Recent progress of Asian GEM module

LP1 analysis

Electron transmission of GEM gate

MPTPC with GATE

LP1 analysis

No big news after prompt analysis

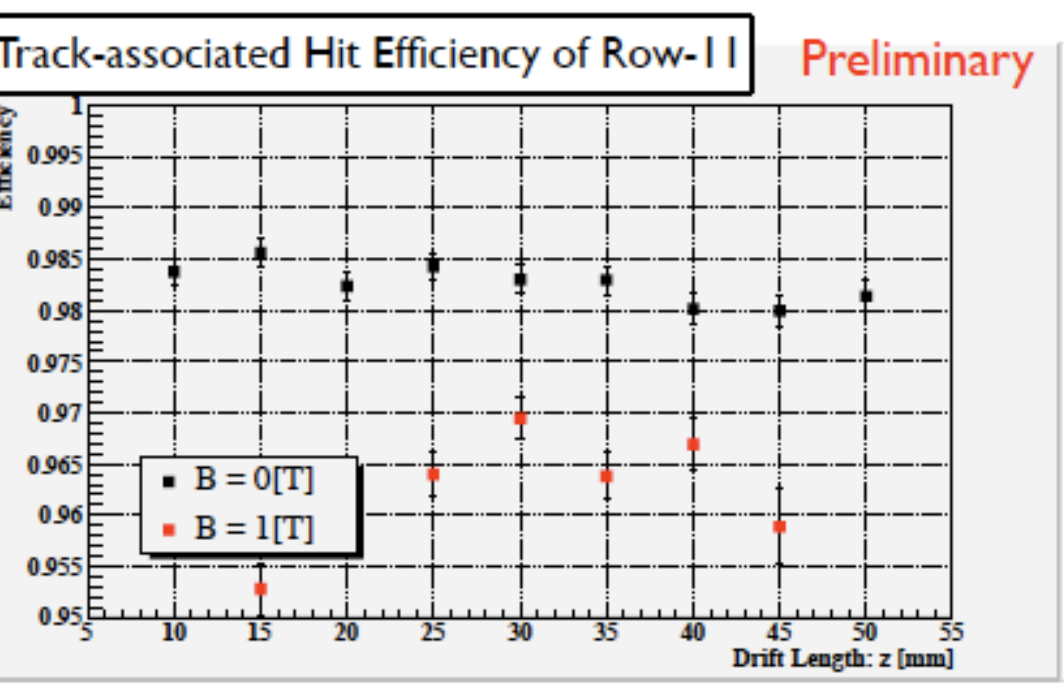
After first-look resolution study
we are in "real study phase"

behavior of mean rather than sigma
we are observing some systematic behavior
(probably) due to distortion

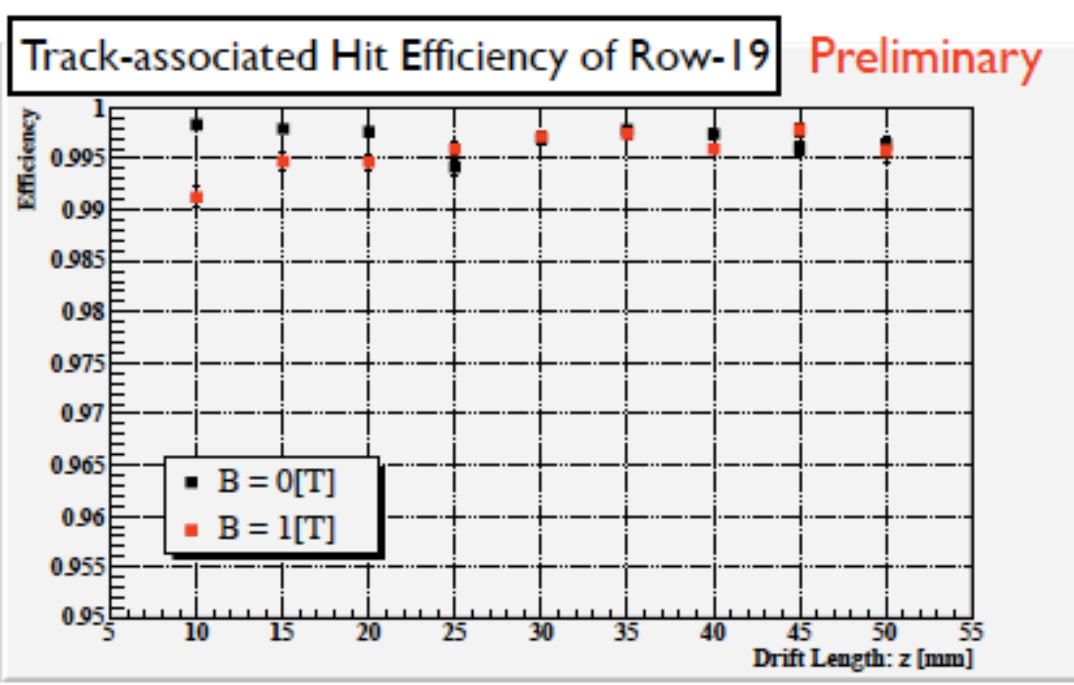
Tracking program(KalTest) works fine at standalone system
and (will) try to be implemented in Marlin-TPC by LiBo, KI,YK

