

KRS network configuration

@ KUINS-III (private address)

fixed-IPs

IP: 10.244.69.191 ~ 200

netmask: 255.255.255.0

gateway: 10.244.69.254

proxy: proxy.kuins.net:8080

DNS: 10.224.253.1

10.224.254.1

DHCP

every settings auto-assigned.

@ KUINS-II (global IP address)

fixed-IPs

IP: 133.3.28.129

netmask: 255.255.254.0

gateway: 133.3.28.254

DNS: 133.3.5.2, 130.54.240.26

DHCP

every settings auto-assigned.

DAQ PC (win2k, pstim2@KEK) 10.244.69.192

LRS1454 (upper, smaller, 4 mods) ... 10.244.69.194

LRS1458 (lower, bigger, 16 mods) ... 10.244.69.193

Analyzing PC (Linux, desktop) { 10.244.69.191
133.3.28.125 (DHCP)

Wireless LAN Access Point/Router
(Air Station) { 133.3.28. (DHCP)
192.168.0.1

19/Nov/02 22:00 outer and inner vessel evacuation start } He leak test O.K.
 20/Nov/02 11:00 purification line evacuation start
 21/Nov/02' KSR

15:30 Mass spectrometer set up

purification line $\sim 3 \times 10^{-4}$ Pa
 Outer vessel 2.2×10^{-3} Pa
 Inner vessel 2.5×10^{-2} Pa

Power down!

~~New Run Modes~~

16:40 Mass spectrometer set up

purification line $\sim 1.0 \times 10^{-4}$ Pa
 Outer vessel 3.6×10^{-4} Pa
 Inner vessel 2.7×10^{-2} Pa
 purification line without molecular sieves 3.0×10^{-4} Pa

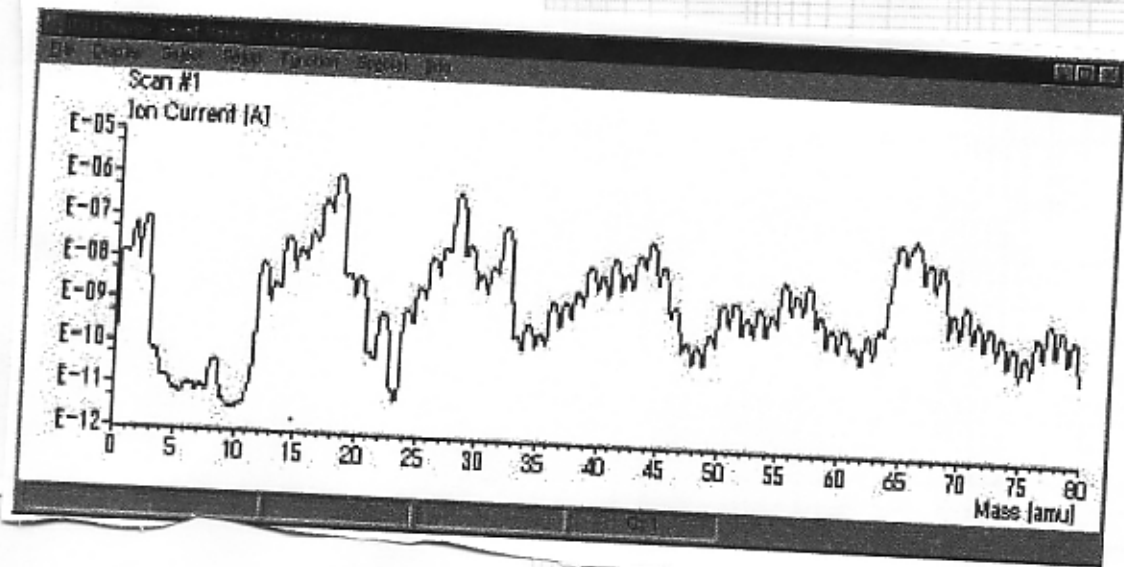
17:00 inner vessel build up test

Time (min)	Press (Pa)
0	2.6×10^{-2}
1	1.3×10^{-1}
1.5	1.7×10^{-1}
2	2.1×10^{-1}
3	2.9×10^{-1}
5	4.1×10^{-1}
7	5.4×10^{-1}
10	7.4×10^{-1}
15	1.1×10^0
20	1.4×10^0

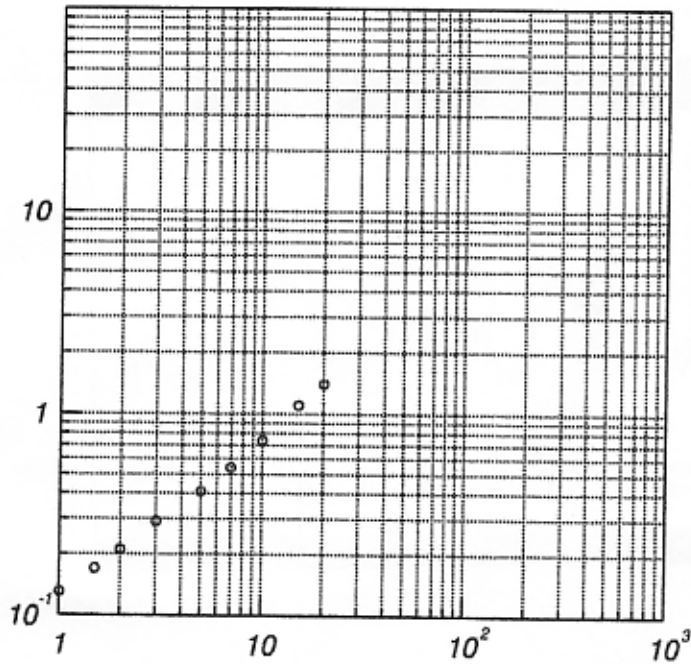
19:30 start to fill chamber with Xenon ~ 2.0 atm

20:30 start pre cooling

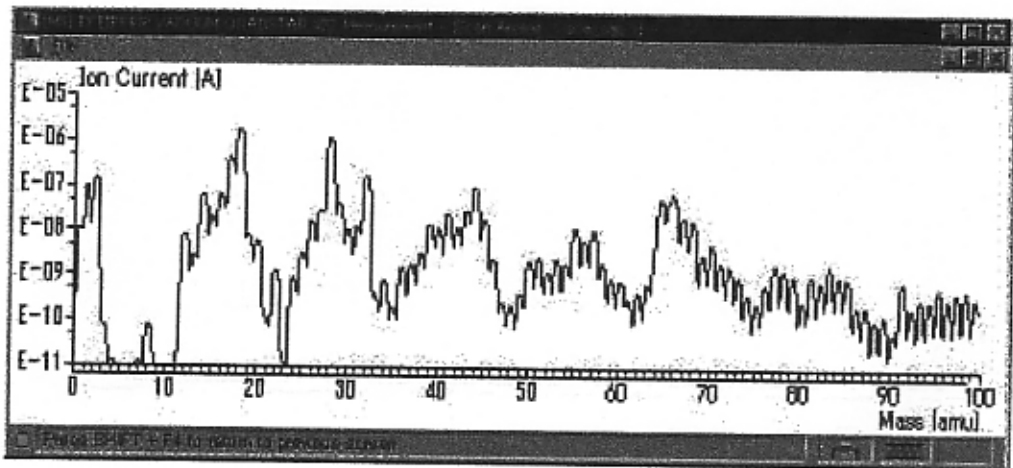
purification line (without molecular sieve)



