OAK RIDGE National Laboratory

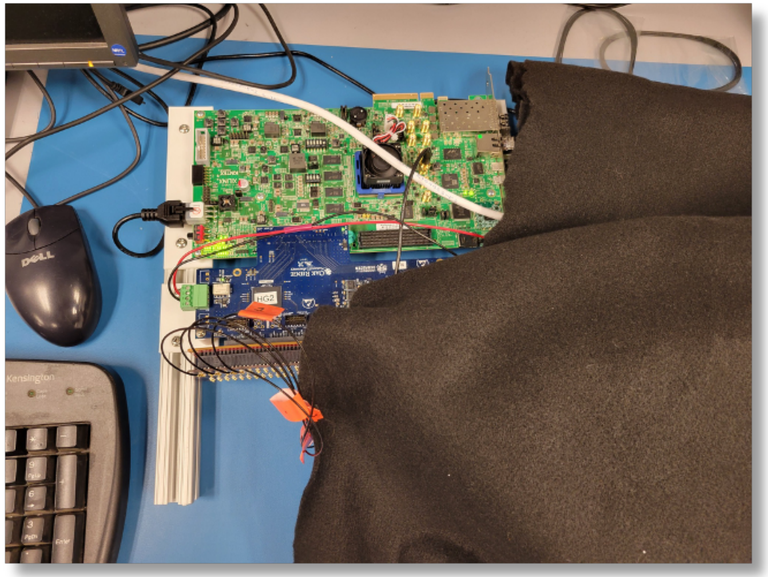
eRD109 update

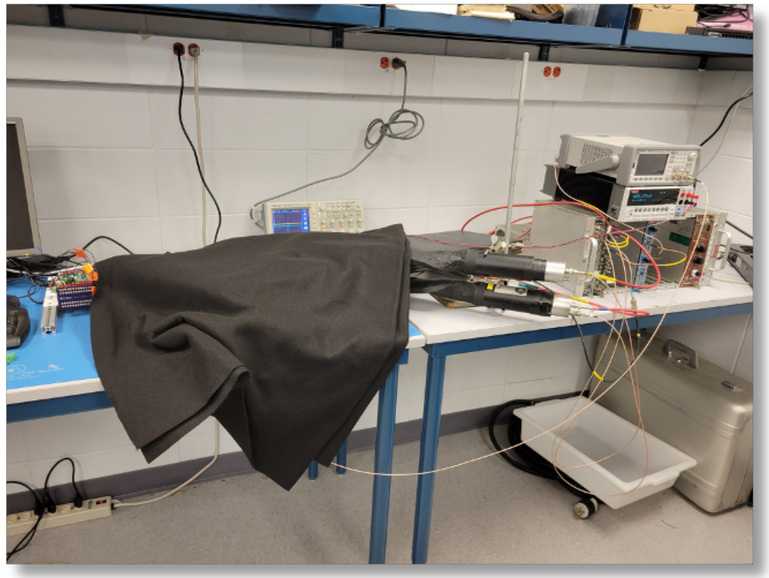
Norbert Novitzky
(ORNL)

