Validation of Runs 38-39-40-41-42-43

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Summary of the runs

Before summer

Threshold scan

RUN 38

Gas bottle change

RUN 39

RUN 40

After summer

RUN 41

Threshold scan

RUN 42

Threshold scan

RUN 43

DISCLAIMER

- You will see some strips are *off* in the data taking
- This is due to various reasons which **need to be studied on site, @ IHEP → only when we will be able to travel again and come to the lab we will have the complete picture!**
- For now, here is what we know:
  - some chips show a peculiar behavior *w.r.t.* power consumption and/or working temperature
  - some FEBs show problems due to some cables and some heat sinks
  - there is a damaged tail on the anode read by FEB 43 (~20 strips)
- As a **precautionary action**, these channels are not taking data and show up as "*missing* strips" in the plots **for these runs**

Hit distributions

Before summer

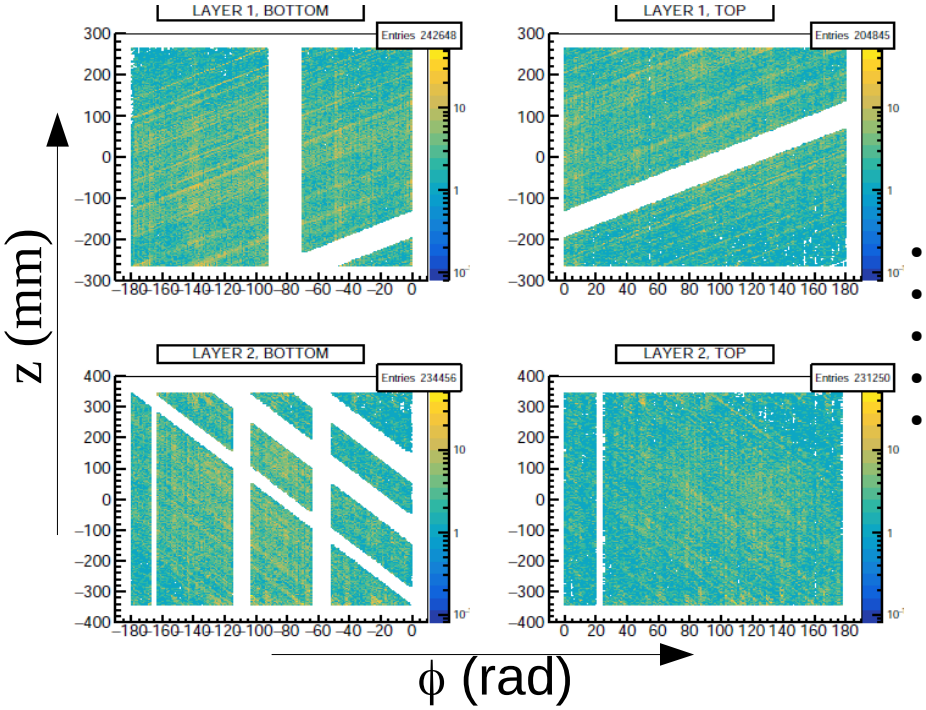
Threshold scan

RUN 38

Gas bottle change

RUN 39

RUN 40



- FEB_label = 34, both chips
- FEB_label = 36, one chip
- FEB_label = 2, both chips
- FEB_label = 32, both chips
- FEB_label = 43, tail