Measurement Number: 45				Process	Process
Nbr	Type	Ident	Unit	---	---
0	Part.Press.	TOTAL	mbar	17:31:48	17:32:11
1	Part.Press.	Ar	mbar	5.867E-06	5.866E-06
2	Part.Press.	CO2	mbar	2.129E-08	2.131E-08
3	Part.Press.	H2	mbar	1.366E-07	1.366E-07
4	Part.Press.	H2O	mbar	8.652E-06	8.646E-06
5	Part.Press.	CxHy	mbar	3.550E-06	3.548E-06
6	Part.Press.	N2 / CO	mbar	9.464E-08	9.475E-08
7	Part.Press.	O2	mbar	1.511E-06	1.513E-06
8	Part.Press.	He	mbar	4.658E-07	4.657E-07
9				1.020E-10	1.020E-10



Purification line + chamber (inner vessel) without molecular sieve



Measurement Number: 8				Process	Process
Nbr	Type	Ident	Unit	17:56:26	17:56:03
0	Part.Pres	TOTAL	mbar	6.211E-06	6.210E-06
1	Part.Pres	Ar	mbar	2.026E-08	2.025E-08
2	Part.Pres	CO2	mbar	1.288E-07	1.285E-07
3	Part.Pres	H2	mbar	9.560E-08	9.526E-08
4	Part.Pres	H2O	mbar	3.382E-08	3.379E-08
5	Part.Pres	CxHy	mbar	1.024E-07	1.019E-07
6	Part.Pres	N2 / CO	mbar	2.078E-06	2.080E-06
7	Part.Pres	O2	mbar	4.037E-07	4.041E-07
8	Part.Pres	He	mbar	8.964E-11	9.048E-11
9					

21/Nov./2002.

20:21. DAQ elec. set up is completed. (~ RUN #4325: test).

RUN #4326.: pedestal run for Electron trigger counter test.

20:23. RUN #4327.: Electron trigger counter test.

Taking the DATA for the HV value definition.

$$\Delta 1^{\text{st}} \text{ setting: } \begin{cases} \text{ET1: } -2800\text{V} \text{ (} V_{th} = 20\mu\text{T)} \\ \text{ET2: } -2700\text{V} \text{ (} V_{th} = 20\mu\text{T)} \end{cases}$$

$$\Rightarrow \text{ADC peak @ scintillation events. } \begin{cases} \text{ET1: } \sim 250\text{ch} \\ \text{ET2: } \sim 320\text{ch} \end{cases}$$

20:30. RUN #4328.: pedestal.

RUN #4329.: Electron trigger counter test.

$$\Delta 2^{\text{nd}} \text{ setting: } \begin{cases} \text{ET1: } -3000\text{V} \text{ (} V_{th} = 20\mu\text{T)} \\ \text{ET2: } -2800\text{V} \text{ (} V_{th} = 20\mu\text{T)} \end{cases}$$

20:51. RUN #4330.: Electron trigger counter test.

$$\Delta 3^{\text{rd}} \text{ setting: } \begin{cases} \text{ET1: } -3000\text{V} \text{ (} V_{th} = 20\mu\text{T)} \\ \text{ET2: } -2900\text{V} \text{ (} V_{th} = 20\mu\text{T)} \end{cases}$$

21:02. RUN #4331.: Electron trigger counter test.

$$\Delta 4^{\text{th}} \text{ setting: } \begin{cases} \text{ET1: } -3000\text{V} \text{ (} V_{th} = 20\mu\text{T)} \\ \text{ET2: } -2800\text{V} \text{ (} V_{th} = 20\mu\text{T)} \end{cases}$$

22/Nov./2002.

14:41. RUN #4332.: pedestal run.

14:42. RUN #4333.: Electron trigger counter test (LONG-RUN, using Cosmic rays)
 \Rightarrow 525 events taken.

The previous start timing has been decided by ET1. (Discri. output is delayed 40ns).
 Following run test is test run for the another start timing decided by ET2.

15:40. RUN #4334.: Electron trigger counter test, triggered by ET2.

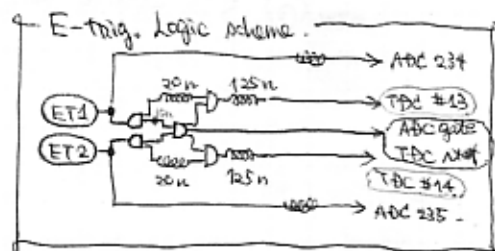
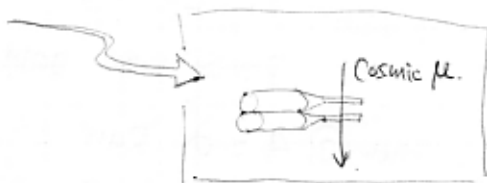
16:00. Start liquid fraction with getter and molecular sieve.

20:05. RUN #4335.: pedestal run. (start timing, decided by ET1).

RUN #4337.: Same as previous RUN (because of #4336 is NG).

20:21. RUN #4338.: Electron trigger counter test. (LONG RUN, using Cosmic rays)

~~Run #4334 is to be removed.~~



21/Nov/2002.

New Run Modes

- changed @ 0: Pedestal Run
 1: Normal Run (e, γ trigger)
 2: LED Run / PMT gain adjust run.
 3: Software gain match (obsolete)
- new @ 4: α Run
 new @ 5: Cosmic Ray Run

FASTBUS

TTL OUT #4

NIM OUT 2

TTL OUT 4

NIM OUT 3

NIM OUT 4

23/Nov/2002

13:30 Temperature Setting of the water cooler has been changed
 from 25°C to 20°C, SM, RS.

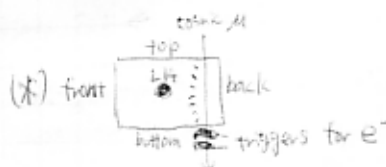
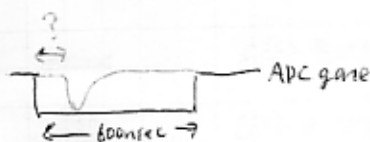
16735 By some reasons, ^{all} "Current limit"s were 2000!!

fixed as:

Ch 0-6: 100
 7: 150
 8-19: 100
 100-199: 2000
 188-239: 100

@ timing from ADC gate \downarrow to signal test

LED ... ~~120~~ ¹²⁰ nsec by F17
 α ... ~ 140 nsec by F17
 CR ... ~ 120 nsec by L14
 Cosmic ~~120~~ ¹⁵⁰ nsec by L14
 (\uparrow substitution for α electron)



10:00 Created a new directory for HV data
 C:/online/hvdata/hvdata_24.Nov.2002/

<u>CR trig</u>	TC1-top	180	-2000V	}	+ for all R6041As	0V	all 0. hv
	TC2-bot	181	-1600V			500V	all 500. hv
	TC2-top	182	-1800V			600V	all 600. hv
	TC2-bot	183	-1800V			700V	all 700. hv
	TC3-top	184	-2070V			800V	all 800. hv
	TC3-bot	185	-1850V			850V	all 850. hv
<u>e-trig</u>	ET1	186	-3000V			900V	all 900. hv
	ET2	187	-2850V				

⊙ Warming-up of PMTs, switching off the power supplies for active dividers.

