UUB Charge and Peak histograms

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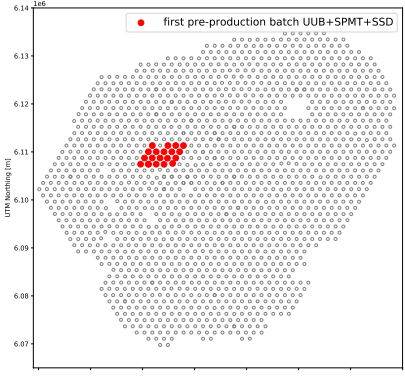
IIHE-ULB

May 6, 2021

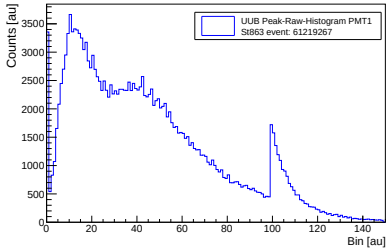
UUB Charge and Peak histograms

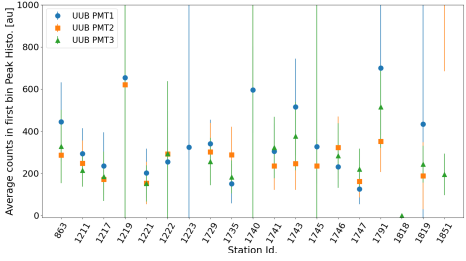
- Station studied: 863 1222 1219 1211 1740 1743 1221 1223 1217 1747 1741 1745 1818 1851 1729 1735 1746 1819 1791
- Data from CDAS.
- Software CDAS, pre-production version.

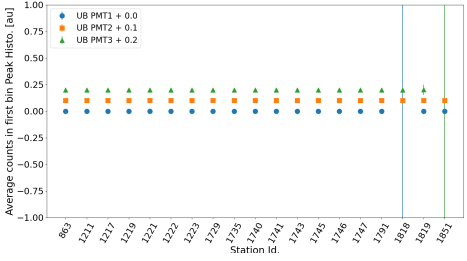


UUB Raw Peak histograms: noise at first bin?

IoSdHisto::Peak[pmtId][0]



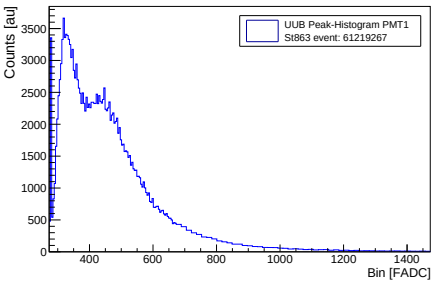


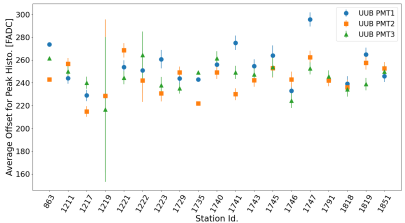


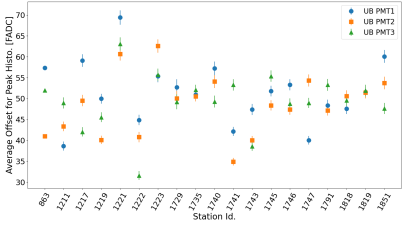
From UUB raw Peak histogram to correct format

Applying IoSdStation::HPeak method

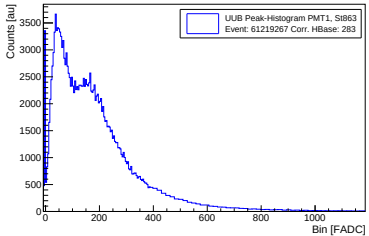
xp[j] = j*mult + **offset**; xp[100 + j] = 100 * mult + bigbins * j * mult + **offset**