After summer

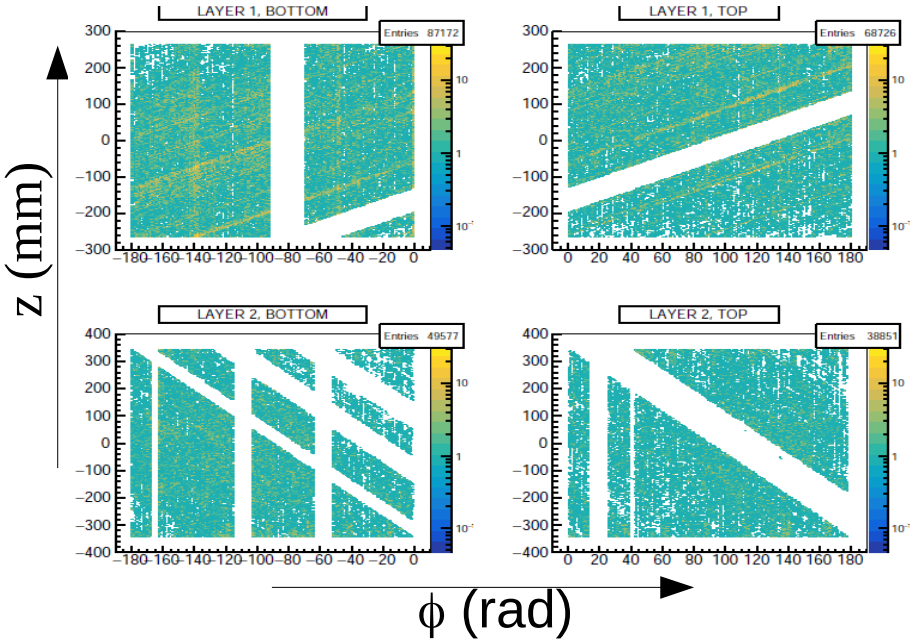
RUN 41

Threshold scan

RUN 42

Threshold scan

RUN 43



- FEB_label = 34, both chips
- FEB_label = 36, one chip
- FEB_label = 2, both chips
- FEB_label = 32, both chips
- FEB_label = 43, both chips
- FEB_label = 42, one chip

Validation against RUN 17

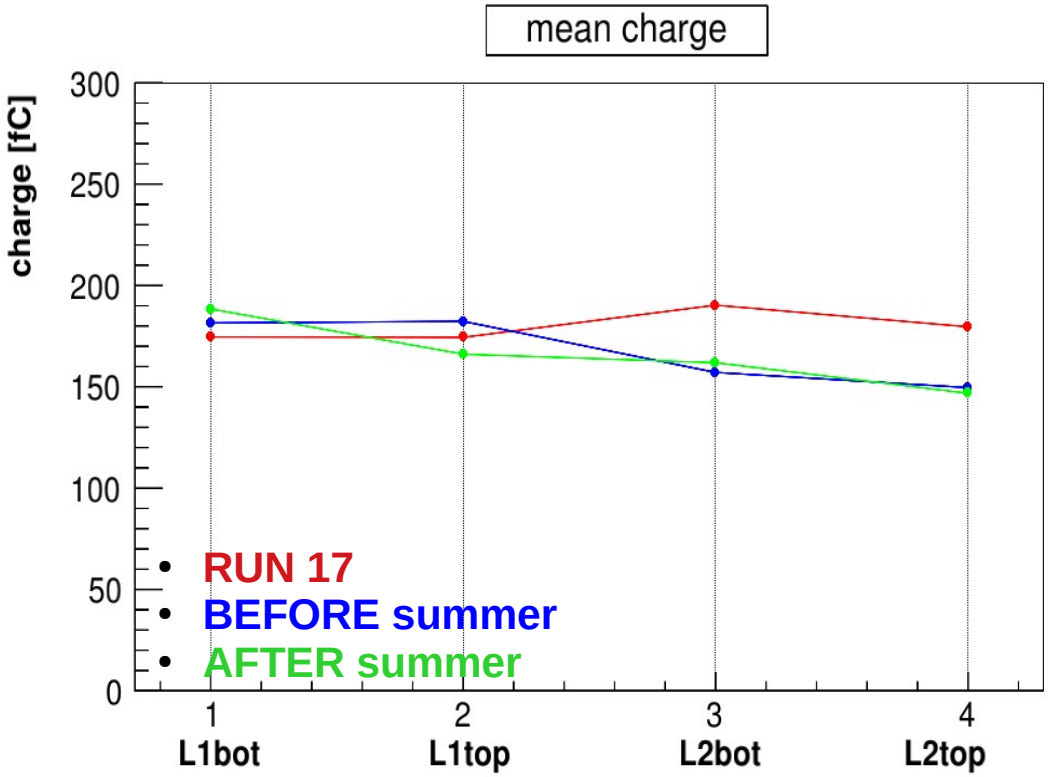
- All data were taken with **standard settings**:
  - Fields ……. 1.5/3/3/5 kV/cm
  - HV …….. 280/280/275 V
  - Noise ……. 8 kHz

