Status 2025/02/26

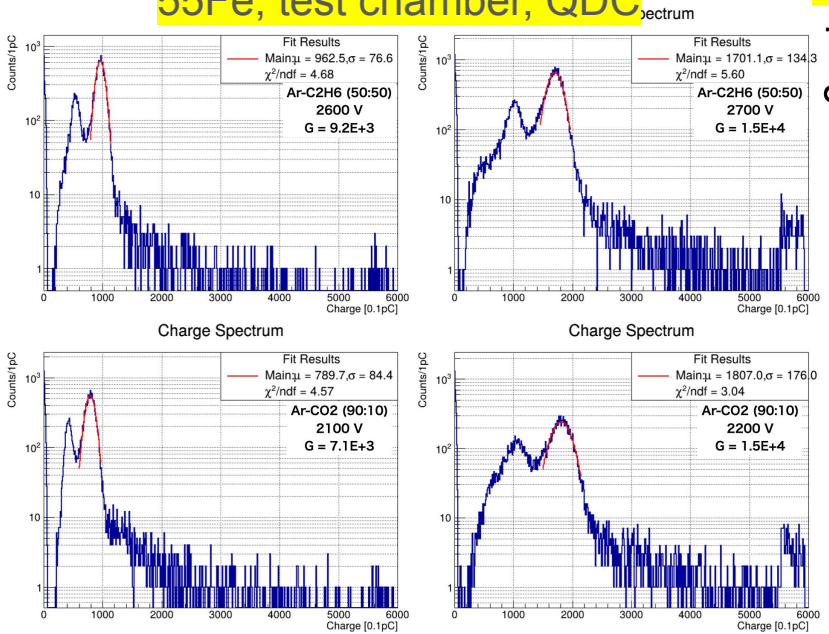
- CDC Gas Study
- E80-CDC
- Other writing works

Yuto Kimura

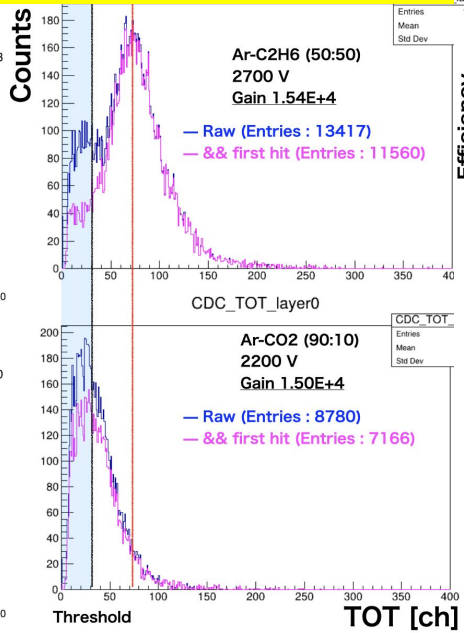
CDC Gas Study

- probrem
  - why efficiency and ToT are different between ArCO2 and ArC2H6 in spite of the same gain

