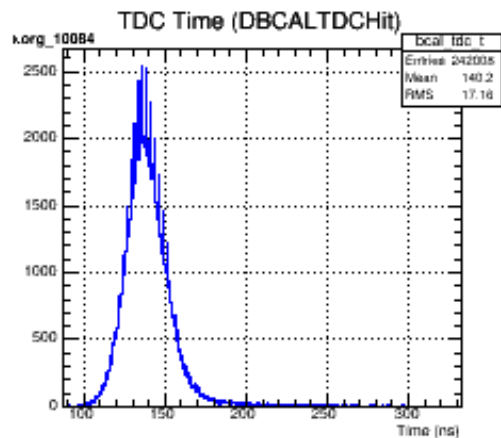
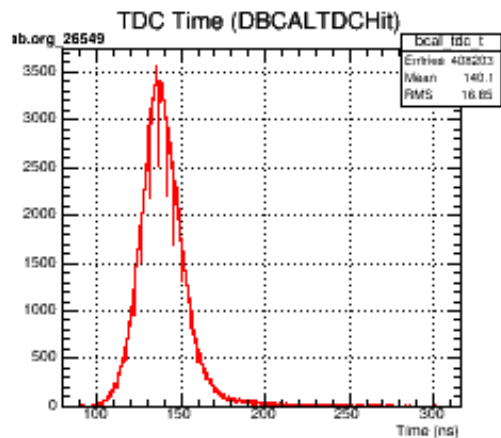
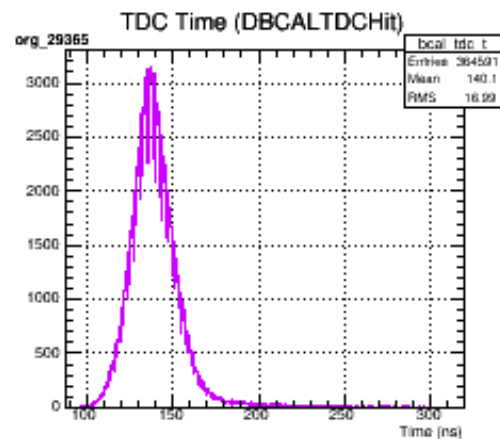
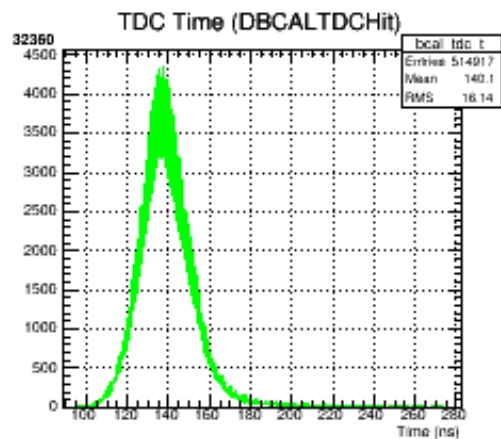
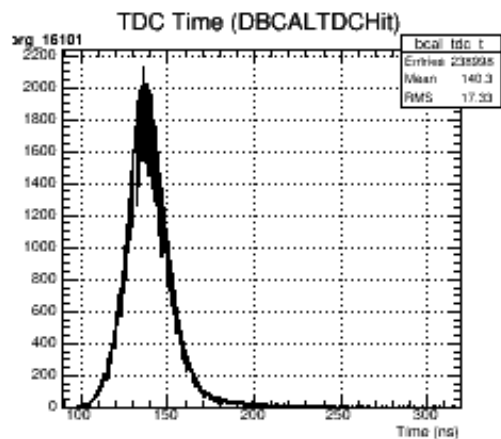
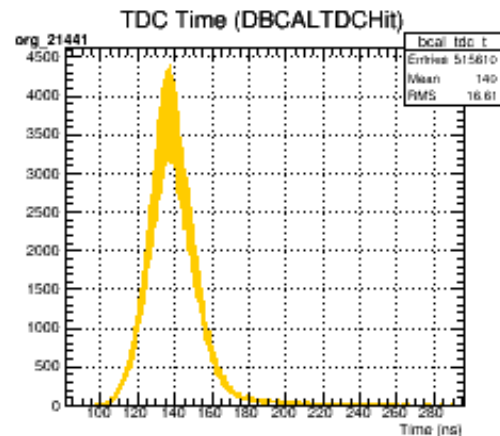
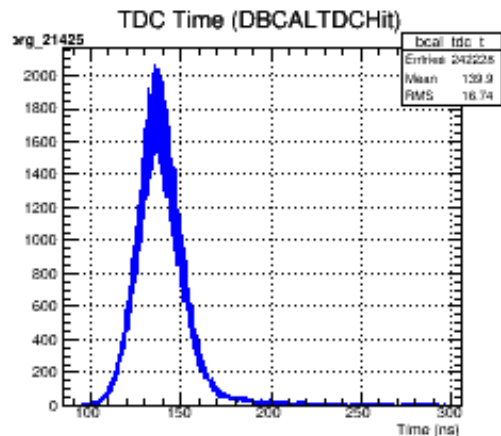
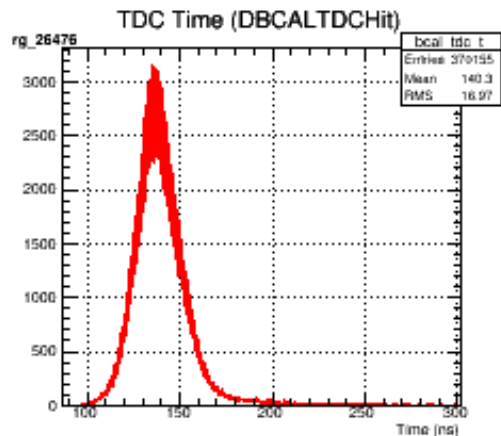
```
package: chamber: wire: time:
```

