# Cosmic(s) in the HighBay
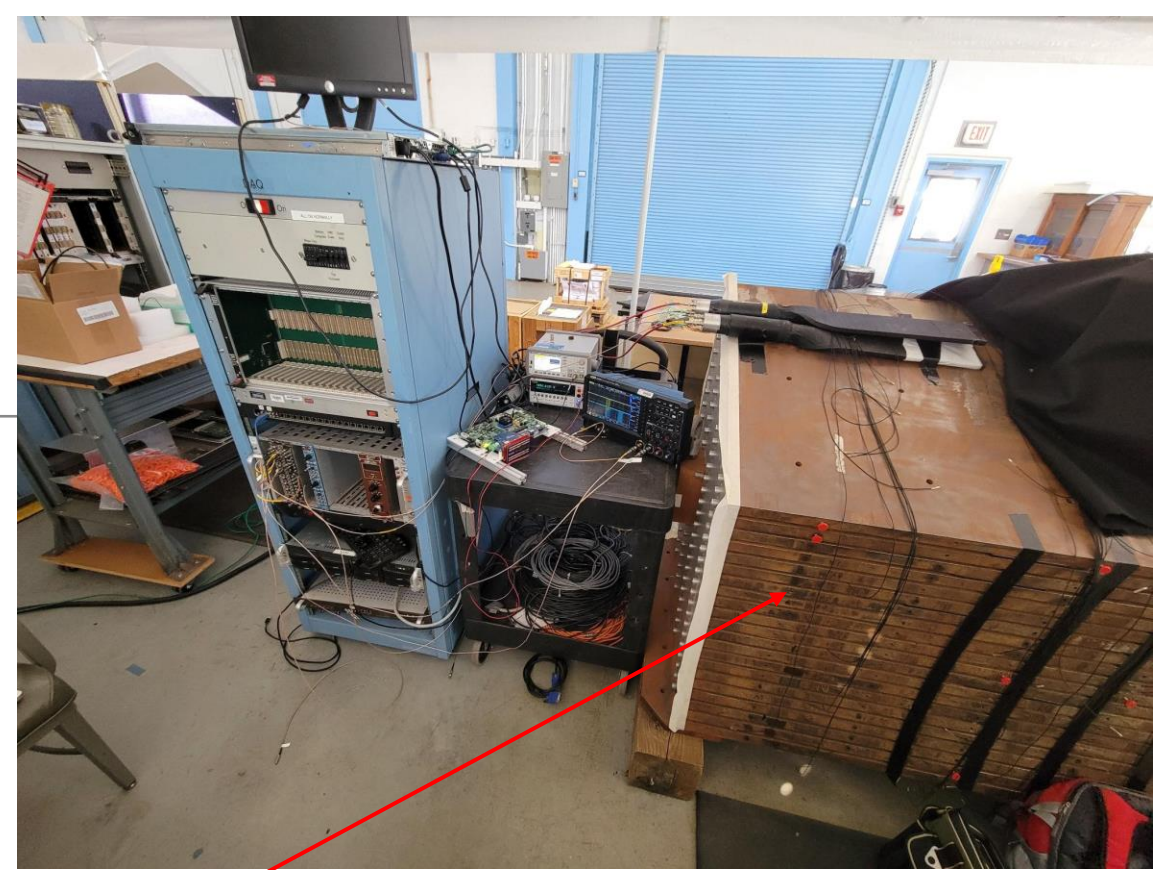
# Anjaly, Norbert, Martin



What's new this week?

- Norbert is here! Makes everything easier.

- We have all 20 tiles from the "left stack" connected and on (better light shielding)

- Lower gain than before (43V instead of 51V)

- Channel mapping is implemented (not an identical Ax <-> ch x mapping)

- "by tile" ordering in sequence

- We are ready to do some systematic checks.

The paddles are in the top/bottom configuration with a low rate

# Channel mapping

The CAEN connector does not provide an "identity" mapping from the $A_n$ to Channel n mapping, some breaks

Norbert warns that this may not be fully accurate

I have taken the map at face value, and made a new pmonitor project with the mapping