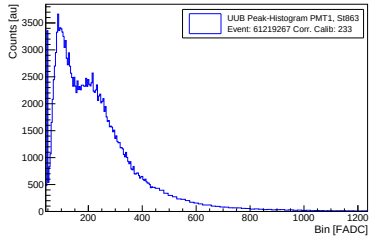


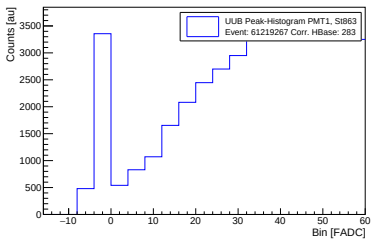


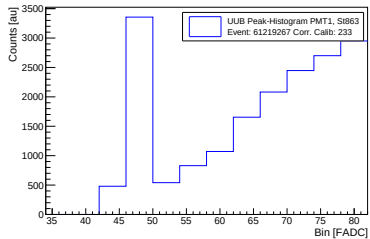


UUB Peak histogram correcting baseline for: HBase and Calib.Base







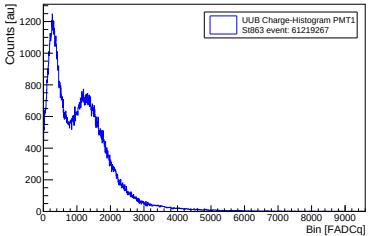


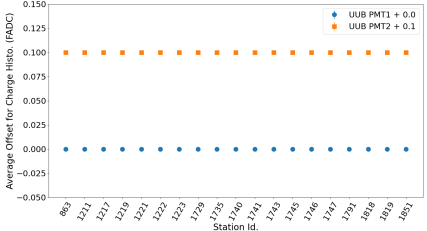
Which one should we use to correct?

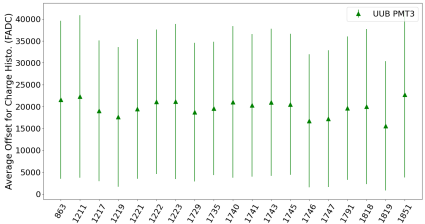
Applying the previous steps to UUB Charge histograms

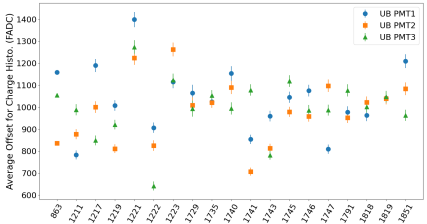
loSdStation::HCharge

xc[j] = mult*j + **offset**; xc[400+j] = 400*mult + bigbins*mult*j + **offset**





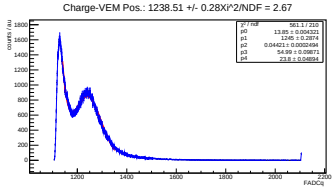




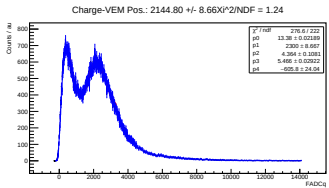
Area/Peak

Fitting Histograms using:

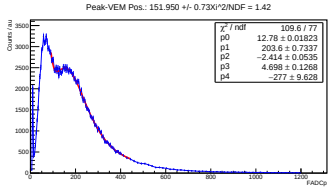
$$e^{\left(a_0-\frac{1}{x\tau}\right)}+x^{-1}e^{-\left(\frac{(\ln x-\ln\mu)^2}{2\sigma^2}\right)}$$



