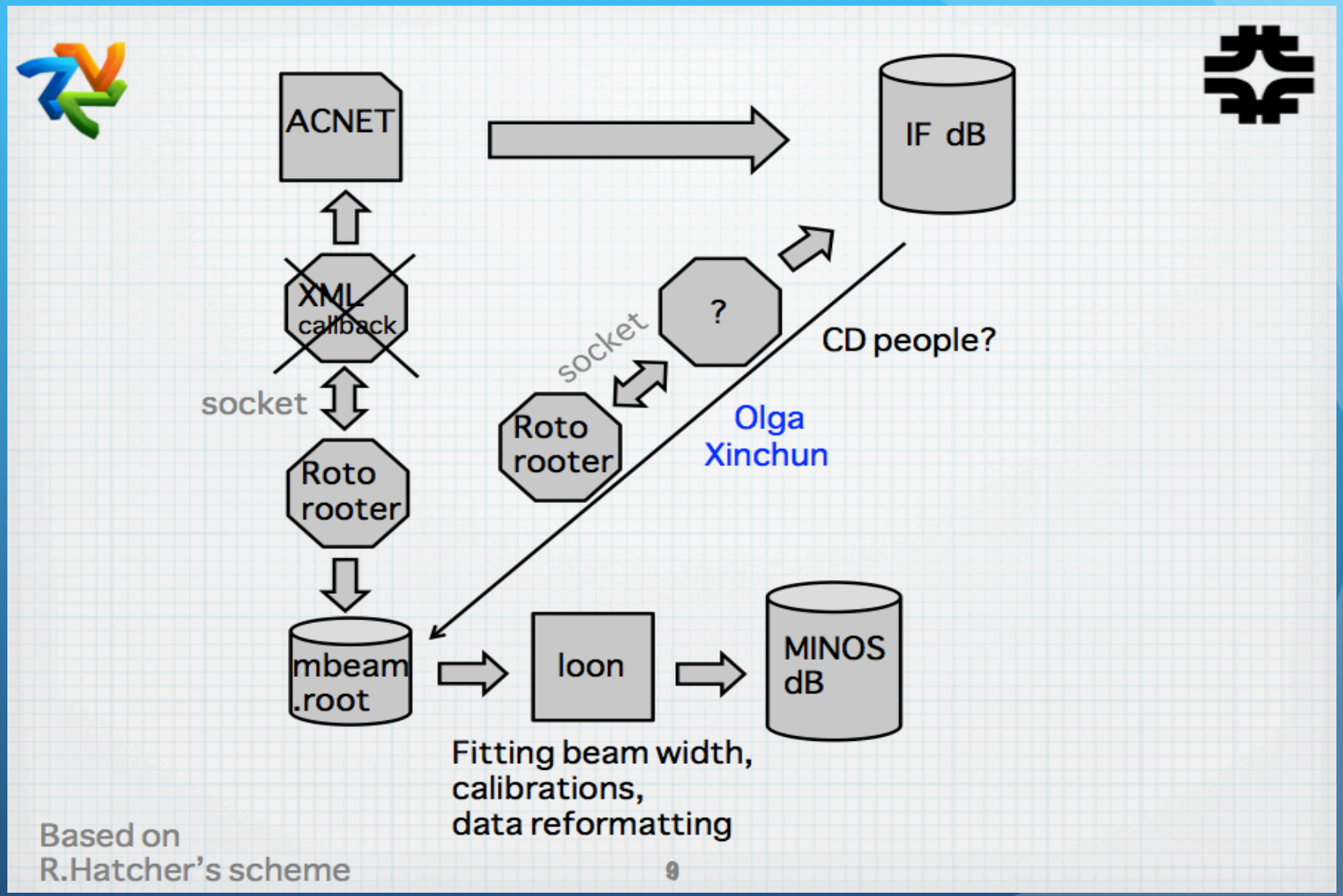
IF dB & Datalogger (beam files comparison)

