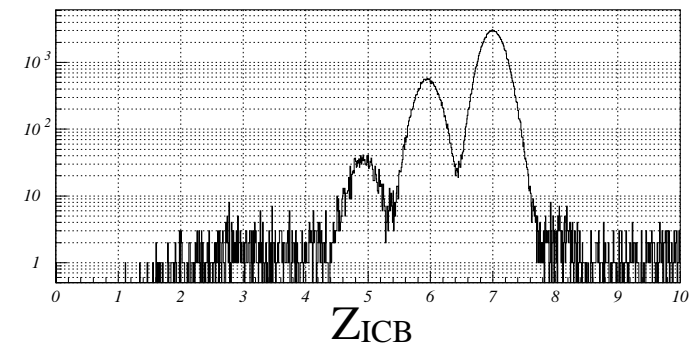
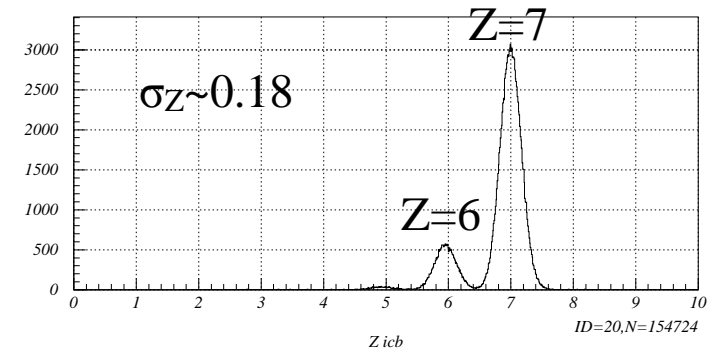


Memo (S36, S27)

- BDC1,2, FDC1, FDC2, ICB, (SBT)
 - adjustment for $Z=6$ (^{22}C) from data on 18-Nov (Fri) morning
 - Efficiency, multiplicity
 - Position resolution
 - adjustment for $Z=10$ (^{22}Ne) from data on 17-Nov (Thur) morning
 - Efficiency

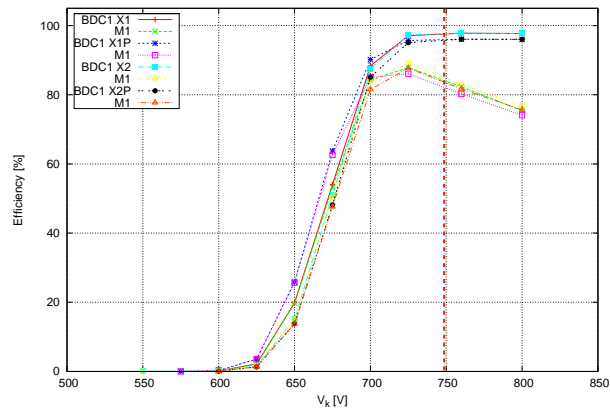
- SBT(SF13a,b)
 - 0.5 mm^t plastic x2
 - pulse height resol..
 - no separation between Z=6 & Z=7
 - time resol. w/o slew cor.
 - σ (SF13a-SF13b)~ 135 psec, no Z dependence
 - NOT good in general
 - → time resolution of one detector : $\sigma_T \sim 96$ psec
 - → resolution of TOF start time : $\sigma(T_0) \sim 68$ psec
- ICB
 - corrected by beam velocity from TOF(SF7-SF13)
 - converted to charge Z info.
 - charge resolution
 - $\sigma(Z=6) = 0.18$
 - $\sigma(Z=7) = 0.17$
- HODF24
 - ADC calibrated by sweep runs



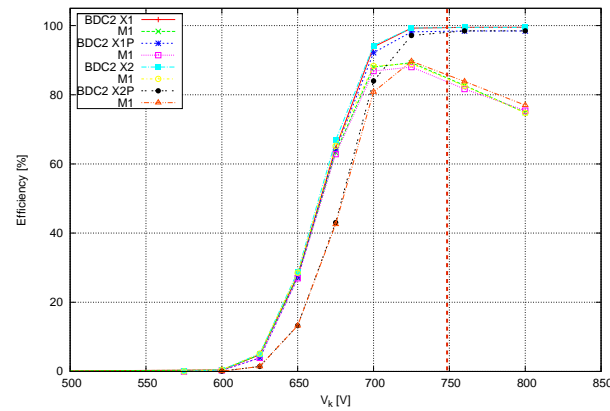
• BDC1, 2

- Gas : i-C₄H₁₀ P= 50 torr
- V_{th}= 0.4 V
- HV (V_p=V_k) = 750 V for Z=6 (^{20,22}C)

