cherenkov telescope array

Response to science related RIXes
Validation of scientific requirements

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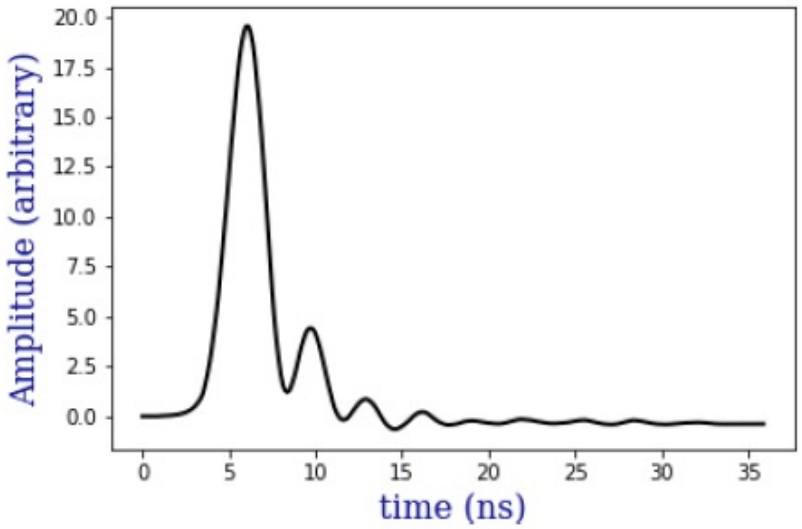
Overview of scientific RIXes

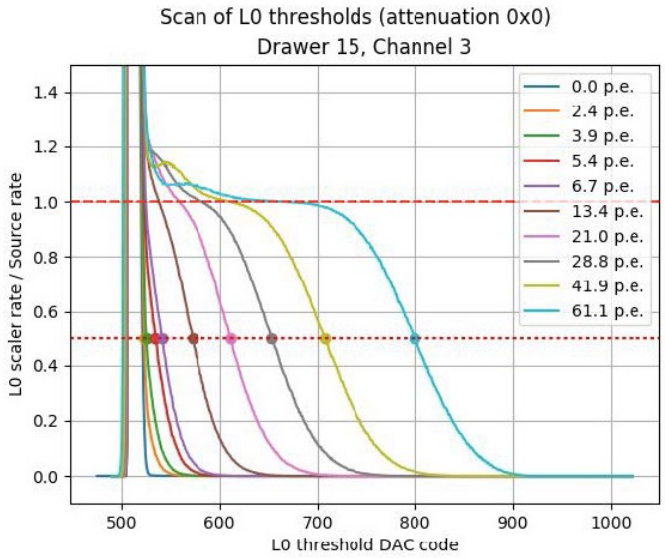
- 33 RIXes still assigned

- 10 require tests
- 1 Monte-Carlo related (comparison test/Monte-Carlo)
- 20 documentation (1 closed?, 8 completed)
- 2 requests for info (PMT properties, 1 closed?)

Signal reflections/L0 threshold scan

- *RIXes 42404/42506*: (FD,RM)
- Are the signal reflections an impedance mismatch?

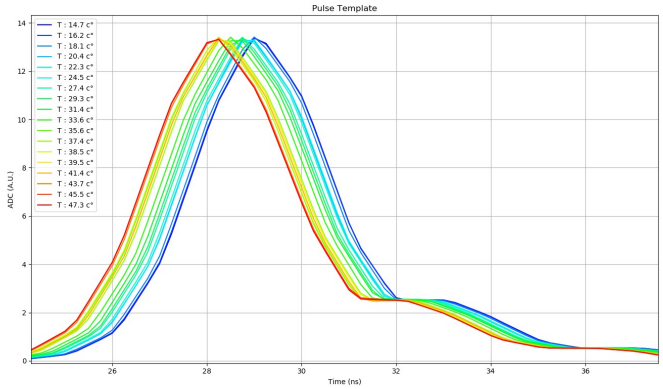




- action: check with a Spice model? , write a note or change design?