→ they were validated against RUN 17, comparing charge and cluster size

- Selection of the clusters 2D:
  - Require all four planes firing
  - Select cluster 2D with maximum charge on each plane
  - Require cluster 1D with cluster size (on x and v) > 1
  - Require fabs(x) < R_{LAYER1} (→ almost vertical tracks)

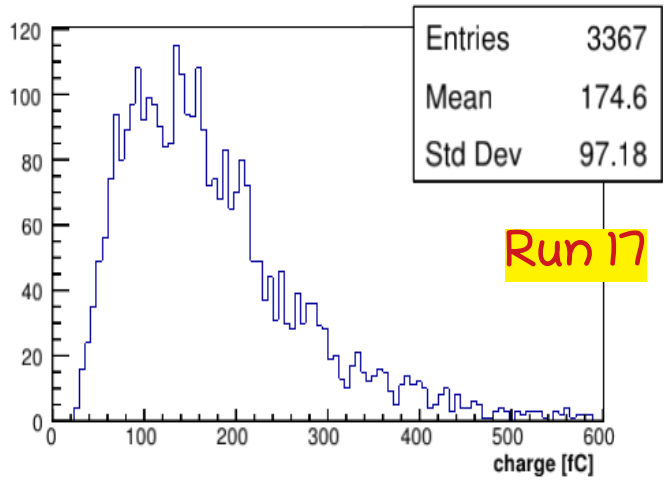
→ evaluate if there are substantial differences between the new runs and RUN 17 and between runs before and after the summer shutdown

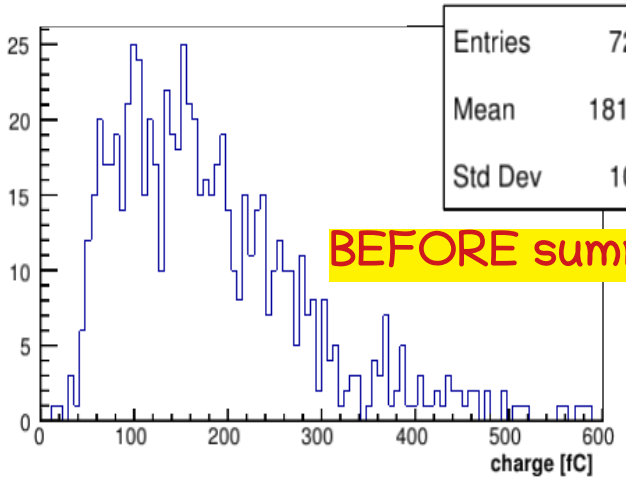
Mean charge

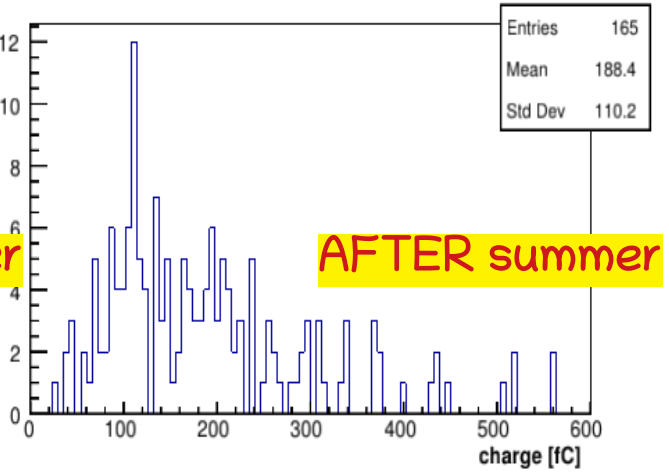


- The mean charge of selected cluster 2D does not change for LAYER 1
- Slight decrease in LAYER 2 *w.r.t.* RUN17 but can be explained as statistical fluctuations and expected fluctuations in gain
- No change between before and after summer