Charge: UB-PMT1

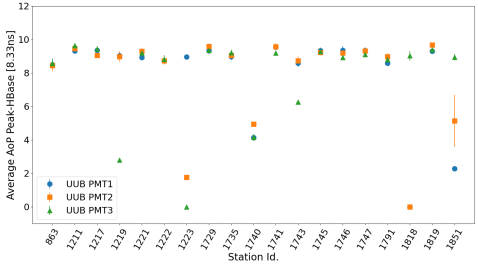


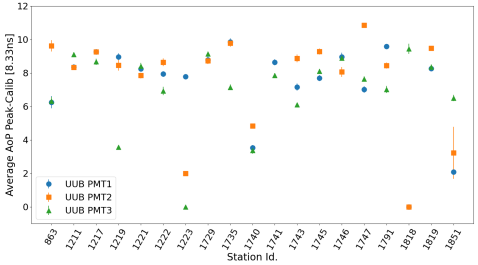
Charge: UUB-PMT1

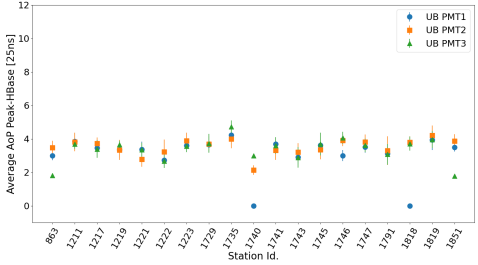


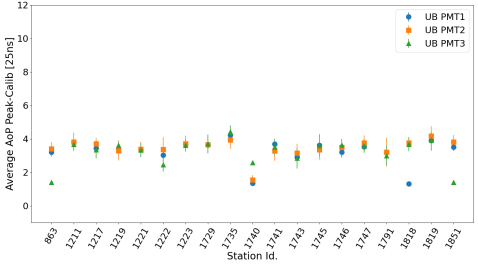
Peak: UUB-PMT1

A/P


Average AoP Peak-HBase [8.33ns]
Station Id.
UUB PMT1
UUB PMT2
UUB PMT3
863
1211
1217
1219
1221
1222
1223
1729
1735
1740
1741
1743
1745
1746
1747
1791
1818
1819
1851


Average AoP Peak-Calib [8.33ns]
Station Id.
UUB PMT1
UUB PMT2
UUB PMT3
863
1211
1217
1219
1221
1222
1223
1729
1735
1740
1741
1743
1745
1746
1747
1791
1818
1819
1851


Average AoP Peak-HBase [25ns]
Station Id.
UB PMT1
UB PMT2
UB PMT3
863
1211
1217
1219
1221
1222
1223
1729
1735
1740
1741
1743
1745
1746
1747
1791
1818
1819
1851


Average AoP Peak-Calib [25ns]
Station Id.
UB PMT1
UB PMT2
UB PMT3
863
1211
1217
1219
1221
1222
1223
1729
1735
1740
1741
1743
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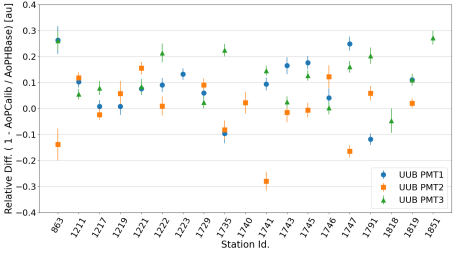
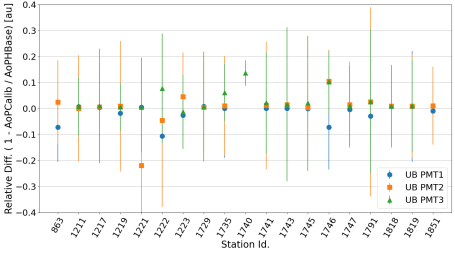
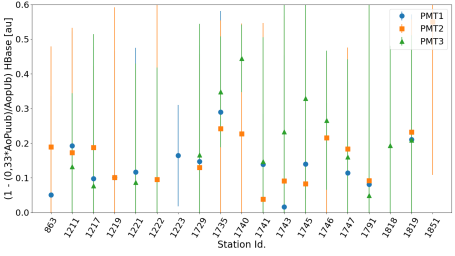
1746
1747
1791
1818
1819
1851

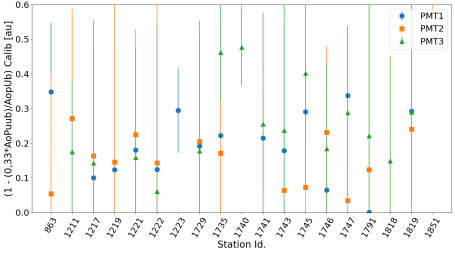
A/P Relative difference for Peak corrections

PMTs with AoP lower than 4 ns for UUB and 2 ns for UB are not considered here.