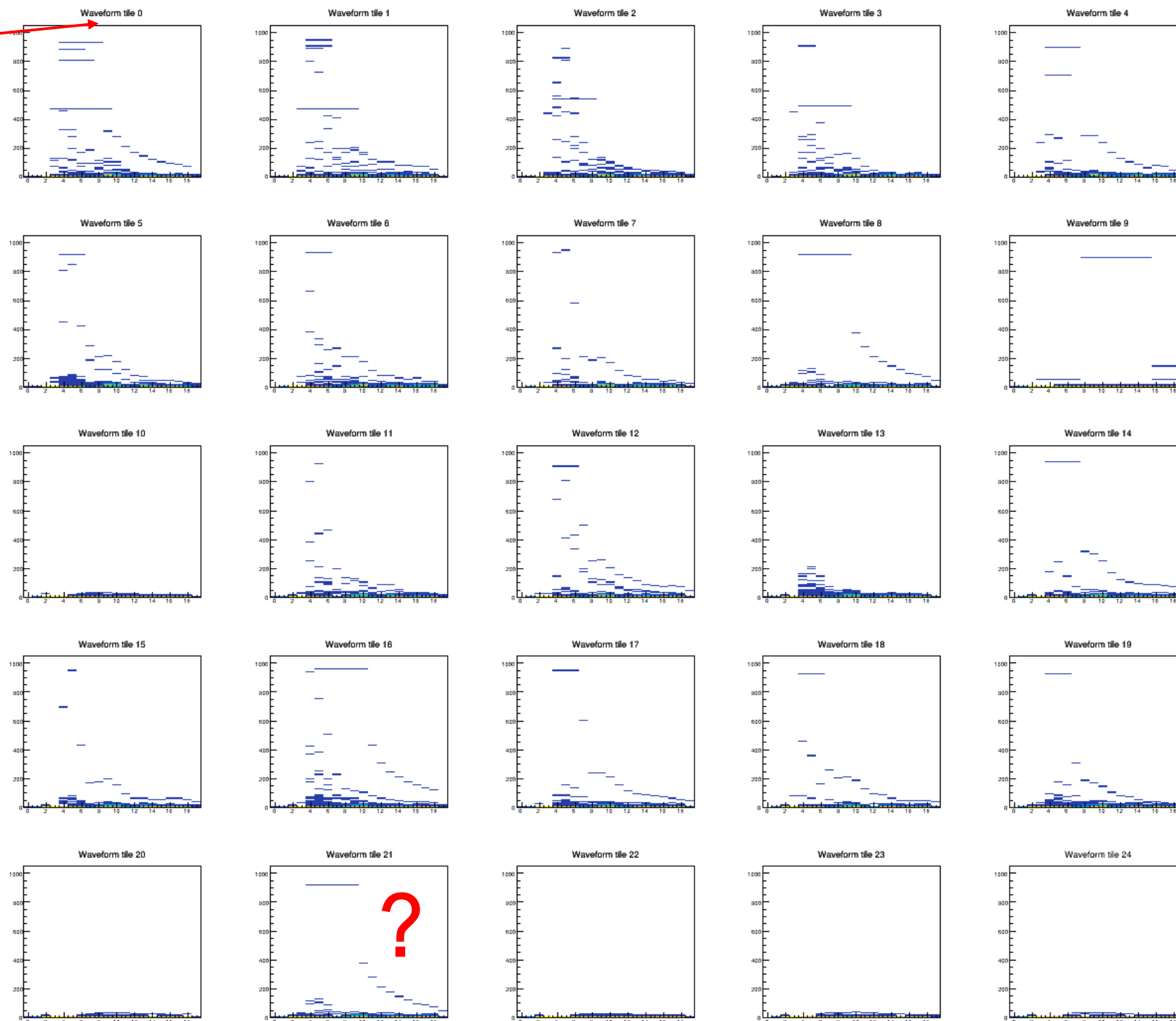Instead of by channel we can now go by tile, top to bottom

Tiles 8 and 10 that would go to broken connectors are now on A20 and A21

(There is still something wrong with that special-case handling...)

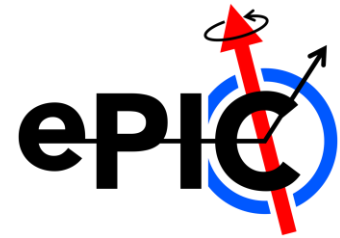| A | Ch |
|------|------|
| "0": | "0", |
| "1": | "1", |
| "2": | "2", |
| "3": | "3", |
| "4": | "4", |
| "5": | "5", |
| "6": | "6", |
| "7": | "7", |
| "8": | "9", |
| "9": | "11", |
| "10": | "10", |
| "11": | "13", |
| "12": | "12", |
| "13": | "15", |
| "14": | "14", |

# All channels at a glance

The order is now (mostly) by tile

(was too late to find all quirks last night, some "idiot checks" though)

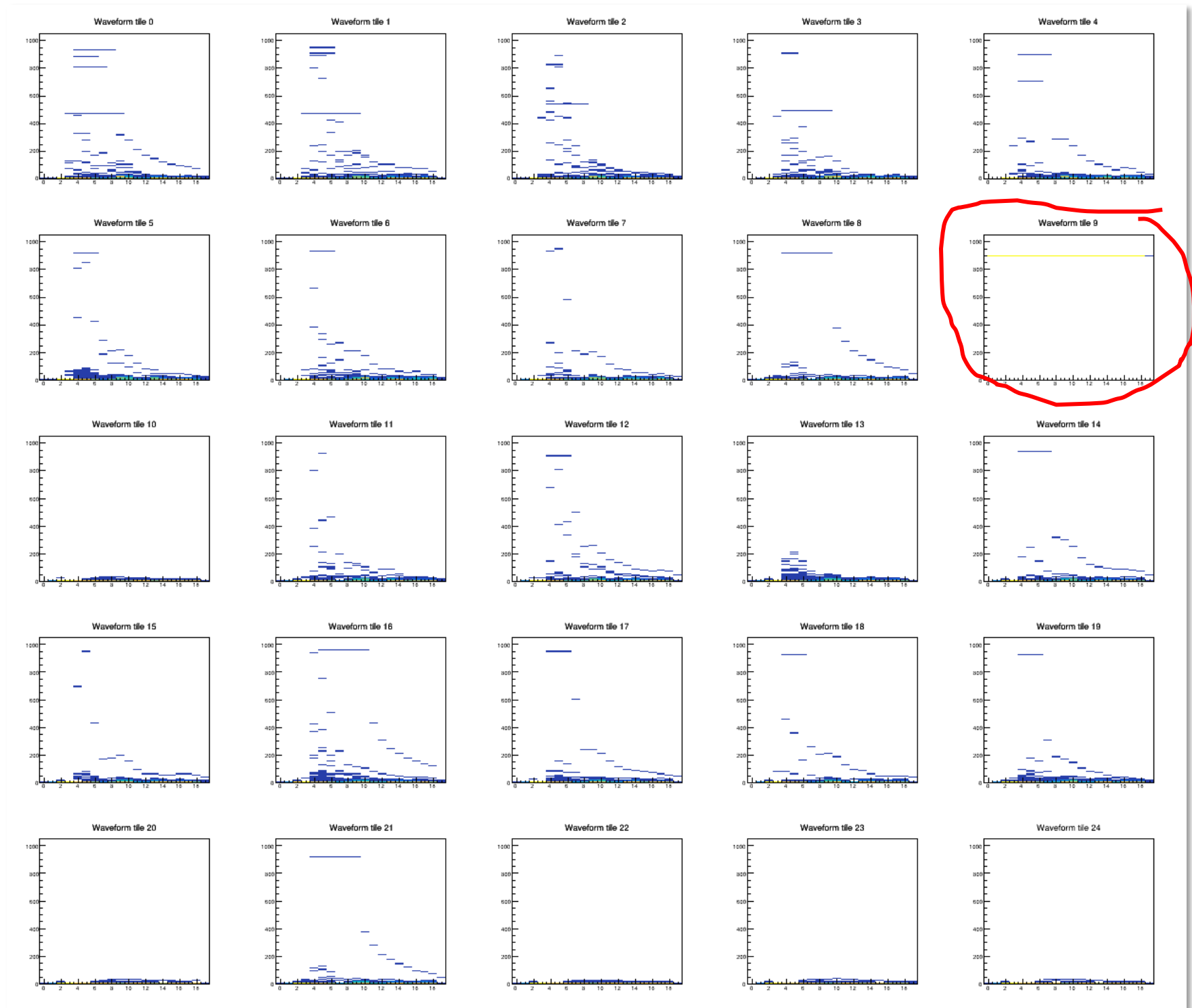Some more work to be done.

