Run 17 BEMC Calibration

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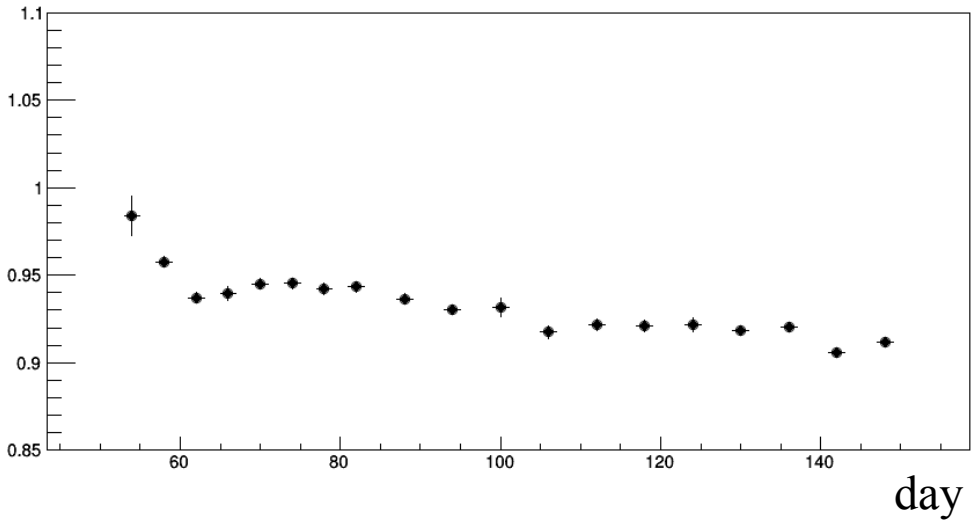
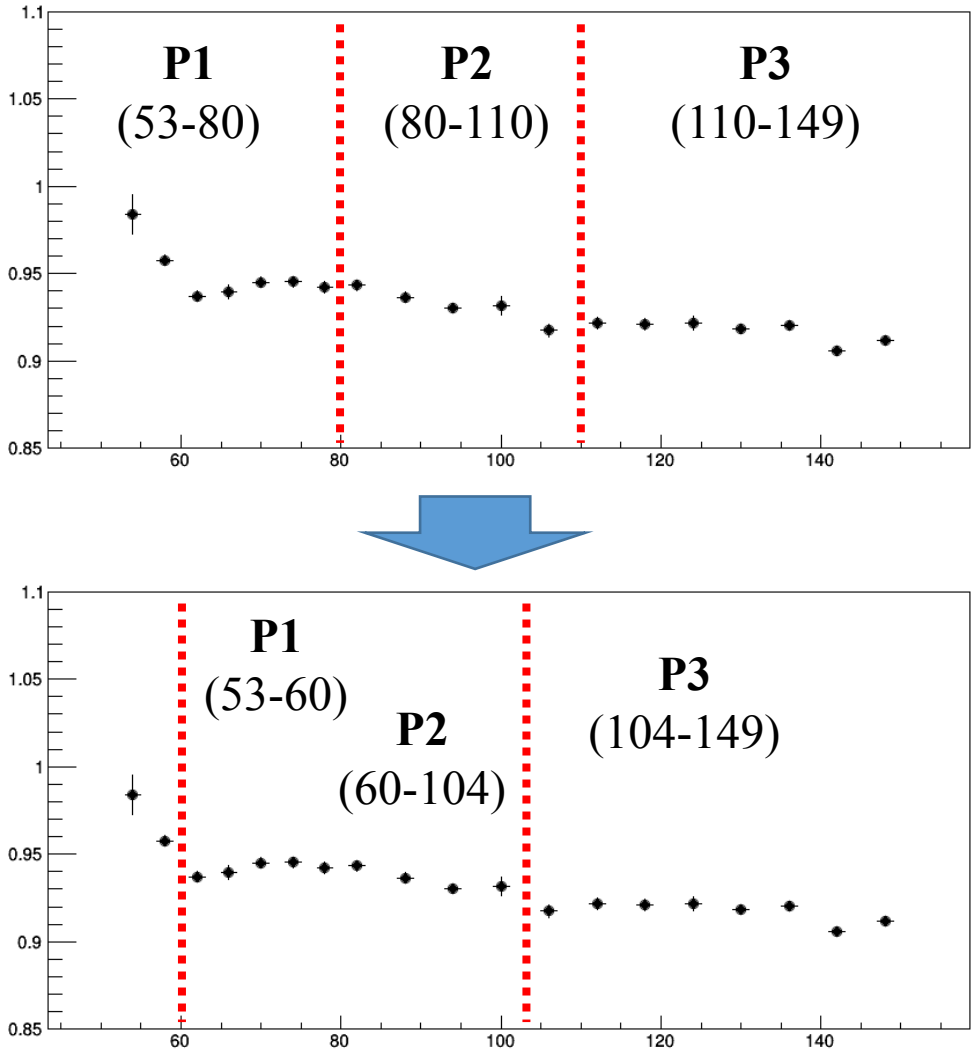
Review