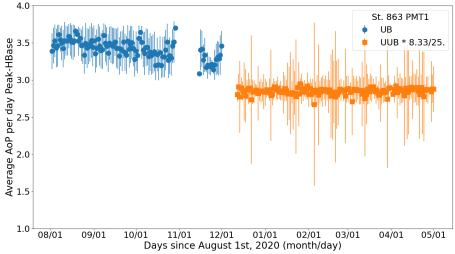


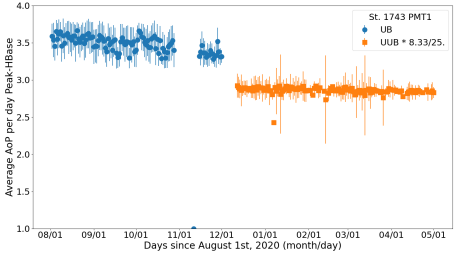


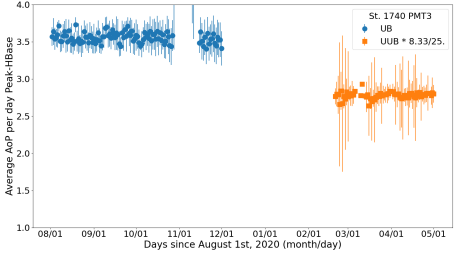


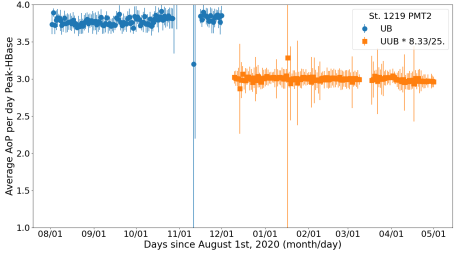


A/P along time









Summary

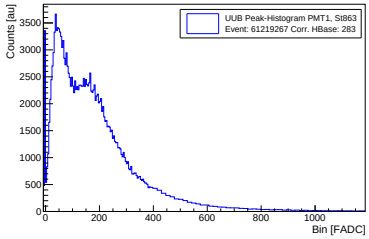
First look at the A/P

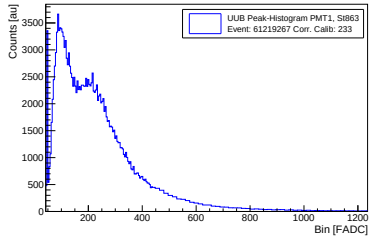
- Why are there entries in the UUB peak histograms at the first bin?
- What is the offset for, and why is it different between the PMTs (Charge histograms)?
- The calibration histograms should be taken from HBase or Calib?
- The A/B from the UUB is a factor 20% lower than the A/P from UB.

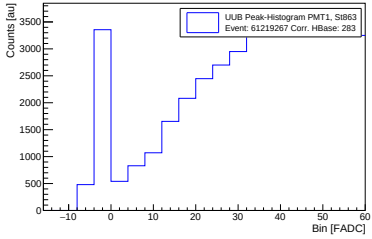
Thanks

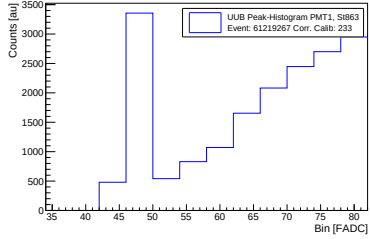
Backup

UUB Peak histogram correcting baseline for: HBase and Calib.Base





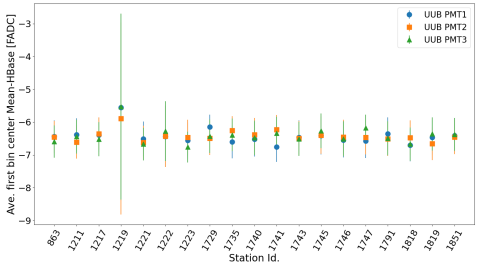


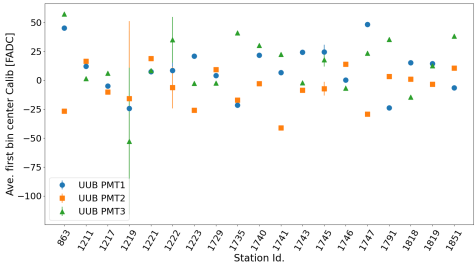


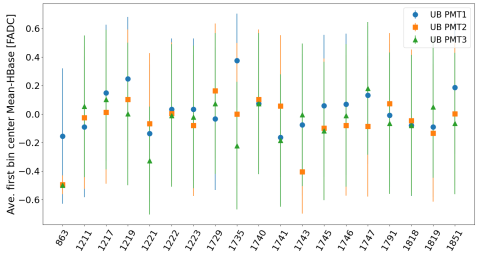
Is the correction using HBase producing negative bins?