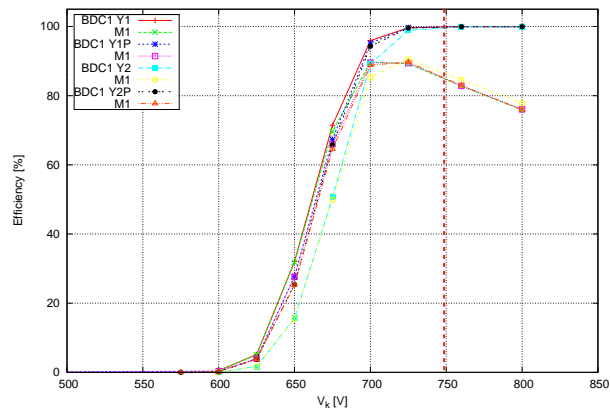
BDC1 X



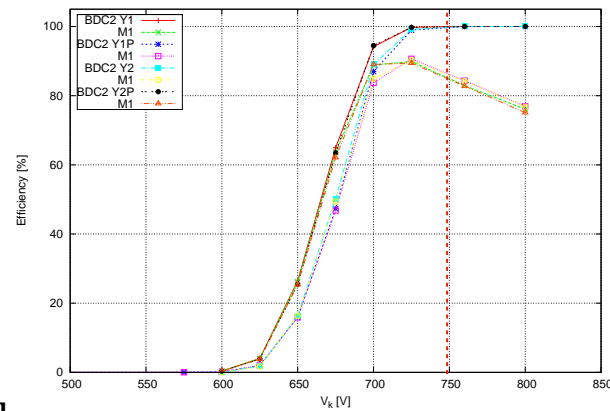
BDC2 X



BDC1 Y



BDC2 Y

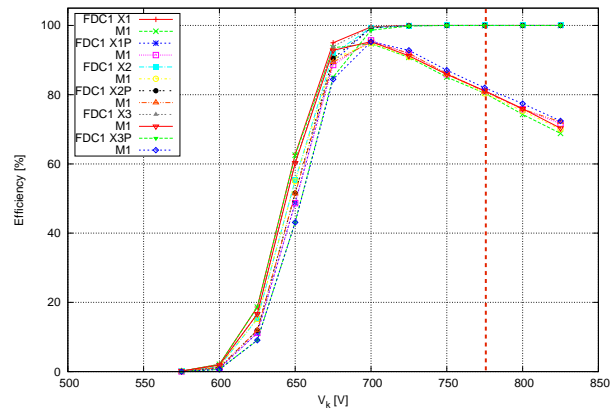


HV [V]

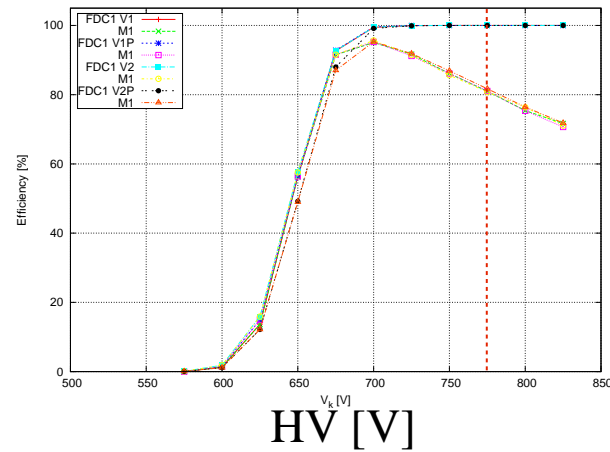
• FDC1

- Gas : i-C₄H₁₀ P= 50 torr
- V_{th}= 0.4 V
- HV (V_p=V_k) = 775 V for Z=6 (^{20,22}C)