Efficiency by Ryo Yonamine

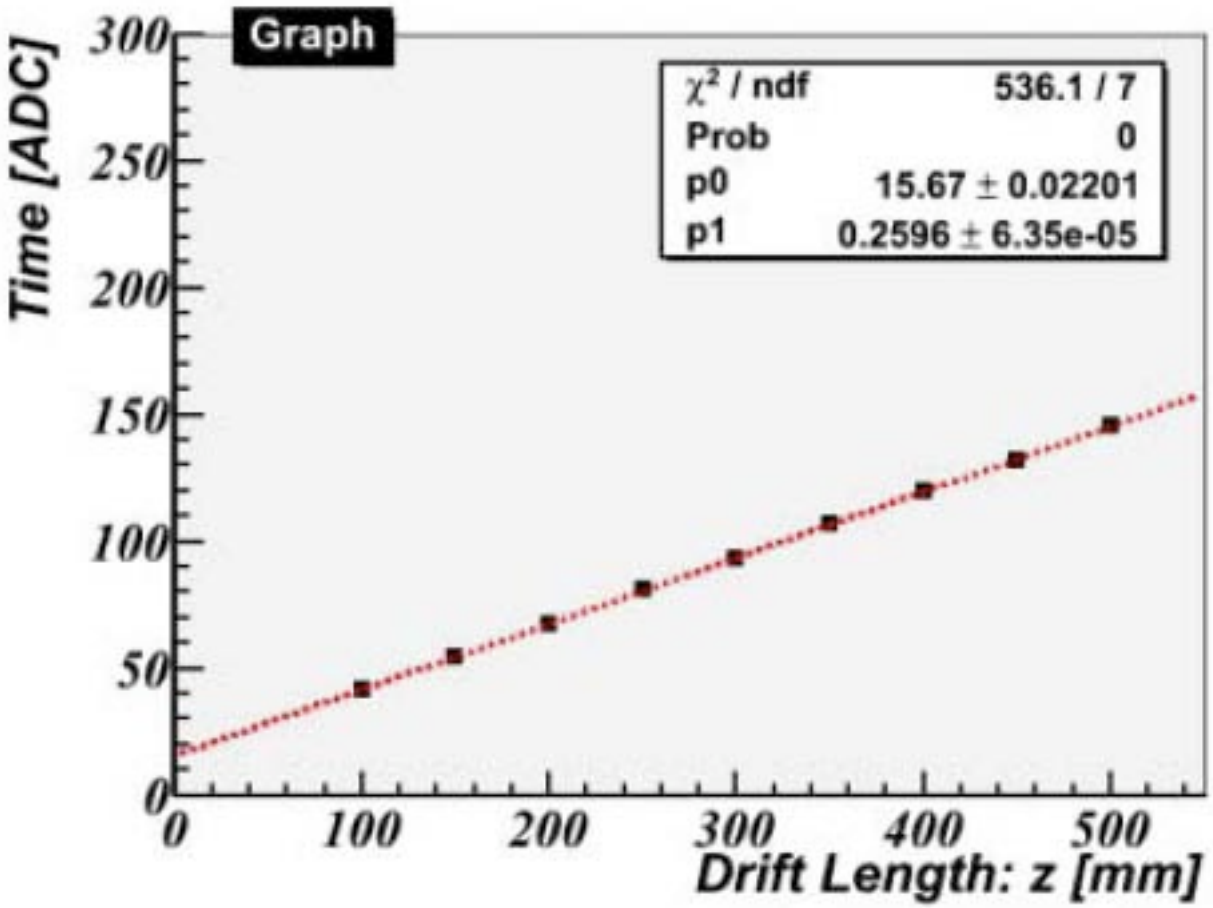
Worst Row



Best Row



Drift velocity by Hiroshi Yamaguchi