# "Idiot check"

In the code I overwrote the internal channel 11 value with a fixed "900"

Should show up as tile 9

And it does…

```
  A    Ch
"0":  "0",
"1":  "1",
"2":  "2",
"3":  "3",
"4":  "4",
"5":  "5",
"6":  "6",
"7":  "7",
"8":  "9",
"9":  "11",
"10": "10",
"11": "13",
"12": "12",
"13": "15",
"14": "14",
```
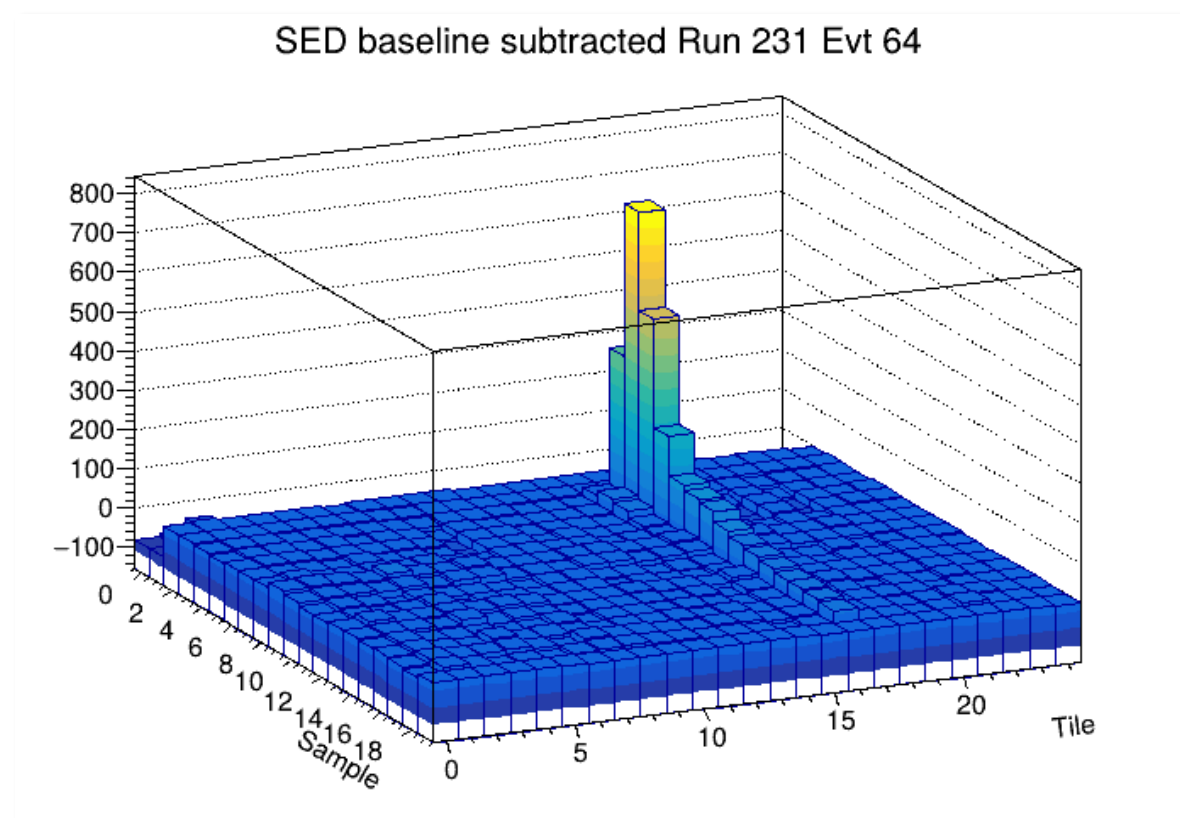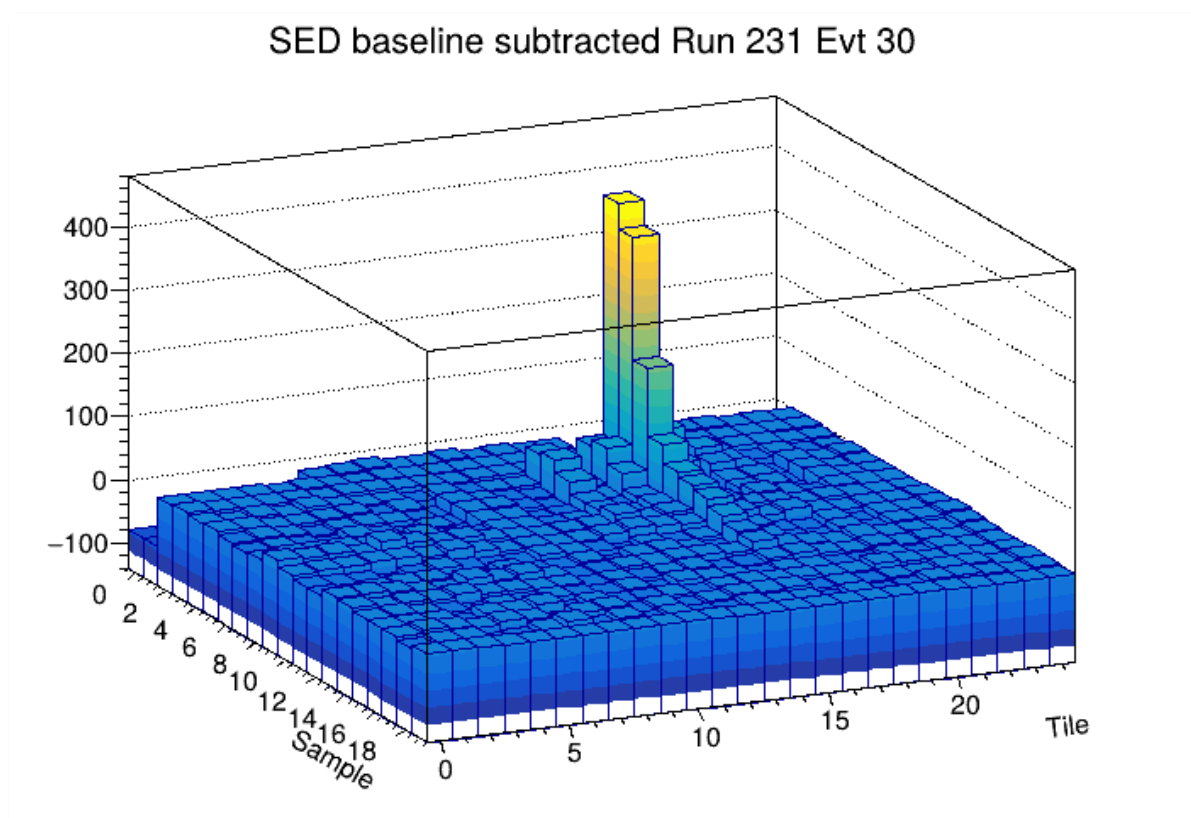
# Some hand-selected SEDs