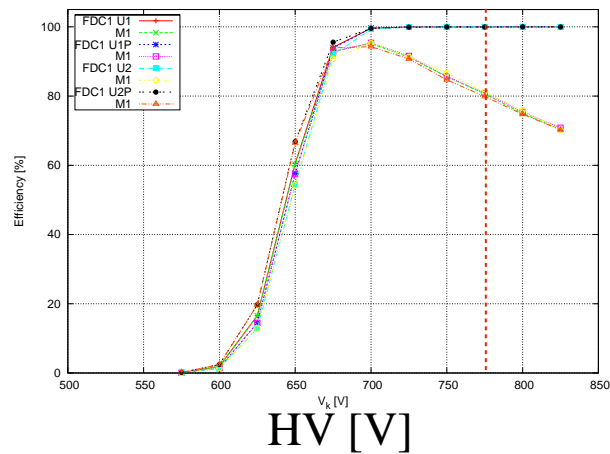
FDC1 X



FDC1 V



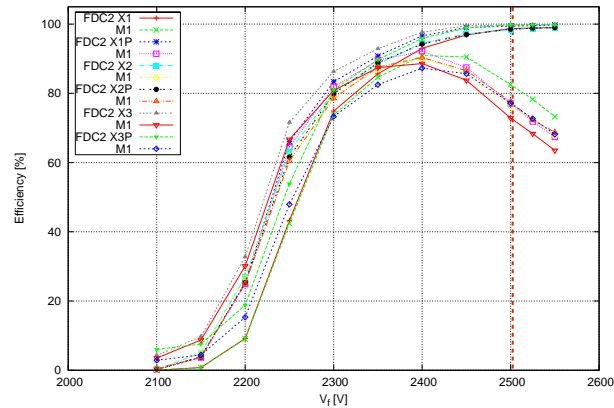
FDC1 U



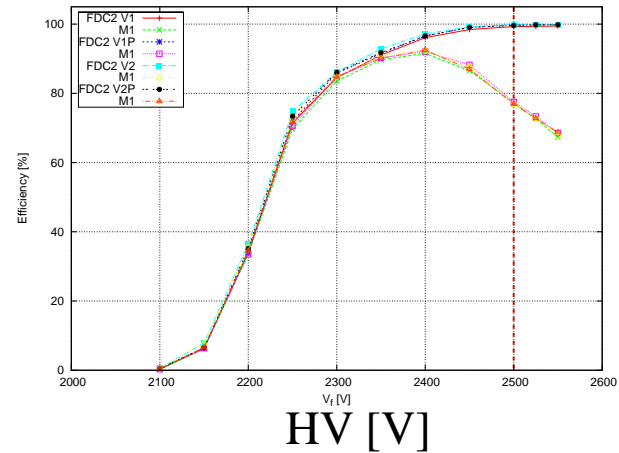
- **FDC2**

- Gas : He + CH₄ (60%) + 2-propanol
- V_{th} = 0.8 V
- HV = 2500 V for Z = 6 (^{20,22}C)

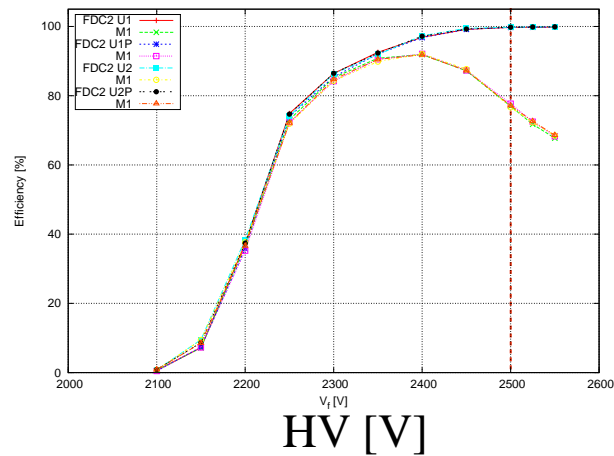
FDC2 X



FDC2 V



FDC2 U



- Noisy wires
 - (w1), w8 in FDC2-X3
 - w1, (w2) in FDC2-X3P

- HV shift between Z=6 & Z=7
 - BDC FDC1 FDC2
 - ΔHV $\sim 20\text{ V}$ $\sim 20\text{ V}$ $\sim 50\text{ V}$
- Wire multiplicity difference at the same HV between Z=6 & Z=7
 - $\Delta\epsilon(\text{m}2) \sim 3\%$

	Z=6				Z=7			
	e(tot)	e(m1)	e(m2)	e(m3)	e(tot)	e(m1)	e(m2)	e(m3)
B1X1	97.2	84.0	11.5	1.6	99.8	81.7	15.2	2.5
B1X1P	95.4	81.8	11.5	1.7	99.7	80.9	15.5	2.7
B1X2	97.4	84.8	10.9	1.5	99.8	83.3	14.1	2.2
B1X2P	95.3	83.2	10.5	1.4	99.7	83.4	13.9	2.1
B1Y1	99.9	85.6	12.3	1.8	100.0	80.7	15.9	2.8
B1Y1P	99.9	84.9	12.8	1.9	100.0	81.2	15.6	2.7
B1Y2	99.8	86.6	11.6	1.4	100.0	83.0	14.5	2.2
B1Y2P	99.9	85.7	12.1	1.8	100.0	81.1	15.7	2.7
average	98.1	84.6	11.7	1.6	99.9	81.9	15.0	2.5