10:16 "all 500. hv" loaded

10:46 "all 600. hv" loaded

11:16 "all 700. hv" loaded

12:00

- finish liquefaction from Xe tank.
- start to move xenon from Xe tank to 1 gal cylinder.
- change cold head SV to 164.4 k.

14:19 "all 800. hv" loaded

14:39 "all 850. hv" loaded

14:51 "all 900. hv" loaded

16:30
~~16:00~~ ~ 18:00
 FAST BBS broken!!
 (reason)
 dust around FAN module
 cleaned up!!

BT9 (HVch 11 error => ok)
 21:05 start to liquify from 1 gal cylinder.

21:24 TDC5-0~16 flat cable and TDC5-16~32 cable had been snapped.

fixed

~ 22:30

liquefaction finished

25/Nov/2002

17:50 active divider switched on (HV = "all900.hv")
 and AS soon as switched on, one of the lower dividers sparked!! \Rightarrow changed to spare.

8:56 Supplied HV set to the same as "hrdata_18_Sep_2002/CXe_1Eb_092402.hv"

\oplus
e-trig.

Saved as "Exp-Same.as_092402.hv"

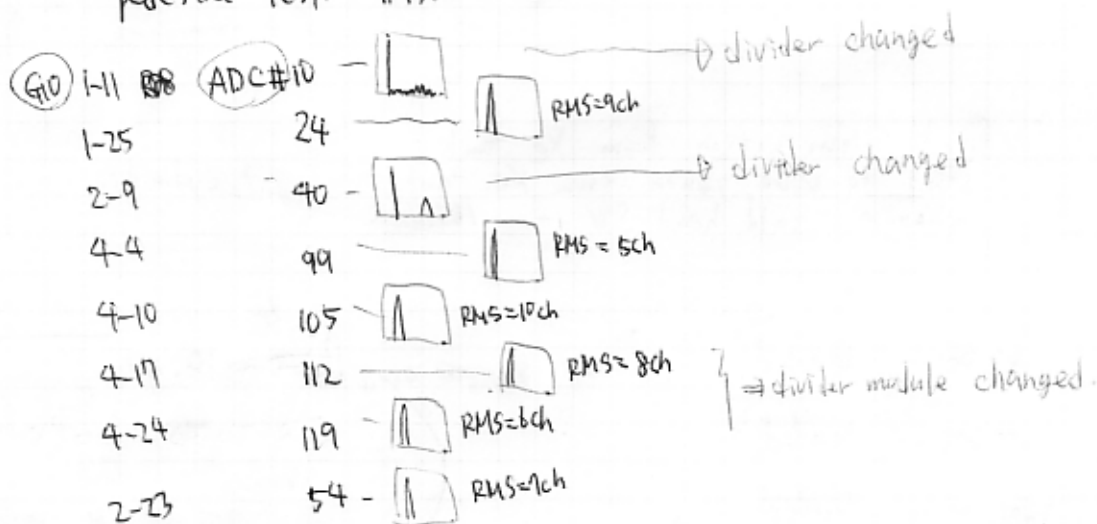
12:15 start circulation ~ 10 l/min

FAL cannot access FAST DAS slot.

15:00 \Rightarrow F-ADC 9 ^{5A} FUSE was broken. \Rightarrow changed.

(\oplus Yesterday, all fuses on FADC9 were changed because of the same reason.)

16:00 ~ pedestal test. #4339 ~ 4769 ^{three tiles} (to be removed)



We had 3 spare modules, I managed to swap and change those dividers, then the following channels still have broader pedestal.

ADC#	G10	RMS
24	1-25	9.7ch
47	2-16	8.4ch
56	2-25	4.5ch
105	4-10	9.6ch

If we had more active dividers ...

25/Nov/2002

First set-run @ KSR

these values correspond with pulse height. (see adccalib.c)

18:38 #4370

pedestal

18:40 #4371

LED run (LED1&5, {88, 90, 93, 96, 99, 102})

18:47 #4372 a run . threshold = -60mV for discriminators.

18:47 #4373 Cosmic ray run

Although some PMT signals cannot still be appeared, we have to take a first look at cosmic ray run events.

20:09 #4373 Cosmic ray run

this CR run will continue by tomorrow morning.

26/Nov/2002

7:57 #4373 stopped

No signal channels

ADC #

- 24, 25, 26, 27, 28, 29, 30, 31 ----- Active divider 3. (G10:1-25~32) Solved (see below)
- 2-1 32 ok (see below)
- 2-1 38 ok (see below)
- 2-19 50 active divider
- 2-22 85 active divider → Divider exchanged. Fixed
- 2-25 88 active divider
- 4-19 114 active divider
- 6-17 164 burndy male pin (no the cable) Fixed
- 8-28 223 open somewhere from feedthrough to burndy.

6-17 (ADC#164) --- In "frontend.c" ADC#164 reads ADC9-17 instead of ADC9-1. But you don't have to change the analyzing programs according to this change.

#4370 ~ #4373

active divider

front	1-17	G10# 1-25	2-1	2-9	2-16
	S	S	S	S	S
rear	1-17	No opt	1-25	2-1	2-9
	S		S	S	S
	1-24		1-32	2-8	2-16

causes ⇒

- 1-25 ~ 32 No signal
- G10# 1-25~32 were read as 2-1~8
- 2-1~8 were read as 2-9~16
- 2-9~16 were ignored.

These runs data were not so useful.

26/Nov/2002

12:29 #4374 pedestal test

RMS > 3ch ADC #40, 47, 105, 56

Mean > 500ch ADC #88 → FADC cards changed.

12:44 #4375 pedestal test

Mean > 500ch ADC #166, 169, 176 → FADC cards changed

RMS > 3ch ADC #40, 47, 105, 56, 83

12:30 Lig N₂ bottle is replaced to a fully charged one although there still remains 30% of lig nitrogen.

This is for surviving the access limitation during

KSR operation starting from 13:00 and continues till 23:00

Practical 1st set run

12:55 #4376 pedestal run

12:57 #4377 LED run

13:43 #4378 α run

14:05 #4379 CR

16:06 #4379 stopped

#4379 includes ^{unexpected} triggers caused by ^{LINAC} KSR at the rate of ~1Hz.

16:06 ⁰⁶ #4380 CR started.

Current status

- active divider ~~change~~ change required.
 - ADC # 40, 47, 56, 83, 105
(G10 # 2-9 2-16 2-25 3-20 4-10)
- Signal line opened
 - ADC # 223 → burndy connector was wrong.
(G10 # 8-28)
- uncalibrated PMT (#4377)
 - ADC # 50, 105, 112, 114, 169, 223

27/Nov/2002 0=15 KSR 入室許可 (We allowed to enter KSR at 0=15)

0=30 run #4380 stopped, because of HV trouble

Active divider corresponding to

Q10 # 2-9, 2-16 (now) 2-25, 3-20, 4-10 ~~then~~

were replaced.

01:50 #4381 → pedestal run (#4381) for checking signal

ADC #140	RMS	
	0.41 x 10 ⁻¹	
#147	0.53	
#156	0.83	
#183	0.56	
#105	0.50	OK!

ADC #166 4.813

2:20 #4382 pedestal

4:00 ADC #160 mini card replaced.

