Weekly Report

Content: Electron transmission rate at beam test

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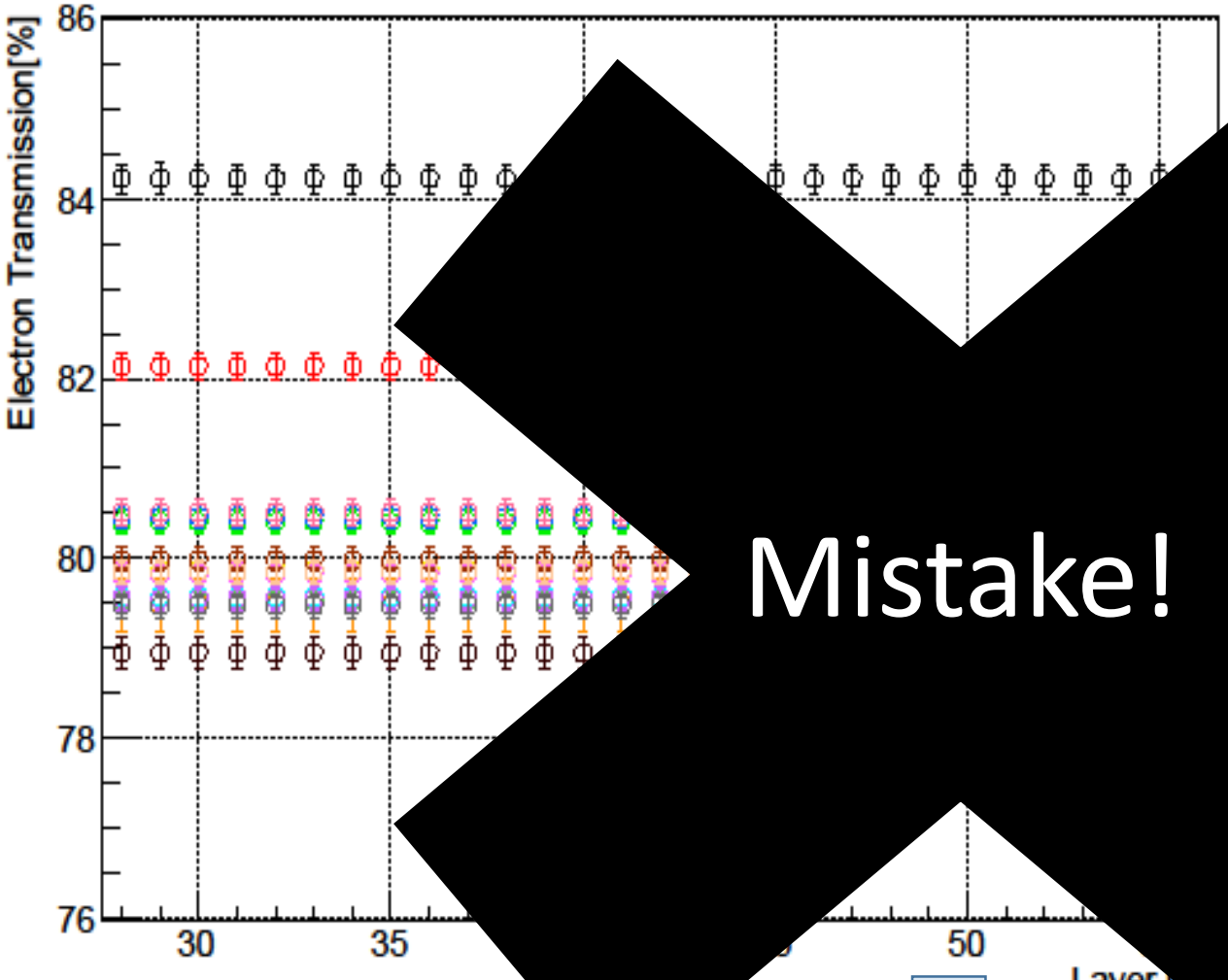
Electron Transmission for each row & drift length 2



