Commissioning of the camera of the first CTA LST

pixel 0

15

20

8.8 x now(x, 0.5) -20.

run 2681 (shutter open)

run 2618 (shutter open)

run 2619 (shutter open) 1NSB (1.6 uA)

25

10NSB (16 uA)

run 2645 (shutter closed)

Noise vs NSB

400

300 gtd.

002 est

100

2020-09-14





1. CTA LST Camera has:

- 1855 PMT pixels
- 4.5 degree FoV
- Analog Sum Trigger
- 60 Gbps bandwidth to the camera server

Commissioning started in October 2018

2. Readout Noise is:

- Defined as Charge RMS of pedestal events
- ~0.2 p.e. level
- Stable within 1%
- Sart(NSB) dependence



2020-09-14

2020-09-14

01:30:00

HV ON, shutter open, Park Out, High Gain, pixel 0

Noise vs Time

2020-09-14

5

std.

<u>ي</u> 89.0 ک

0.96

2020-09-13

2020-09-13

23:30:00

2020-09-14

00.00.00

3. ADC->P.E. Conv. factor is:

- Determined with F-Factor method
- Uniform with 2% over pixels
- Stable within 1% up to 10 x NSB

Commissioning of the camera of the first CTA LST





21-03-18 21-03-18 21-03-18 21-03-18 21-03-18 21-03-18 21-03-1

01:00:00 01:30:00 02:00:00 02:30:00 03:00:00 03:30:00 04:00:00

4. Trigger System:

- The threshold were well calibrated for all PMT modules, for different NSB levels.
- Trigger Distribution is syncronized within 150 ps precision

<u>5. DAQ :</u>

- It includes pre-process as well
- Up to 15 kHz possible
- 5% dead time at 7.5 kHz

6. Stable Observation:

- To deal with stars in FoV, trigger thresholds are adjusted automatically
- Stable witin 1.5%
- Cos(Zd) dependence is seen.