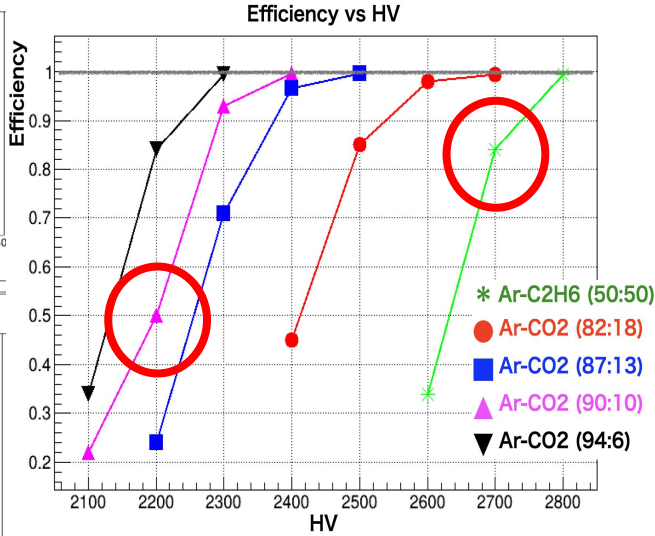
55Fe, test chamber, QDC



Cosmic, E15-CDC, TOT



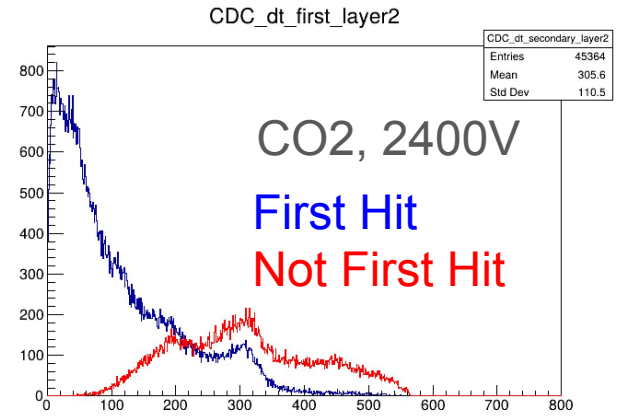
90Sr, test chamber, Efficiency

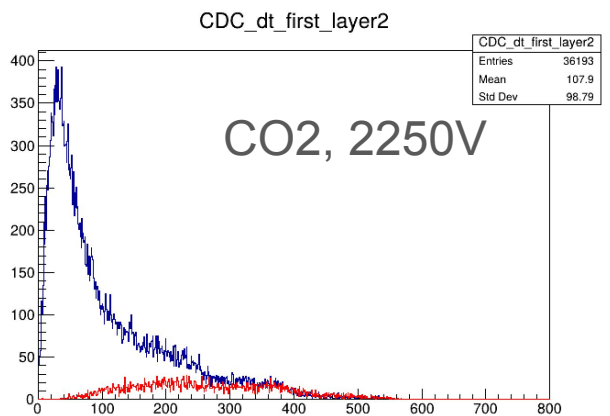


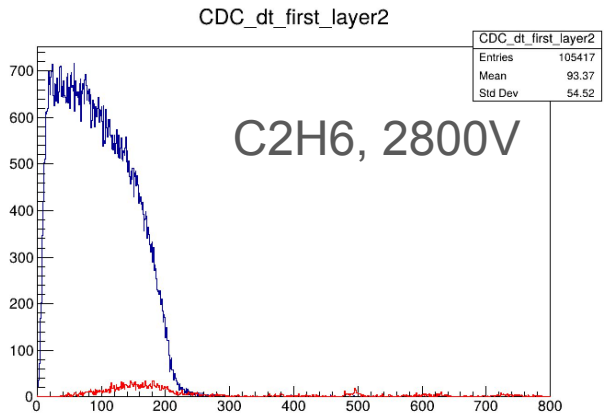
CDC Gas Study

- probrem
  - why efficiency and ToT are different between ArCO2 and ArC2H6 in spite of the same gain
  - TDC distribution ?

Raw Drift Time







CDC Gas Study

- purpose
  - understand why efficiency and ToT are different between ArCO2 and ArC2H6 in spite of the same gain
  - understand ArCO2 TDC distribution ?
  - determine the conclusion Ar-C2H6 (50:50)? Ar-CO2 (90:10 or another ratio?)
- what to do
  - check the raw signal and after preamp with 90Sr and 55Fe again
  - take the TDC data (HUL) again on test chamber (90Sr)
  - (あとで)take the TDC data (HUL) with BPC1 (90Sr)
  - (From April?) 16ch(32ch?) ASAGI study on test chamber @RIKEN