	Z=6				Z=7			
	e(tot)	e(m1)	e(m2)	e(m3)	e(tot)	e(m1)	e(m2)	e(m3)
F1X1	100.0	79.6	16.3	3.3	100.0	74.6	19.6	4.5
F1X1P	100.0	81.0	15.3	2.9	100.0	76.2	18.8	4.0
F1U1	100.0	79.9	16.1	3.2	100.0	75.7	19.1	4.1
F1U1P	100.0	80.6	15.7	3.1	100.0	75.7	19.3	4.1
F1V1	100.0	80.9	15.3	3.1	100.0	76.4	18.6	4.1
F1V1P	100.0	81.1	15.3	3.0	100.0	76.2	18.7	4.2
F1X2	100.0	80.6	15.5	3.1	100.0	75.5	19.2	4.2
F1X2P	100.0	81.3	15.2	3.0	100.0	76.7	18.5	3.9
F1U2	100.0	80.6	15.4	3.2	100.0	76.5	18.6	3.9
F1U2P	100.0	79.5	16.7	3.1	100.0	75.4	19.3	4.3
F1V2	100.0	80.7	15.7	3.0	100.0	76.6	18.6	3.9
F1V2P	100.0	81.7	14.8	2.8	100.0	77.2	18.1	3.8
F1X3	99.9	80.4	15.9	3.0	100.0	76.3	18.7	4.0
F1X3P	100.0	82.1	14.5	2.7	100.0	77.4	18.0	3.8
average	100.0	80.7	15.6	3.0	100.0	76.2	18.8	4.1

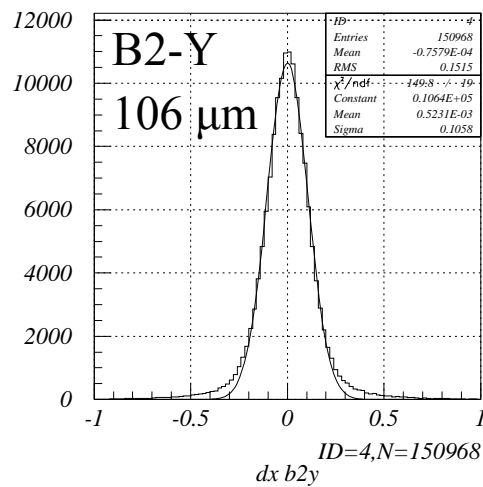
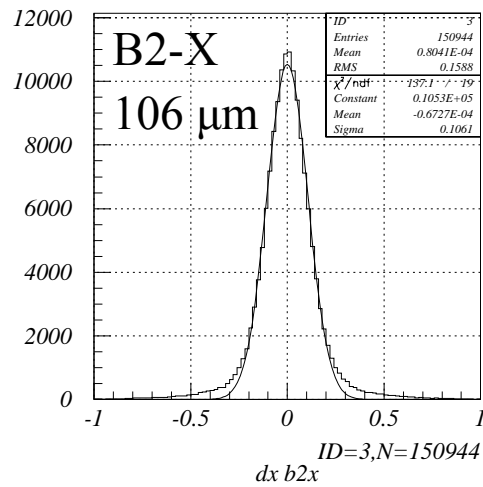
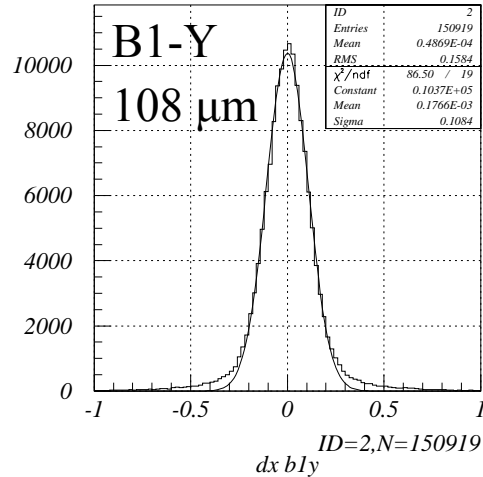
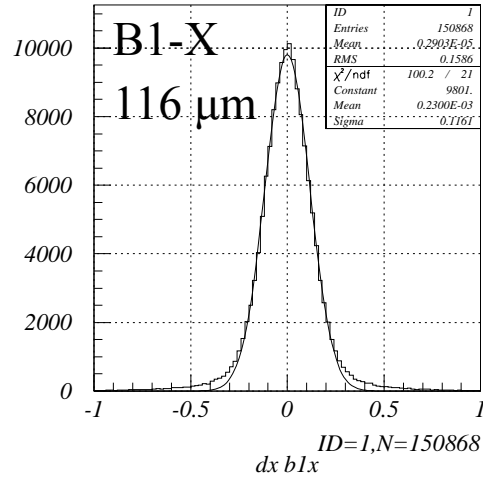
B2X1	99.4	84.1	12.9	2.1	100.0	81.4	15.3	2.7
B2X1P	98.1	83.4	12.5	1.9	99.9	81.2	15.5	2.7
B2X2	99.4	84.9	12.2	1.9	100.0	80.7	15.9	2.8
B2X2P	98.2	85.9	10.8	1.3	99.9	84.0	13.7	1.9
B2Y1	100.0	85.2	12.5	2.0	100.0	81.1	15.6	2.8
B2Y1P	100.0	86.7	11.4	1.7	100.0	83.2	14.2	2.2
B2Y2	100.0	86.3	11.7	1.7	100.0	82.8	14.7	2.3
B2Y2P	100.0	84.8	12.8	2.1	100.0	81.0	15.6	2.8
average	99.4	85.2	12.1	1.8	100.0	81.9	15.1	2.5