Given the paddle placement, I would have expected to see many events with most tiles giving a signal

The path of the cosmics is pretty constrained

But we see many "singles", and even more "no deposition" events (quantitative analysis to come)
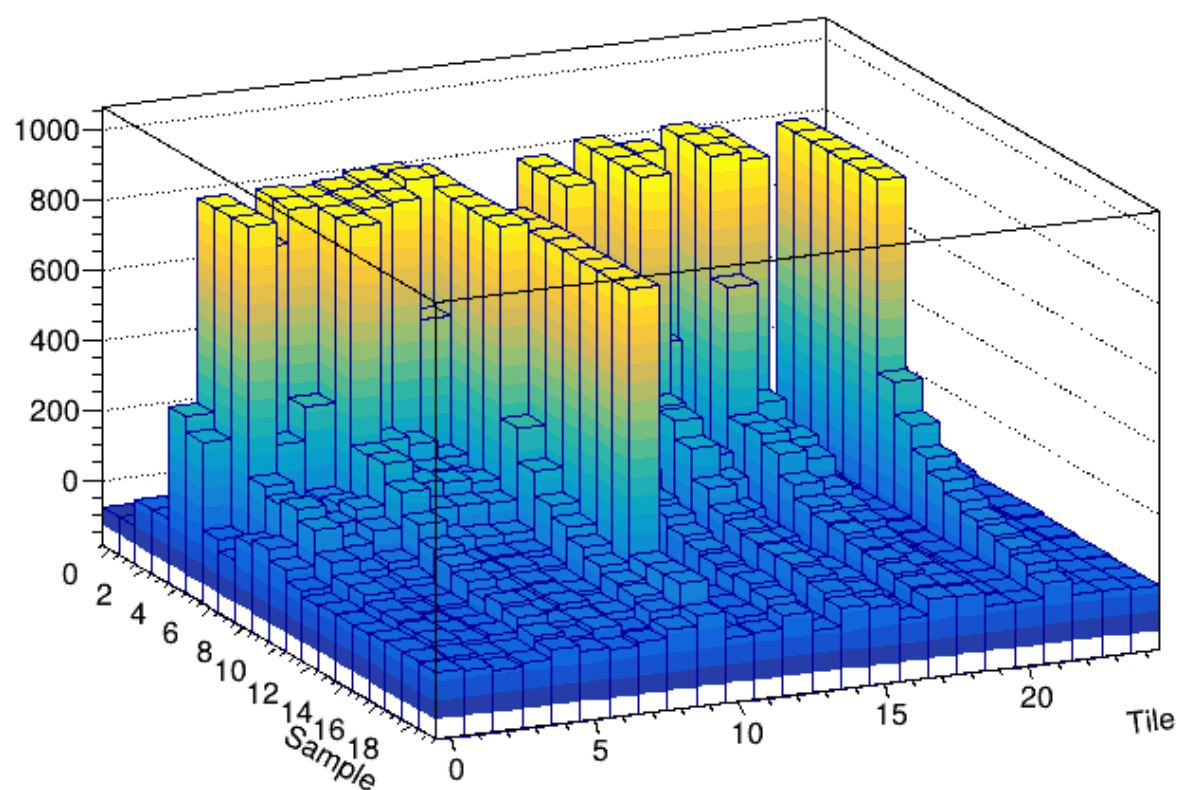
Note that the x axis is now by tile