Joseph M. Kiveni

Introduction



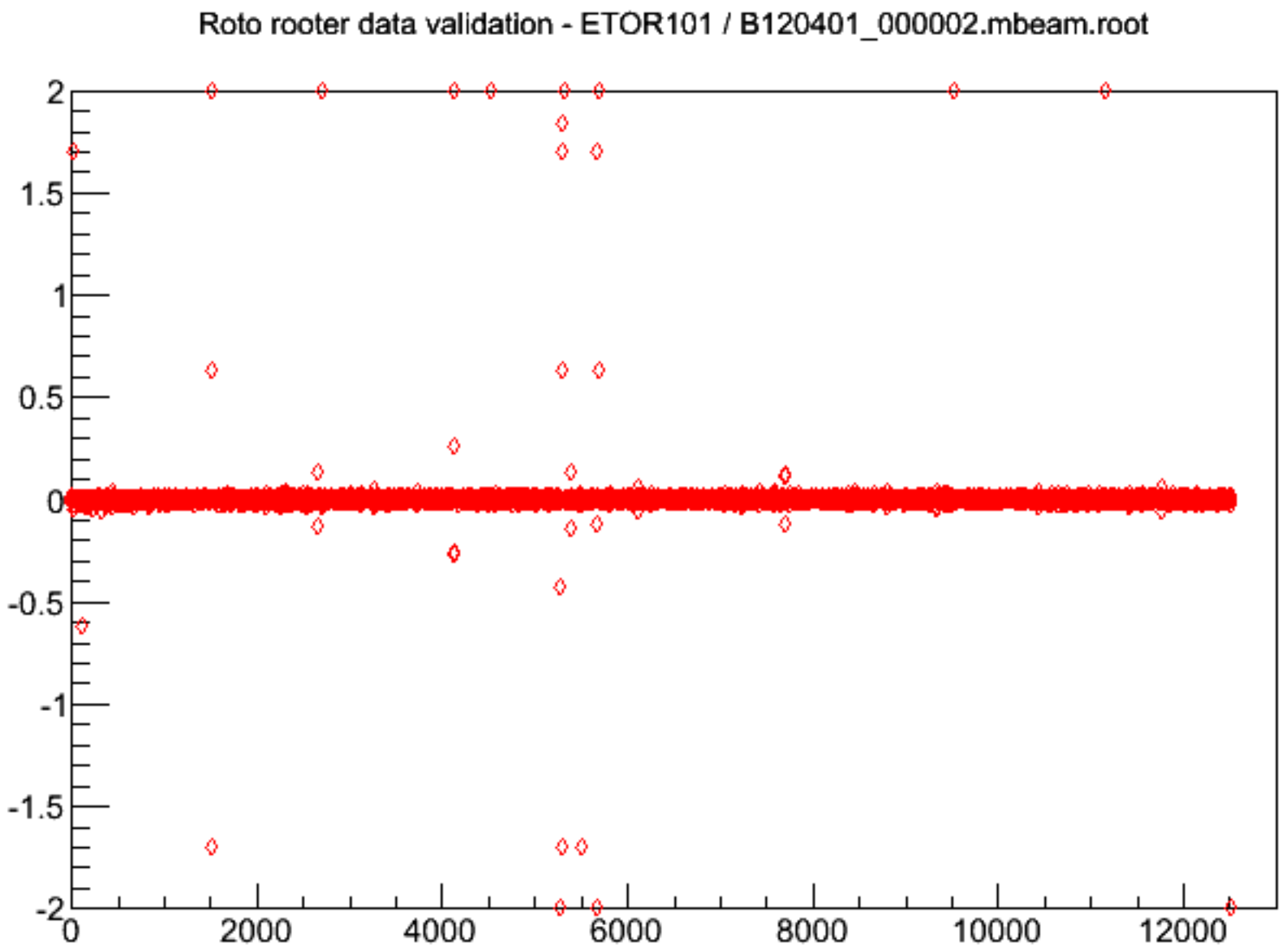
Task was

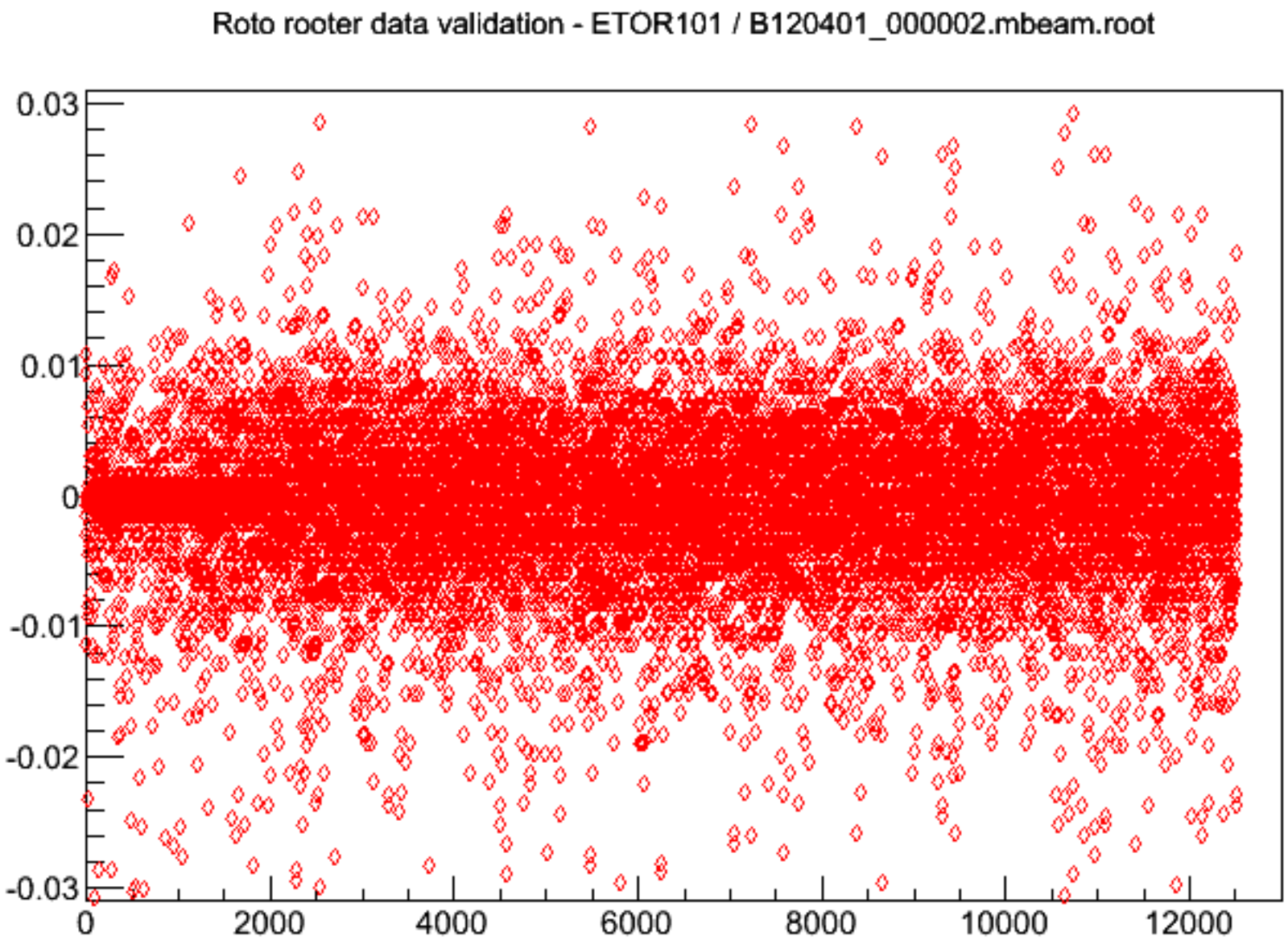
- To build a new software that is able to talk to the Rotorooter and produce the mbeam.root files in the format we are use to
- using the interface made available by the intensity frontier team.
- Check the robustness of the interface (**ifdhc** or intensity frontier data handling client) by comparing the devices' values from Minos historical data files to the values read out from the data base using **ifdhc** (Michelle's report).
- Compare the new mbeam.root files to the old ones in order to certify that the system is logging the data as it should.

