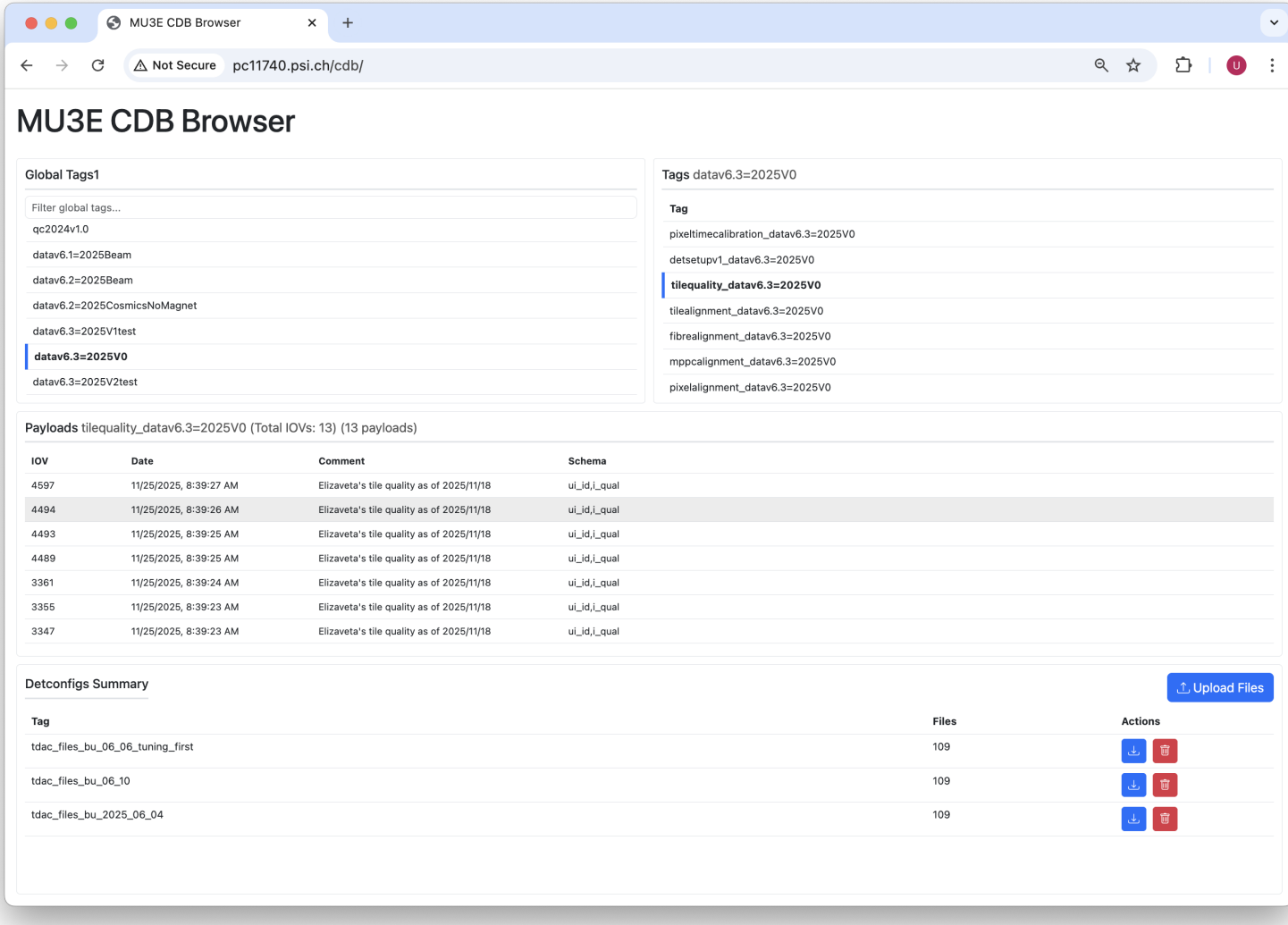
Introduction

- CDB code changes
  - ▷ Tile Quality
  - ▷ Pixel Quality
  - → All in mu3eUtil/cdb (dev), many thanks to Mark Grimes
  - ▷ Pixel Time Calibration: pushed to branches "correlate-CDB"
- CDB payload additions
  - ▷ David's metrology-improved pixel sensor alignment
  - ▷ Mikio's cosmics-improved pixel sensor alignment
  - ▷ Elizaveta's tiles quality
  - ▷ Replaced all pixelqualityLM payloads
- RDB changes
  - ▷ fibres good runs list included
- CDB backends all uptodate and sync'ed
  - ▷ pc11740 (REST/mongo)
  - ▷ merlin7:/data/project/mu3e/cdb (JSON)
  - ▷ mu3ebe:/data/mu3e/cdb (JSON)