Singles…



SED baseline subtracted Run 231 Evt 30



SED baseline subtracted Run 231 Evt 64

# More SEDs

We also have some multiple-channel depositions'
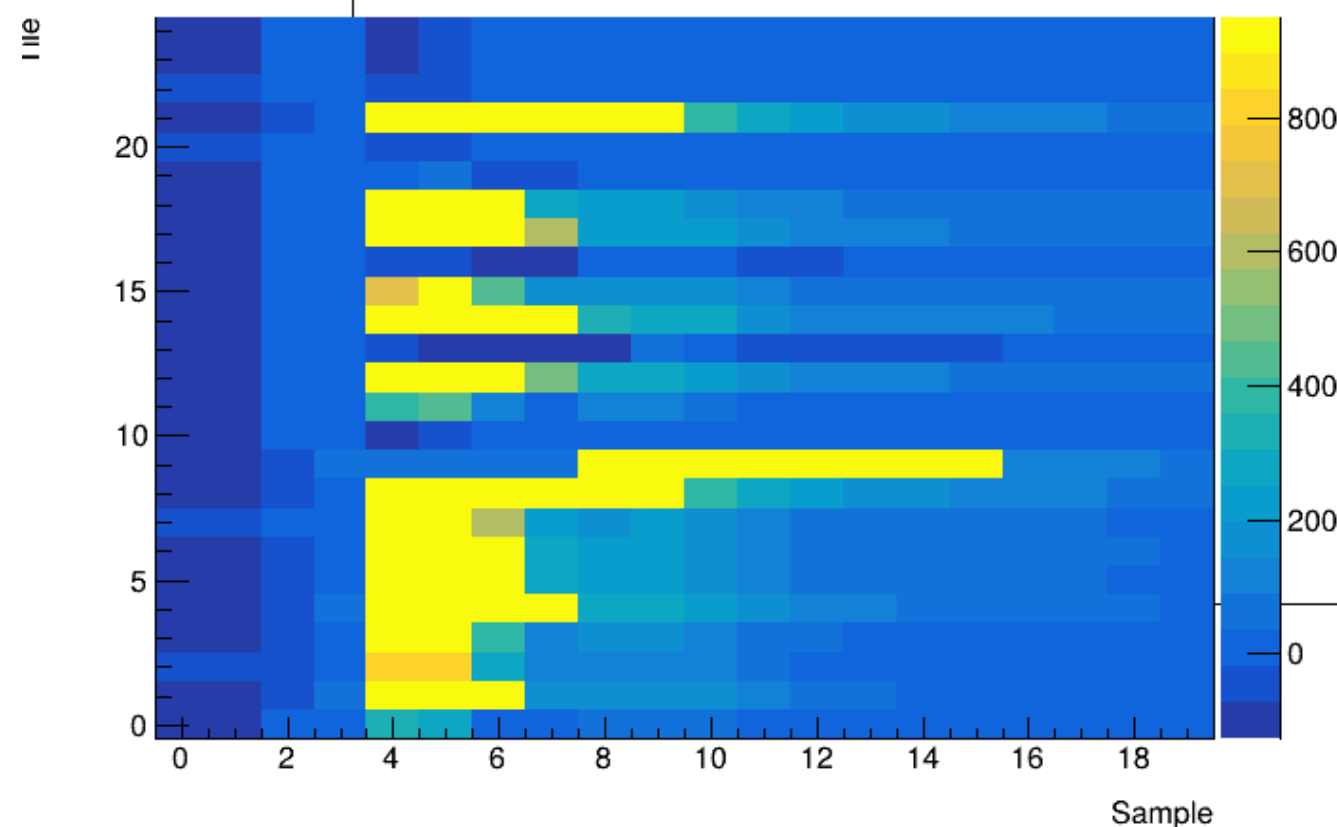
Gain still seems a bit high

(In later runs, Norbert has played with internal gains etc)