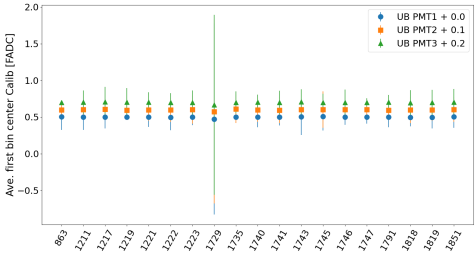
Comparison PMT1: UUB and UB Peak histogram First Bin center

Here, First Bin center: GetBinCenter(1).

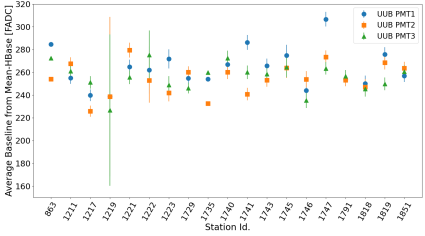


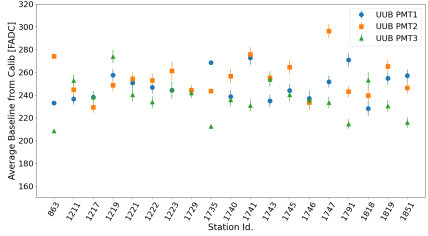


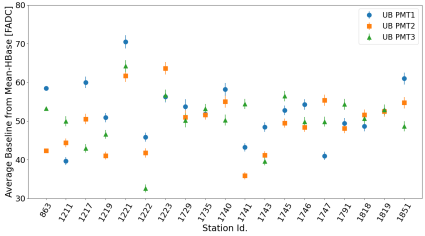


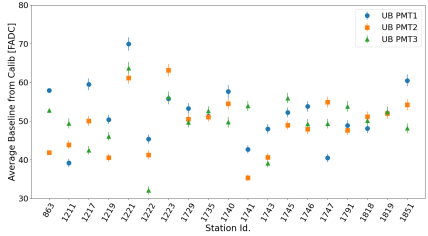


Checking UUB Baseline: IoSdStation::HBase[pmt] and Calib.Base[pmt]