4:16 ADC #159, 160 mini card replaced.
11-92 11-93.

ADC#223 bundy connector replaced.

4:51 #4384 pedestal pedestal RMS < 2.3 ch (Active Divider off)

- o HV file "lre_same_as_092402.hv" loaded
- o turn Active Divider on

5:05 #4385 pedestal run.

ADC-num

11, 156, 183, 183, 219 have wide (> 3.0 ch) pedestal.
G1-12, G2-25, G3-20 → mini card.

7:43 #4386 pedestal run.

ADC#159, 219: mini-cards broken.
RMS > 3ch

4 #4387 pedestal run.

ADC#162: min-card broken.
has been

8 27/Nov/2002

#4388 pedestal / test

all pedestals' RMS < 3ch.

10:17 #4389 pedestal run.

10:18 #4390 LED run.

Active divider not ON

10:26 #4391 pedestal test

ADC#54 pedestal RMS 73ch

10:41 #4392 pedestal test

ADC#92 pedestal RMS 73ch

10:53 #4393 pedestal ---- ADC#82 -- ped-RMS = 3.5ch

10:56 #4394 LED

11:02 #4395 alpha . 50000 evts.

⊛ About uncalibratable PMTs (see page 6)

ADC#	address	GIO#	ADC-ch	description
50	B10	2-19		active divider output inverted = broken ⇒ fixed
112	F34	4-19		low gain ⇒ +100V (90-1000V)
114	F33	4-19		active divider broken
164	T34	6-17	9-17 (see pages)	low fitted.c (see pages) was not saved. ⇒ saved & compiled file
105	F30	4-10		active divider broken

12:36 #4396 pedestal ---- ADC#83 ped RMS = 10.1ch
#164 = 16.2ch

12:46 #4397 LED

12:48 #4398 alpha 50000 evts

12:58 #4399 CR

ADC plug (ADC-ch 11-1~48) was unplugged.

#4400 ~ #4401 test.

14:37 #4402 pedestal run

14:46 #4403 LED run

ADC #61, 114 have no signals.

HV setting before adjusting HV is "

• HV adjustment run

Set "adjust HV" key to 1.

15:10 #4404 pedestal run for HV adjust.

15:11 #4405 ~~HV~~ LED run for HV adjust

HV setting saved as "hvadjust1.hv"

15:29 #4406 pedestal run for HV adjust.

15:31 #4407 LED run for HV adjust.

HV setting saved as "hvadjust2.hv" ..

Set "adjust ~~key~~ HV" key to 0

Back to normal CR set run

HV setting saved as "lxe_ksr_1eb.hv"

same as "hvadjust2.hv"

15:50 #4408 ~~pedestal~~ pedestal run

15:52 #4409 LED run.

28/Nov/2002

Yang 21

0:30 ADC channel 93 and 95 (L/S and R/S) ~~seemed~~ seemed to be swapped.

1. We checked HV cables and signal cables, but no swap was ~~found~~ found.
(R.S and T.M)

2. Analyzer.C seemed to ~~have~~ have no error.

3. We unplugged Led 5 (left side)'s cable and used only LED 1 (Right side)
and took LED ~~1~~

10 27/Nov/2002

4415 Pedestal

4416 LED 1000

4417 LED 5000 HV_ADJ = 0

4418 Ped

4419 LED 8000 HV_ADJ = 1

4420 " " HV_ADJ = 0

4421 α -RUN 30000

} HV ADJ

93 \leftrightarrow 95 HV \leftrightarrow ADC ?

Channel 93 & 95 are swapped L15 \leftrightarrow R15

23:30 We found PMTS R15 & L15 swapped. i.e. switching on/off L/R15 the other gets switched on/off.

We still have to check the TDCs. i.e. is the signal swapped or is the HV swapped?

DURING THE NIGHT WE TAKE COSMICS

WE DECIDE TO TURN L15, R15 OFF FOR THE MOMENT.

28/Nov/2002

0:06 stop # 4422

* L15 \leftrightarrow R15 checking!

0:30 1. We (R.S and T.M) checked the cables of signal and HV, but no swap was found.

2. Analyzer, C seemed to have no error.

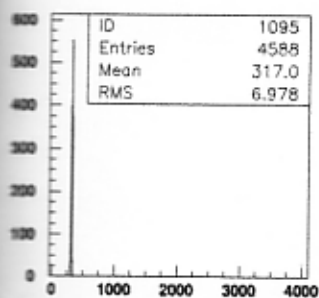
3. We unplugged Led 5 (left side) and used only Led 1 (right side) to take the LED data.

Left side ~~LED~~ PMTS (L14, 15, 20, 21) outputs showed ~~same~~ trend ~~in~~ in each other, and right side PMT's showed

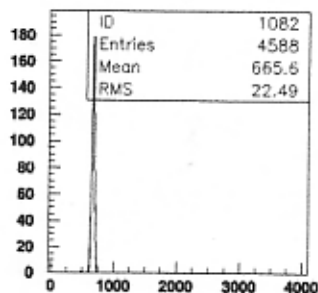
Same trend ~~to~~ each other, too.

So, we concluded that ~~the~~ the scrapping was happened at the HV cable ~~in the PMT holder~~ of PMT holder.

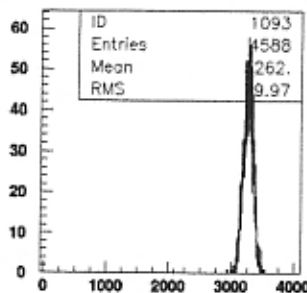
We exchanged the HV cables of L15 and R15
(HV#60) (HV#48)



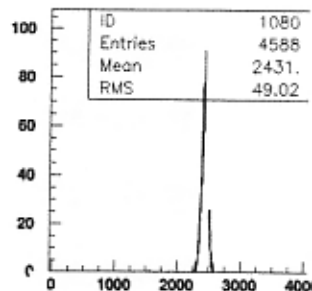
R15 S13-M96 C95



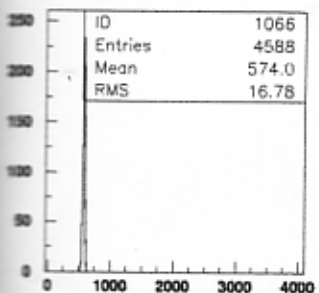
R14 S13-M83 C82



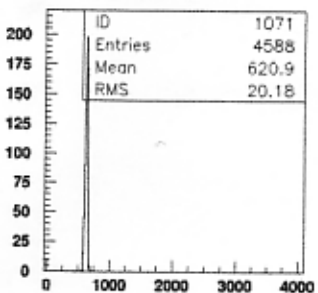
L15 S13-M94 C93



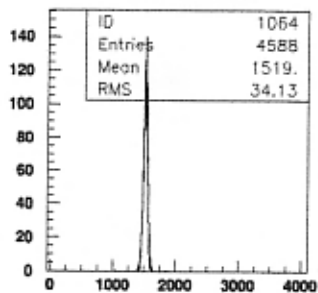
L14 S13-M81 C80



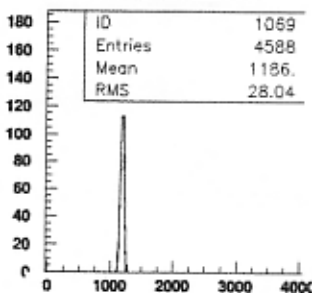
R20 S13-M67 C66



R21 S13-M72 C71



L20 S13-M65 C64



L21 S13-M70 C69

4230. Camos and FB TDC systematic error study

original value
e⁻-trig Th = 20mV → 65mV

Pulse from C.G. inputted to electron TC and ~~disc~~ ^{LP} FB.