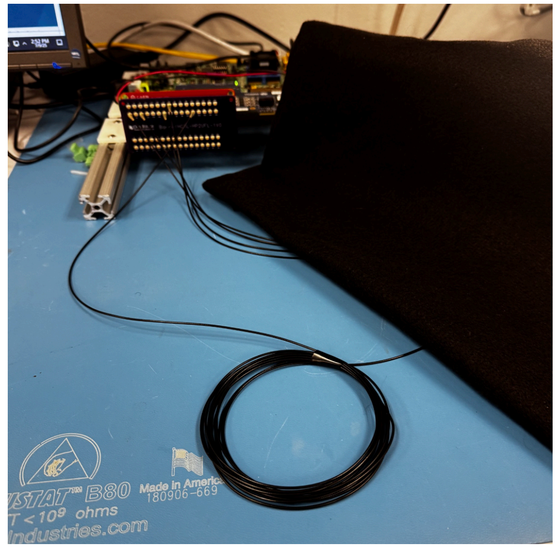
Cable test checks in BNL for BHcal

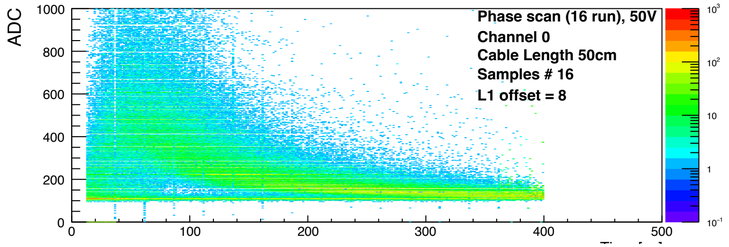
New setup working in BNL with the Barrel HCal tiles, new SiPM, etc

