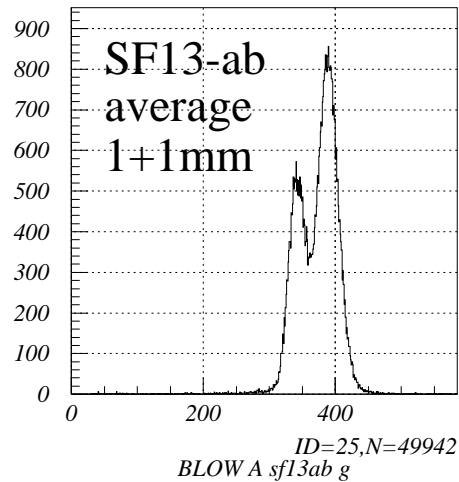
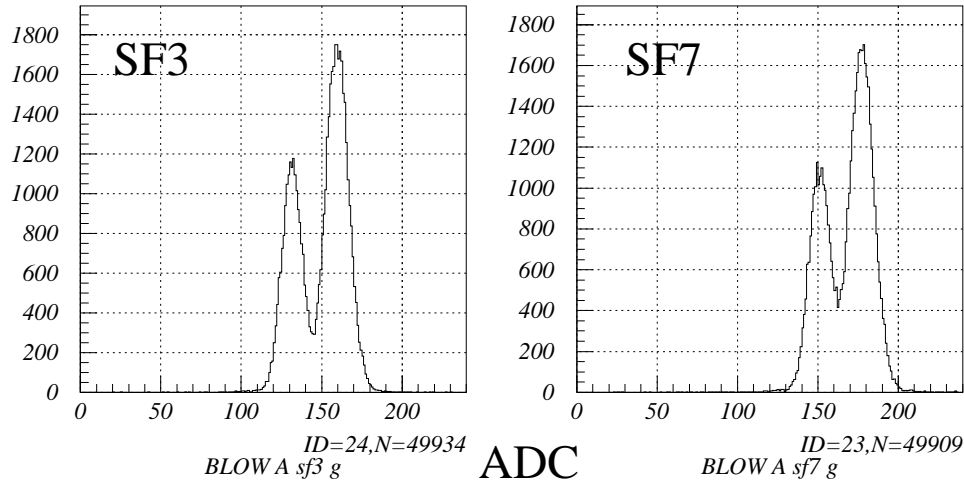


## Memo (S21)

---

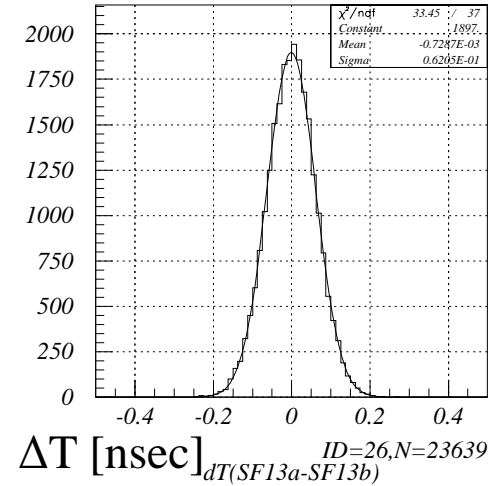
- Standard detectors during S21 Kondo-exp. tuning
  - SBT
  - BDC1, BDC2
    - proton,  $^{20}\text{F}(Z=9)$
  - FDC1, FDC2
    - $^{19}\text{O}(Z=8)$
  - (HODF24)
- misc.
  - detector gas status for DC's @21-Nov-2015

- Pulse height for <sup>20</sup>F+<sup>19</sup>O



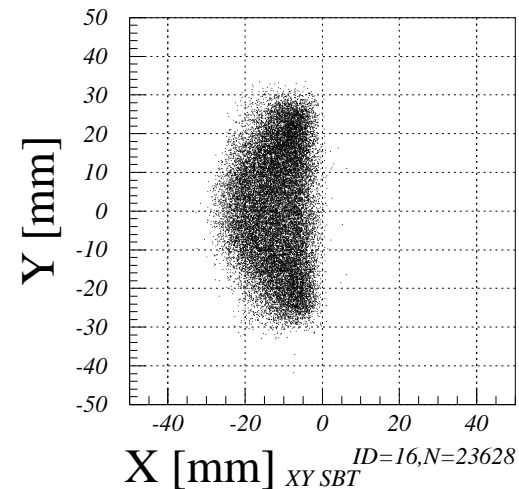
- 1枚ずつではz=8&9は分離しない。  
2枚の平均ではかろうじて分離。

- Time resolution : T(SF13a)-T(SF13b)