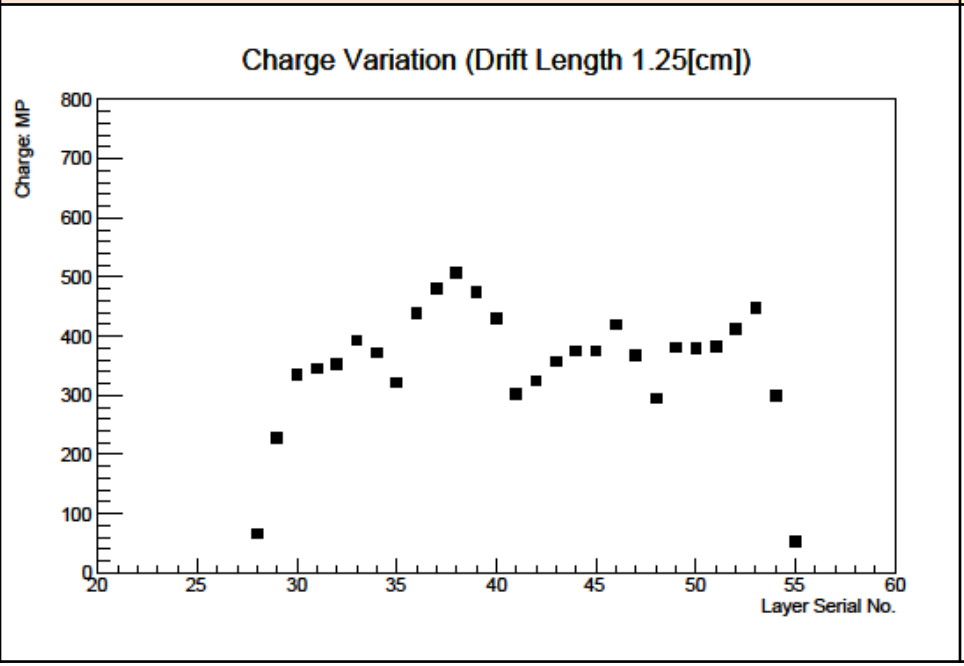
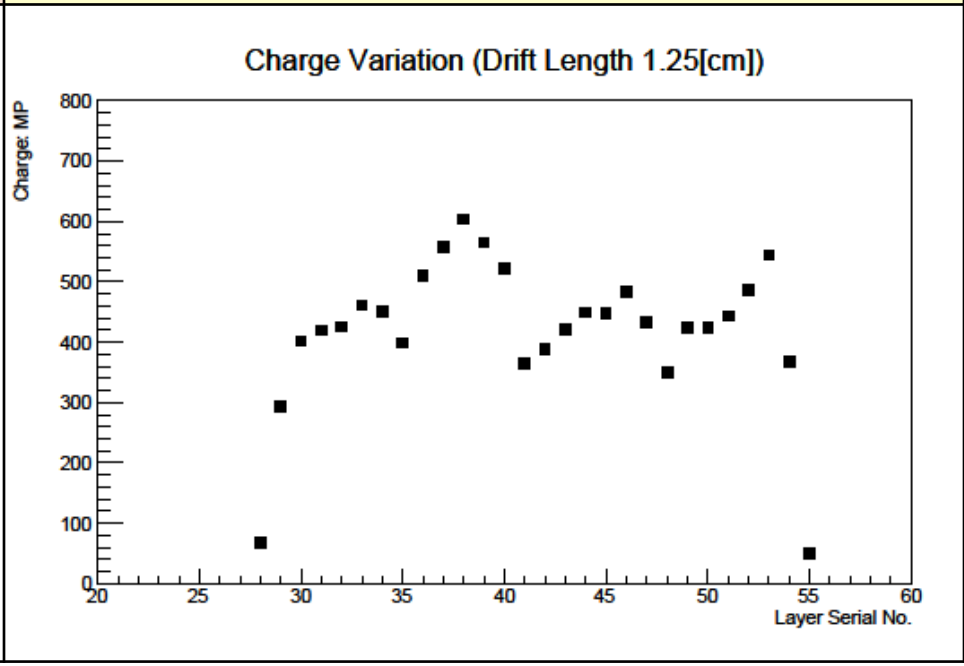
Mistake!