Systematics	P1	P2	P3	ALL
Trigger	0.3	0.4	0.5	0.2
Momentum	1.3	0.8	0.5	0.8
Charge	1.2	1.1	0.4	1
Crate	1.4	1.3	1.7	1.1
Time	1.6	1.1	0.8	1.8
ZDC	1	1.9	0.9	1.8
dR	1.2	0.7	1.1	0.9
Tower Edge	1.8	1.8	1.8	1.8
Sum	3.7	3.5	3.1	3.7



- Systematic uncertainties of Run 17
  - Major contributors: Time- and ZDC-dependences.
  - Different approach to period separation suggested.
    - Focus on equal statistics → equal time dependence.
- Update
  - All of the primary sample retrieved.

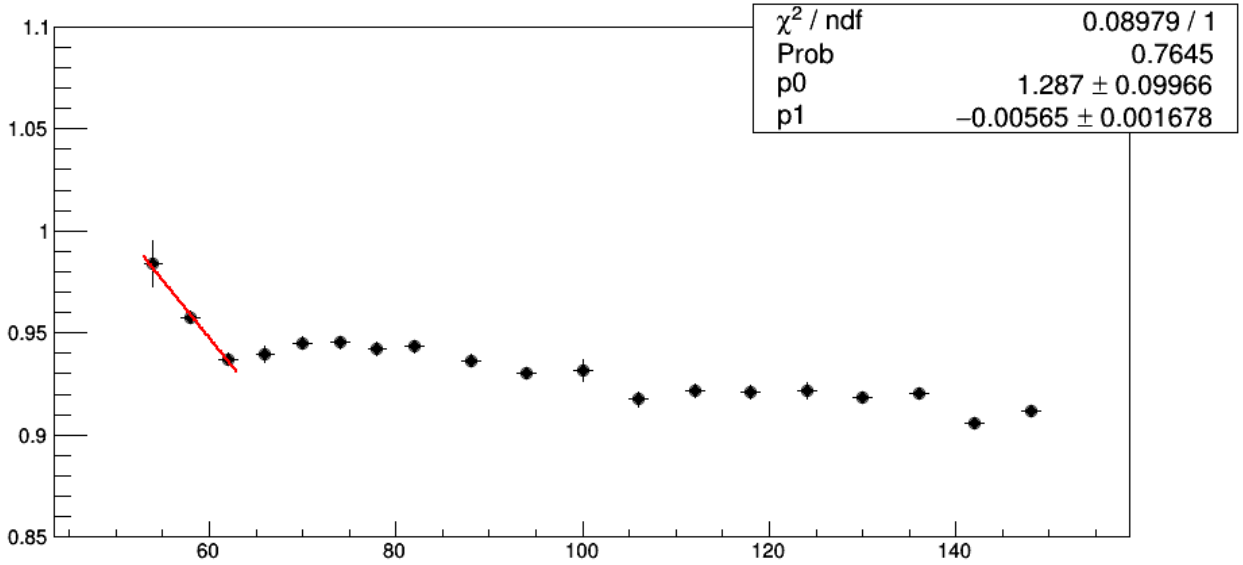
New period separation



- The old approach focuses on distributing statistics uniformly into three periods.
- The new approach focuses on splitting the sample so that they have similar time dependence.