Rotorooter

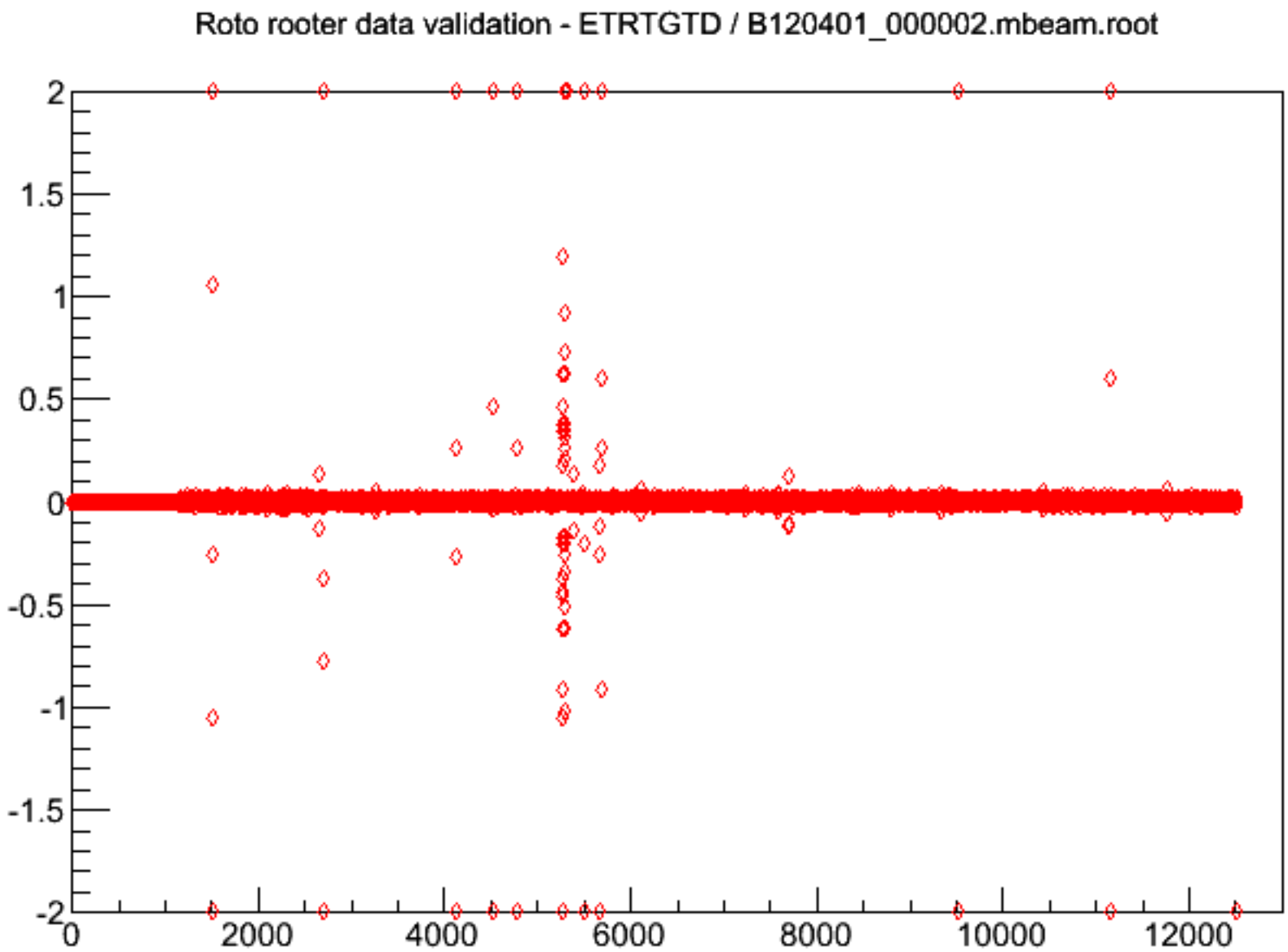
- The new software was used to send to send data to the rotorooter and produce the mbeam.root files
- Few files were produced
- For the sake of cross-validation, the fractional difference were calculated
- $2(Value_{oldfile} - Value_{newfile})/(Value_{oldfile} + Value_{newfile})$
- For the toroid devices, the fractional difference as function of time was scanned