Thermal tests

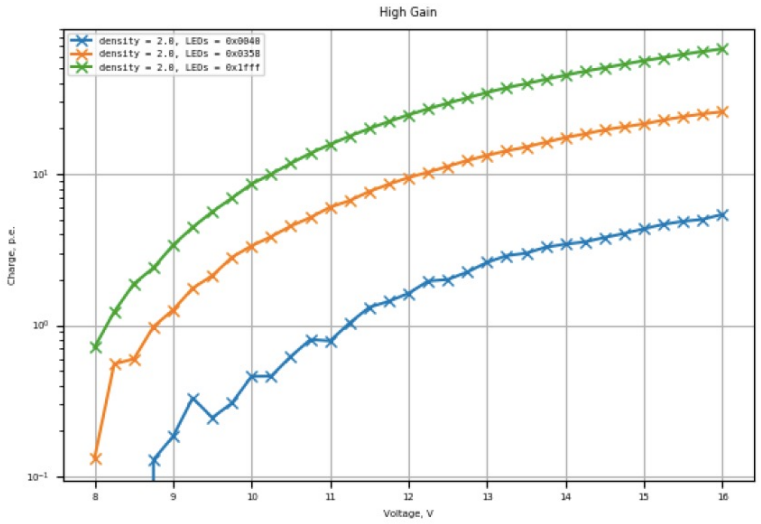
- *RIX 42662:* (GH, RZ)
- Question: temperature stability of calibration parameters, linearity, threshold, etc : How stable does the temperature inside camera need to be for stable operation and parameters?
- Known effects: pedestals (corrected), gains, timing.



- Action: tests (single module+ on whole camera)
- Remark, flasher output also likely temperature dependent.

Ageing of light pulsers, recalibration

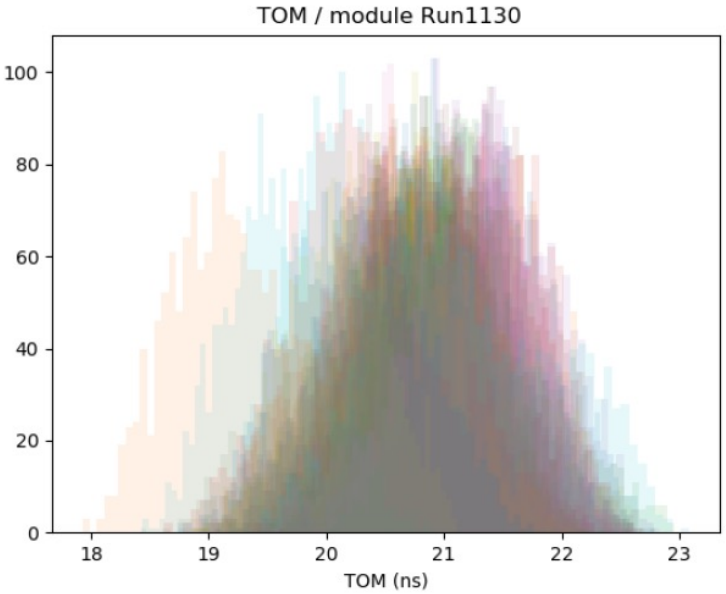
- *RIX 42485:* (FD)
- Light pulser calibration not required for flat-fielding, but necessary to test linearity.
- Question: when is it necessary to recalibrate the pulser?

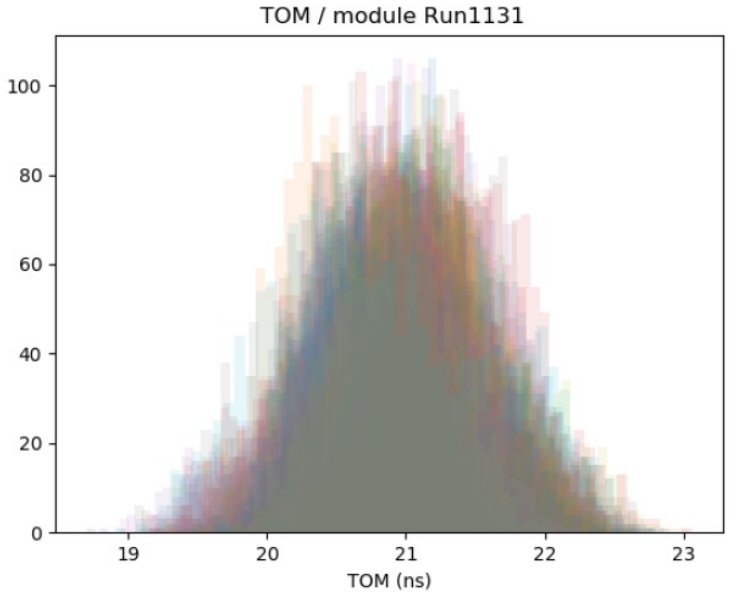


- Action: aging measurement or calculation?