- I am not confident in calcu[illegible]s errors…
- There are some cases where the transmission does not reach 80% subtlely.

average

	Drifft Length [mm]	Trans mission [%]	Error [%]
	12.5	84.22	0.032
	[illegible]5	82.14	0.027
		80.41	0.026
		80.50	0.026
	[illegible]100	79.86	0.026
	125	79.82	0.025
	150	79.58	0.025
	200	79.55	0.025
	[illegible]50	78.95	0.035
		79.48	0.055
		79.55	0.025
	[illegible]00	79.47	0.025
	450	79.99	0.025
	500	79.85	0.025
	550	80.51	0.026

Charge for each row

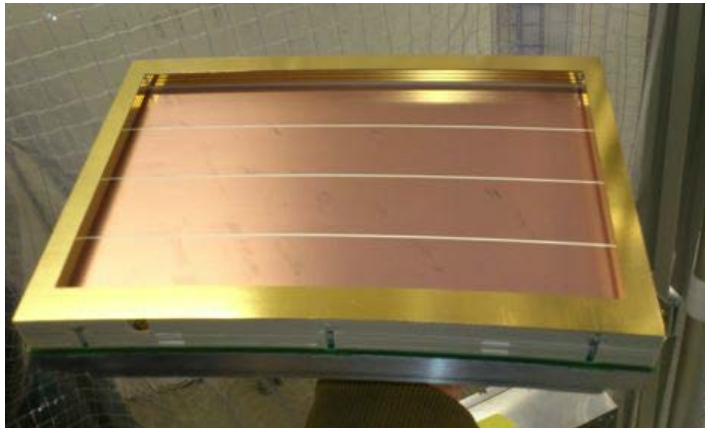
Gate GEM (w/)	Field Shaper(w/o Gate GEM)
	