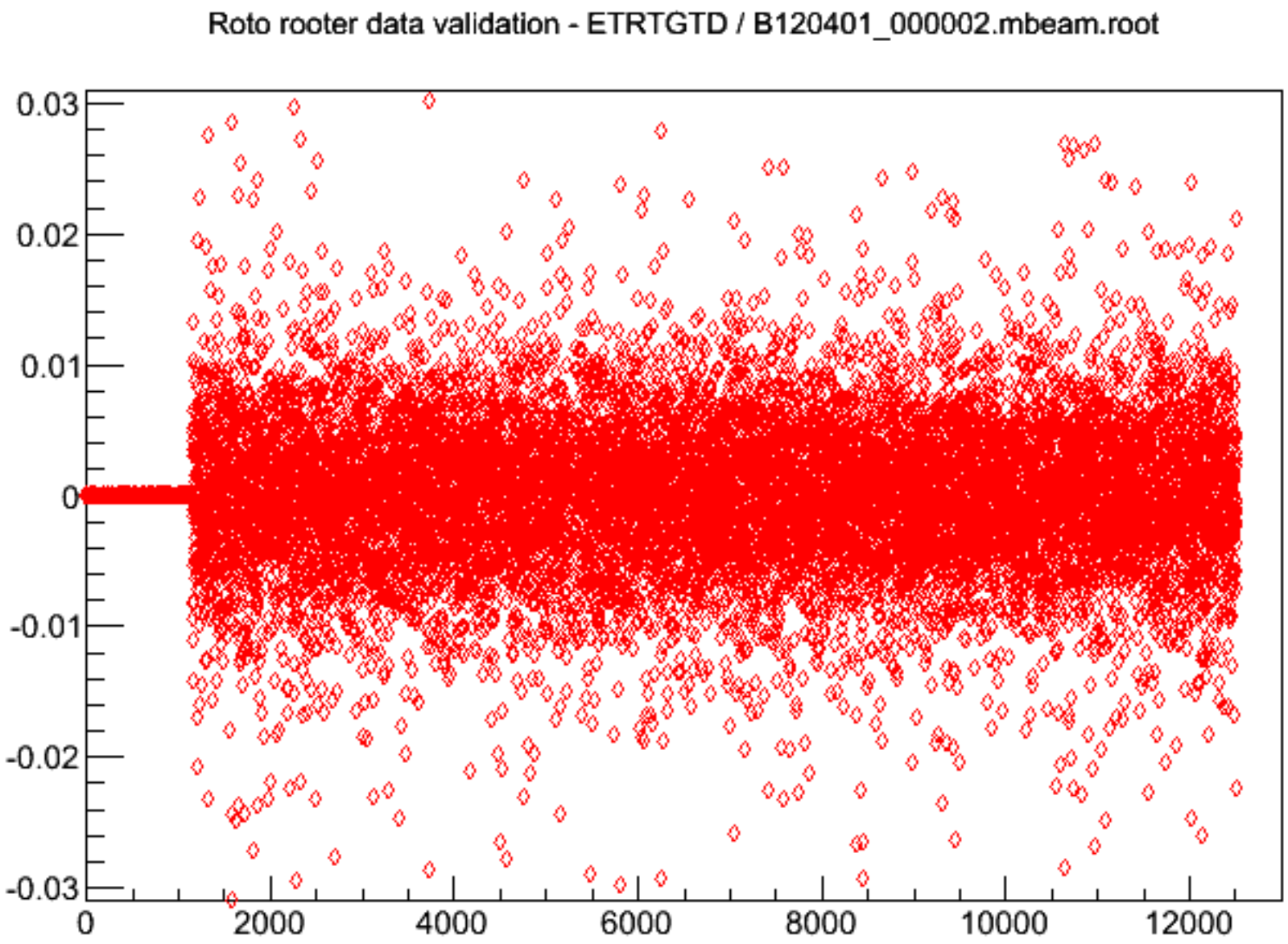
For analog devices, the fractional difference as function of time seem to be what we expect due to the fact that the values from the Minos files and the ifbeam data base aren't exactly the same