Trigger calibration (1)

- *RIXes: 42504* (FD)
- Accuracy of L1/L1A calibration

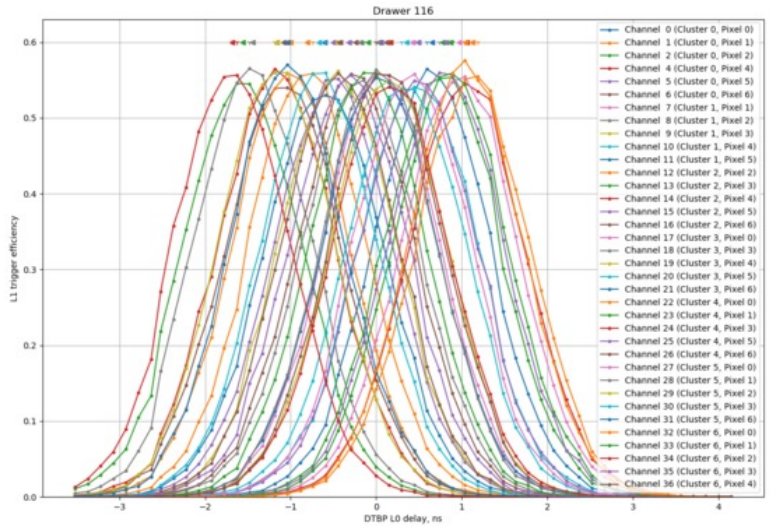




- Action: More systematic measurement+ documentation

Trigger calibration (2)

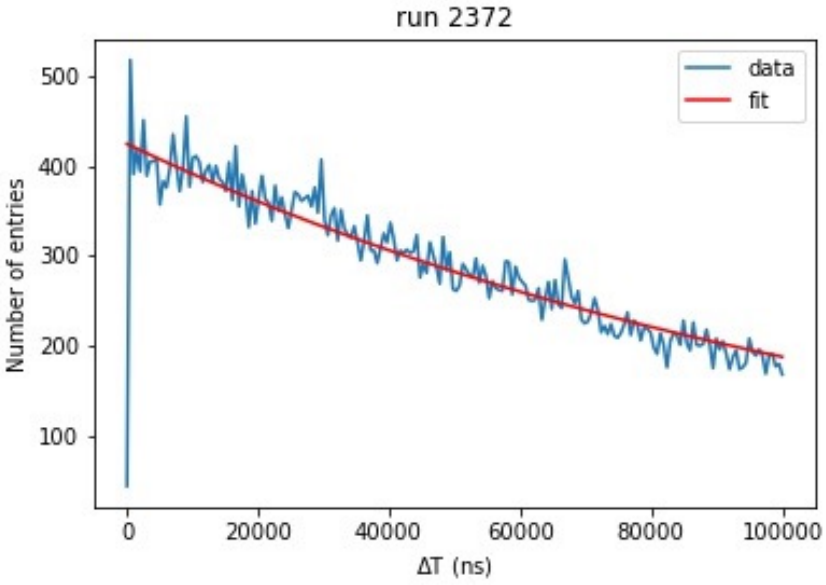
- *RIXes: 42503, 42507* (FD)
- Time requirement for L0 threshold, delay calibration