Status and future plan about E80-CDC

- purpose
  - prepare for E80 in 2026 (install is 2026秋?)
- what to do
  - set up the mass flow meters
  - make it possible to apply HV to all field wires
  - Full commissioning with 16ch ASAGI (or used ASD?) test on E80-CDC

- ちゃんと計画立ててやる。1月のPACまでに結果出す。ちゃんと動いてるのを示さなければならない。

Writing, Presentation

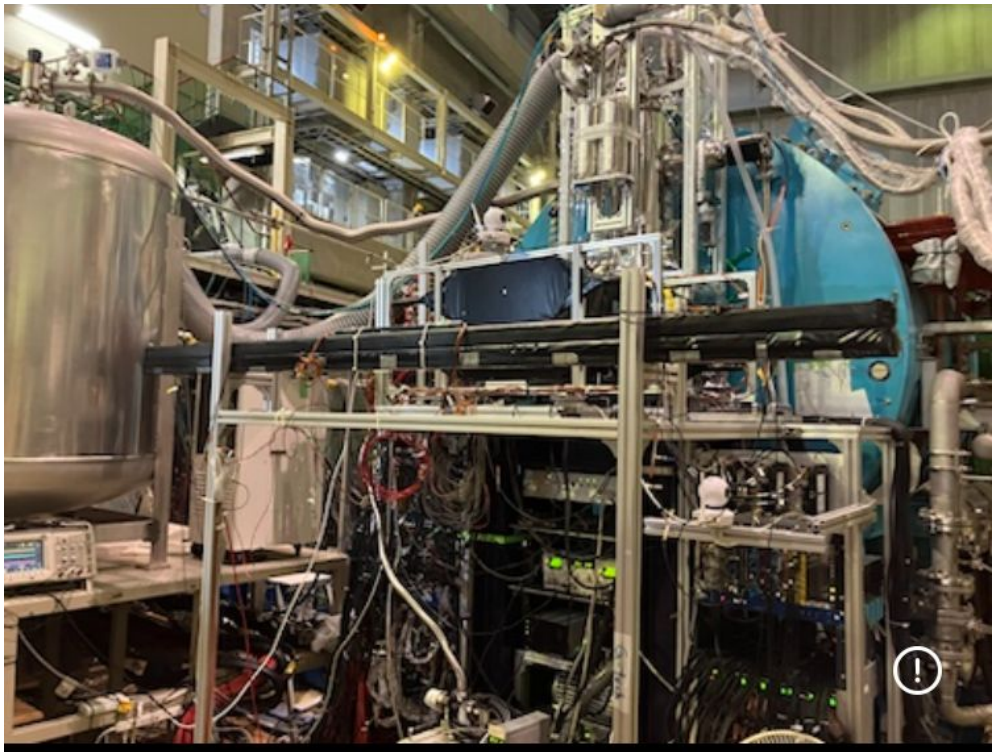
- J-PARC sympo proceedings about CDC gas study, 4 pages (~2/28)...
  - https://ja.overleaf.com/7492586659fnqgphfzgqzv#27b47f
- RARiS sympo poster (3/7)
- JPS meeting oral (3/20 afternoon)
- RARiS anual report , about CNC test in 2022~2023 (~3/24)

Status 2025/03/04

- Dismantling of Detectors @J-PARC K1.8BR
- Writing works
- Additional exp. with Test Chamber
  - 進捗なし