F2X1	98.4	82.8	13.9	1.5	99.0	78.5	17.8	2.4
F2X1P	99.5	77.4	18.8	2.9	99.6	72.1	22.6	4.3
F2U1	99.6	77.8	18.4	2.9	99.7	71.7	22.7	4.5
F2U1P	99.7	77.9	18.5	2.8	99.7	72.5	22.0	4.4
F2V1	99.3	78.4	17.6	2.9	99.7	72.8	22.1	4.1
F2V1P	99.7	77.8	18.4	3.0	99.8	73.0	22.0	4.0
F2X2	98.4	77.8	17.7	2.5	98.8	72.0	22.0	4.1
F2X2P	98.5	77.7	17.7	2.7	98.8	72.5	21.7	3.9
F2U2	99.8	77.6	18.8	3.0	99.9	71.9	22.6	4.6
F2U2P	99.8	77.1	19.2	3.1	99.9	72.7	22.2	4.3
F2V2	99.7	77.5	18.8	3.0	99.7	72.6	22.1	4.2
F2V2P	99.7	78.1	18.3	2.9	99.8	73.2	21.8	4.1
F2X3	99.7	73.8	20.9	4.1	99.9	68.2	24.7	5.7
F2X3P	99.7	77.7	16.5	3.5	99.8	73.6	19.7	4.4
average	99.4	77.8	18.1	2.9	99.6	72.7	21.9	4.2

low due to ^{20}C trajectory



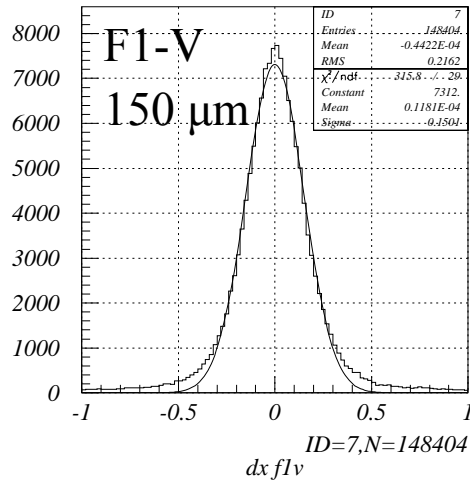
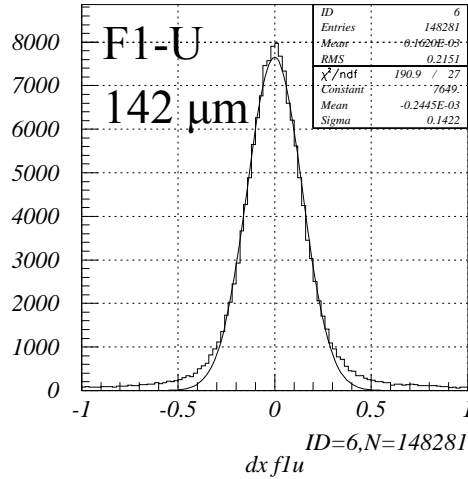
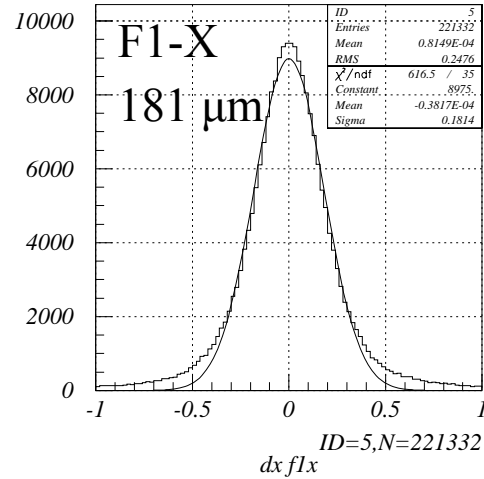
- **BDC1, 2** for ^{22}C
 - HV ($V_k = V_p$) = 750 V