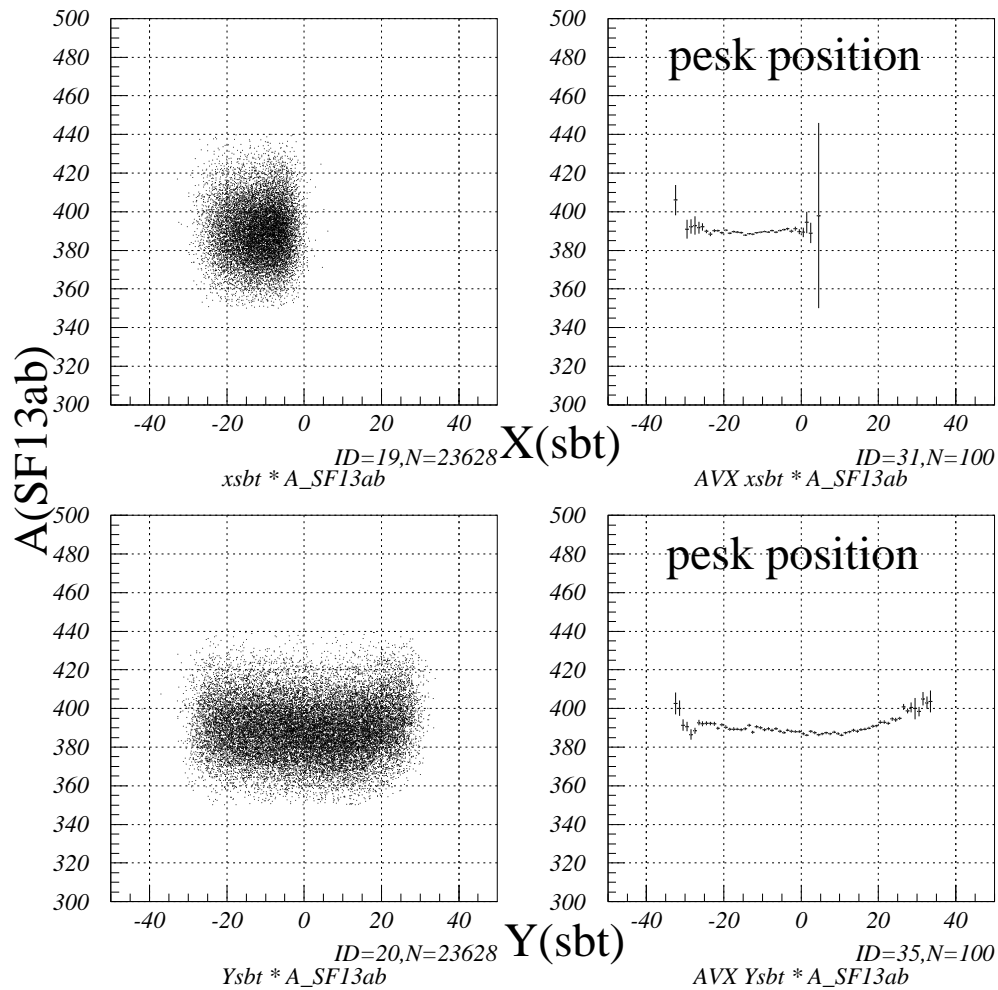


- Z=9
  - $\sigma_T(a-b) \sim 62$  psec w slew correction
  - $\sigma_T(a-b) \sim 83$  psec w/o slew correction