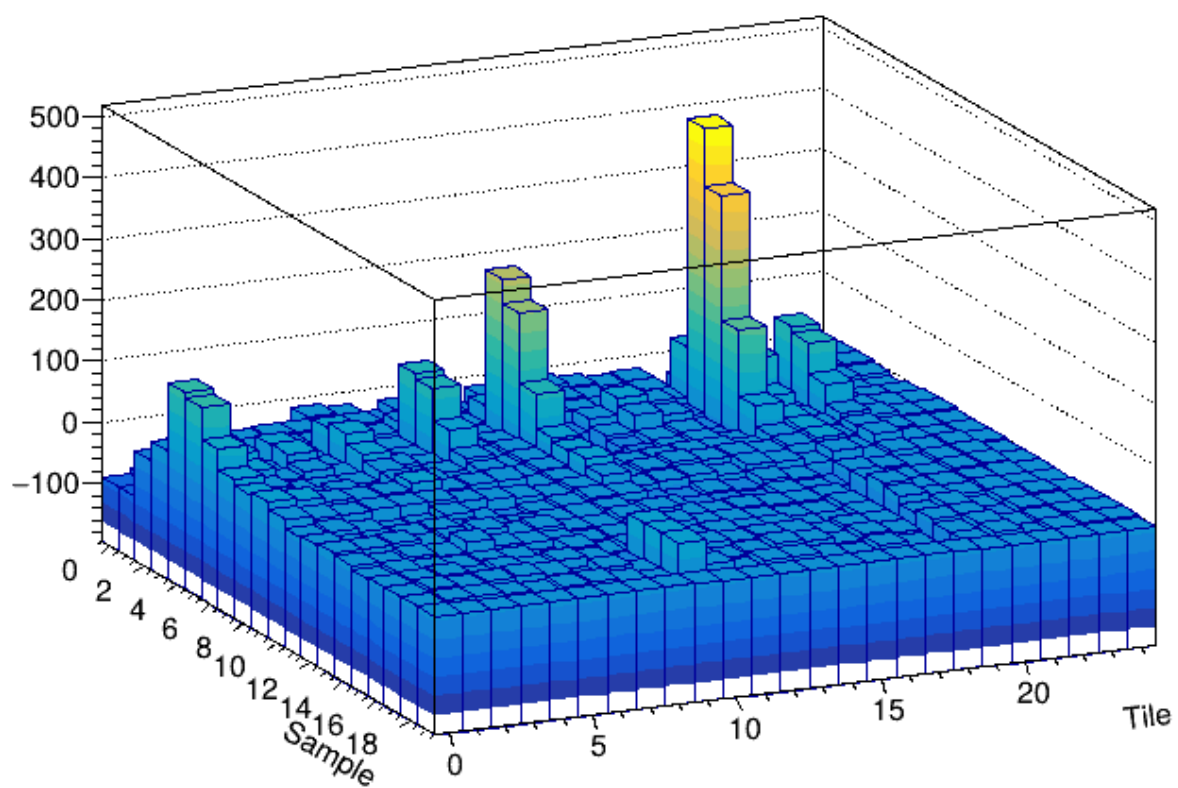SED baseline subtracted Run 231 Evt 143
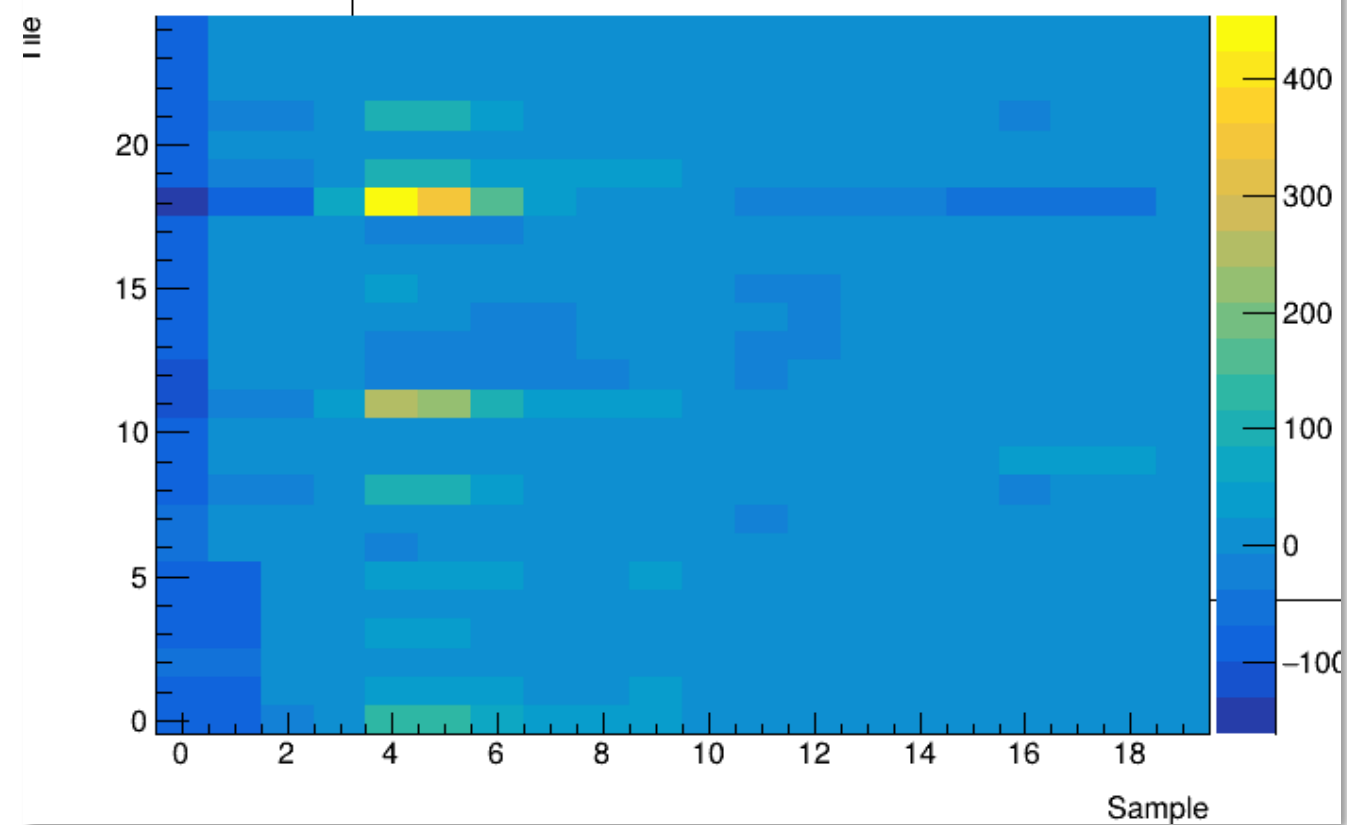