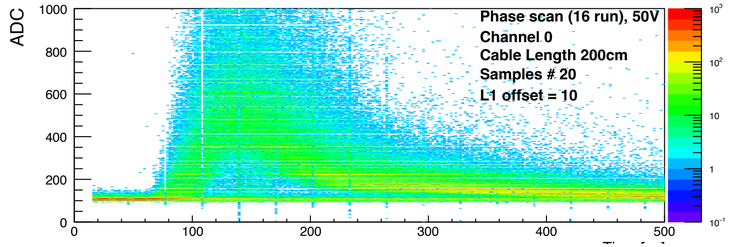
Micro coax cables, UFL connectors



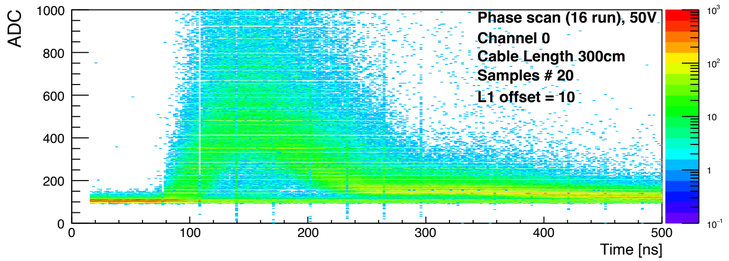


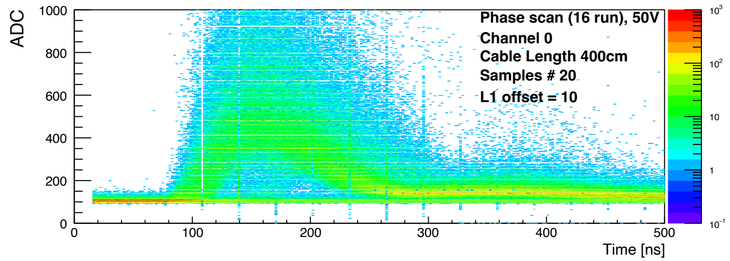


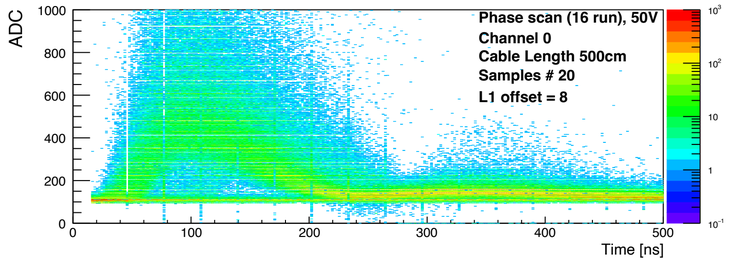




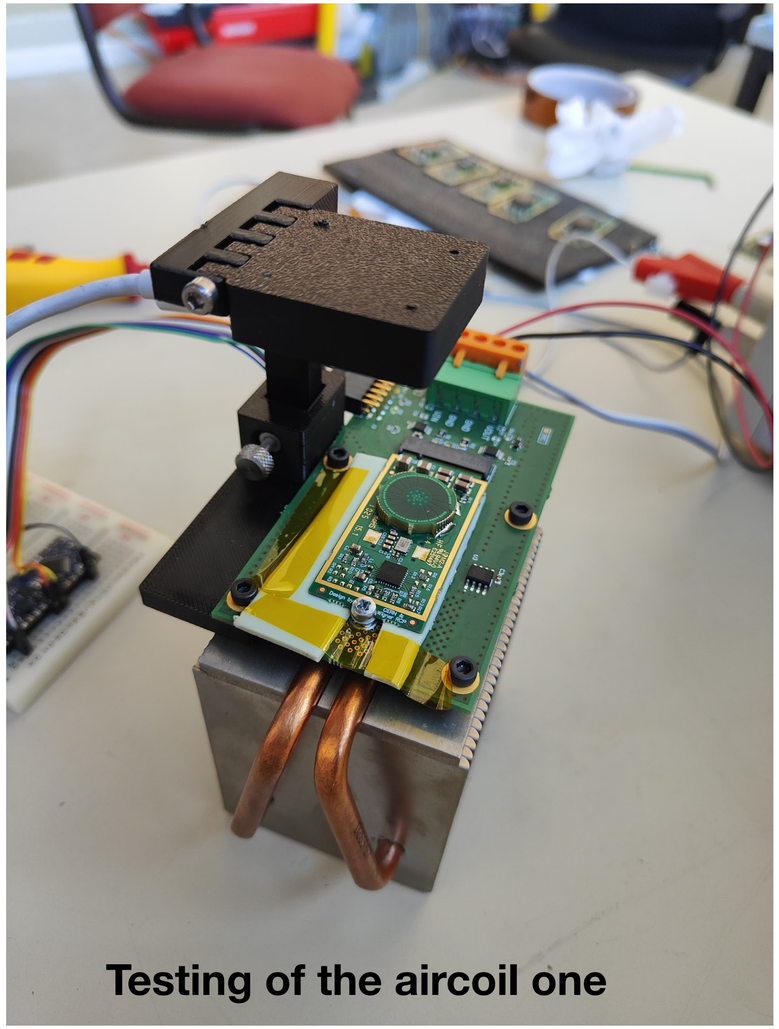
There is a secondary peak appearing after 3m cable is used —> The max cable is 2.5m and this can be mitigated (TDR measurement)