- <u>Shape of four mountains:</u>

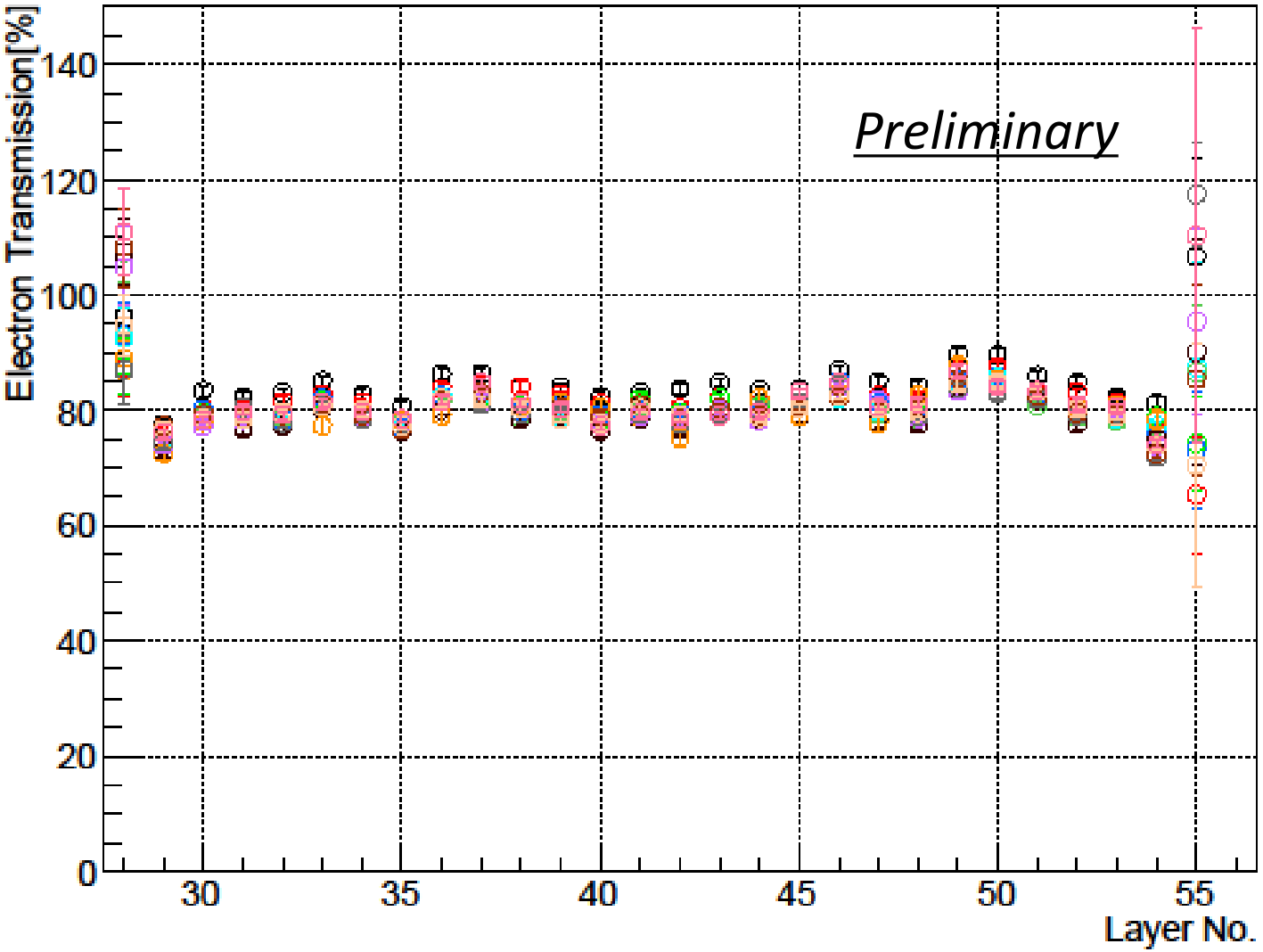
The electric field is distorted at the boundary part of the dielectric of GEM (see the right picture), which seems to affect charge.

- <u>Especially charge decreases at the edge:</u>

Because the electric field is distorted at the edge



Electron Transmission for each row & drift length

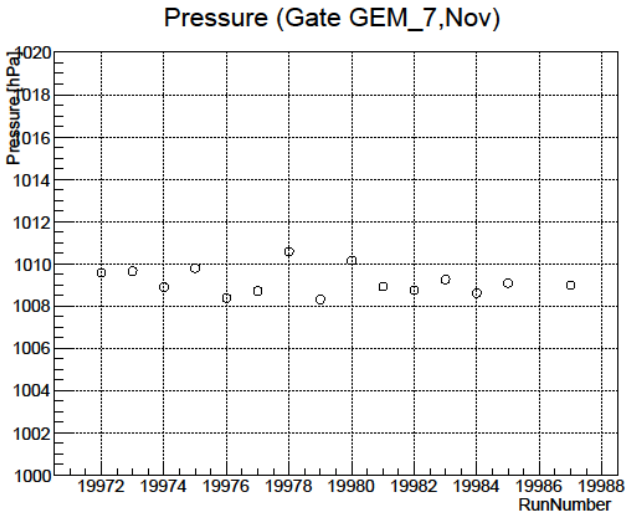


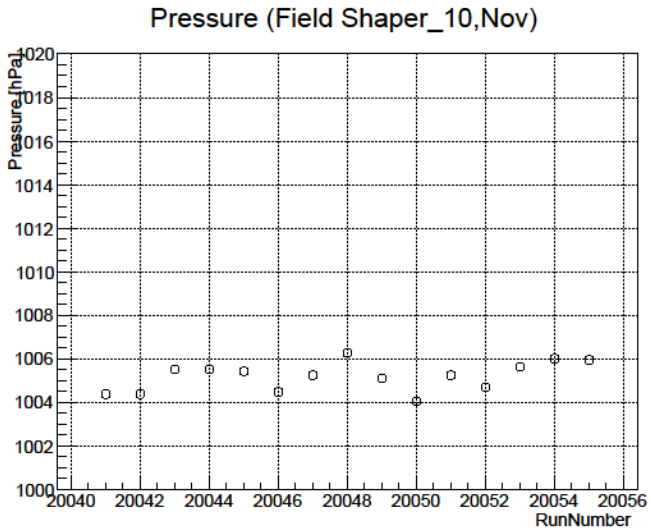
Shape of four mountains can be seen a little