- | | | | |
|--------|-----------------|---|----------------|
| # 4423 | electron disc 1 | — | discr1 (to FB) |
| # 4424 | disc 1 | — | discr2 |
| # 4425 | disc 1 | — | discr3 |
| # 4426 | disc 1 | — | discr4 |

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12 #4429 miss (same ^{data} as #4426)

#4428 electron disc 1 - PB disc 5

#4429 disc 1 - PB disc 6

#4430 disc 1 - PB disc 7

#4431 disc 1 - PB disc 8

#4432 electron Te disc 2 - PB disc 1

#4433 - PB 2

#4434 - PB 3

#4435 - PB 4

#4436 - PB 5

#4437 - PB 6

#4438 - PB 6 missed same as #4437

#4439 - PB 7

#4440 - PB 8

7:50

H.V. error 15-7

8:00 #4443 pedestal

8:04 #4444 LED (H.V. error 15-7 → turn ¹⁵⁻⁷ off) _{etrig}

8:14 #4445 α

8:16 #4447 LED

8:24 #4448 LED

#8:31 #4449 LED

L15, R15 → 900V

R8 → 1000V

L13 → 1100V

L18 → 1050V

H.V. 15-7 → 0V

⇒ save as "lxe.ksr_swap_tmp2.hv"

8:50 H.V. error 1-1
4-11
9:21 #1 4450 LED
9:29 #1 4452 α
10:37 #1 4453 Cosmic

13:00

G10# problem
2-1 active divider (upper) & connector ⇒ active divider replaced ①
2-30 active divider (upper) not yet
4-16 No signal } ⇒ supplied HV were too low. X
4-32 No signal }
4-19 active divider (upper) not yet

Signal test for G10# 4-16, 4-32

HV
F12 4-16 : 965 → +2000 → 1165
R22 4-32 : 941 → 1141

14:44 pedestal for signal test.

14:45 α for signal test

No signals seen...

Back the HVs of 4-16 and 4-32 to the previous values

To be checked.

G10# 4-16 } No signal
4-32 }
2-30 } active divider
4-19 }

HV data saved as "l1eksr-1eb_021128.Hv"

15:01 #4459 ~~run~~ pedestal run.

15:02 #4460 ~~run~~ LED

15:14 #4461 α

15:22 #4462 CR run. ← No histogram entries in TC ADC

15:30 #4462 Interrupted to investigate the null-entry problem

~~#4462~~ Testing Pedestal without saving data ... OK

Testing LED Run " ... OK

It's not due to ADC. global problem link GATE 0.900

Take 2 RUN to check the ADC entries.

#4463 2 RUN OK. A peak can be seen

Take Cosmic RUN ~~off~~ w/o saving data to reproduce the problem.

- It triggered events in about 90 seconds, but no entry in TC ADC histogram.

- Check the raw data by viewing MIDAS bank data.

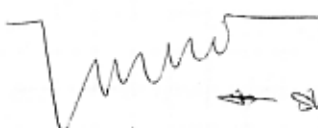
ADC0 ... ok.


CADC ... always 0 for TC's.

⇒ ~~software~~ Software Gain found to be set 0!
Switched to 1 for [228] ~ [235]

OK Now we can see the entries

Kenj: investigated low-gain channel of F12 & R22.

F12.  HV
965 → 1100V

R22.  HV
941 → 1041V

In addition, HV for TC1 Top is reduced from 2000V to 1600V.

Apparently, the mini-card is out of order,
 { pedestal 4096
 } Signal always 4096.

Maybe the mini-card was broken due to spark of the PMT, so it is the best to exchange the PMT - which will be carried by Fujino tomorrow. ~~to another one~~
 to another one

Best to confirm that all the systems are alive, take cosmic-ray data... by exchanging the mini-card to a new one.

The mini-card for TC1 Top is Replaced
HV data saved as "lxeksr-1eb-021128-2.hv"

18:31 Pedestal RUN #4464.

18:34 Cosmic Ray RUN #4465

replaced the next to TC1.....

18:38 #4465 stopped.

re-replaced

ADC mini card 9-81 for TC1-upper replaced changed

18:46 #4466 pedestal run (all channels' RMS < 3ch) wrong

18:48 #4467 LED run. wrong

18:55 #4468 d run

18:58 #4469 pedestal run ← #4470 d ????

19:10 #4471 Cosmic Ray RUN

problems with ADC channels 148-163 (missing) since run 4460

missing channels	56-63	G10 2-25 ~ 2-32
	111	4-16
	148-163	6-1 ~ 6-16
	184	7-21
	(216)	

29 / Nov / 2002

0:45 stop 4471

H.V. error 9-10

G10 #6 & #7 ^{have been} ~~were~~ swapped. => change

All G10 card reconnect

1:38 # 4473 pedestal

1:42 @ test run (w/o writing date)

LED

missing channels	# 56-63
	111
	129 : 168
	145-155

!! Active Divider front panel
All cables unplugged.
have been

ADC # 111
127) → 1230V

⇒ "save as lxeusr_leb-021129.hr"

3:14 test LED w/o writing



Small signal channels

ADC#	111	F12
	127	R22
	168	T33

o three channels are still bad (see above), but continue ~~to~~ data taking.
Cosmic Ray

3:37 # 4474 pedestal

3:38 # 4475 LED

3:44 # 4476 α

3:50 # 4477 CR

5:00 no TC ADC histogram are banded in online ~~data~~ monitor data
↓
software gain (228 ~ 235) found to be set 0.

stop 4477

set software gain (228 ~ 235) 1

5:00 #4478 CR

o gain of #111
#127 are too big, it should be decreased later.

7:55 F21 found in trip.