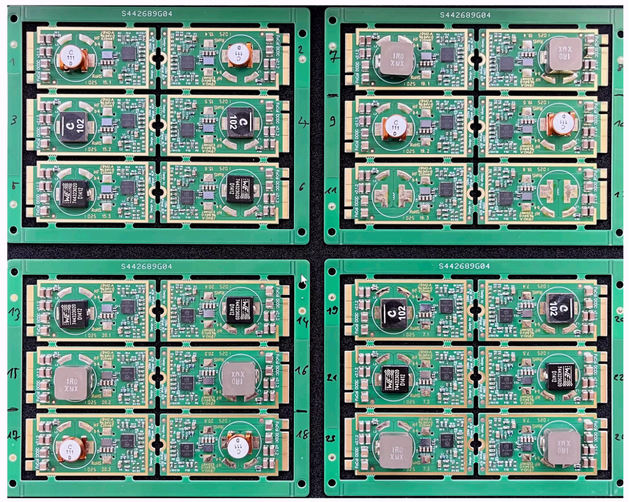




DC-DC converters



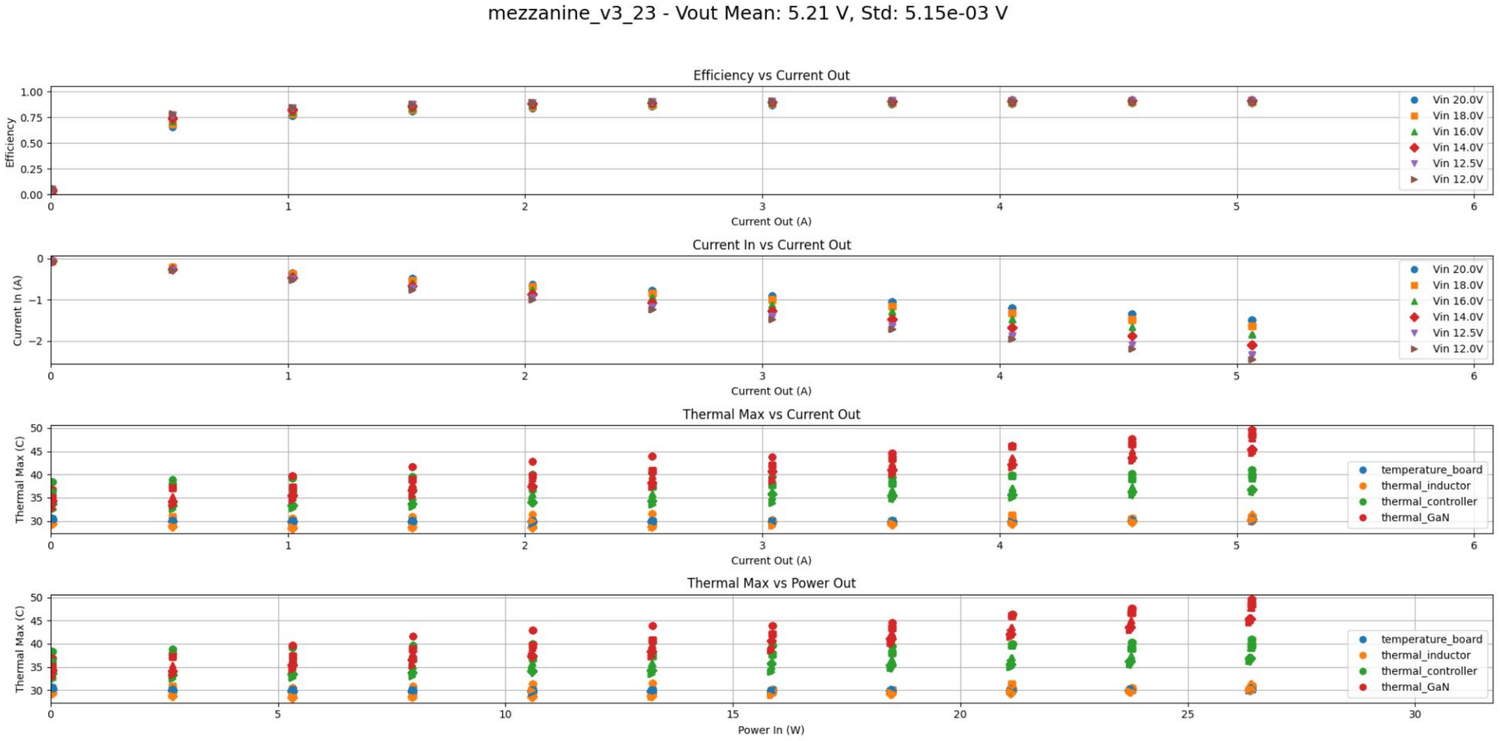
Testing of the aircoil one



Produced couple of the bPol48 modules for testing:

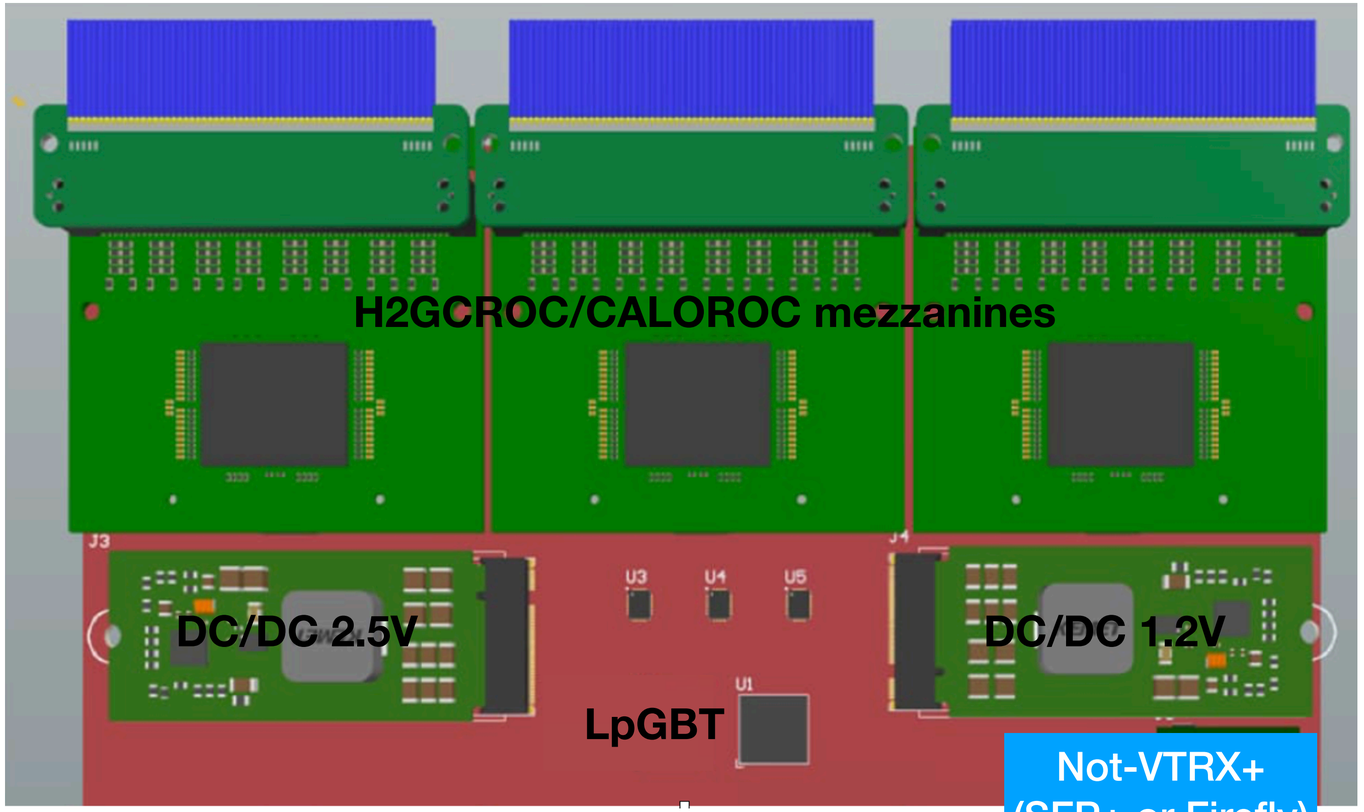
- Difference is the coil:
  - Couple of ferrite coils
  - Couple of air coils

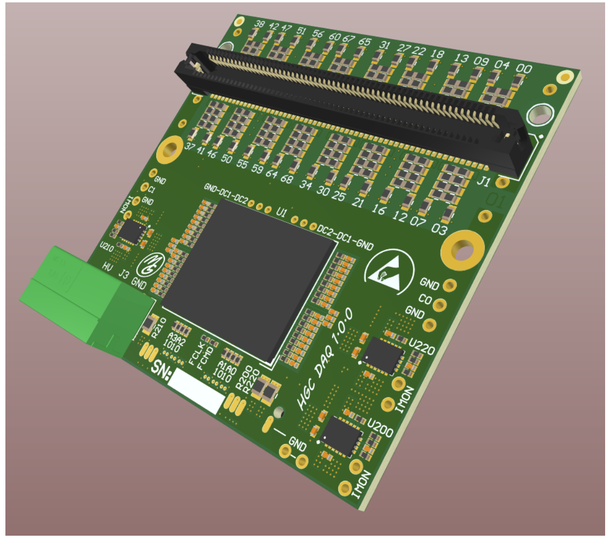
Testing is ongoing at CERN now, will report on the results once it is finished