Roto rooter data validation - ETOR101 / B120401_000002.mbeam.root
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
0
2000
4000
6000
8000
10000
12000


Roto rooter data validation - ETOR101 / B120401_000002.mbeam.root
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
0
2000
4000
6000
8000
10000
12000

For digital devices, we have noticed that after matching the time stamp, the spills were identical for the first hour or so, then offsets by one spill for sometime, and then by two spills.


Roto rooter data validation - ETRTGTD / B120401_000002.mbeam.root
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
0
2000
4000
6000
8000
10000
12000


Roto rooter data validation - ETRTGTD / B120401_000002.mbeam.root
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
0
2000
4000
6000
8000
10000
12000

offset by one spill sequence

120401_000002_ETRTGTD/1333241073/1333241073: old value= 36.7971 / new value= 36.7971 fracdiff= 0.0000
120401_000002_ETRTGTD/1333241075/1333241075: old value= 36.8860 / new value= 36.8860 fracdiff= 0.0000
120401_000002_ETRTGTD/1333241077/1333241077: old value= 37.0880 / new value= 36.8947 fracdiff= 0.0052
120401_000002_ETRTGTD/1333241079/1333241079: old value= 36.5673 / new value= 37.0880 fracdiff= -0.0141
120401_000002_ETRTGTD/1333241081/1333241081: old value= 36.7223 / new value= 36.5673 fracdiff= 0.0042
120401_000002_ETRTGTD/1333241083/1333241083: old value= 36.6839 / new value= 36.7223 fracdiff= -0.0010
120401_000002_ETRTGTD/1333241085/1333241085: old value= 36.2799 / new value= 36.6839 fracdiff= -0.0111
120401_000002_ETRTGTD/1333241093/1333241093: old value= 36.7623 / new value= 36.2799 fracdiff= 0.0132
120401_000002_ETRTGTD/1333241095/1333241095: old value= 36.8738 / new value= 36.7623 fracdiff= 0.0030
120401_000002_ETRTGTD/1333241097/1333241097: old value= 36.5289 / new value= 36.8738 fracdiff= -0.0094
120401_000002_ETRTGTD/1333241099/1333241099: old value= 36.7066 / new value= 36.5289 fracdiff= 0.0049
120401_000002_ETRTGTD/1333241102/1333241102: old value= 36.5115 / new value= 36.7066 fracdiff= -0.0053
120401_000002_ETRTGTD/1333241104/1333241104: old value= 36.7519 / new value= 36.5115 fracdiff= 0.0066
120401_000002_ETRTGTD/1333241106/1333241106: old value= 36.4523 / new value= 36.7519 fracdiff= -0.0082
120401_000002_ETRTGTD/1333241108/1333241108: old value= 36.8302 / new value= 36.4523 fracdiff= 0.0103
120401_000002_ETRTGTD/1333241110/1333241110: old value= 36.7710 / new value= 36.8302 fracdiff= -0.0016
120401_000002_ETRTGTD/1333241112/1333241112: old value= 36.3652 / new value= 36.7710 fracdiff= -0.0111
120401_000002_ETRTGTD/1333241114/1333241114: old value= 36.4941 / new value= 36.3652 fracdiff= 0.0035
120401_000002_ETRTGTD/1333241116/1333241116: old value= 36.7310 / new value= 36.4941 fracdiff= 0.0065
120401_000002_ETRTGTD/1333241118/1333241118: old value= 36.4279 / new value= 36.7310 fracdiff= -0.0083
120401_000002_ETRTGTD/1333241120/1333241120: old value= 36.7484 / new value= 36.4279 fracdiff= 0.0088
120401_000002_ETRTGTD/1333241122/1333241122: old value= 36.7066 / new value= 36.7484 fracdiff= -0.0011
120401_000002_ETRTGTD/1333241124/1333241124: old value= 36.6927 / new value= 36.7066 fracdiff= -0.0004
120401_000002_ETRTGTD/1333241126/1333241126: old value= 36.5342 / new value= 36.6927 fracdiff= -0.0043
120401_000002_ETRTGTD/1333241128/1333241128: old value= 36.6596 / new value= 36.5342 fracdiff= 0.0034