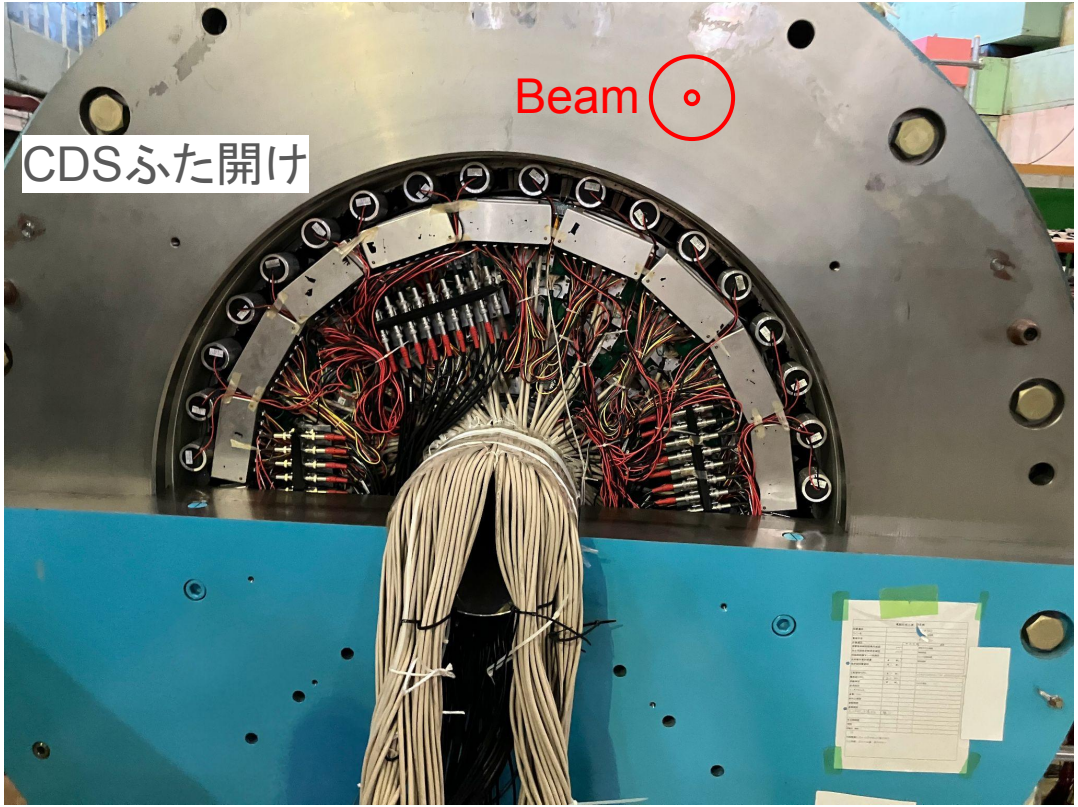
Yuto Kimura

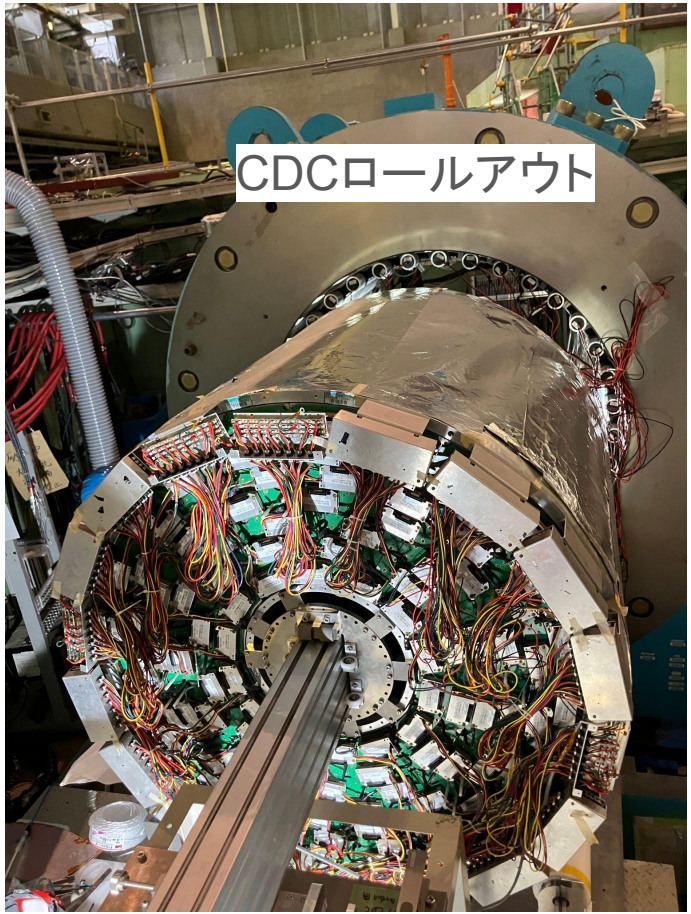
Dismantling @K1.8BR



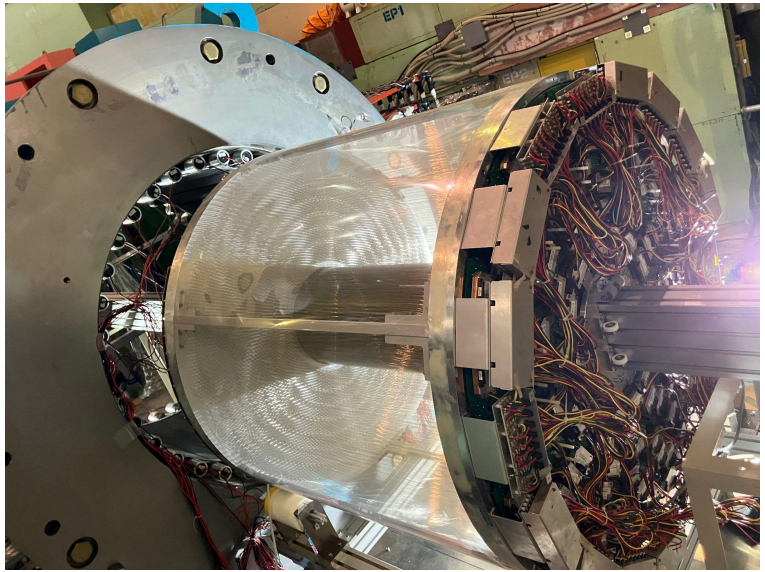
Set-up for Direct lifetime measurement of hyper triton (J-PARC E73 exp.)