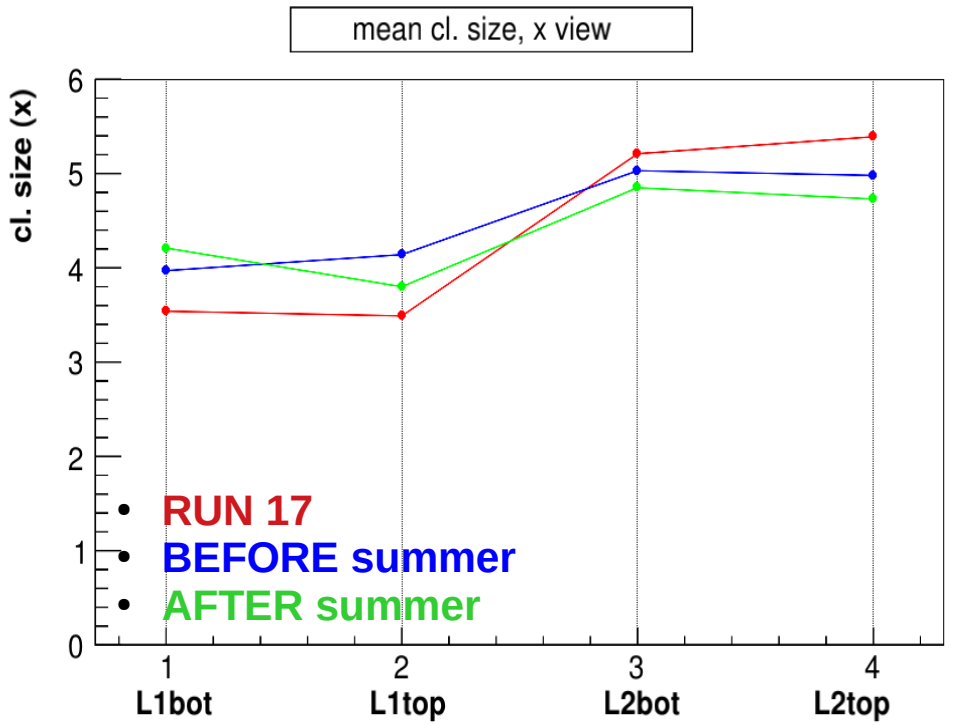
EXAMPLE PLOTS: LAYER 1 BOTTOM, charge of selected cluster 2D