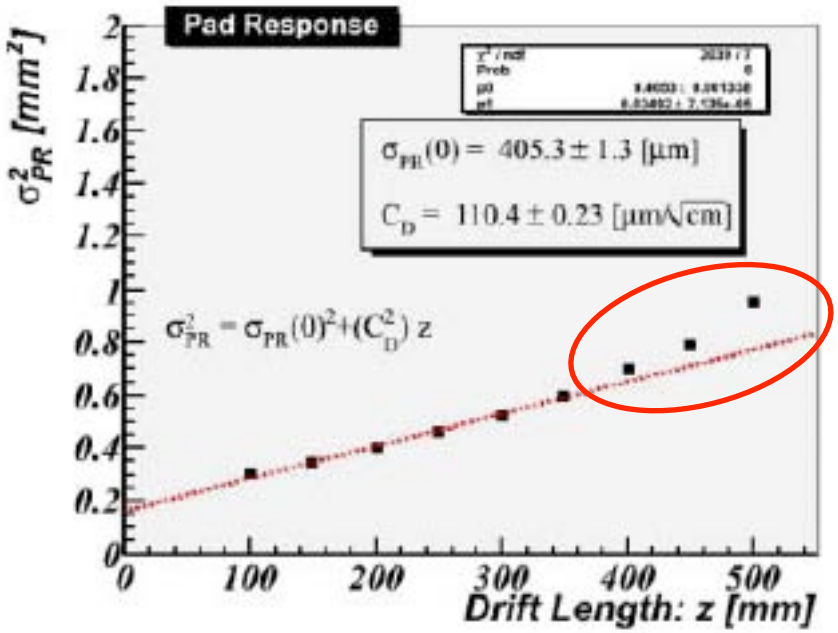
Garfield

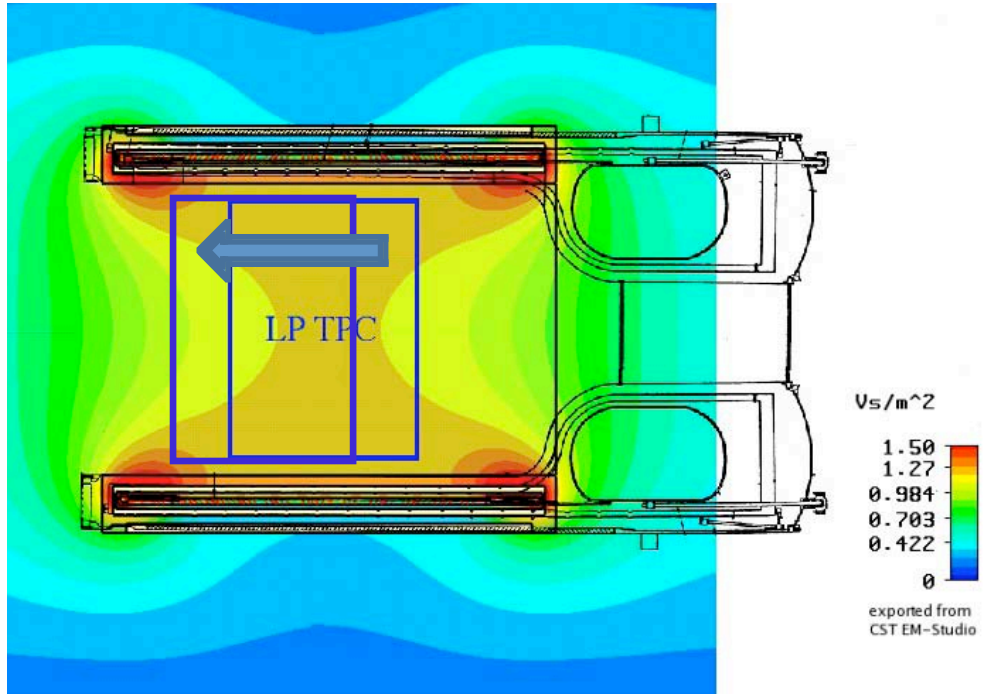
Vd = 0.076[mm/ns]

