ALPIDE Update

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ALPIDE Update - source testing

- Colorscheme:
  - green: chips in place, ready to be read-out
  - red: chips missing
  - **bold number**: respective chip ID (which we see in the data)
- ^{90}Sr source, random trigger used, measuring random coincidences
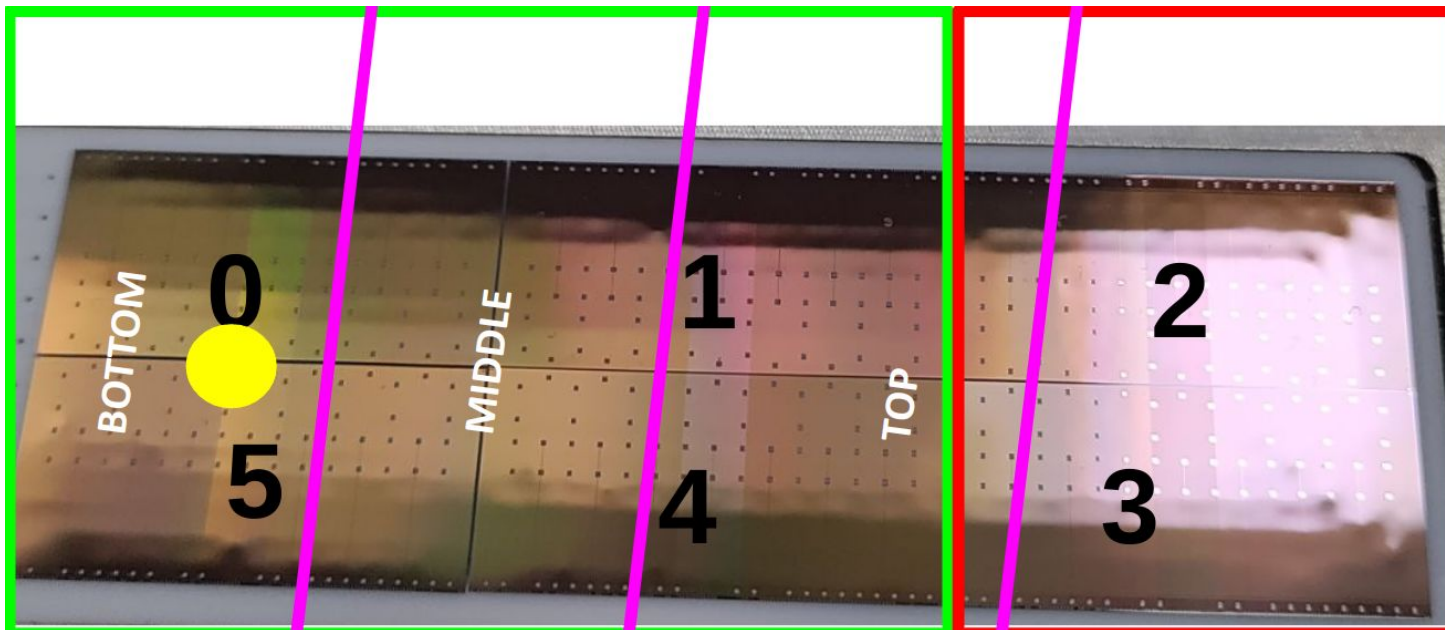
ALPIDE Update - plots