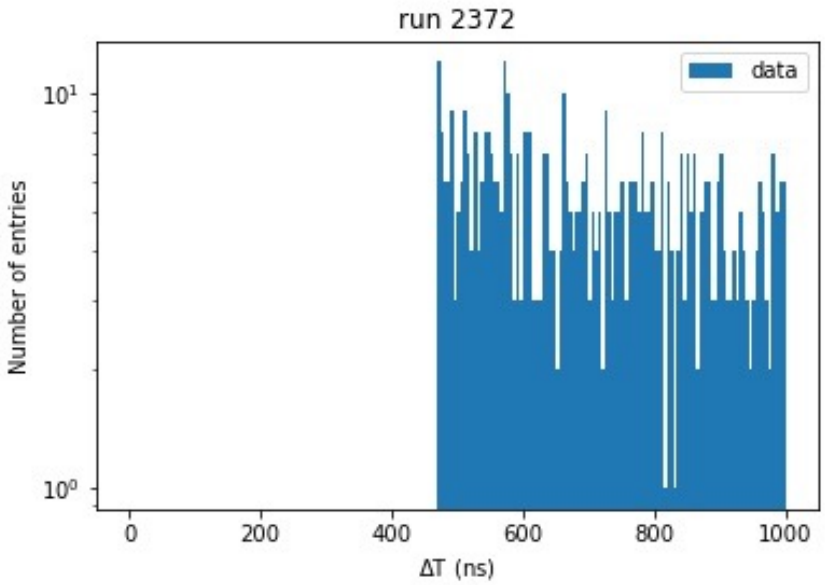


•Action: Try dichotomy-like algorithms, less steps, compare with present results

Requirement B-TEL-1260 not met

- *RIXes: 42413* (FD)
- Deadtime is 5.2% at 7 kHz

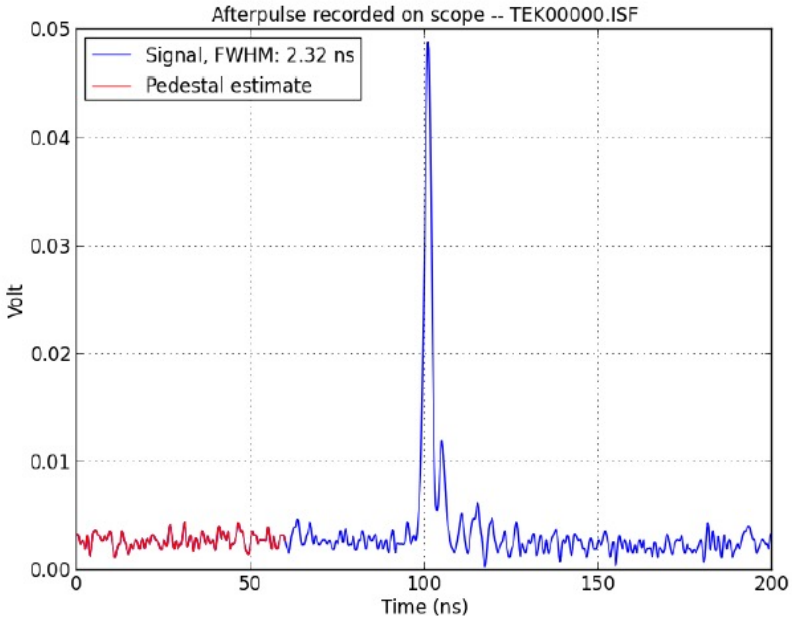


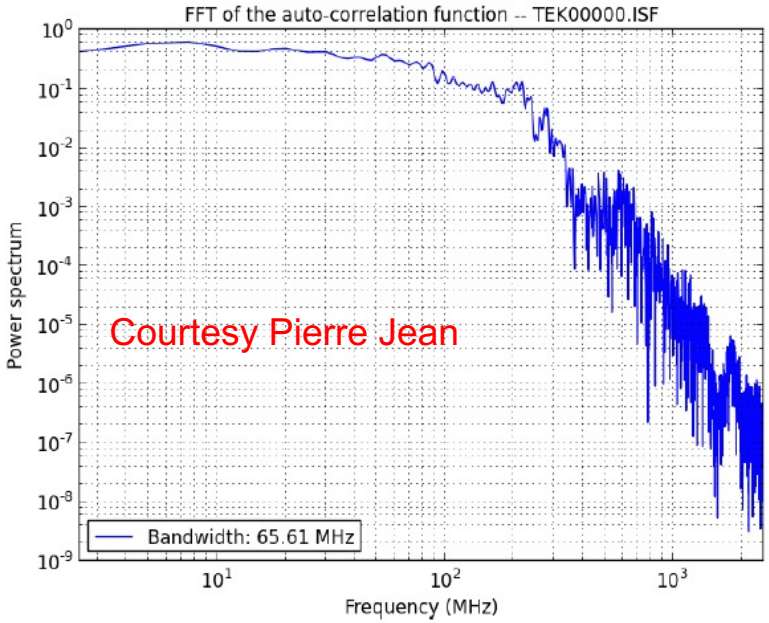


- Action: validate FEB v6. Test with whole camera.

Electronic bandwidth > 200 MHz

- *RIXes: 42830* (RM)
- Electronic BW should correspond to the 1 GHz sampling





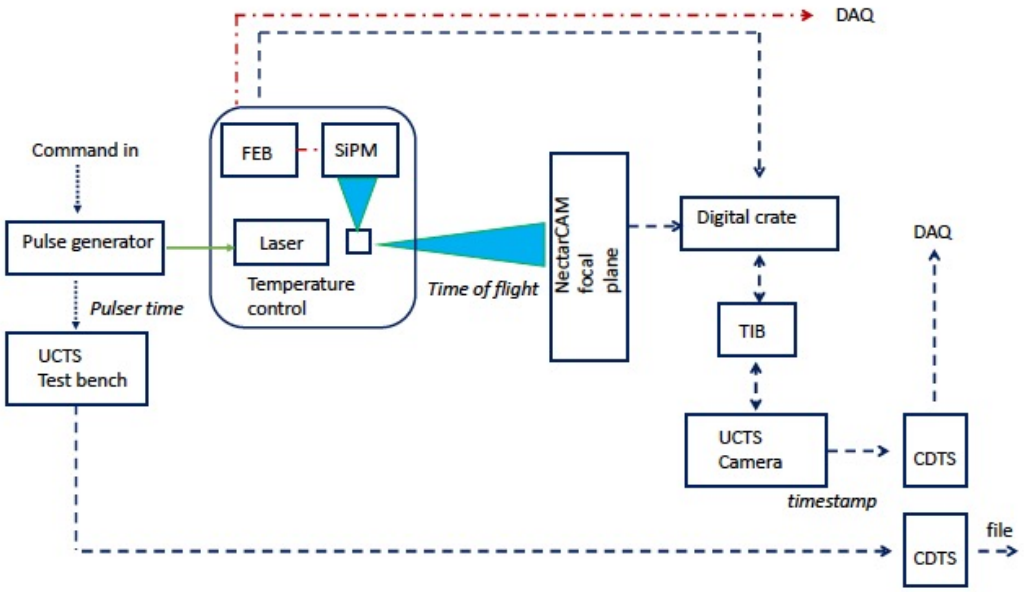
- should be measured ideally before PACTA
- Action: should try to disantangle the input signal from the electronics.

Crab pulsar observations

- *RIXes: 42741* (FD)
- Use the Crab pulsations to test the WR system, as done by MAGIC
- Action (FD): assert the effort/benefit ratio with project scientist and clock coordinator (?).

« Missing » scientific requirements

- Some requirements could not yet be validated due to missing hardware or software (RTA):
- B-TEL-1410 and B-TEL-1430, 1440: trigger timing



- Action: test first on tower 66, then on whole camera.

Documentation to be completed/missing:

- Trigger
  - –Trigger logic (#43399)
  - – Overall trigger time adjustment, L0 splitting stage, L2 global OR jitter cancellation (#42500)
  - –-Functionnality of digital trigger crate (?) (#42493)
- DAQ:
  - – MST-CAM-TN-0360-CPPM (#42452)
- Control
  - – MST-CAM-TN-0068 (#42452)
  - – RCC (#42452)

Conclusion

To be done:

- Tests:
  - Calibration (including write-up)
  - On single module: bandwidth, signal reflection, FEB V6 validation
  - On full camera: thermal tests, trigger, deadtime and comparison to Monte-Carlo
- Documentation
  - Most urgent: update of DAQ and control documents.