- Beam profile @SBT for Z=9

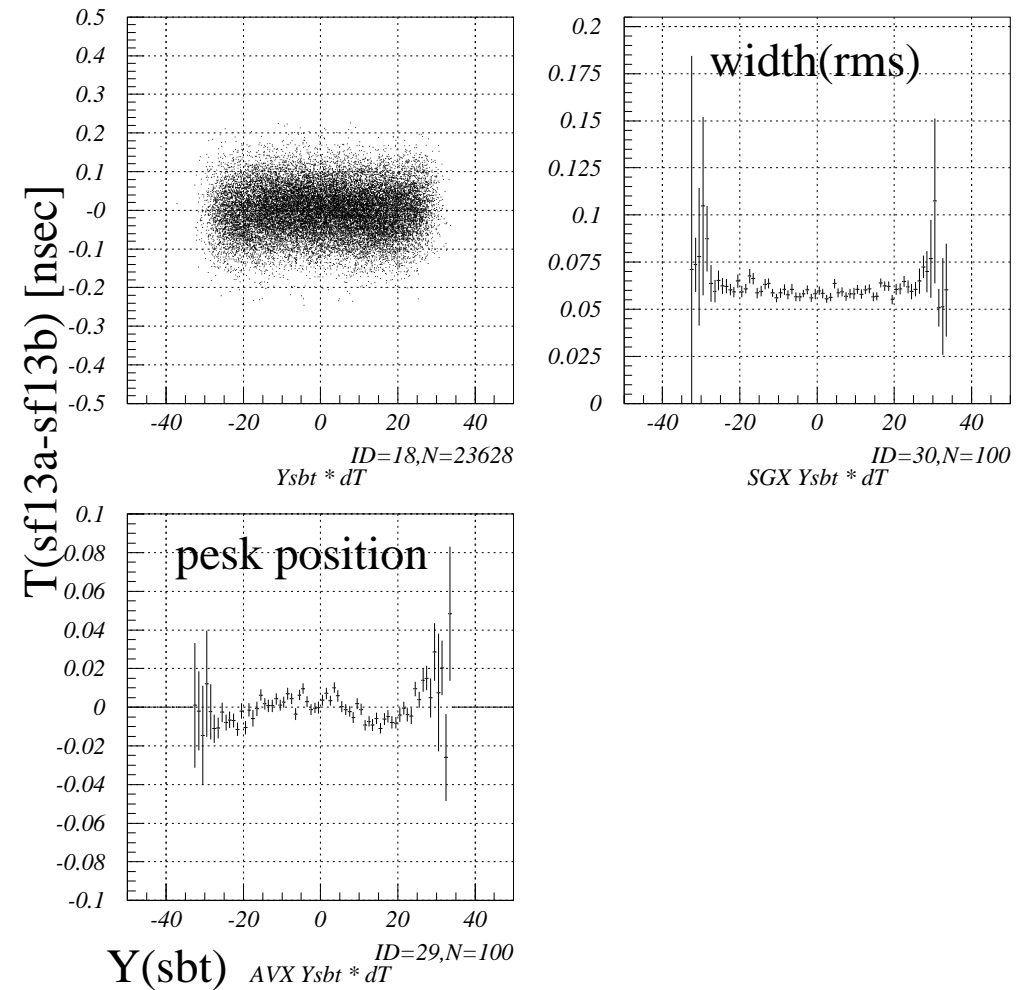


- Pulse height : XY dep. for Z=9



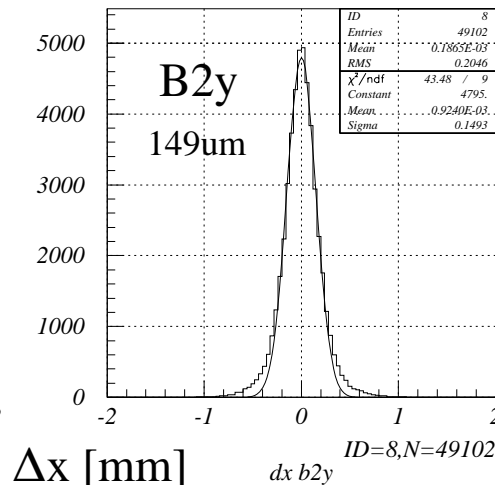
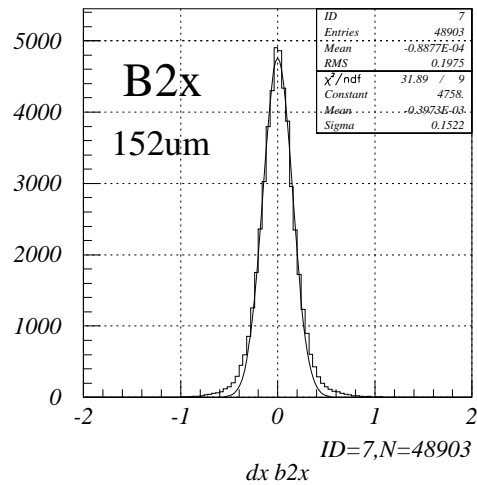
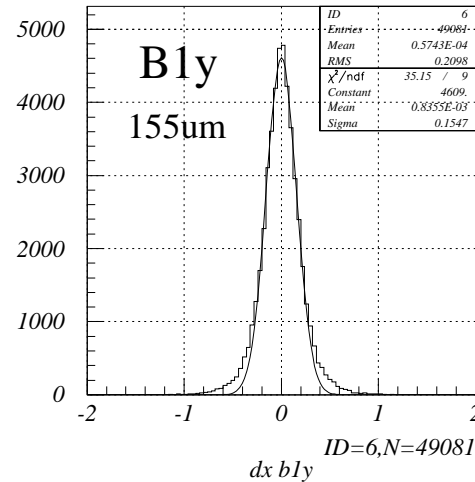
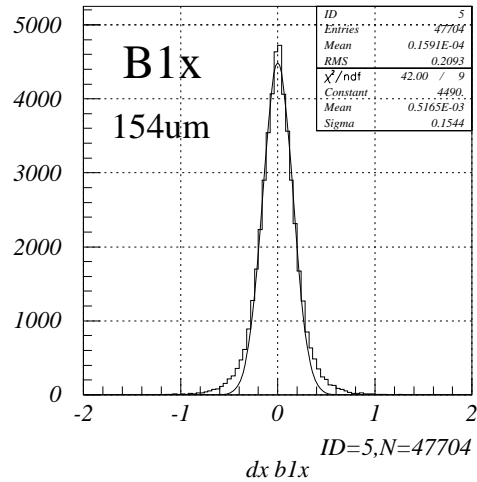
- Y dep. > X dep.

- Time difference : XY dep.



- X dep. も同様に殆ど無し

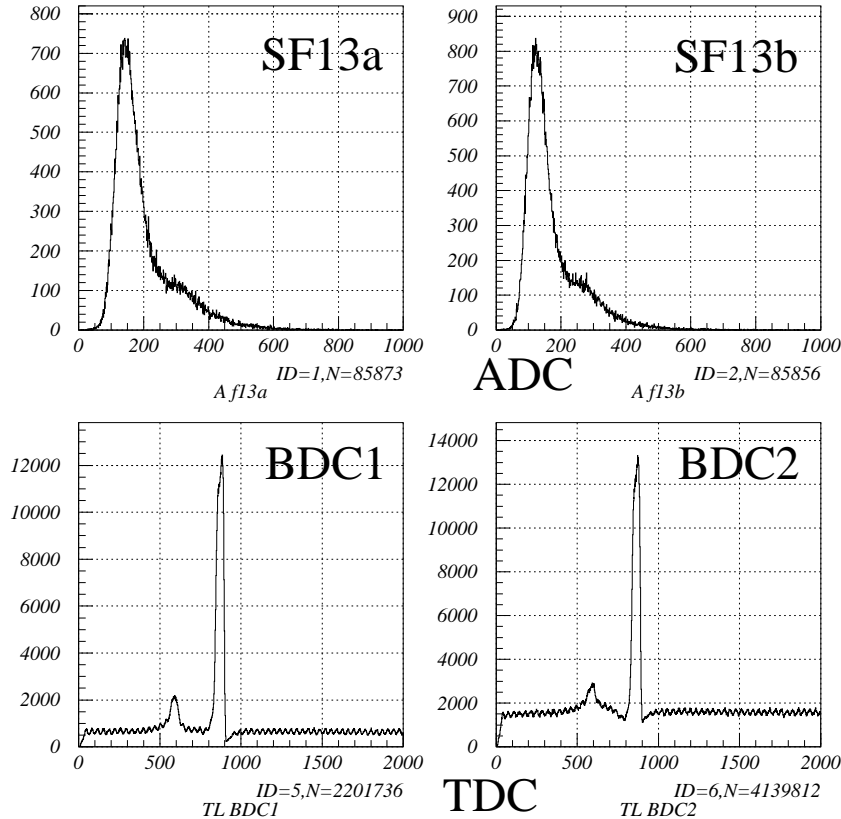
- track residue at low rate



$\Delta x$  [mm]