- $\sigma_{\text{residue}} \sim 109 \mu\text{m}$
 - $\rightarrow \sigma_{\text{resolution}} \sim 155 \mu\text{m}$ for $Z=6$

σ_{residue} [mm]

- **FDC1** for ^{22}C
 - HV ($V_k = V_p$) = 775 V

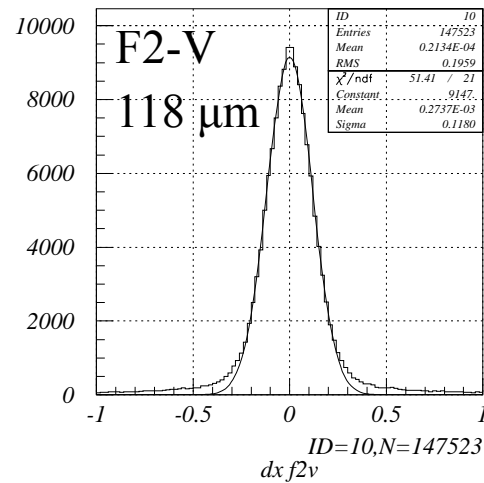
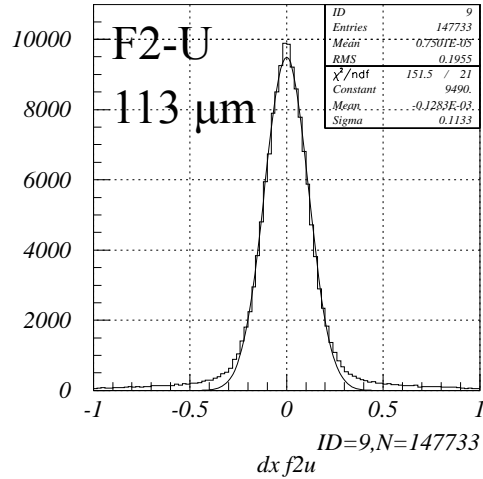
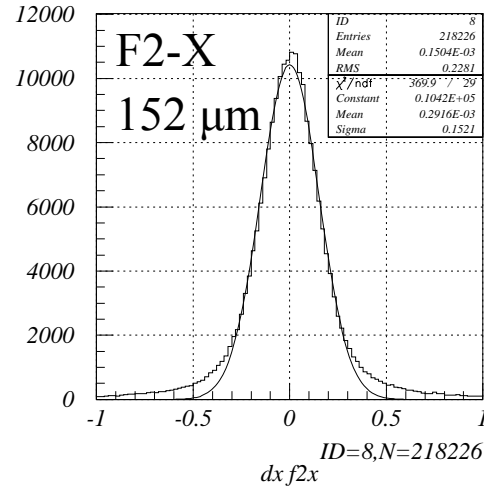


- $\sigma_{\text{resolution}}(\text{FDC1}) \sim 220 \mu\text{m}$ for $Z=6$

plane	σ_{residue} [μm]	$\sigma_{\text{resolution}}$ [μm]
F1-X	181	222
F1-U	142	201
F1-V	150	213

σ_{residue} [mm]

- **FDC2** for ^{22}C
 - HV = 2500 V



- $\sigma_{\text{resolution}}(\text{FDC2}) \sim 190 \mu\text{m}$ for $Z=6$

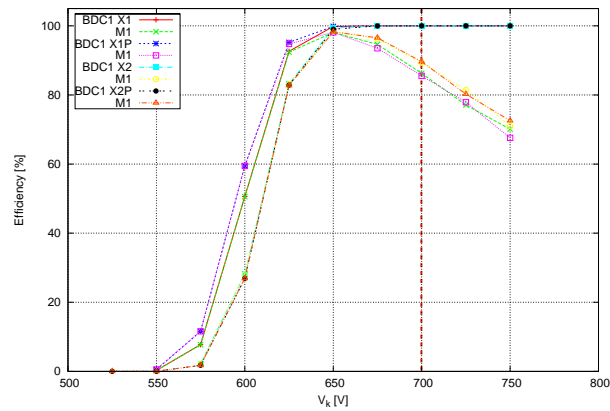
plane	σ_{residue} [μm]	$\sigma_{\text{resolution}}$ [μm]
F2-X	152	187
F2-U	113	160
F2-V	118	167

σ_{residue} [mm]