Tile Quality

- calTileQuality.cc
  - current contents
    - channel ID
    - quality
      "Good"
      "Dead"
      "Noisy"



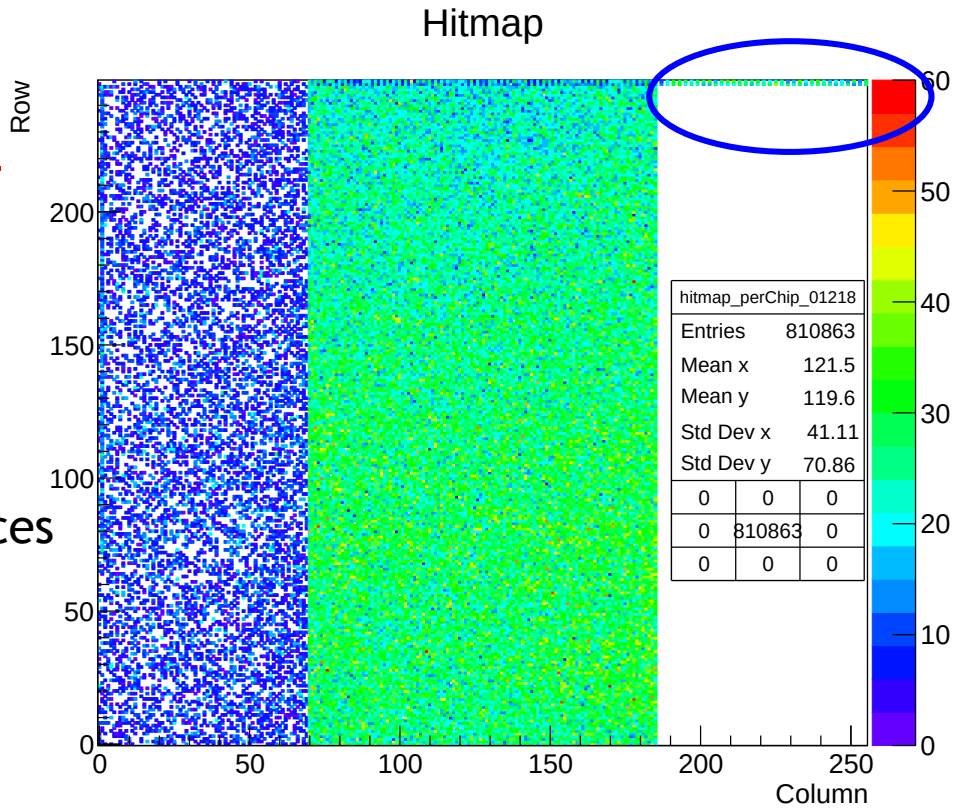
- CDB payloads
  - based on tile's JSON files
  - iovs for changes only!
  - → Many thanks to Elizaveta

- Interface quite simple currently
  - calTileQuality::getChannelQuality(uint id)