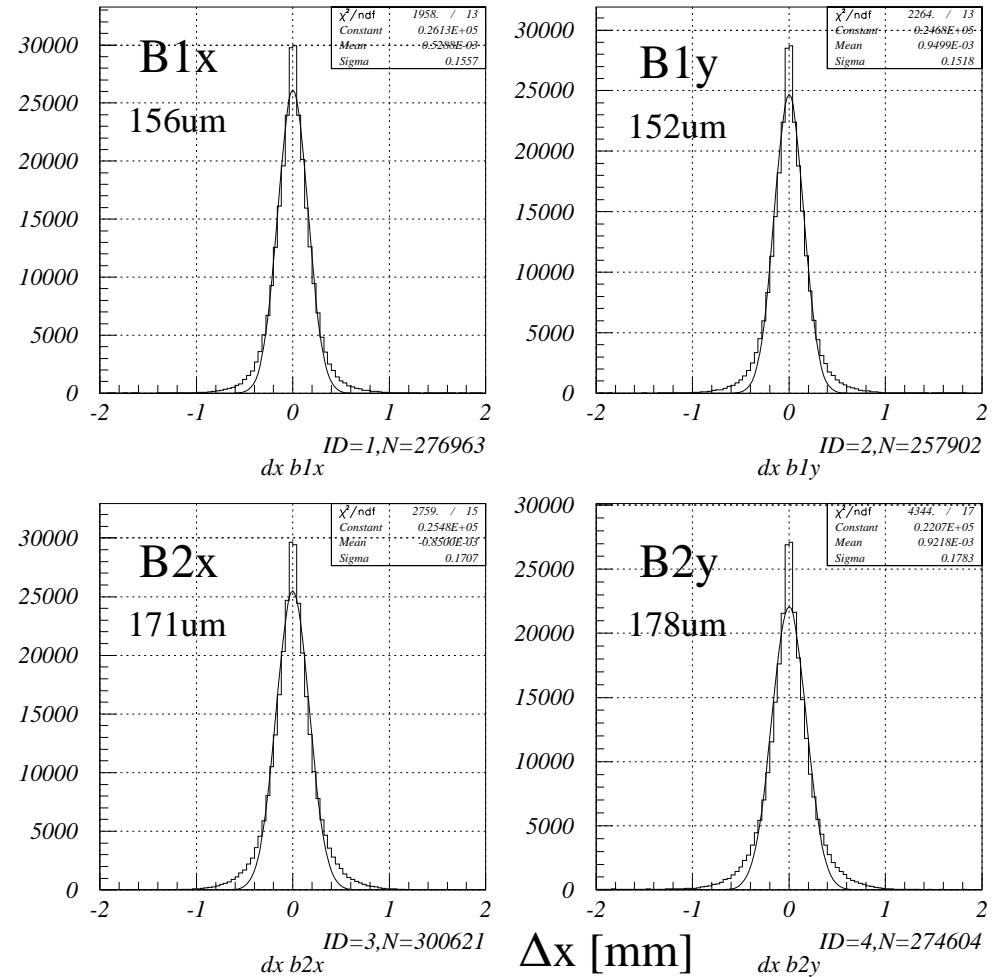
- conditions
  - Pressure : 100 torr
  - HV : 1.15/1.20 kV
- Position resolution /plane
  - $\sigma_{\text{residue}} \sim 155 \mu\text{m}$
  - $\sigma_{\text{plane}} \sim 220 \mu\text{m}$
- Tracking efficiency
  - $\sim 98\%$  for b1x,b1y,b2x,b2y

• Pile-up / accidental



• higher accidental for BDC2 (?)

• Position resolution



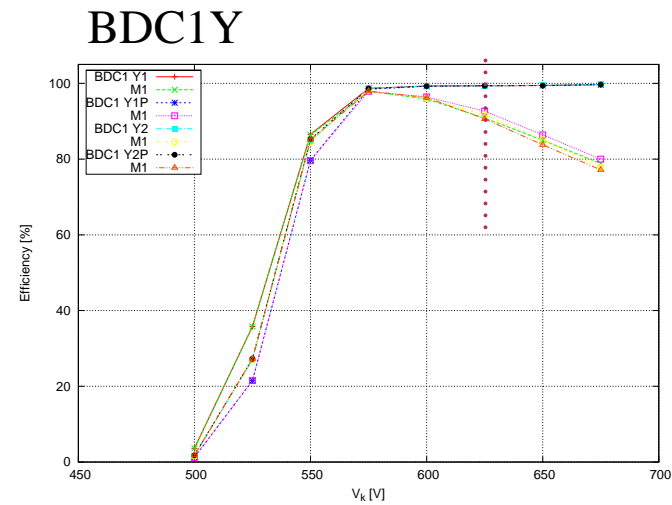
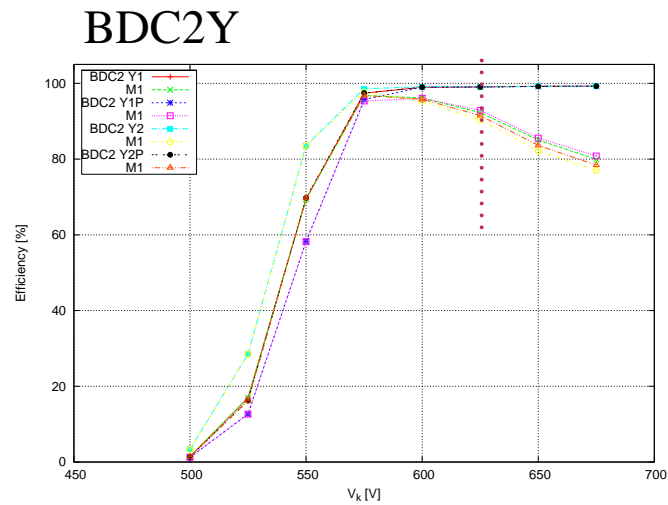
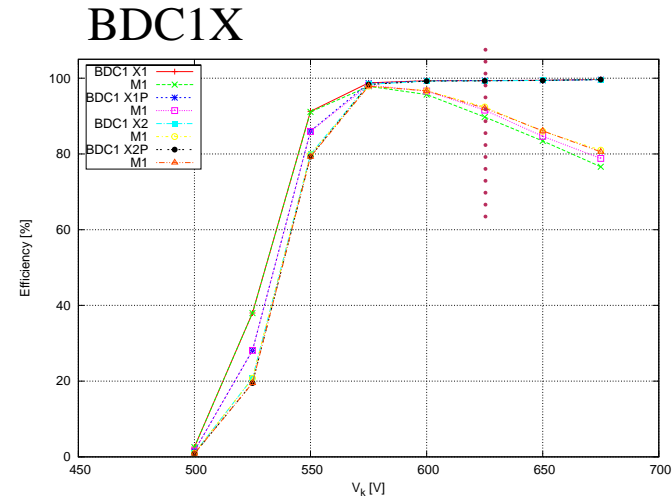
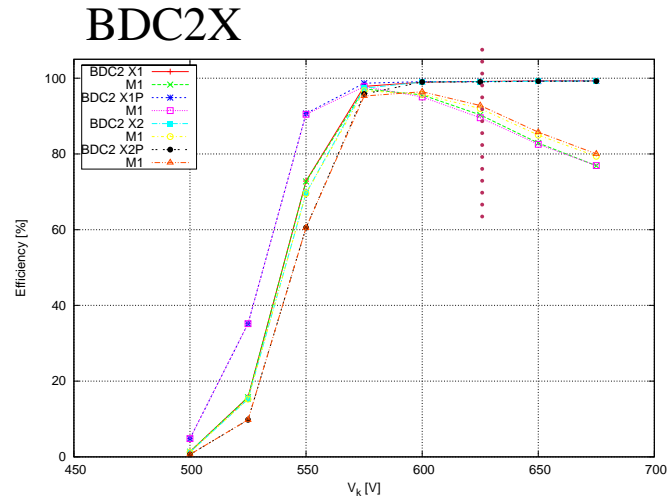
• Position resolution /plane