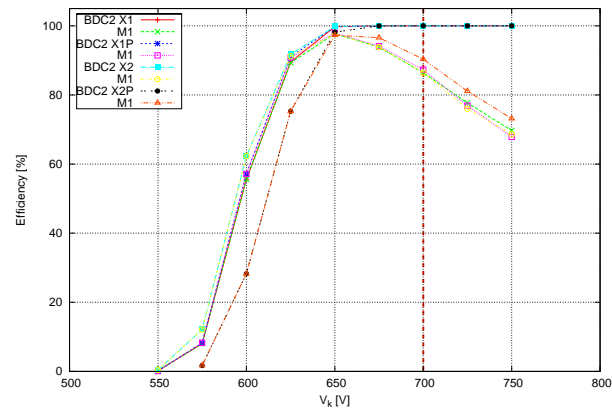
- **BDC1, 2**

- Gas : $i\text{-C}_4\text{H}_{10}$ P= 50 torr
- $V_{\text{th}} = 0.4$ V
- HV ($V_p = V_k$) = 700 V for $Z=10$ (^{22}Ne , 320 MeV/u)

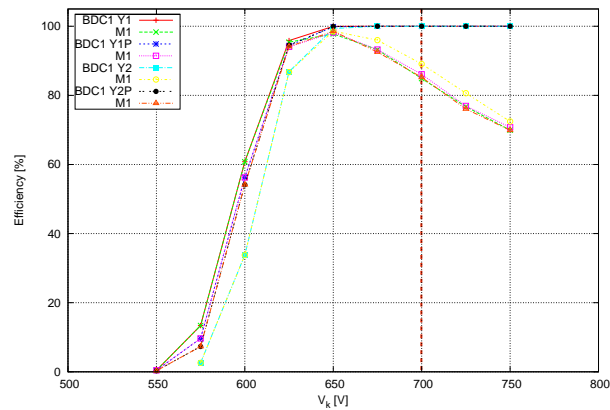
BDC1 X



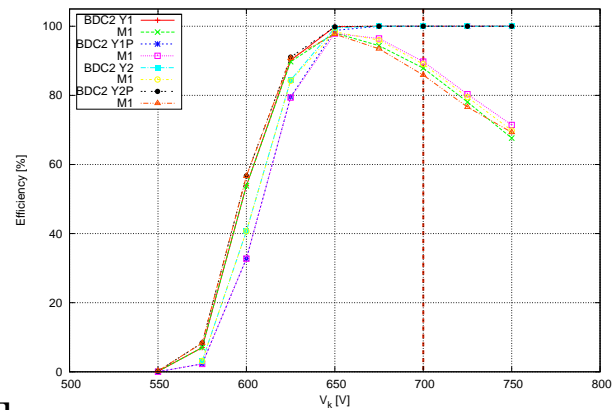
BDC2 X



BDC1 Y



BDC2 Y

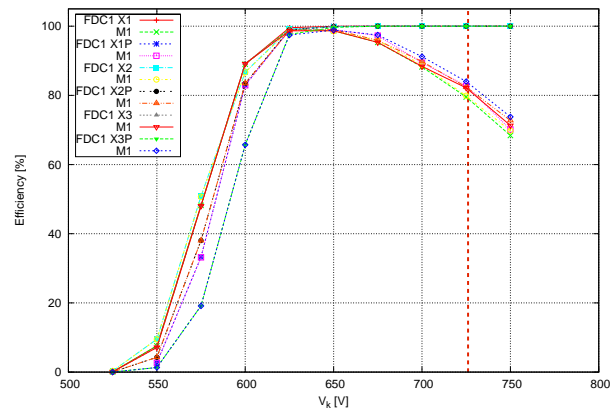


HV [V]

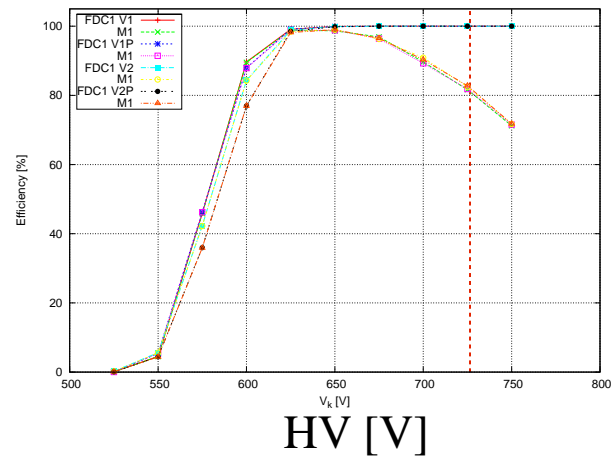
• FDC1

- Gas : i-C₄H₁₀ P= 50 torr
- $V_{\text{th}} = 0.4$ V
- HV ($V_p = V_k$) = 725 V for Z=10 (^{22}Ne)