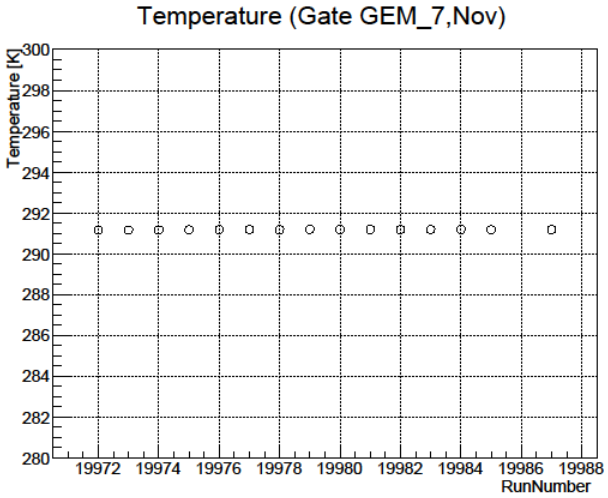
-> slightly change in transmission rate depending on position

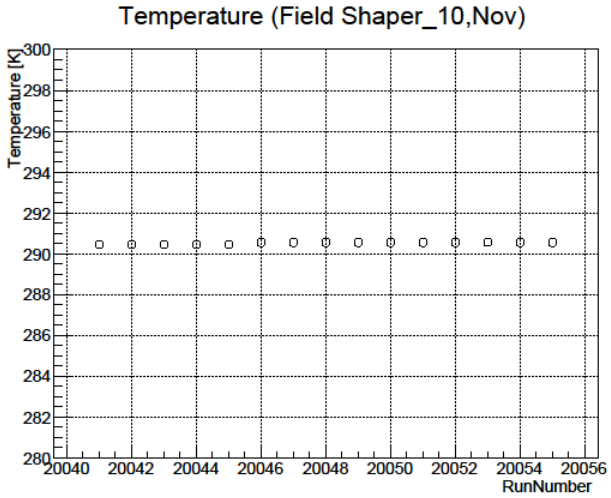
For correction

- Calculate the correction coefficient by using the average value of temperature and pressure for each Run (time from measurement start to end, see the figure below)