Thanks Tivadar, Nicola, Tommaso

HGCROC-CALOROC transition with LpGBT





H2GCROC/Caloroc testing with LpGBT communication:

- 2x1.28 Gbps links for H2GCROC and also CALOROC1
- We can use either to ASIC with the same base board

New test board for the H2GCROC and LpGBT:

- 10 H2GCROC boards (design is done, chips are ready, waiting for production)
- 2-3 Baseboards (design ongoing, ready in end of July)

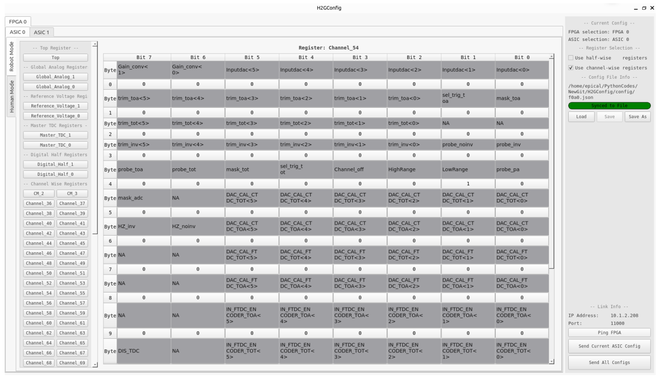
DAQ integration

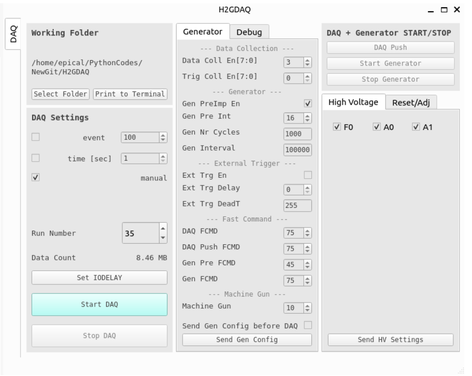
With Martin we started to work on full DAQ integration to RCDAQ

```
$ daq_status -ll
caloroc2 -  Stopped
  Filerule:      /home/phnxrc/data/junk/junk_ROC-%08d-%04d.evt
  Logging enabled
  Number of buffers/write threads: 2 Buffersize: 64MB
  compression disabled level: 0
  MD5 calculation enabled
  have a trigger object
  Buffer Sizes:      65536 KB adaptive buffering: 15 s
  Web control Port:  8899
  Elog: not defined
  -- defined Run Types:
          cosmics - /home/phnxrc/data/cosmics/cosmics_ROC-%08d-%04d.evt
             junk - /home/phnxrc/data/junk/junk_ROC-%08d-%04d.evt
  List of loaded Plugins:
   - H2GCROC3 Plugin, provides -
 -      device_h2gcroc3 (evttype, subid, IP addr, trigger, nr_packets) - readout an H2GCROC3
```

```
$ daq_list_readlist
File Device  Event Type: 9 Subevent id: 900 reading from /home/phnxrc/ROC/new ROC
firmware/rcdaq_roc.sh
H2GCROC3 Device  Event Type: 1 Subevent id: 12001 IP: 10.1.2.208 nr_packets: 128 trigger
```