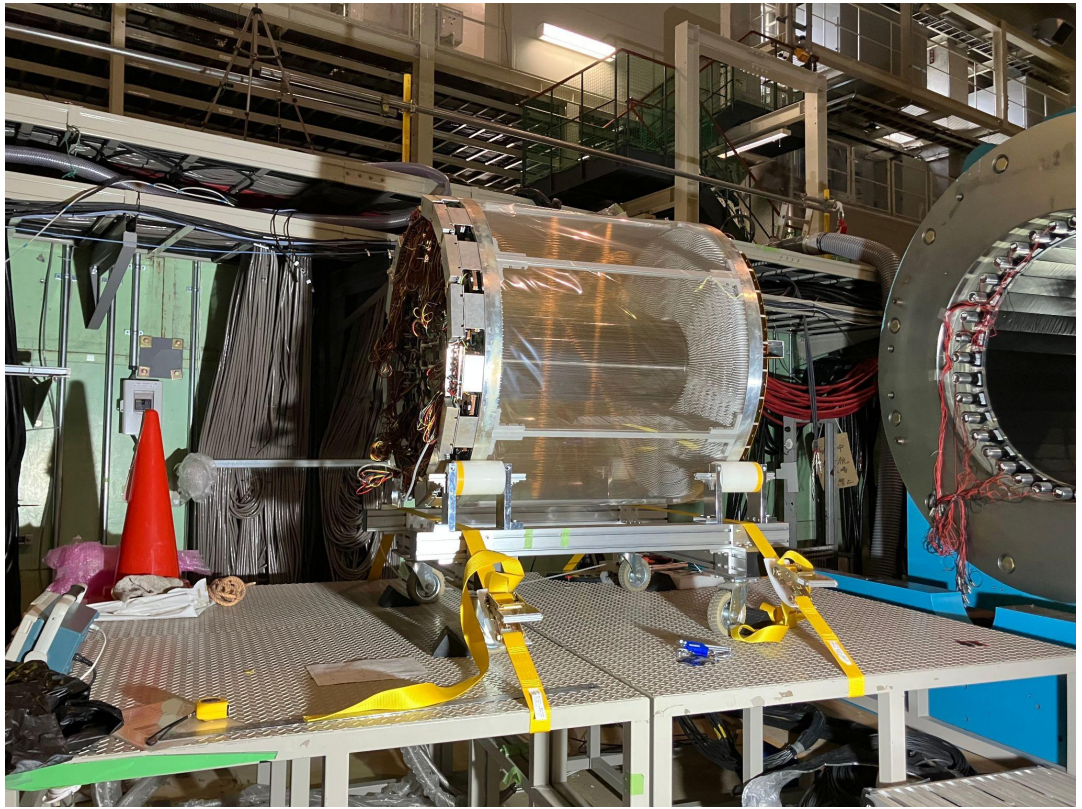
Dismantling @K1.8BR





Dismantling @K1.8BR





Writing, Presentation

- J-PARC sympo proceedings about CDC gas study, 6 pages (~3/31〆切延長)
  - https://ja.overleaf.com/7492586659fnqgphfzgqzv#27b47f
- RARiS sympo poster (3/7) 今夜、Knuclローカルへ回覧したい。
- JPS meeting oral (3/20 afternoon)
- RARiS anual report , about CNC test in (2022~)2023 (~3/24)