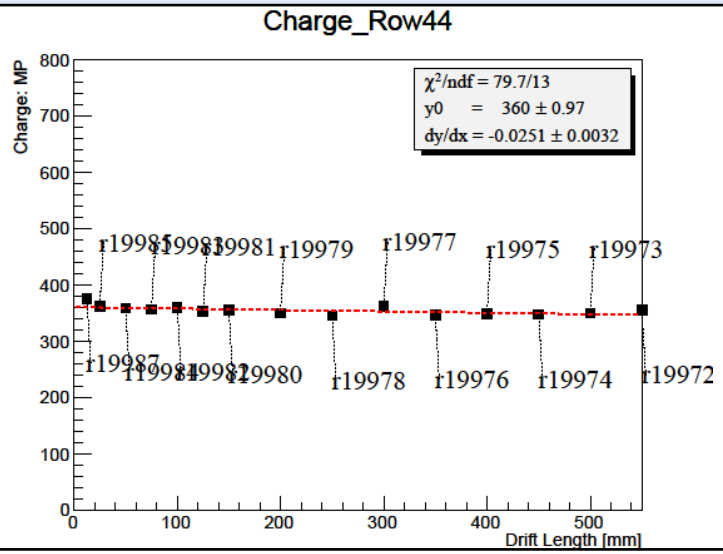
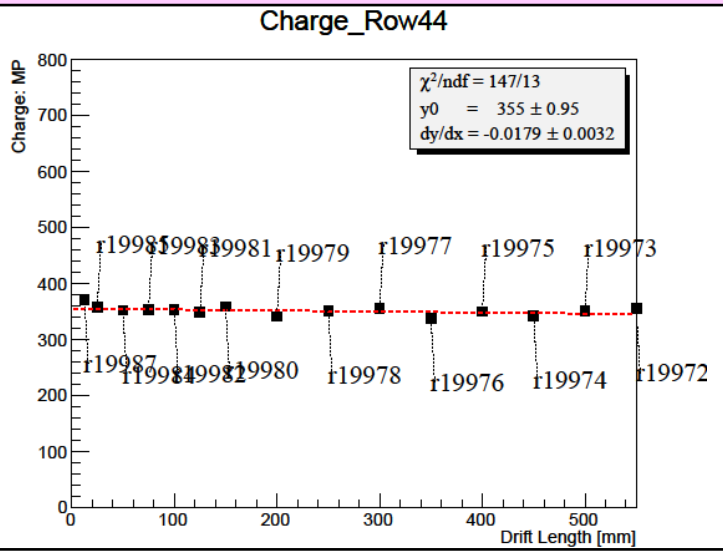
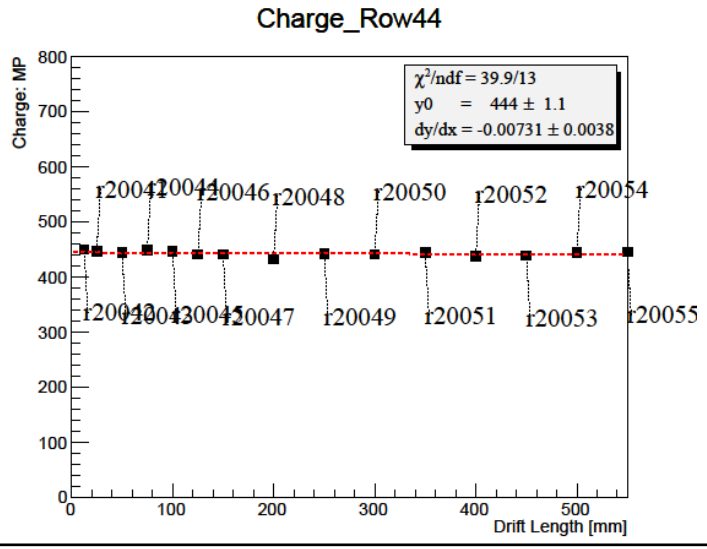
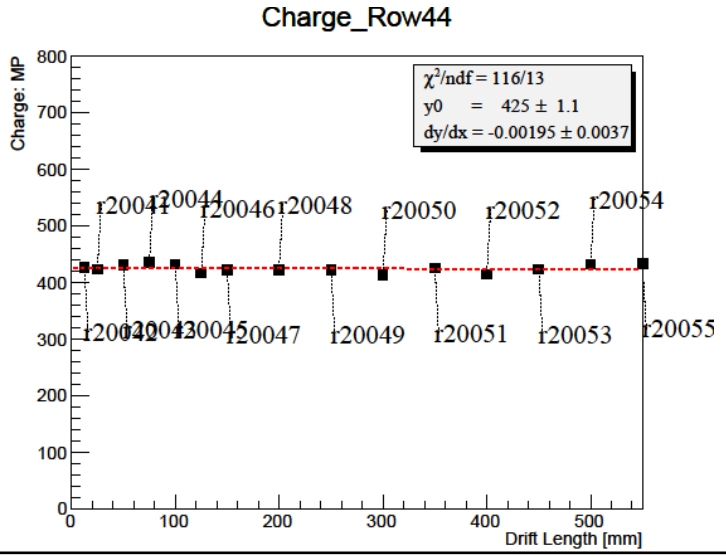