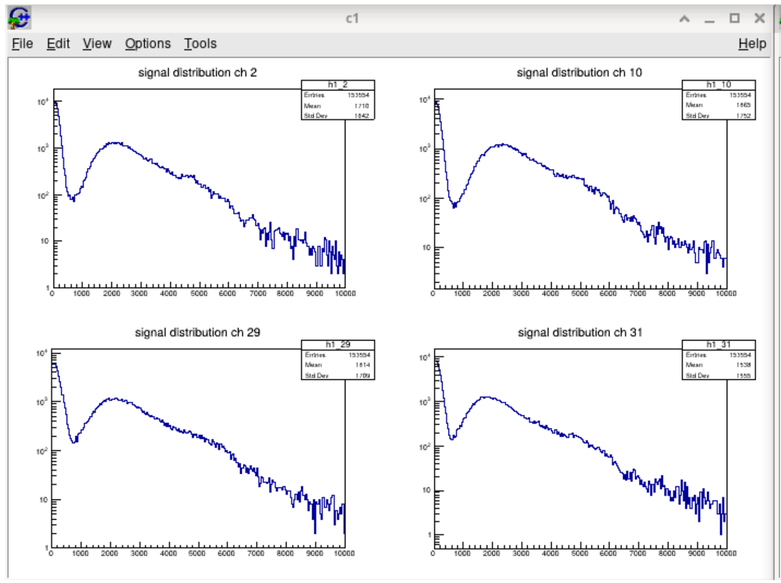
Slow control stays as is for now (python GUI)

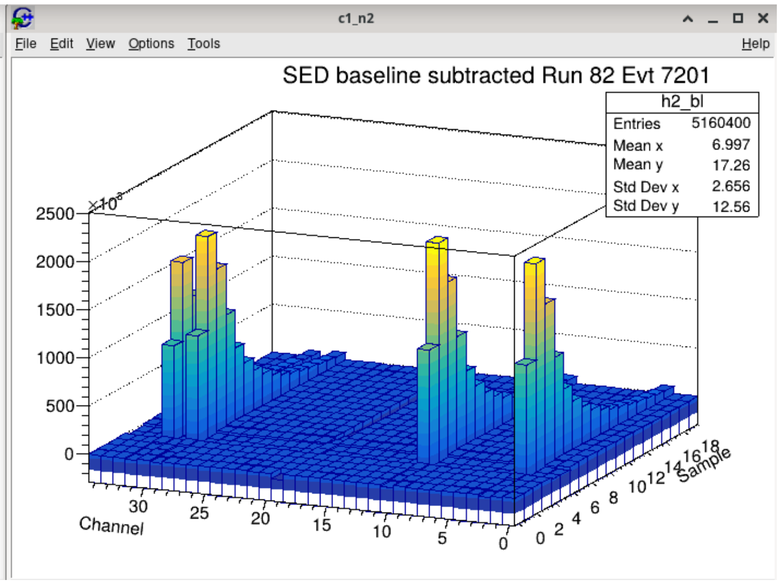




With RCDAQ one can connect multiple other devices (trigger scintillator signal, moving stages, cameras, temperature/humidity sensors), most importantly Astropix for now (work in progress).

It is running smoothly in BNL and ORNL now.





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Quick summary

Managed to setup couple of test stands around the world:

- ORNL has it for ~3 years (every calorimeter)
- BNL has one for BHcal, but Insert can be tested there too (BHCal, Insert)
- One setup in France, IJCLab/LLR (EEEMCal)
- One working setup in Argonne, one coming in Korea (BIC)
- Setup in UCR (Insert)

Very successful testbeam of the EEEMCal, there is much better understanding of the responses, EEEMCal performance is not yet satisfactory (see Carlos' presentations on CaloMeeting/TIC).

More measurements coming:

- DC/DC conversion measurements, efficiencies at different temperatures
- Summing board needs to be tested
- BIC test stand under work - soon to be tested:
  - Here also want to synchronize Astropix with H2GCROC
- Testing H2GCROC-LpGBT and then replace with CALOROC