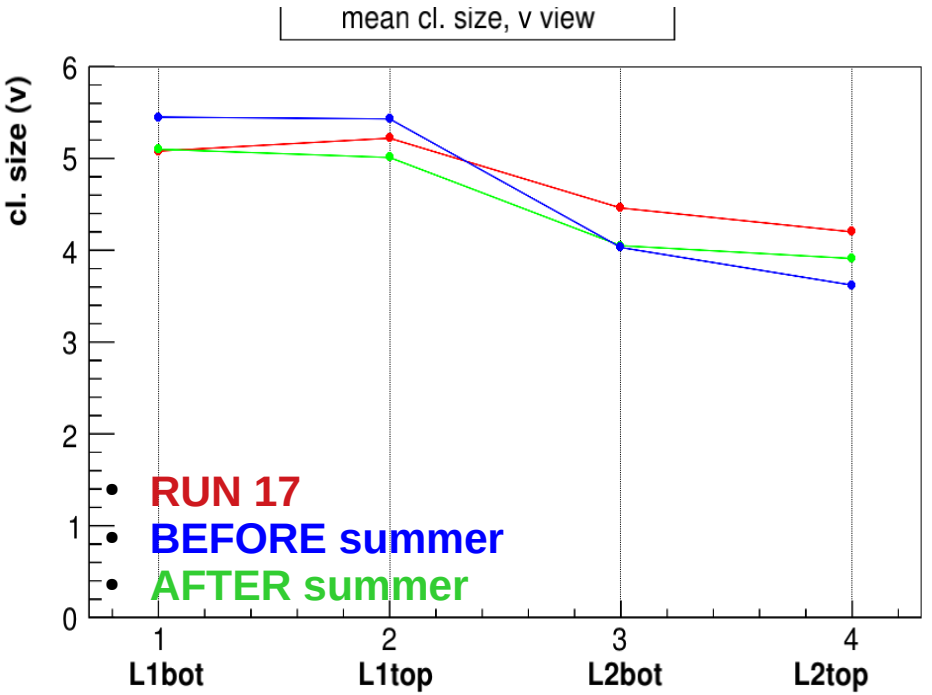






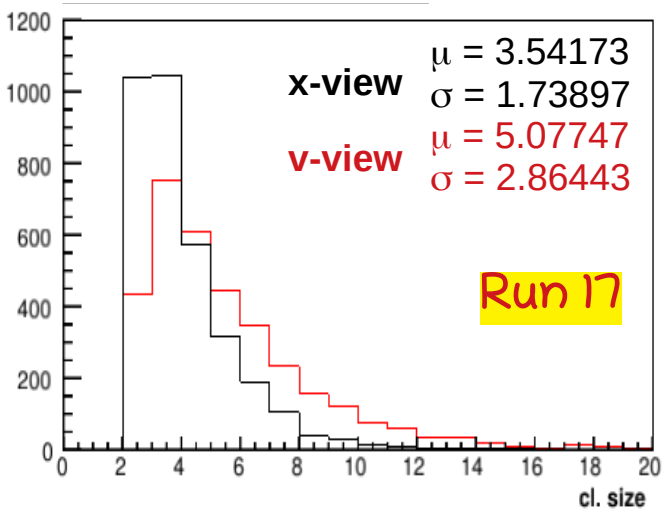
Cluster Size, x/v view

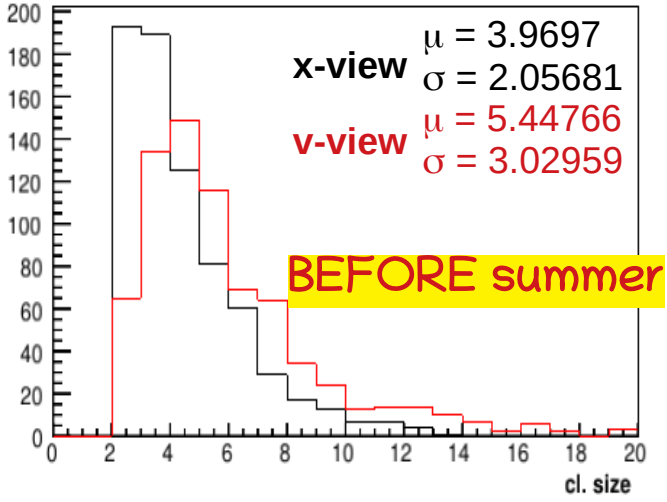


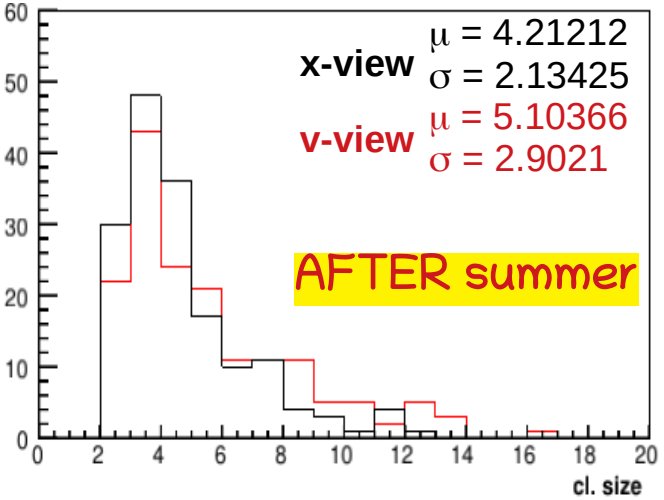


There is a small change in cl. size, but less than 1 strip

EXAMPLE PLOTS: LAYER 1 BOTTOM, cluster size selected cluster ID







Conclusions

- There has been a slight change in the charge mean value of LAYER 2 → a slight fluctuation in the gain value is expected
- The cluster size Is almost the same
- The new runs are **consistent** with the old runs, can be released and used for analysis and calibration
- The LAYER1 and LAYER2 detectors and electronics showed **stability in the results** both in the long run (RUN 17 was taken ~1 year ago!) and after the summer shutdown
- The components which now are problematic need investigation **on site**
- Maintenance is now done remotely and with the help @IHEP of Mingyi, Jing and Qun (thanks!)... but of course, some testing, debugging and actions on the detectors are needed and not possible now

Thank you for the attention