Run ⁴⁴⁷⁸ stopped



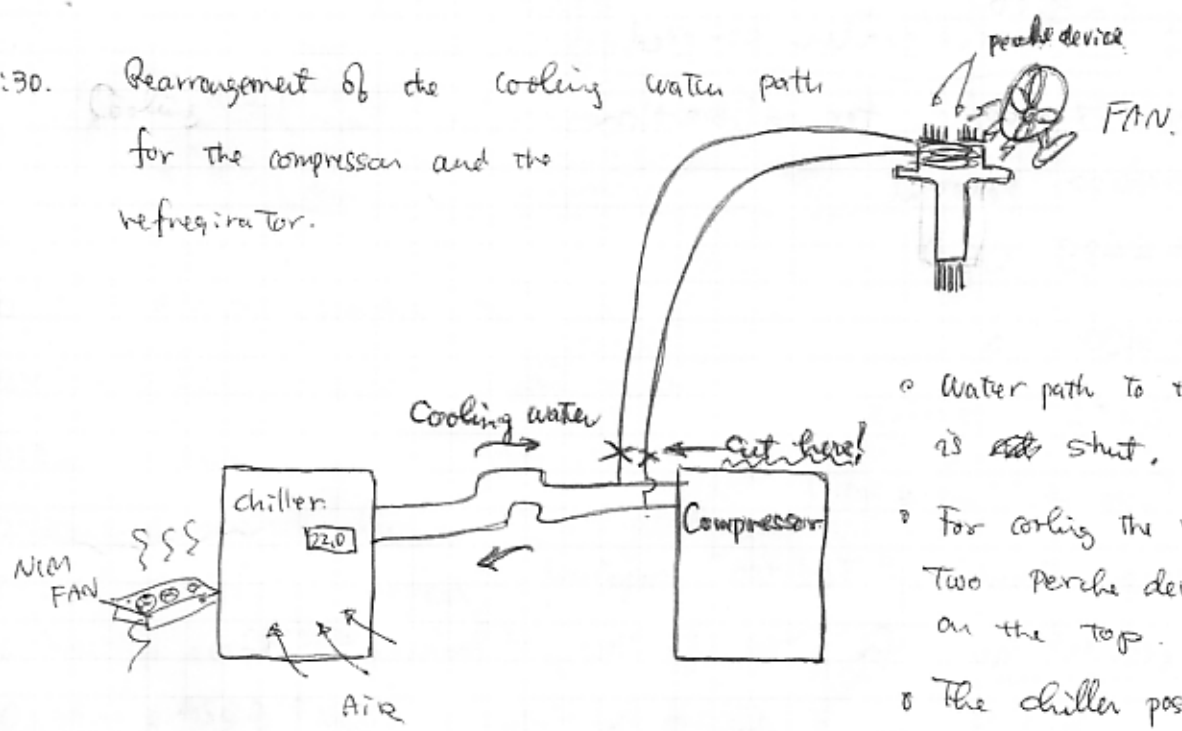
By analyzing & calibration data ~~from~~ ^{taken} last night (run 4475) we found the following problems

ADC ch	PMT	G-10				HV old	HV new
44	T5	2-13	low gain	0.5×10^6		813 V	880 V
56	L7	2-25	" "	0.15×10^6		822 V	900 V
61	L4	2-30	" "	0.5×10^6		802 V	850 V
95	R15	3-32	" "	0.6×10^6		930 V	970 V
111	F12	4-16	high gain	2.4×10^6		1230 V	1200 V
114	F33	4-19	low gain	0.6×10^6		875 V	960 V
127	R22	4-32	high gain	3.5×10^6			
222	BK13	8-27	ADC non-linearity(?)				

HV saved to lxe_ksr_1e6_021129-2.hv

- 8:35 Run 4479 pedestal
- 8:45 Run 4480 LED
- 9:00 Run 4481 α
- 9:05 Run 4482 COSMICS RUN STARTED

9:30. Rearrangement of the cooling water path for the compressor and the refrigerator.



- Water path to the refrigerator is ~~not~~ shut.
- For cooling the refrigerator, two perche devices are mounted on the top.
- The chiller position is changed to keep better air flow.

29/Nov./2002

11:30. Paused RUN #4482.

due to exchange the Trigger Counter "TC1 top".

⇒ NO DATA triggered by the front telescope from now on.

11:35. Resumed RUN #4482.

17:05 RUN #4482 stopped

17:05 RUN #4483 Pedestal

Restored the HV for PMT L7, ADC channel 56 to 822V,
as the gain was ~~was~~ improperly evaluated due to an error in the fit.

17:10 Run #4484 LED

17:25 Run #4485 α 30.000 events

17:26 #4486 cosmic ray.

?:? ~~FASTBUS~~ inhibited by unknown reason.

20:10 #4486 stopped and FASTBUS reset.

20:11 #4487 cosmic ray.

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~9:00
accelerator stopped

10:25 #4487 stopped for calibration

#4488 pedestal

10:30 #4489 LED

11:00 #4490 α

11:20 #4491 cosmic

20:30. Stop the RUN #4491.

Trigger Counter, "TC1 top" repaired.

21:09. pedestal run for test of New TC1 upper. #4492.

↪ The pedestal data @ New TC1 top is broad! (RMS ~ 12.87 ch)

So, turning off the HV for new counter and taking the pedestal
again
due to check the noise source. (PMT or DAB elec.)

21:12. #4493 pedestal, again.

▲ pedestal data • RMS \sim 12.8 ch. → Next, signal cable unplugged.

#4494. pedestal, again.

▲ pedestal data • RMS \sim 9 ch.

So, noise source is BNC connector @ New counter.

~~However~~ However, we have no counter, so we continue test.

→ Signal cable @ TC1 top, plugged again.

#4495. pedestal.

21:20. #4496. Test RUN for HT adjust @ New Counter.

At first: HT = 2200 V. → too small.

#4497. HT = 2400 V. → small.

#4498. HT = 2500 V. (MAX value)

OK.

New HT set for Cosmic Trigger Counters.			
* TC1	Up	...	-2200 V.
	down	...	-1600 V.
* TC2	Up	...	-1800 V.
	down	...	-1800 V.
* TC3	Up	...	-2070 V.
	down	...	-1850 V.

22:15. #4499. pedestal RUN.

22:17. #4500. LED calibration RUN.

20:32. #4501. α .

22:38. #4502. cosmic.

8:02. #4502. stopped.

10:30. #4503. pedestal

10:32. #4504. LED

10:42. #4505. α

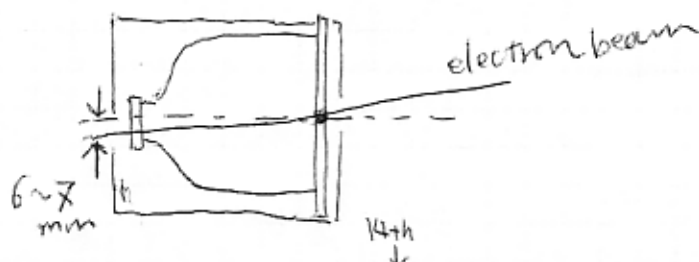
11:10. #4506. cosmic

20 ¹ / Dec / 2002

~ 8:00 Detector alignment done again

The center of the front face is aligned well with the electron beam axis.

But the detector axis is slightly slanted.



22:45 LN₂ ELF changed. (15th ELF)

2 / Dec / 2002

7:18 #4506 (cosmic ray run) Stopped.
Xenon Circulation stop

7:44 #4507 Pedestal ← mistake No data

#4508 Pedestal

#4509 LED

7:54 #4510 α

7:59 #4511 Cosmic After stopping xenon circulation

13:34 #4511 Stopped.

13:36 Switch all channels off


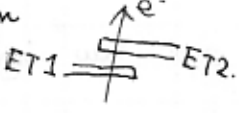
To stop the beam & enter the area

1. Turn the HVs for Linac. off.
2. Hit the injection button once, this will dump the beam.
3. Push a Reset located beside the personal key box
4. Open the door ~~area~~ and enter.

To start to use the beam

1. Confirm nobody left in the area
2. Close the door
3. Push "Interlock Reset (1-7-0, 7-1-0)" in the control room
4. Turn the HVs for Linac on (14.00kV left), 16.12 kV right

→ HV applied when electron injected!