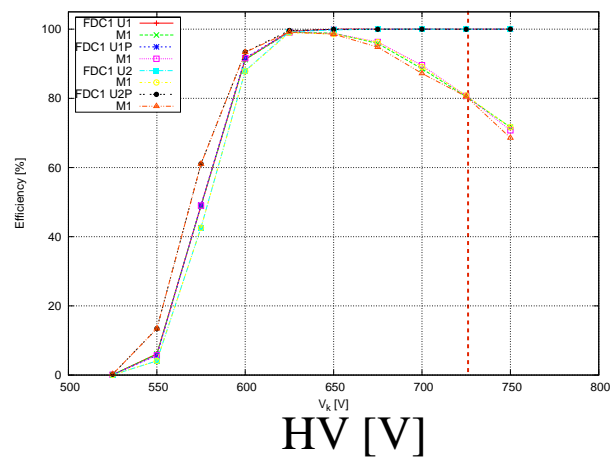
FDC1 X



FDC1 V



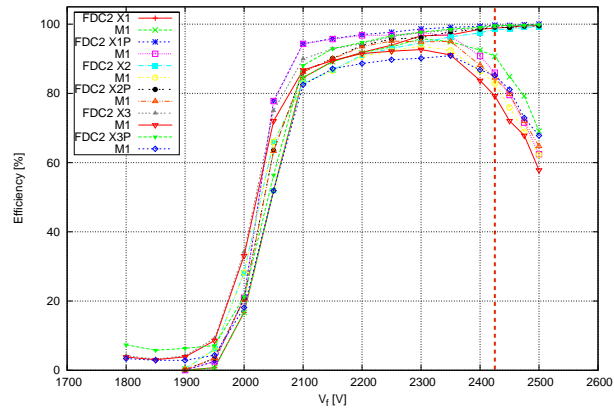
FDC1 U



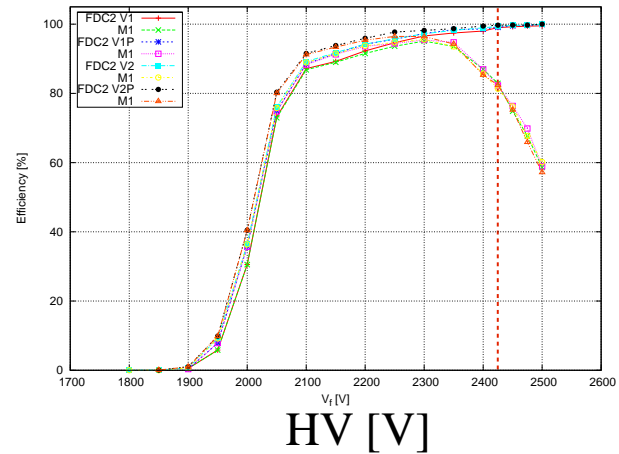
• FDC2

- Gas : He + CH₄ (60%) + 2-propanol
- $V_{th} = 0.8$ V
- HV = 2425 V for Z = 10 (^{22}Ne)

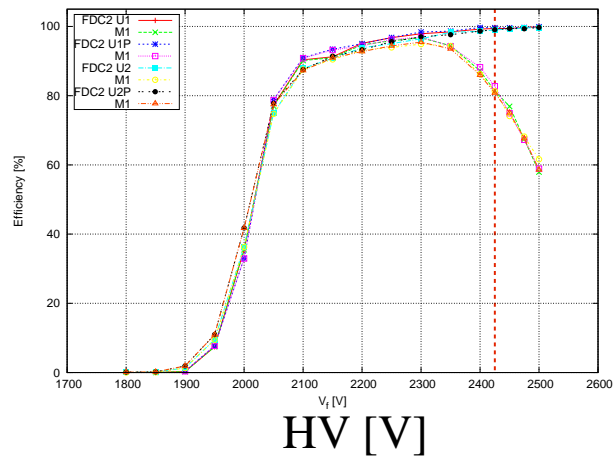
FDC2 X



FDC2 V



FDC2 U



- Noisy wires
 - (w1), w8 in FDC2-X3
 - w1, (w2) in FDC2-X3P

- There are no data files with reasonable beam intensity for ^{22}Ne beam
 - DC HV's were turned off during the high intensity calibration runs for neutrons
- Load current of DC's for ^{22}Ne beams
 - I (FDC2, @2425 V) $\sim 4 \mu\text{A}$ @100 KHz
 - may be too high considering the small beam spot in FDC2
 - actually no problems for BDC1,2 & FDC1
 - I (BDC, FDC1) $\sim 0.3 \mu\text{A}$ @100 KHz
 - I (ICB) $\sim 10 \text{ nA}$ @100KHz
 - consistent with the rough estimate