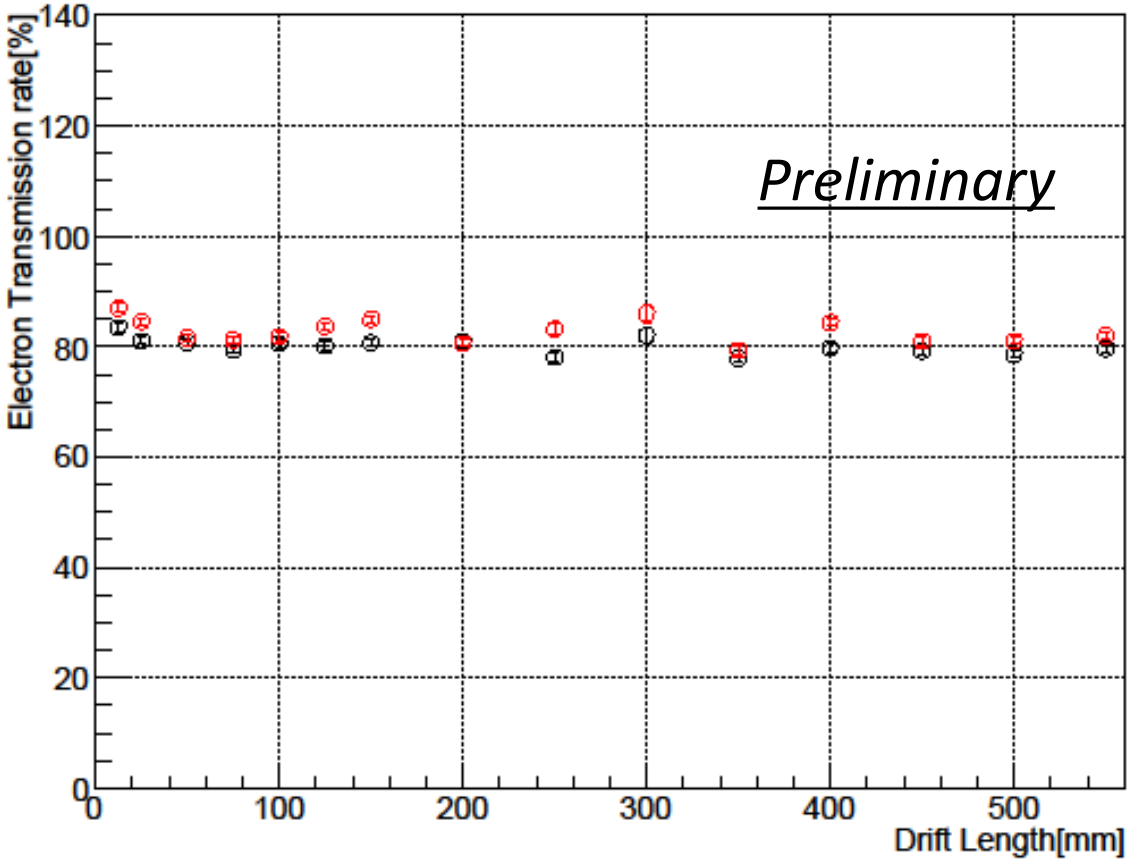
Charge with correction

- Correction with r19972, which began measurement, as a reference

	Without correction	With correction
Gate GEM		
Field Shaper		

Transmission with correction

Electron transmission rate at row 44



Black circle : w/o correction

Red circle : w/ correction

- The transmission rate with correction is higher than transmission rate without correction.
- I will try to correct on other Row.

Summary

- Looking at charge for each Row, it is considered that the electric field is distorted at the boundary part and the edge part of the dielectric of the GEM and affects the charge.
- There is also a slight influence on the transmission rate.

At the master thesis presentation(16th Feb…15:20~15:40), I will talk about:

· Electron transmission rate with Gate GEM at negative potential difference

· Electron transmission rate(without correction) at beam test

Thank you for your attention.

Fin.