- 16:30 Test run for electron #4512. Stopped after ~ 30000 events taken
- * 17:45 #4513 test run started FIRST PEAK SEEN!! 
- 18:05 #4514 electron run with low luminosity. stopped @ ~ 6500 only ~1400 good events.
- 18:10 #4515 Pedestal run for electron. ~2000 events
- 18:11 #4516 Calibration run for electron.
- 18:25 #4517 Pedestal run
- 18:26 #4518 Calibration run
- 18:28 ~~#45~~ INJECTION 
- 18:40 #4519 Electron run with the AND. Trigger w/o collimation

.OR. TRIGGER

not so good

ONE CONNECTOR OF FASTBUS ADC WAS UNPLUGGED, SO CH. 196 → 220 WERE NOT TAKEN.

19:00 We enter the area to replace the FADC connector

19:05 Re-apply HV

19:07 Pedestal

#4520 ok.

19:11 #4521 LED calibrations. Problems with ADCch 56, ok

19:27 INJECTION: rate ~ 5 kHz

19:30 #4522

electron run started. TRIG = .AND. 4 kHz

ended @ 400 Hz

19:45 #4523 electron run @ low rate; 50 Hz

20:05 New injection

20:08 #4524 Calibrations done @ high rate to see rate-dependence of calib.

rate = 5 kHz

→ HOD. 6-4, ... unstable ???

20:12. All PMTs, turn off. "R22", HV error, enabled.

20:20. New injection. and HV turn ON. ~ 4 kHz.

20:26. RUN #4525. e⁻ run. L7 has no ADC data. - but TDC has significant data.

02-Dec-2002.

20:40. All PMTs, HV off. and new injection
HV turn on.

20:42. RUN #4526. e⁻ RUN. ~ 3 kHz.

20:51. RUN #4527 Same as previous. ~ 60 Hz.
~ 12700 events taken, stopped.

20:56. All PMTs, HV off. and new injection

▶ New HV configuration file "LX0... 021202.tlv" saved.
Load new HV configuration file from now on.

21:02. RUN #4528. e⁻ run, same as previous, ~ 90 kHz.

R22. HV error, again !!

HV. 6-4. → enabled again.

21:09. RUN #4529. e⁻ run, same as previous.

Now, HV set value @ R22 is 1030 V ... TOO HIGH!!
and ADC peak is also high.

21:18. All PMTs, HV off, and new injection

21:49. ~~RUN #4530. (NO DATA WRITER)~~

HV adjust @ R22. (using R19's peak.)



➔ R22: 1020 V.

Revised "LX0... 021202.tlv"

21:25. Beam dump.

21:26. #4530. Pedestal RUN.

21:28. #4531. LED Calibration RUN.

(L7 seems low gain? (No problem @ LED run.) ????)
(see, p21).

#4532. ~~STAT~~ tail-line (e⁻ RUN)

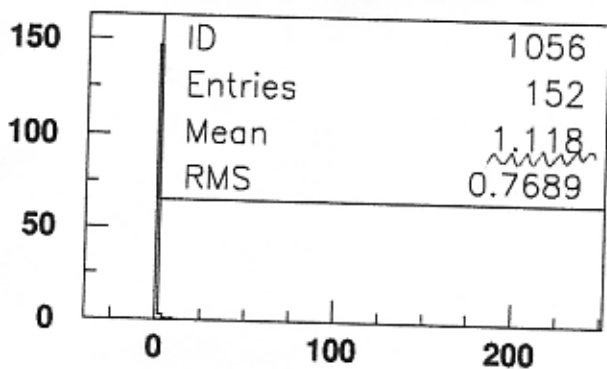
We forgot to set the HV for R22 to be 1020 V...

21:40 #4533 started (e⁻ run)

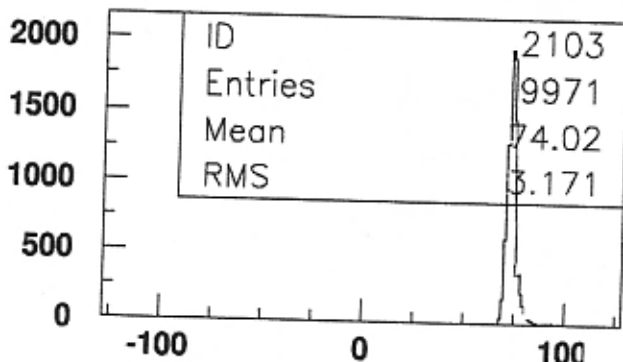
21:50 #4534 started (e⁻ run) w/o injection after the previous run

L7

For electron-triggered events, ADC spectrum of L7 cannot be seen, while the TDC is filled



L7 S13-M57 C56



TDC L7

⇒ Maybe due to the fan-out, need further investigation.

22:00. Beam dump.

RUN #4535. pedestal.

RUN #4536. LED calibration RUN.

22:10 RUN #4537 d RUN

22:20 RUN #4538 COSMIC

22:35 Circulation Re-started.
Flow RATE 10.43 l/min.

22:40 RUN #4539 LED RUN to investigate the L7 problem.

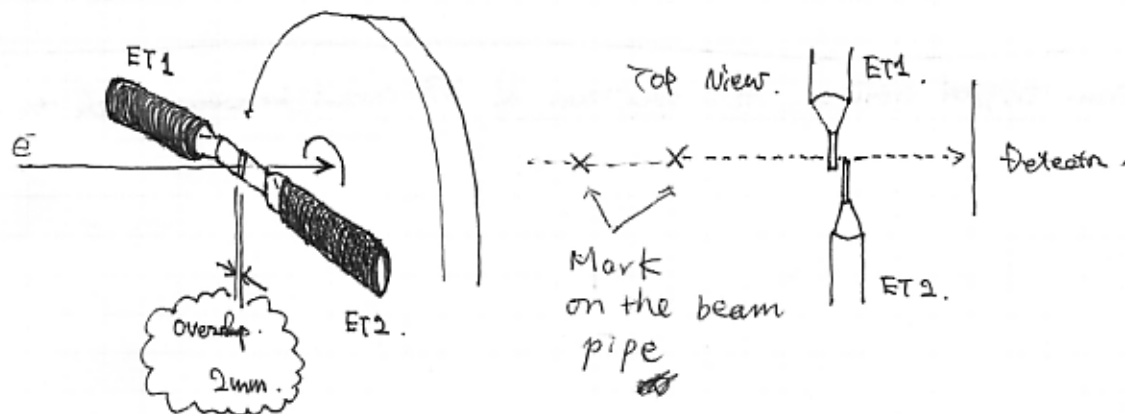
F70, module (11) - CH1.

⇒ Found that the fan-out had a problem. The IC for the ADC should be replaced. → replaced.

* Central value of the septum magnet is ~~760A~~ 725A which corresponds to the electron beam path along the markers on the beam pipe

23:02. RUN #4541. COSMIC ray. RUN.

02-Dec-2002.



02:30. ADC ch 222 (BK13) was calibrated badly, since run # 4521

7:45 Circulation stopped.

7:58 # 4541 (CR) stopped.

8:00 #4542 pedestal test
ADC# 225 ... RMS = 3.5ch

8:15 #4543 LED

#4544 ✗

9:35 accelerator on.