SED baseline subtracted Run 231 Evt 143
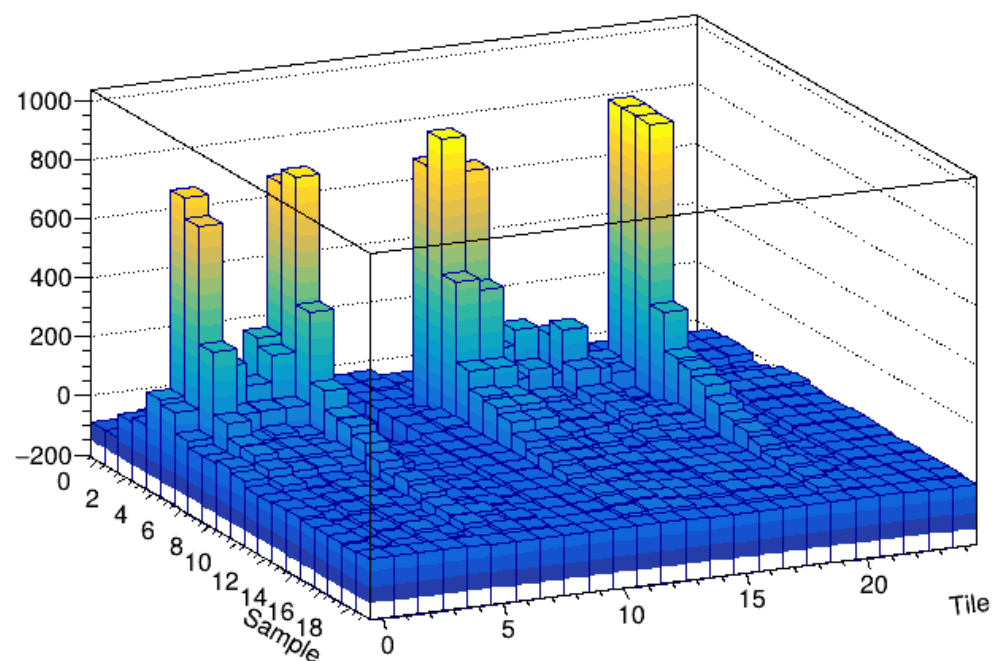
# More SEDs