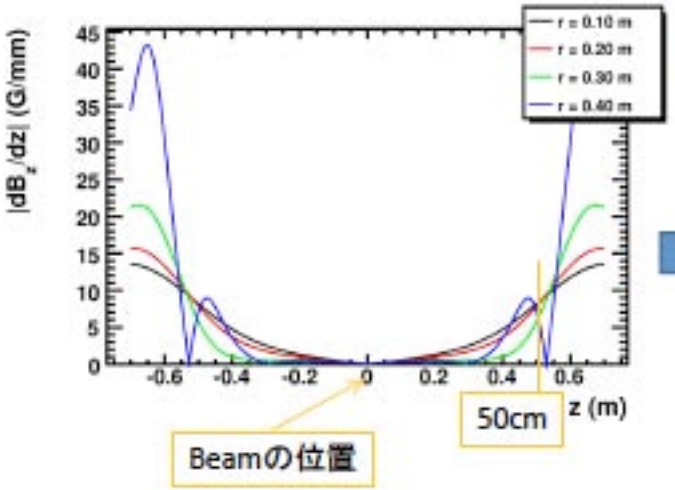
Measurement

Vd = 0.077[mm/ns]

Large PR at long drift

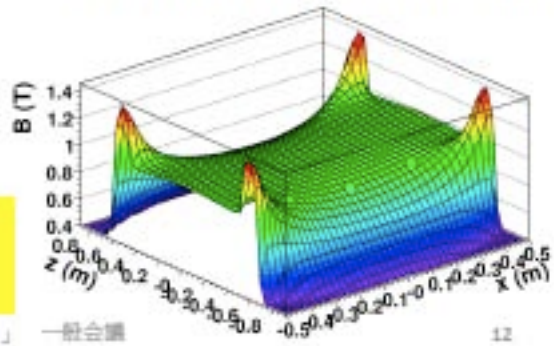






Pad row 19
→ r = 0.10 m

大雑把な見積もり
DL 50 [cm]のとき
GEM部分 約 0.8 [T]



DL50cmのときの$\sigma_{PR}{}^2$の値をシュミレーションの値から見積もる。

Even when we assume B=0.8T DL >40cm, diffusion contribution can explain only 30% of excess.