1	1	47	1250
1	2	45	1272
1	3	51	904
2	1	45	1413
2	2	44	1429
2	3	50	930
3	1	44	1395
3	2	44	918
3	3	48	999
4	1	43	1532
4	3	48	1493
3	4	44	1484
3	5	44	963
3	6	48	987
4	5	44	1438
4	6	48	1313
1	4	47	896
1	5	45	1519
1	6	51	944
2	4	45	946
2	5	44	1404
2	6	50	978

```
< Hit return for the next event (P=prev. Q=quit) >|
```

Summary

- Automated system for starting/stopping monitoring processes from CODA exists, but needs more testing
- Initial set of plugins exist and detector groups are starting to fill them in (BCAL, CDC are pioneers)
- All DANA programs can attach to ET system and read events online including *hdview2* and *hd_dump*
- RSArchiver program will be used to archive all monitoring histograms to tape.



Update

- Combined
- Divided Canvas
- Tick Marks
- Grid Lines

Close

```
Terminal — hd_dump — 76x31
=====
Event: 15
Df250Config:
  rocid: slot_mask:   NSA:   NSB: NSA_NSB: NPED:
-----
  11  0x07f3fd  65535  65535    50    4
  12  0x07f3fd  65535  65535    50    4
  13  0x07f3fd  65535  65535    50    4
  14  0x03f3fd  65535  65535    50    4
  15  0x07f3fd  65535  65535    50    4
  16  0x03f3fd  65535  65535    50    4
  17  0x03f3fd  65535  65535    50    4
  18  0x07f3fd  65535  65535    50    4
  19  0x03f3fd  65535  65535    50    4
  20  0x07f3fd  65535  65535    50    4
  21  0x07f3fd  65535  65535    50    4
  22  0x07f3fd  65535  65535    50    4
  31  0x00f3fd  65535  65535    50    4
  32  0x00f3fd  65535  65535    50    4
  34  0x00f3fd  65535  65535    50    4
  35  0x00f3fd  65535  65535    50    4
  37  0x00f3fd  65535  65535    50    4
  38  0x00f3fd  65535  65535    50    4
  40  0x00f3fd  65535  65535    50    4
  41  0x00f3fd  65535  65535    50    4
  71  0x0003fd  65535  65535    50    4
  72  0x07f3fd  65535  65535    50    4
  77  0x0073fd  65535  65535    50    4

< Hit return for the next event (P=prev. Q=quit) >|
```