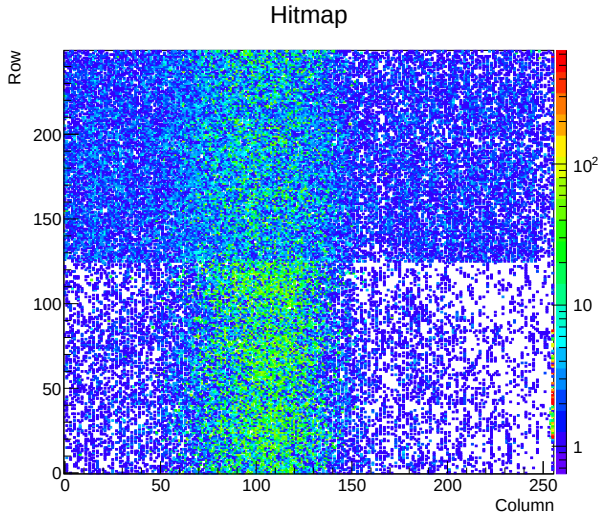
Pixel Quality

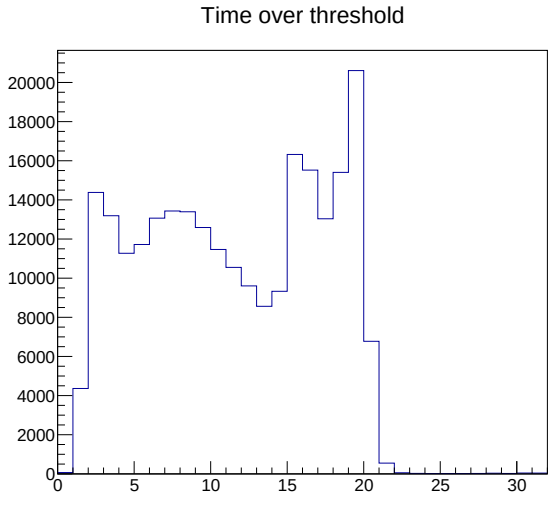
- calPixelQualityLM
  - ▷ chip subMatrices without hits (but unmasked links) flagged as such (this was a bug)
  - ▷ all payloads have been updated
  - → many thanks to Haris
- Algorithm
  - ▷ links: Use LVDS errors from midas meta data and hit counts
    - "3" if link data mean row position < 10 or > 245 (cf next slide)
    - "4" if link has LVDS error rate > 10 Hz or (unmasked) 'E'
    - "5" if other unmasked link has LVDS error rate > 10 Hz
    - "8" if no hits on link (recovered code)
    - "9" if link masked
  - ▷ columns: determine average column hit count
    - "9" if column hit count $< 10\%$ of average (not for cosmics!)
    - "3" if more than 40 noisy pixels in column
  - ▷ pixels: determine average chip hit count
    - "1" if pixel hit count $> 10\sigma$ above average
  - → improvements possible!

Pixel pathologies



- Run 4756, chip 1218
  - ▷ immaculate MIDAS metadata
  - ▷ overflow would be useful (Mark?)
  - ▷ cannot be flagged currently
    - regions not aligned w/ chip submatrices
- Also: run 4756, chip 1089
  - ▷ ToT distribution inconsistent with other "good" chips
  - ▷ 1284 "noisy" pixels, 18 "suspicious" columns
  - ▷ unclear how to diagnose this reliably - hitmap(!) looks OK for other runs





Summary/Outlook

- pixelquality should provide better MC/data agreement now
  (I guess Haris will show these plots)
- Two new alignment settings available:
  - datav6.3=2025V0 ideal MC alignment
  - datav6.3=2025V1test David's metrology-improved alignment
  - datav6.3=2025V2test Mikio's cosmics-improved alignment
  - Test it with your physics code

```
login001>../_build/mu3eTrirec/mu3eTrirec --conf ./trirec_twolayer_beam.conf \
--cdb.dbconn=/data/project/mu3e/cdb --cdb.globalTag=datav6.3=2025V0 \
/data/project/mu3e/data/2025/trirec/250829/006/run06300-sorted.root --output ./test.root

login001>../_build/mu3eTrirec/mu3eTrirec --conf ./trirec_twolayer_beam.conf \
--cdb.dbconn=/data/project/mu3e/cdb --cdb.globalTag=datav6.3=2025V1test \
/data/project/mu3e/data/2025/trirec/250829/006/run06300-sorted.root --output ./test.root

login001>../_build/mu3eTrirec/mu3eTrirec --conf ./trirec_twolayer_beam.conf \
--cdb.dbconn=/data/project/mu3e/cdb --cdb.globalTag=datav6.3=2025V2test \
/data/project/mu3e/data/2025/trirec/250829/006/run06300-sorted.root --output ./test.root
```

- Outlook
  - fibre quality (indexed by ASIC number, not channel)
  - use good-runs list of tiles and fibres for insignificant run list