- ~20% worse
- $\sigma_{\text{residue}} \sim 180 \mu\text{m}$
- $\sigma_{\text{plane}} \sim 260 \mu\text{m}$

• Tracking efficiency

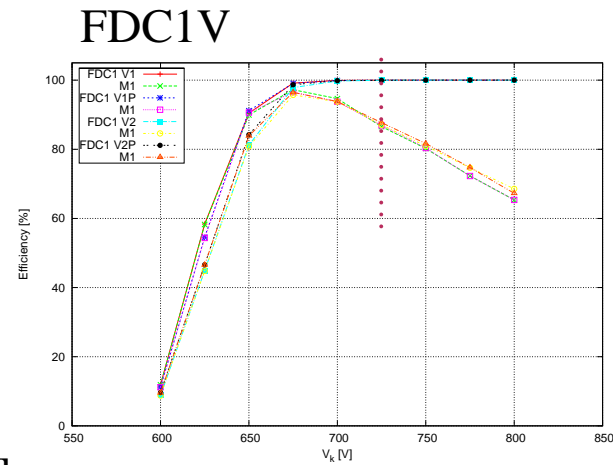
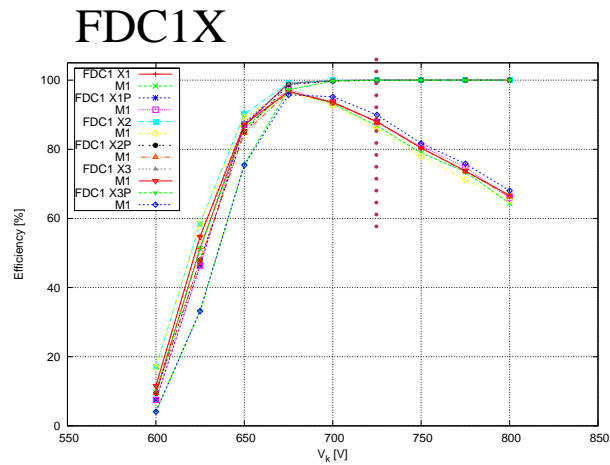
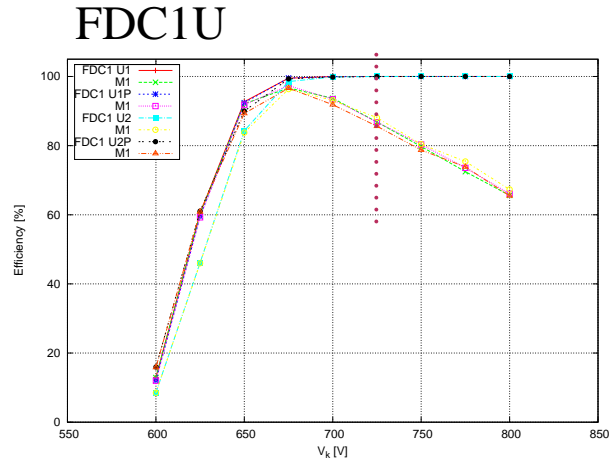
- 85%(b1x), 80%(b1y)
- 91%(b2x), 86%(b2y)

- BDC for Z=9 : HV= 625/675 V



HV [V]

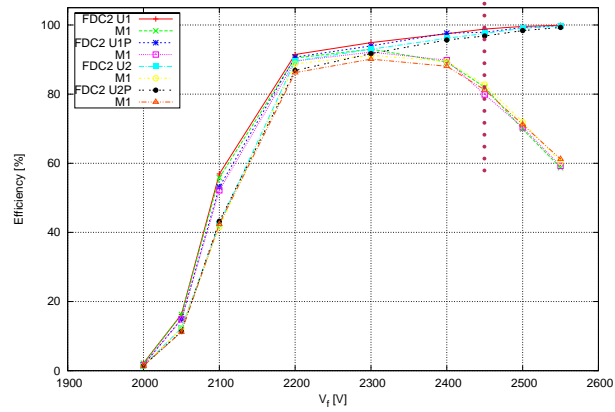
- FDC1 for Z=8 : HV= 725 / 775 V



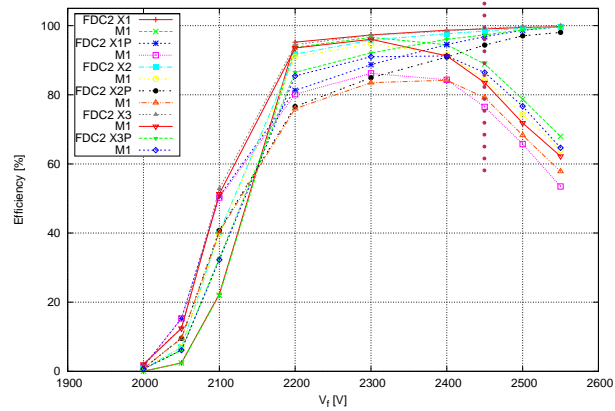
HV [V]