It must be coming from ExB and diffusion convolution

Electron transmission measurement

transmission is only 30~40% @1T

- Electron transmission efficiency
  - Ratio of ❷ to ❶

❷conversion at drift region

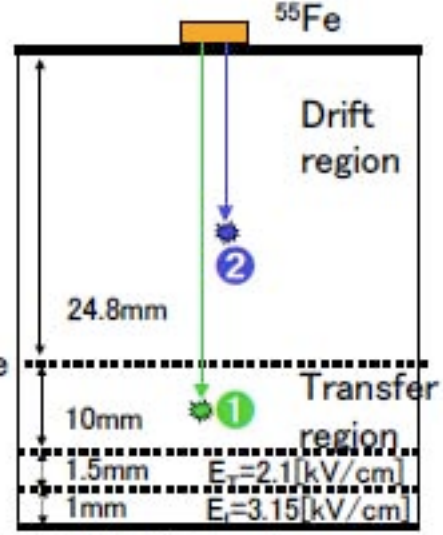
Electron loss by Gate

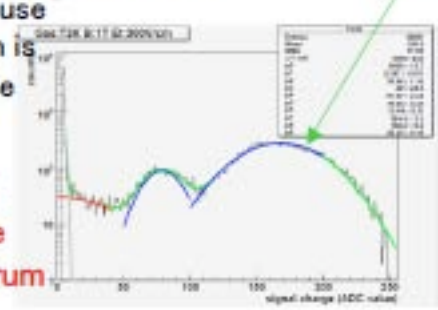
❶conversion at transfer region

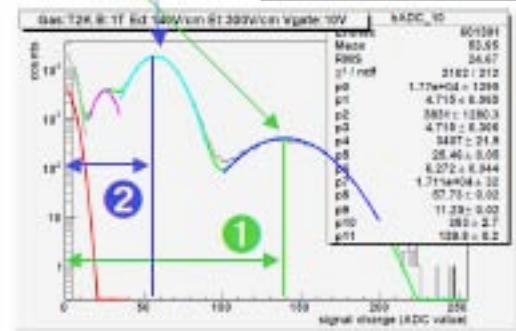
No effect by Gate
(ie. trans. eff. = 1)
E_D=0[V/cm]