Status 2025/03/06

- Writing works
- Additional exp. with Test Chamber

Yuto Kimura

Test Chamber with 90Sr

The same set-up as in 2024

Raw signal from a sense wire with pre-mixed Ar-CO2 (90:10)

ref

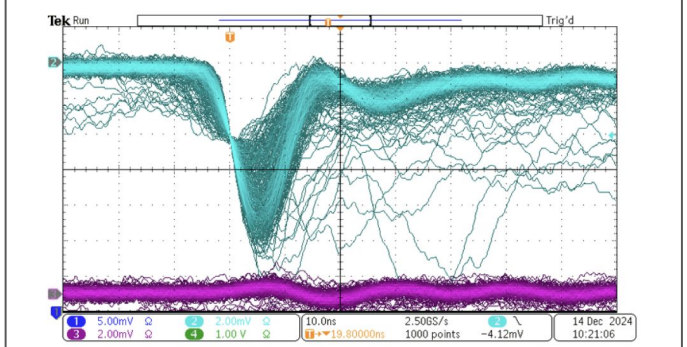
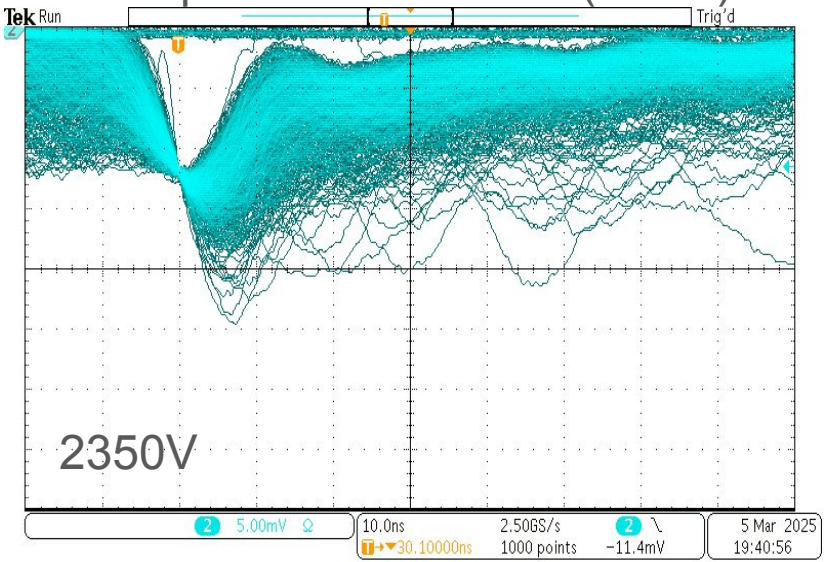
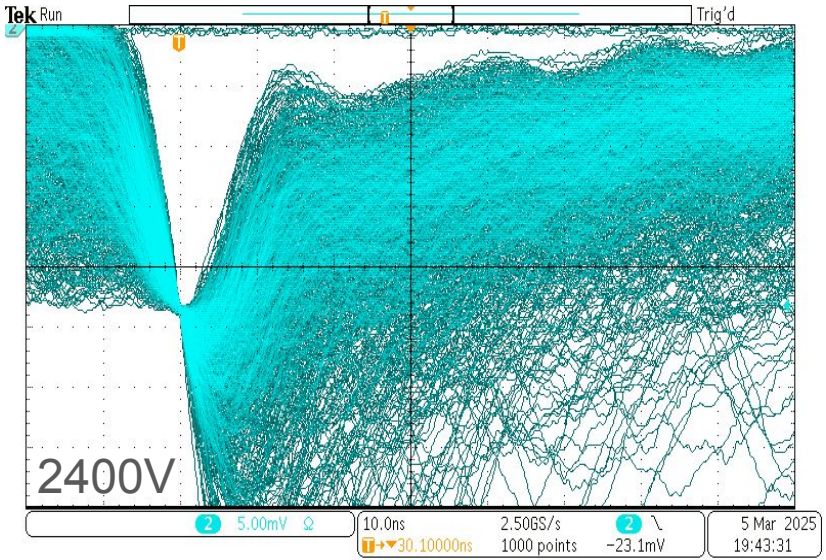