offset by two spills sequence

120401_000002_ETRTGTD/1333243776/1333243776: old value= 36.5760 / new value= 36.4227 fracdiff= 0.0042
120401_000002_ETRTGTD/1333243778/1333243778: old value= 36.6387 / new value= 36.5168 fracdiff= 0.0033
120401_000002_ETRTGTD/1333243780/1333243780: old value= 36.7832 / new value= 36.5760 fracdiff= 0.0057
120401_000002_ETRTGTD/1333243782/1333243782: old value= 36.7345 / new value= 36.6387 fracdiff= 0.0026
120401_000002_ETRTGTD/1333243784/1333243784: old value= 36.5220 / new value= 36.7832 fracdiff= -0.0071
120401_000002_ETRTGTD/1333243786/1333243786: old value= 36.6404 / new value= 36.7345 fracdiff= -0.0026
120401_000002_ETRTGTD/1333243788/1333243788: old value= 36.6735 / new value= 36.5220 fracdiff= 0.0041
120401_000002_ETRTGTD/1333243790/1333243790: old value= 36.6369 / new value= 36.6404 fracdiff= -0.0001
120401_000002_ETRTGTD/1333243792/1333243792: old value= 36.5707 / new value= 36.6735 fracdiff= -0.0028
120401_000002_ETRTGTD/1333243794/1333243794: old value= 36.6003 / new value= 36.6369 fracdiff= -0.0010
120401_000002_ETRTGTD/1333243796/1333243796: old value= 36.6735 / new value= 36.5707 fracdiff= 0.0028
120401_000002_ETRTGTD/1333243798/1333243798: old value= 36.4958 / new value= 36.6003 fracdiff= -0.0029
120401_000002_ETRTGTD/1333243800/1333243800: old value= 36.8546 / new value= 36.6735 fracdiff= 0.0049
120401_000002_ETRTGTD/1333243802/1333243802: old value= 36.6839 / new value= 36.4958 fracdiff= 0.0051
120401_000002_ETRTGTD/1333243804/1333243804: old value= 36.8111 / new value= 36.8546 fracdiff= -0.0012
120401_000002_ETRTGTD/1333243807/1333243807: old value= 36.6927 / new value= 36.6839 fracdiff= 0.0002
120401_000002_ETRTGTD/1333243809/1333243809: old value= 36.9939 / new value= 36.8111 fracdiff= 0.0050
120401_000002_ETRTGTD/1333243811/1333243811: old value= 36.0779 / new value= 36.6927 fracdiff= -0.0169
120401_000002_ETRTGTD/1333243813/1333243813: old value= 36.4993 / new value= 36.9939 fracdiff= -0.0135
120401_000002_ETRTGTD/1333243821/1333243821: old value= 36.7031 / new value= 36.0779 fracdiff= 0.0172
120401_000002_ETRTGTD/1333243823/1333243823: old value= 36.4593 / new value= 36.4993 fracdiff= -0.0011
120401_000002_ETRTGTD/1333243825/1333243825: old value= 36.7153 / new value= 36.7031 fracdiff= 0.0003
120401_000002_ETRTGTD/1333243827/1333243827: old value= 36.4558 / new value= 36.4593 fracdiff= -0.0001
120401_000002_ETRTGTD/1333243829/1333243829: old value= 36.5168 / new value= 36.7153 fracdiff= -0.0054
120401_000002_ETRTGTD/1333243831/1333243831: old value= 36.6387 / new value= 36.4558 fracdiff= 0.0050

To do:

Investigate why the offsets occur for the digitals even though the time stamps are matched

Fix the problem and run the comparison again