ate because
er region is
m source

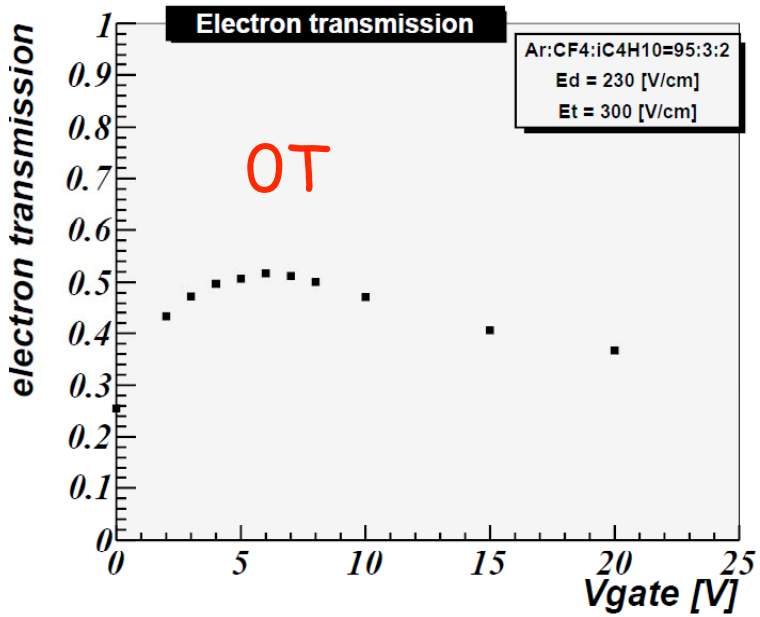
Signal charge spectrum

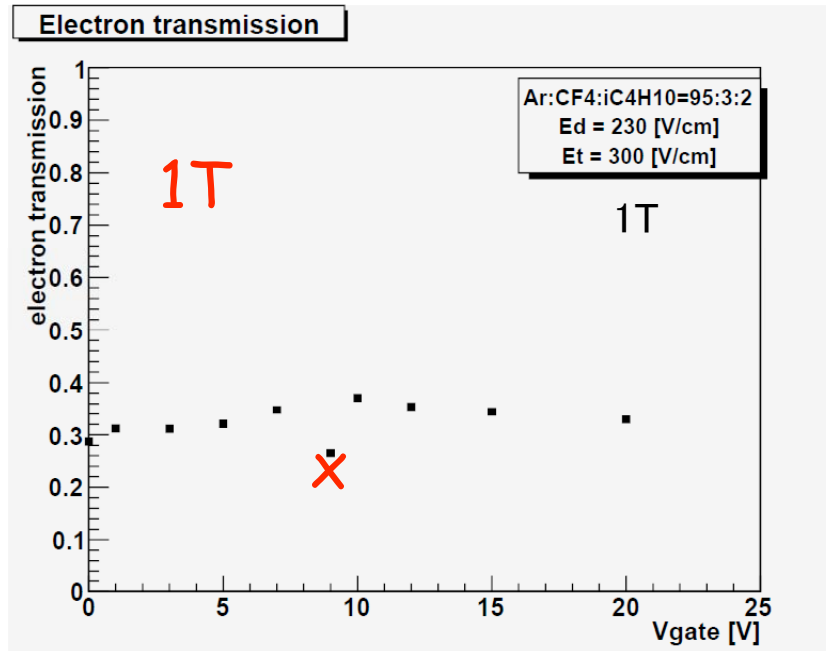






Peak position decided by gaussian



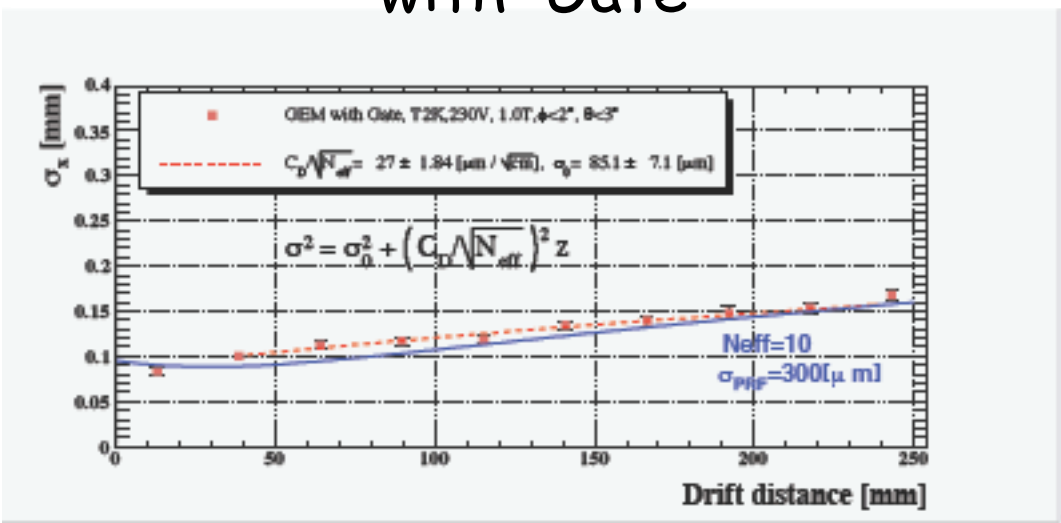


Effect of Gate @MPTPC

efficiency ~ 50%

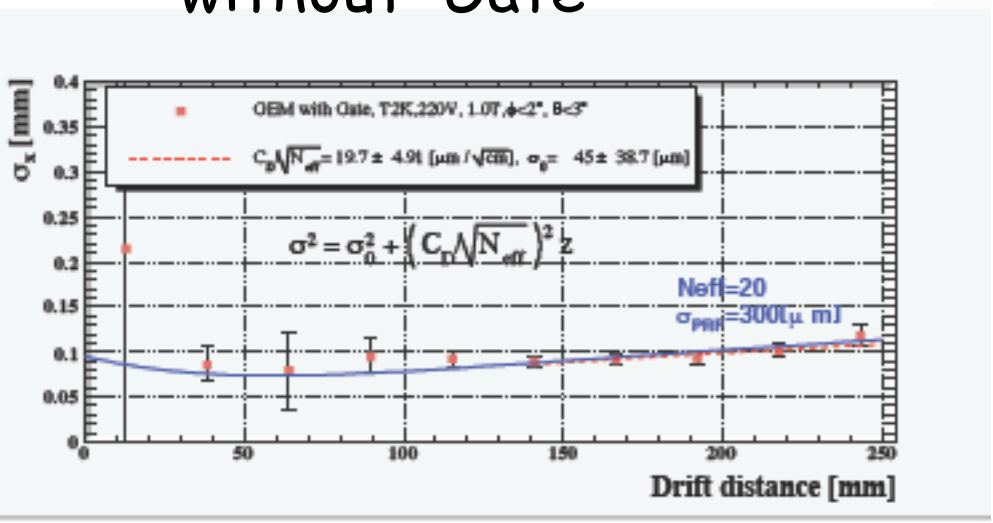
consistent !?

with Gate



→ Neff ~ 10

without Gate



→ Neff ~ 20