- FDC2 for Z=8 : HV= 2450 V

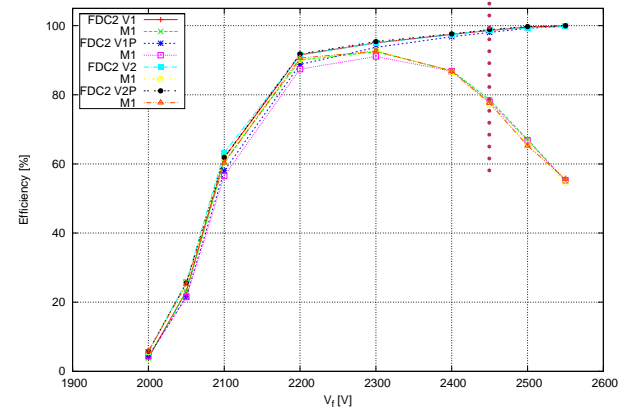
### FDC2U



### FDC2X



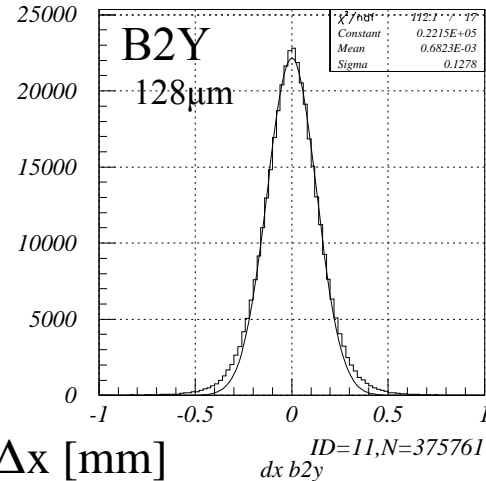
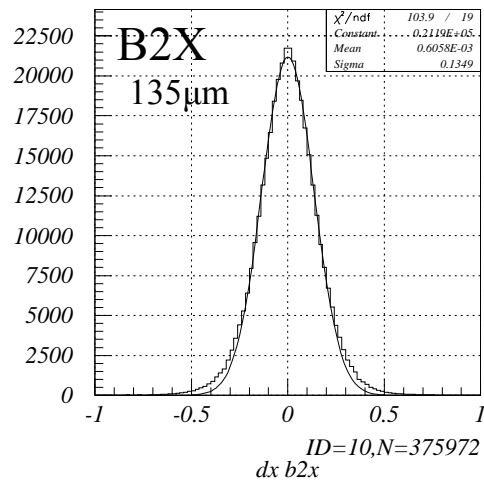
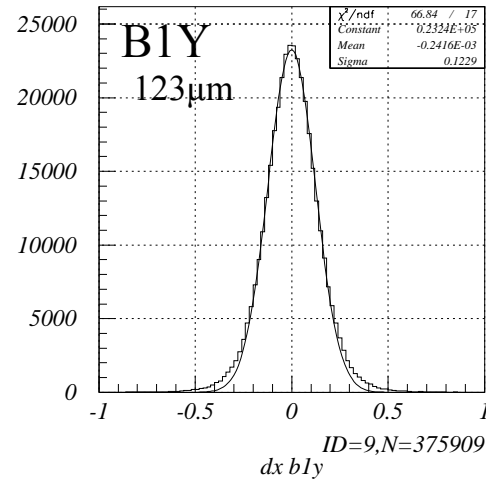
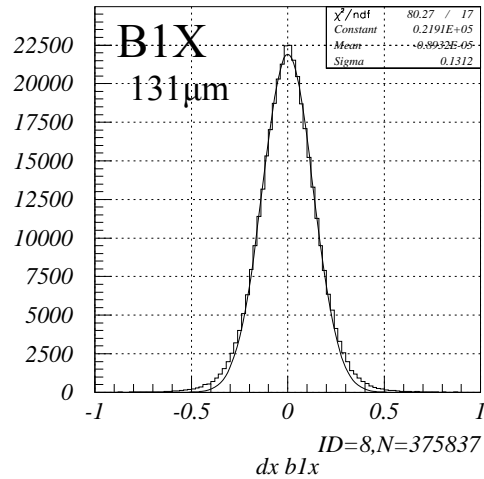
### FDC2V



HV [V]