図 4.14: テストチェンバーにおけるワイヤーからの直接信号の典型例。Ar-CO_2 (90:10), 2400 V。





Next week; with Ar-C2H6 (50:50)

Writing, Presentation

- J-PARC sympo proceedings about CDC gas study, 6 pages (~3/31〆切延長)
  - https://ja.overleaf.com/7492586659fnqgphfzgqzv#27b47f
  - 3/12までにローカルに回覧-->修正してe80_mlに回覧
- RARiS sympo poster (3/7) ; Discodeにて回覧済み。。。。。
- JPS meeting oral (3/20 afternoon) ; 佐々木君の次
- RARiS anual report , about CNC test in (2022~)2023 (~3/24)

Ref

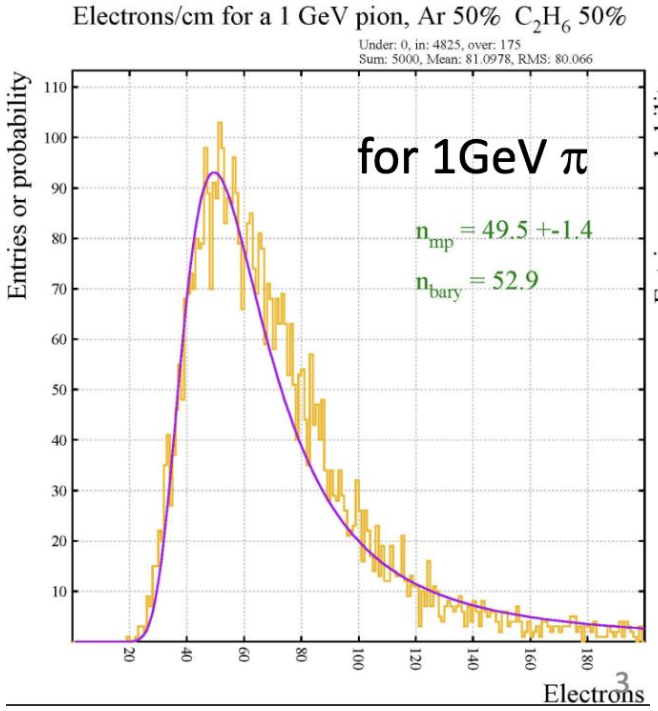
By F. Sakuma's Sim using Garfield:

http://ag.riken.jp/J-PARC/sakuma/weekly_meeting/CDCstudy/CDCstudy.pdf

Ar-C2H6(50:50)の方がエネルギー損失大きい。

1cmでのエネルギー損失と
1cmでの全1次電子

Ar-C2H6 (50:50)



Ar-CO2-CH4 (89:10:1)

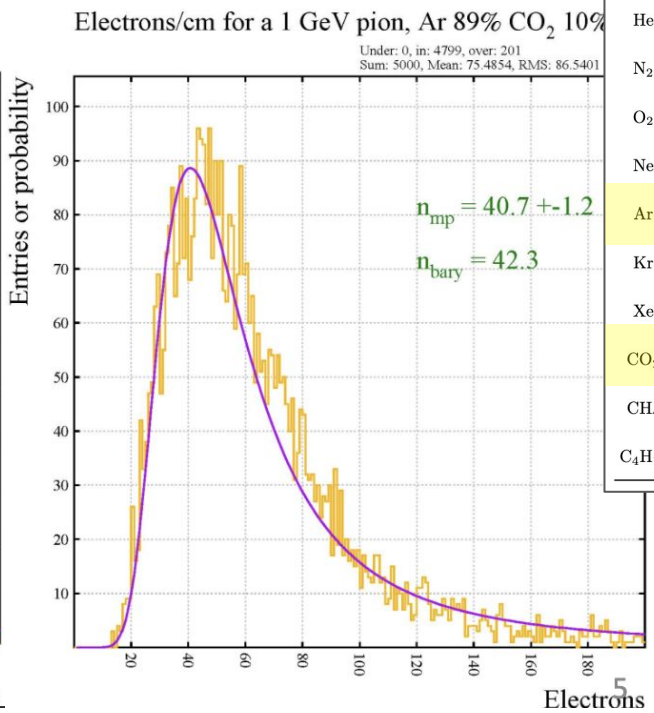


表 A.1: 気体の物理特性 [43]

Gas	Z	A	ρ (g/cm^3)	E_{ex} (eV)	E_i (eV)	I_0 (eV)	W_i (eV)	$\frac{dE}{dx}_0$ (keV/cm)	n_p (cm^{-1})	n_T (cm^{-1})
H_2	2	2	8.38×10^{-5}	10.8	15.9	15.4	37	0.34	5.2	9.2
He	2	4	1.66×10^{-4}	19.8	24.5	24.6	41	0.32	5.9	7.8
N_2	14	28	1.17×10^{-3}	8.1	16.7	15.5	35	1.96	(10)	56
O_2	16	32	1.33×10^{-3}	7.9	12.8	12.2	31	2.26	22	73
Ne	10	20.2	8.39×10^{-4}	16.6	21.5	21.6	36	1.41	12	39
Ar	18	39.9	1.66×10^{-3}	11.6	15.7	15.8	26	2.44	29.4	94
Kr	36	83.8	3.49×10^{-3}	10.0	13.9	14.0	24	4.60	(22)	192
Xe	54	131.3	5.49×10^{-3}	8.4	12.1	12.1	22	6.76	44	307
CO_2	22	44	1.86×10^{-3}	5.2	13.7	13.7	37	3.01	(34)	91
CH_4	10	16	6.70×10^{-4}	15.2	15.2	13.1	28	1.48	16	53
C_4H_{10}	34	58	2.42×10^{-3}	10.6	10.8	10.8	23	4.50	(46)	195

C2H6に関するdE/dXの
文献値、探し中。