$$\rightarrow \delta_{2,3}^{time} = 0.6\%$$

Time dependence in P1

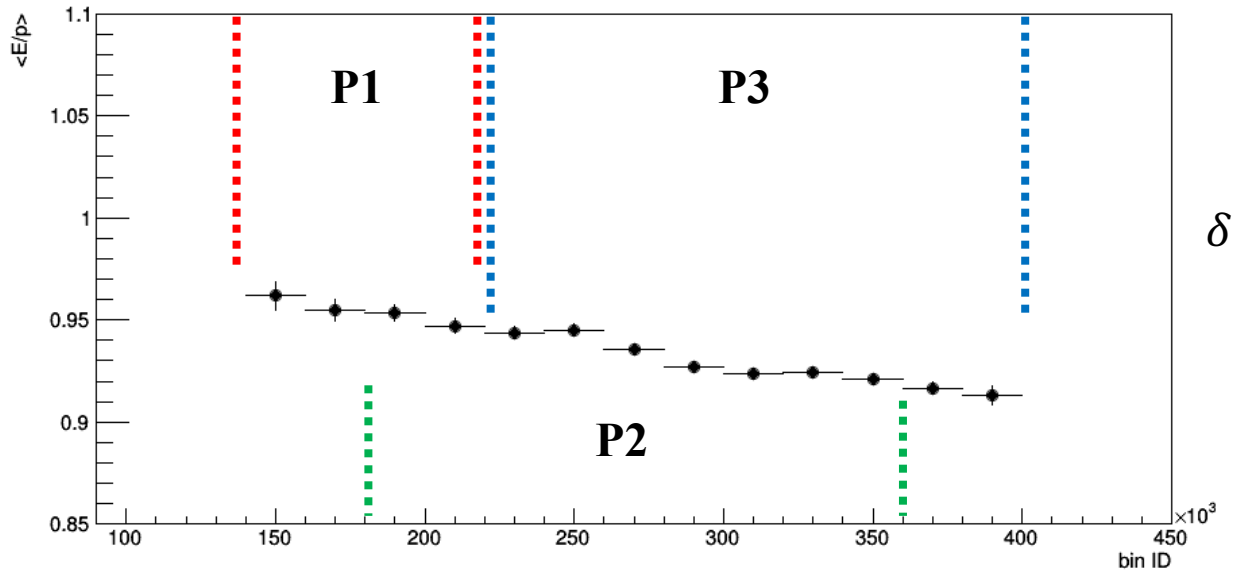


- The E/p graph within the range of P1 shows a linear trend in time.
  - The fit shows about 0.6% reduction in E/p per day.

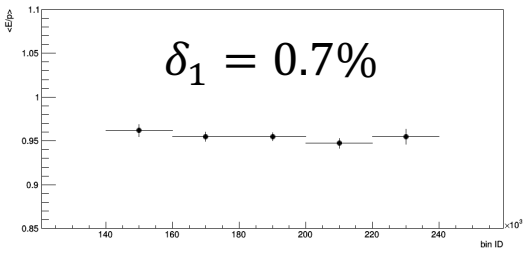
→ Suggestion

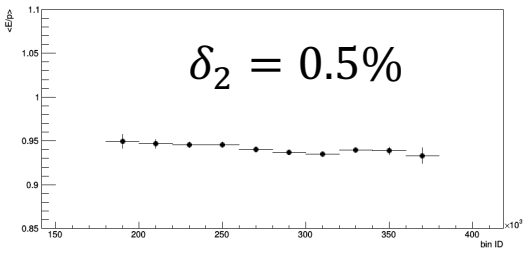
- First, find the mean $< E/p >$ of P1, and scale it based on the fit for each of the seven days.
- 7 sets of gains for P1, 1 each for P2 and 3.

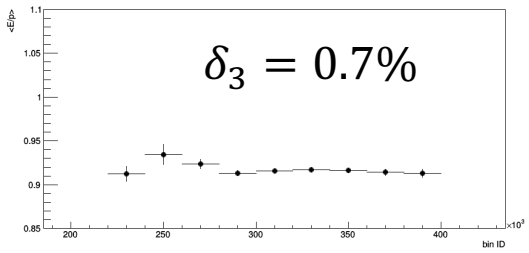
ZDC



$\delta = 1.7\%$







- ZDCx-dependence from the whole Run 17 sample is about ~1.7%.
- However, when calculated separately for each period, the value goes down to ~0.7%.
- Also identified that each period only probes a region in ZDCx.

Summary

Systematics	Run 17 (Full)
Trigger	0.2
Momentum	0.8
Charge	1
Crate	1.1
Time	**0.6**
ZDC	**0.7**
dR	0.9
Tower Edge	1.8
Sum	2.8

- Assuming no strong correlation between time dependence and the other criteria (trigger-, charge-, crate-, dR-dependences), the rest of the values were taken from the previous presentation
- By using the new separation scheme, time dependence of 0.6% is ensured.
- Different period probes different ZDCx, and thus ZDCx-dependence was calculated separately for each of the three periods. Cited here is the largest among the three.