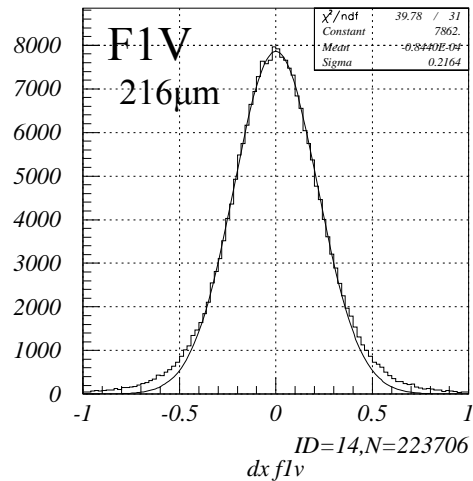
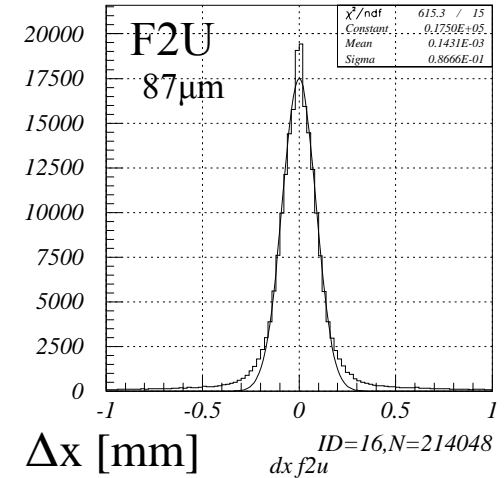
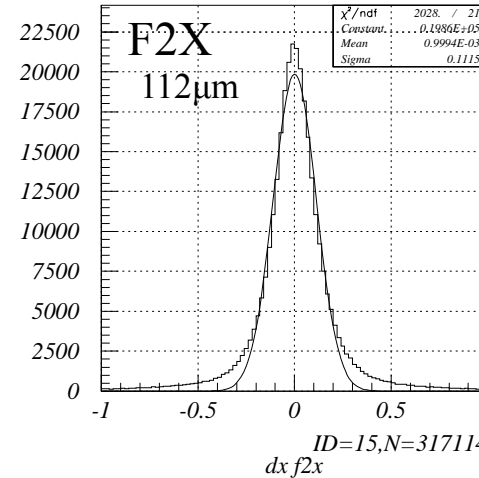
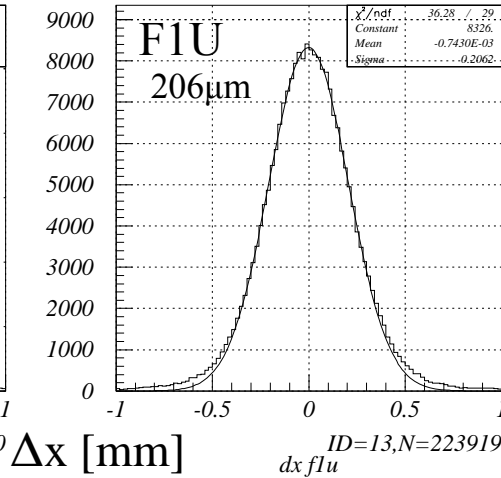
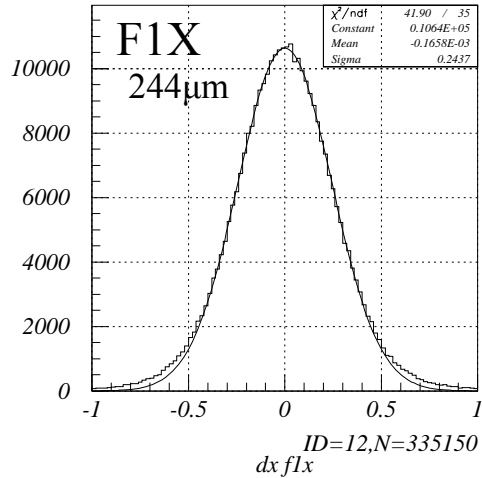
- BDC1,2 for Z=9 ( $^{20}\text{F}$ ) beam



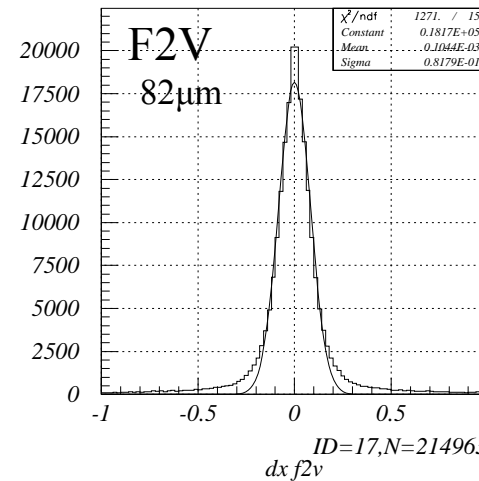
$\Delta x$  [mm]

- data: run0021.ridf
- $\sigma_{\text{residue}} \sim 135 \mu\text{m} \rightarrow \sigma_{\text{plane}} \sim 190 \mu\text{m}$
- $\sigma_Y < \sigma_X$  (?)

• FDC1 & FDC2 for Z=8 ( $^{19}\text{O}$ ) beam



- $\sigma_{\text{residue}(x)} \sim 244 \mu\text{m}$   
 $\rightarrow \sigma_{\text{plane}(x)} \sim 299 \mu\text{m}$
- $\sigma_{\text{residue}(u)} \sim 206 \mu\text{m}$   
 $\rightarrow \sigma_{\text{plane}(x)} \sim 292 \mu\text{m}$
- $\sigma_{\text{residue}(v)} \sim 216 \mu\text{m}$   
 $\rightarrow \sigma_{\text{plane}(v)} \sim 306 \mu\text{m}$



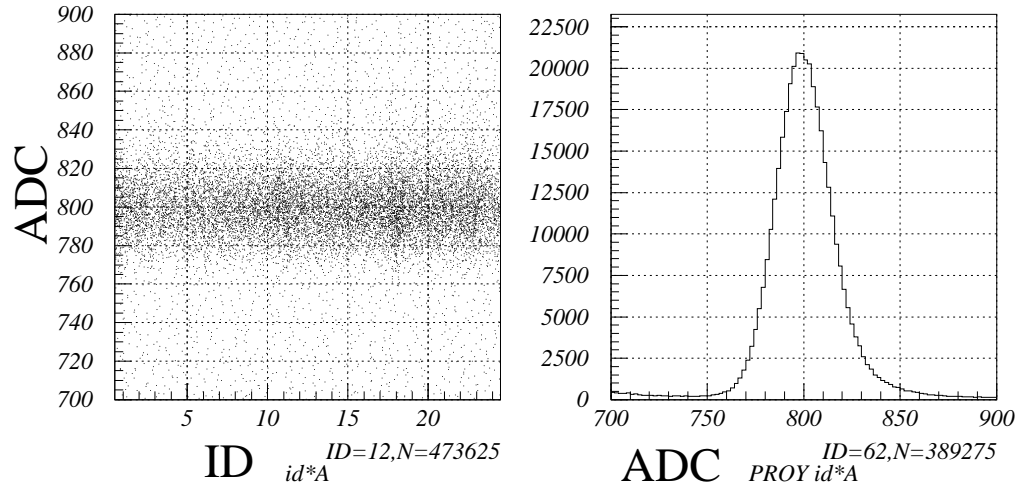
- $\sigma_{\text{residue}(x)} \sim 112 \mu\text{m}$   
 $\rightarrow \sigma_{\text{plane}(x)} \sim 137 \mu\text{m}$
- $\sigma_{\text{residue}(u)} \sim 87 \mu\text{m}$   
 $\rightarrow \sigma_{\text{plane}(x)} \sim 123 \mu\text{m}$
- $\sigma_{\text{residue}(v)} \sim 82 \mu\text{m}$   
 $\rightarrow \sigma_{\text{plane}(v)} \sim 116 \mu\text{m}$