- **X axis**: hit position in X … sensor changes at value 1024
- **Y axis**: hit position in Y … sensor changes at value   512
  - Can see clear 'break' between neighbouring chips
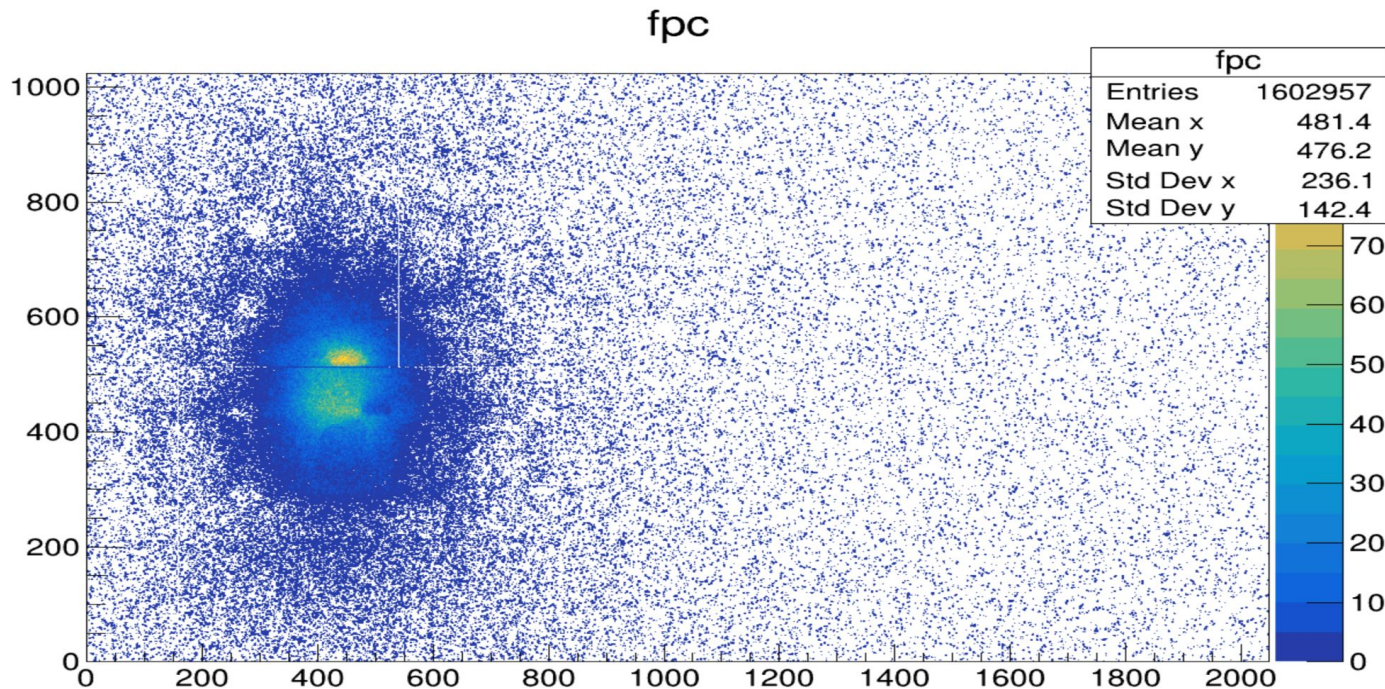
- Laser test works for both
  - FPC (Flexible Printed Circuit) = multiple chip sensor, right side
  - SSC (Single Carrier Card)   = single chip sensor, left side
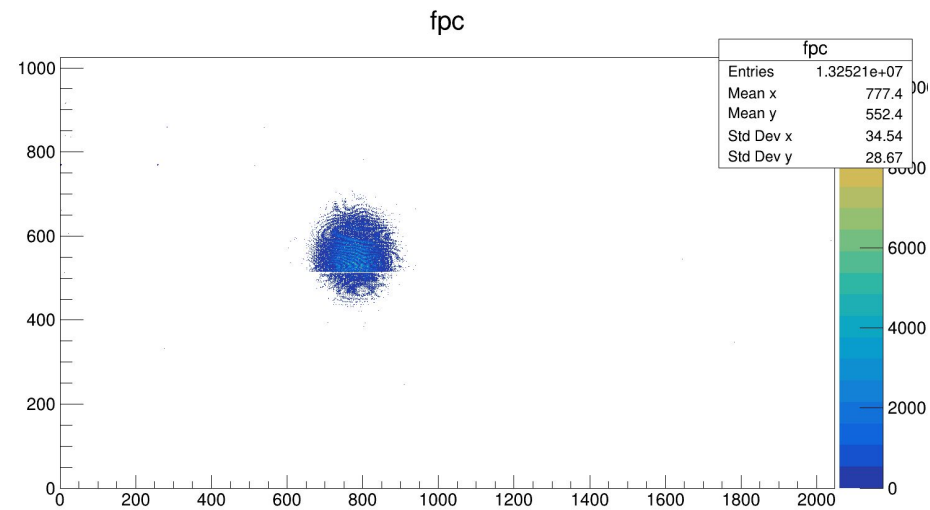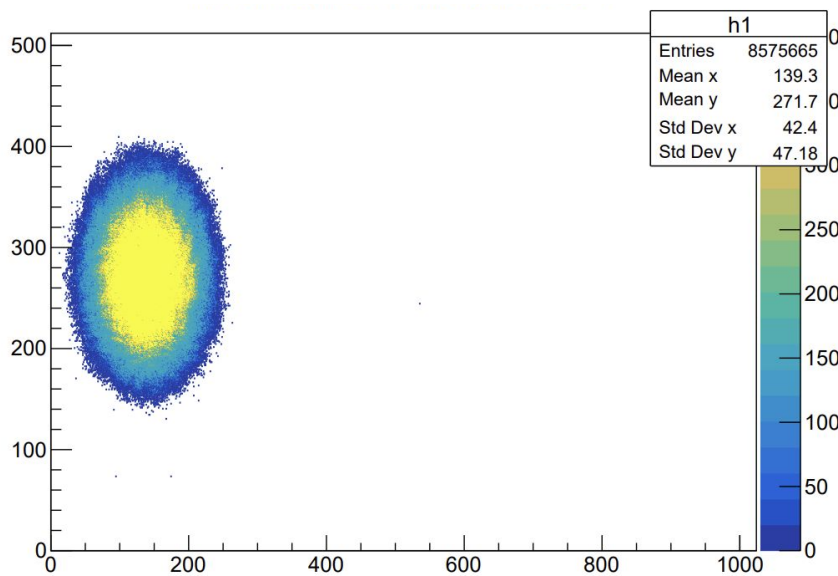
Readout issues

- Number of chips fired in a readout cycle seems inconsistent?
  - High intensity laser, firing every 1 ms (1 kHz regular pulser)
- Consistently every other event there are **zero** pixels fired!
  - Doesn't make sense … (picture below)
- Timestamp problems since Jülich … we need to sit down and work on it 🪑

- ❑ **Snapshot below:** each number represents amount of pixels fired in each consecutive event.
- ❑ Event number increasing left to right, wrapping with a newline after 32 events

ALPIDE Status summary

- We can clearly identify hit data
- Can verify geometry and see laser / charged particle hits.
- ALPIDE DAQ *likes* periodic triggers. With low payload < 20 pixels firing per cycle, can go up to 100 kHz readout rate.

- **Things to do:**
  - Threshold scan -> decided a simpler form for now.
    - Full glory after: https://github.com/kLayz3/Alpide-thresholdscan
  - Stability of readout? Why is data sent in this weird fashion?
  - Measure small chip position offsets on the PCB
  - CERN TS problems unexplored -> data fragmentation in <0.5% events
    - TS error bit raised for no apparent reason
    - Happens at low rate.
    - Do we care?