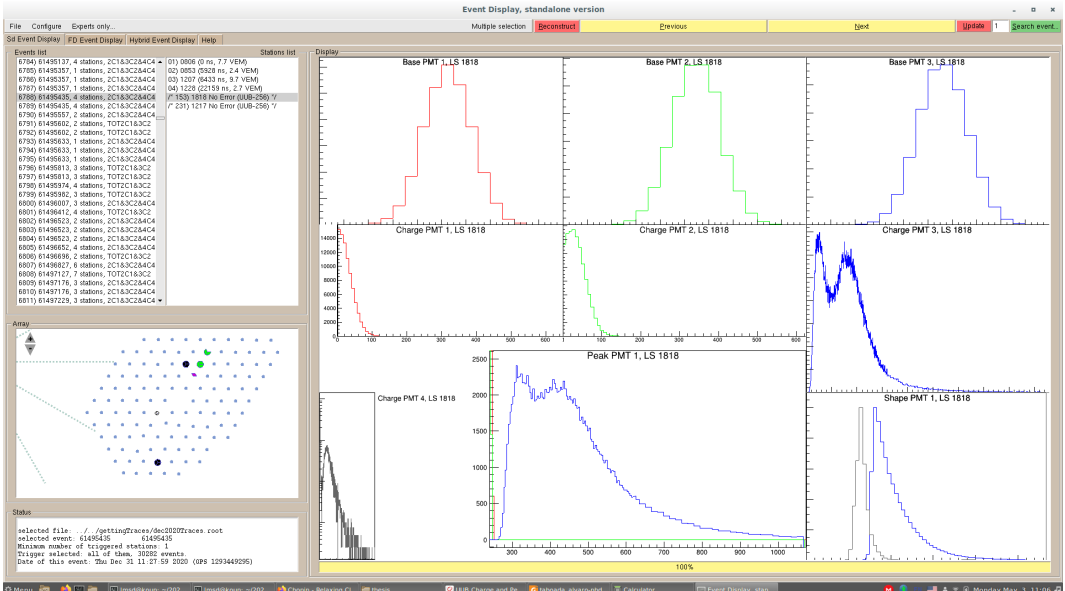




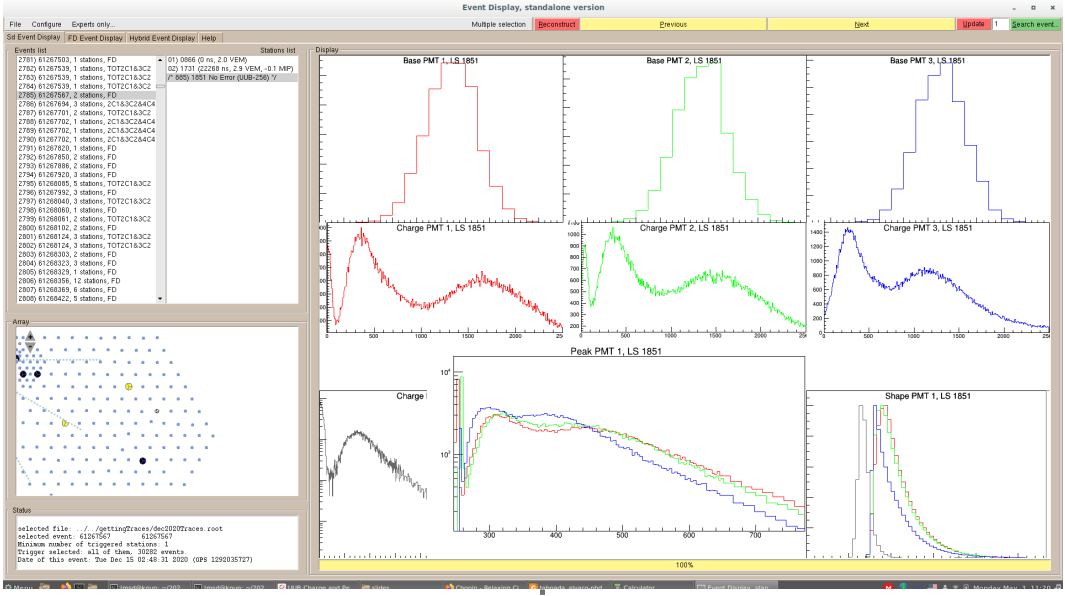




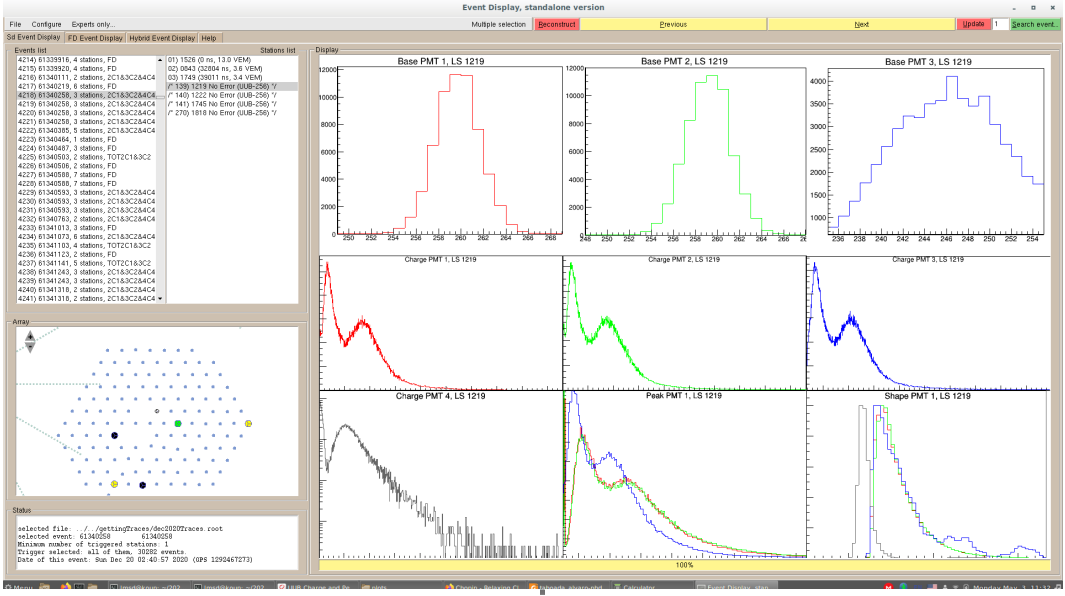
Station 1818



Station 1851



Station 1219



Station 1219