- $\sigma_{\text{plane}}(\text{FDC1: } x, u, v) \sim 300 \mu\text{m}$ 
  - rateの問題がないなら、  
 少しHVを上げる方が良いかも？

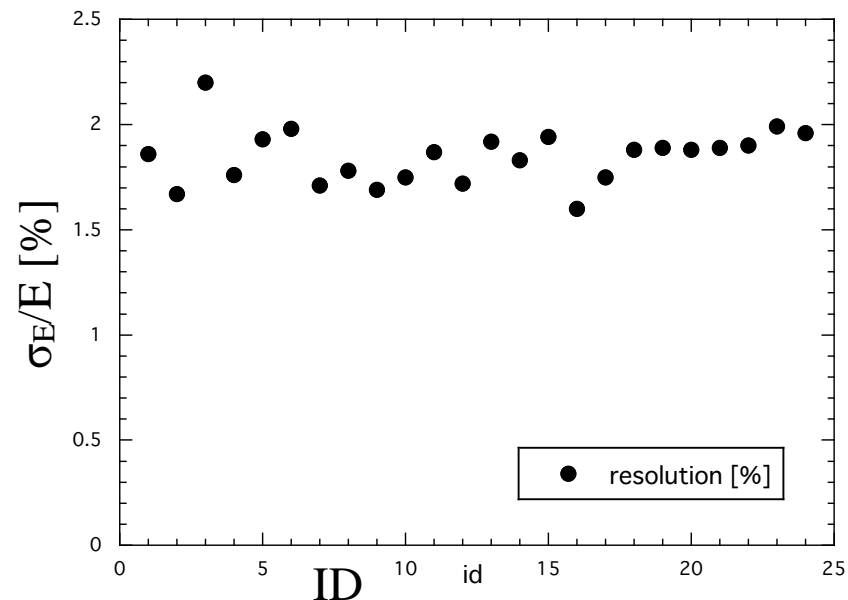
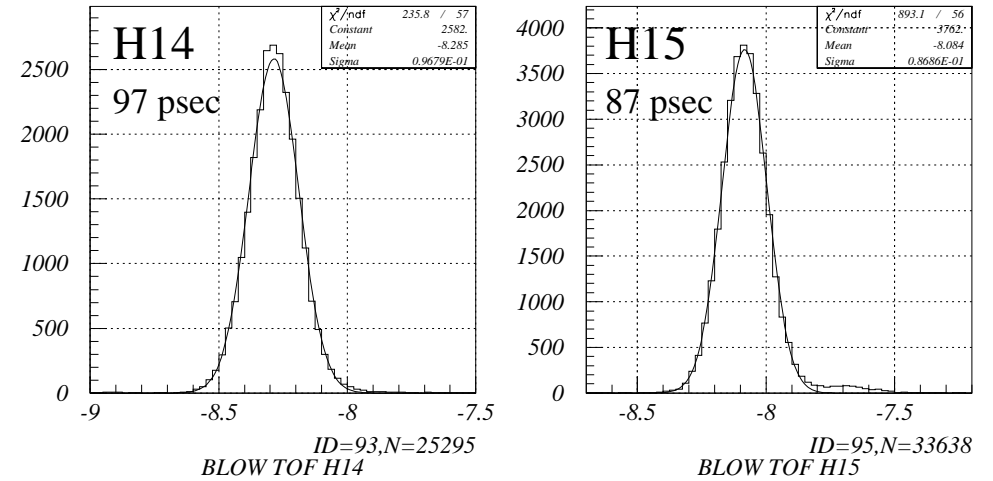
- $\sigma_{\text{plane}}(\text{FDC2: } x, u, v) \sim 130 \mu\text{m}$   
 (still tail exists, calibration tentative)

- Detector gas status @21-Nov-2015
  - FDC2
    - He + 60% CH<sub>4</sub> + 0.5% iso-propanol
    - pressure(2 bottles) : 8.4 + 8.4 Mpa left , OK
  - BDC1, BDC2, FDC1
    - i-C<sub>4</sub>H<sub>10</sub> @50 torr
    - ~8.2 kg left for BDC, ~6 kg left for FDC1 : OK
- BDC1, BDC2の圧力変更 for MS
  - 12/2(水)は理研に来られないので、proton run用に以下の変更をお願いします。
    - BDC1, BDC2のMKS246 set pointダイヤルを50から100に変える。
    - 安定するまで少し時間がかかる。
  - 100MeV protonですが、250MeVと同じHVでbeam tuningには問題無いはず。
- FDC1の位置分解能がZ=8に対して300 $\mu$ m(rms)とあまり良くないので、HVをあと25V~50V上げて使う方がいいと思います (rateの問題が無ければ)

- energy-loss resolution for z=8 (sweep down)



- TOF : T(hod)-T(SF13ab) (run0021)



- $\sigma_{\text{TOF}} < 100$  psec for Z=8 w/o slew correction
- ~10~15 psec better w slew correction

- $\sigma_E/E \sim 1.9$  % for z=8