SED baseline subtracted Run 231 Evt 149
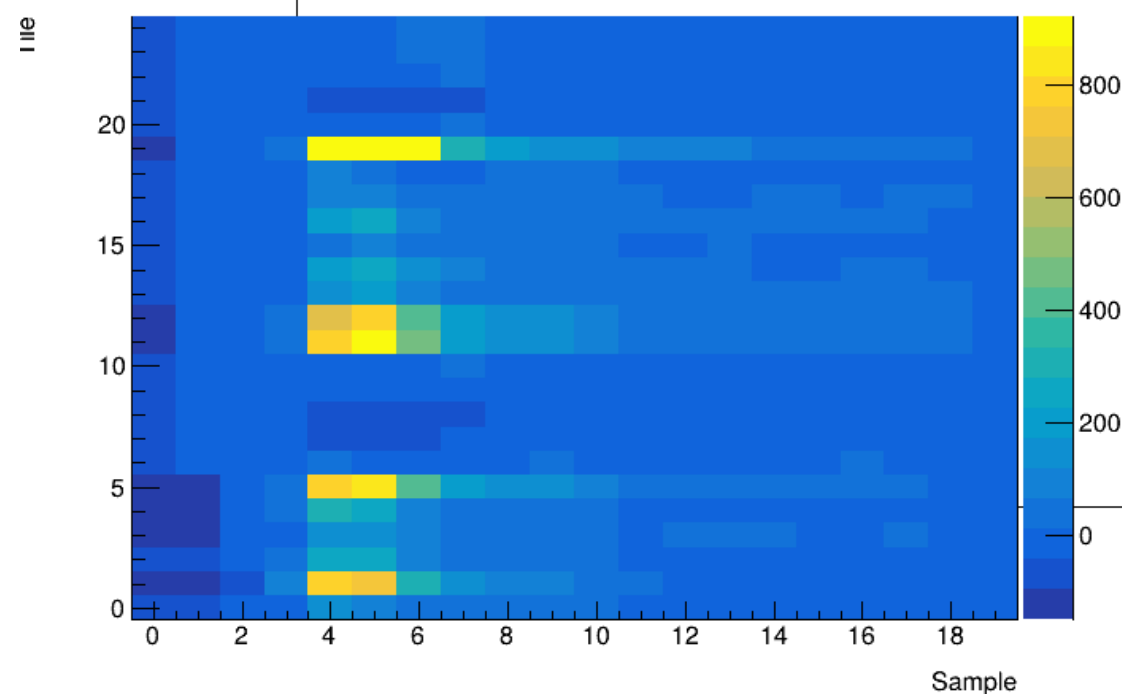


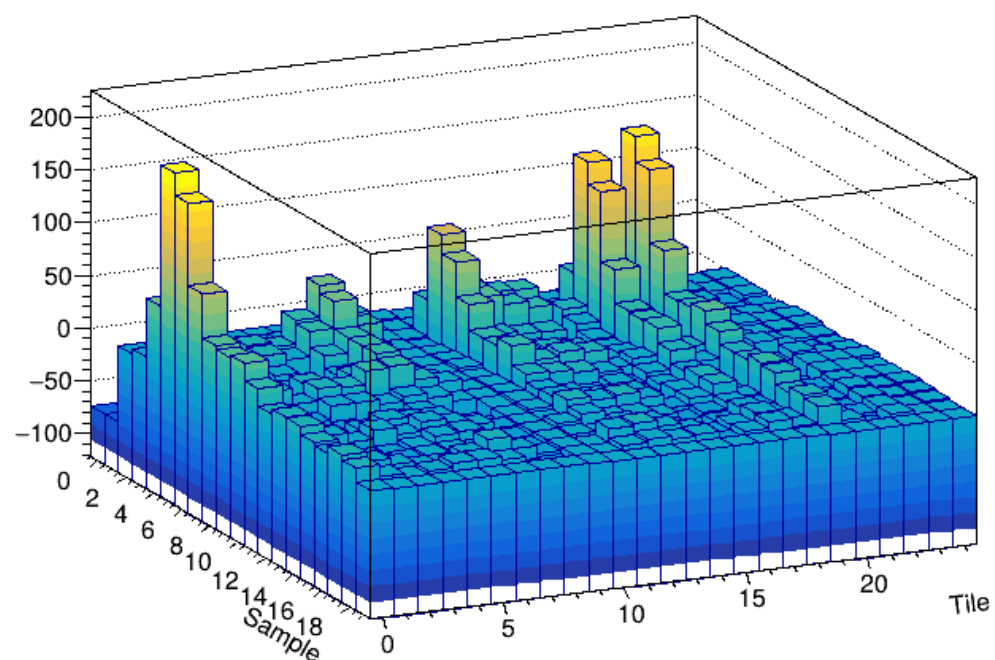SED baseline subtracted Run 231 Evt 149

# More SEDs



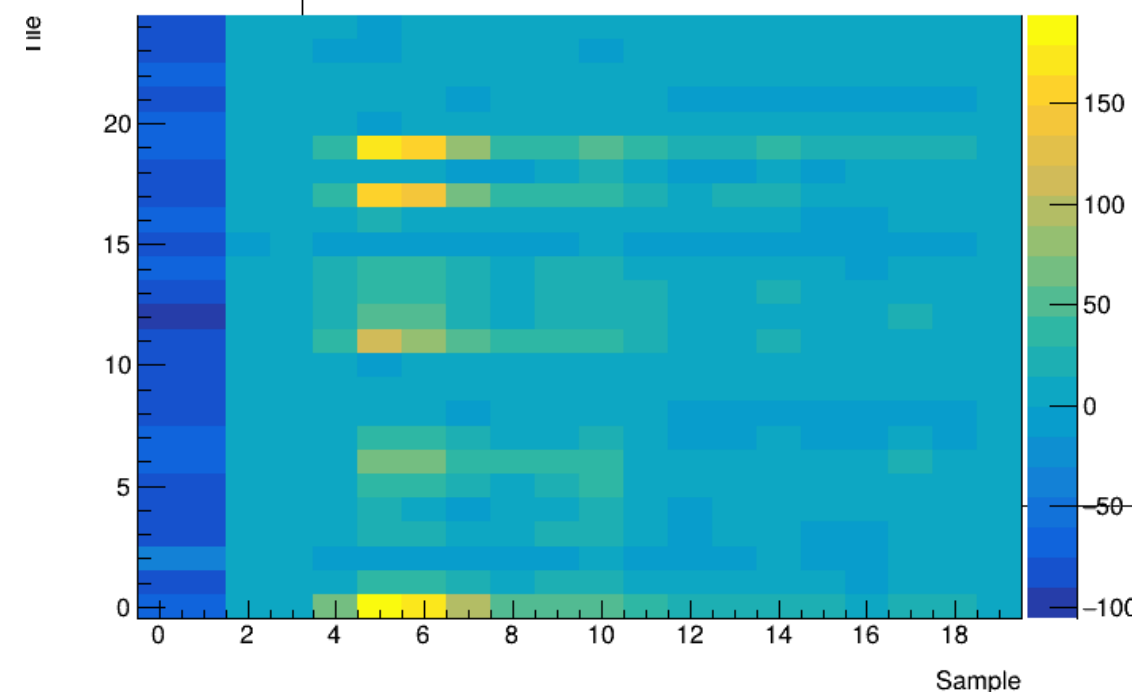SED baseline subtracted Run 231 Evt 151



SED baseline subtracted Run 231 Evt 151

SED baseline subtracted Run 231 Evt 261

SED baseline subtracted Run 231 Evt 261

# Conclusion

We are ready to systematically step through parameters

We can think of a better paddle arrangement (make a "cosmic gun")

I need to fix some mapping issues still

(I didn't get around to looking at the CFD timing, still think it's not quite optimal)