Today's menu (tentative)

- e-run w/ smaller overlap (2mm)
- e-beam scan by changing the septam current
- Lower or higher discrv ~~thres~~ threshold
- Lower or higher gain

Typically each data set should have ~ 1M events

10:05 adjusting e-beam to hit the overlap of the ETC
by changing septam current

⇒ septam current set to 726 A

10:30 ~~Why~~ Threshold of trigger counters set to

~~{ ET1 → 50mV
ET2 → 50mV }~~
{ ET1 - 20mV
ET2 - 20mV }

10:40 Injection

HV turned on (Lxe.... 021202 HV)

10:45 #4545 started e-run w/ overlap of 2mm
→ 50000 evts

10:55 #4546 start e-run 1.9×10^5 evts 2 KHz at the beginning of the run
11:47 beam dump. HV off → stopped ~~at~~ after next injection
11:50 Injection HV on. → forgot to stop DAQ before injection

189216 evts
be careful to treat this data

11:56 #4547 e-run started same condition as #4545
-4546

OR trig. rate ~ 8 KHz @ 12:00
win. " ~ 900 Hz

1.2×10^5 evts

e-beam life (1/e) ~ 1000 sec. x3 longer than yesterday

No TDC data ⇒ L14 ⇒ HV not applied (HV trip) fixed
ADC " ⇒

12:27 #4547 stopped HV off fixed

12:30 Injection HV on

12:35 #4548 e-run started, same condition as before

13:05 #4548 stopped. 1.6×10^5 evts
HV off.

13:08 Injection HV on

13:11 #4549 e-run started same as before

14:04 #4549 stopped 2.2×10^5 evts
HV off

14:11 Injection HV on

14:16 #4550 e-run started

15:18 #4550 stopped

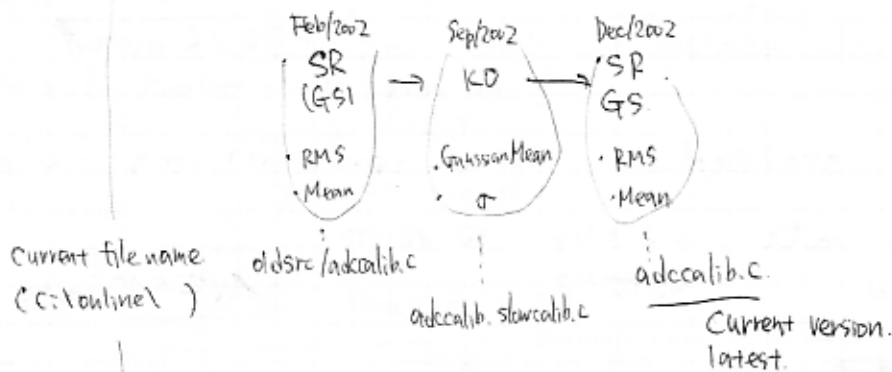
03/Dec/2002.

Note. by KD

HV adjustment run

To adjust supplied HV values, a complicated way, which takes a lot of time, has been used since Sep 2002. The previous revision was written by Stefan, could estimate the adequate HV values. However it doesn't work well under noisy condition. Then I modified adcalib.c to make it reliable. Instead of RMS and Mean, Gaussian parameters was adopted for fitting. It worked well in any case, while it took too much time to evaluate the gains.

This is why that I decided to back adcalib.c to SR's version.



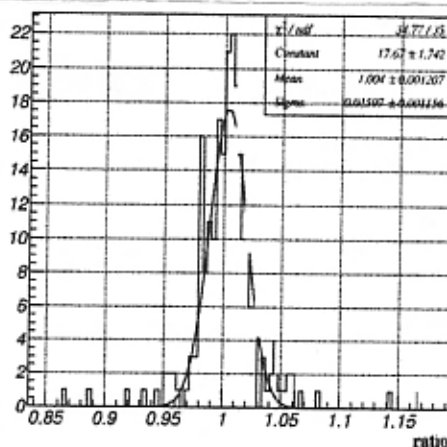
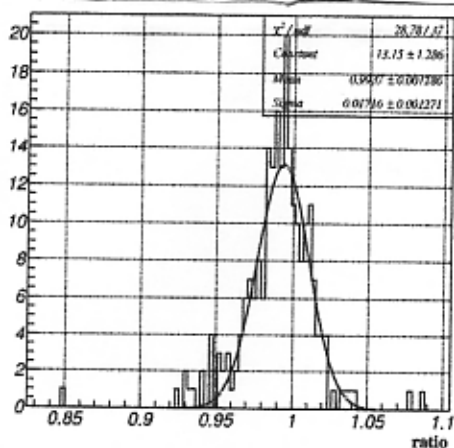
⊛ If FAL doesn't work well, compile FAL with adcalib_slowcalib.c.

Ratio of gains taken from two runs.

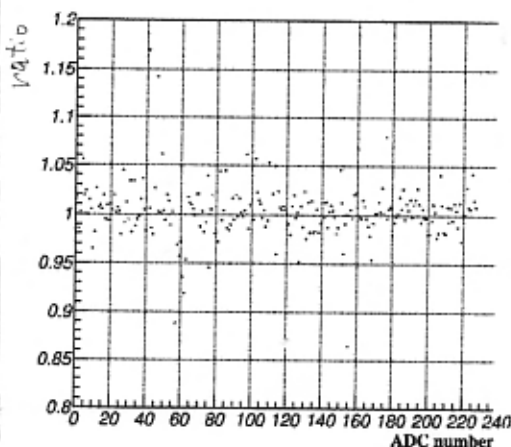
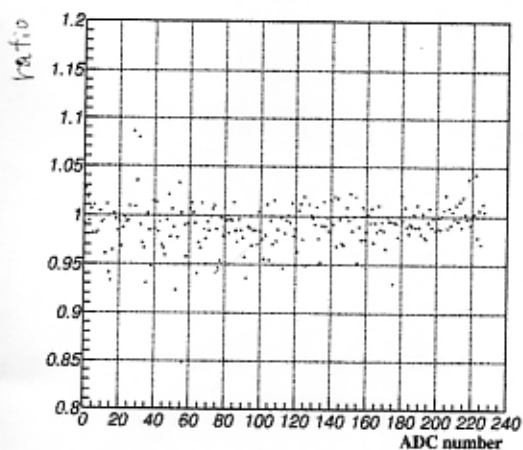
LED

#4⁵24 / #4⁵21

#4⁵43 / #4⁵36



#4521 : no electron beam
 #4524 : after injection
 rate ~ 5kHz
 #4536 : no electron beam
 #4543 : no electron beam



15:20

CAMAC discr level changed 10mV → 20mV

15:25

Injection, HV on

HV off

15:30

#4551 pedestal @ 6.7 kHz

#4552 e-run w/ CAMAC thrs. 20mV started @ 5.6 kHz ended @ 680 Hz

Injection

148,353 events triggered.

16:15

#4553 e-run w/ CAMAC th. = 15mV

started @ 6.3 kHz unexpectedly beam dumped. 56,949 events triggered

Electron beam suddenly ~~to~~ dumped.
 accidentally re-injected with HV on.
 ⇒ #4553 stopped.

16:38

#4554 same as #4553

17:07 stopped #4554 ↓ see below

17:30 Injection HV-on CAMAC threshold 12mV

#4555 e-run started @ 6.4 KHZ

w/ CAMAC th 12mV

18:20 #4555 stopped 2.4×10^5 evts

• ETC shifted to the left by 5mm

• septum current $726 \text{ A} \rightarrow 737 \text{ A}$

19:20 Injection HV on

19:23 #4556 started → stopped
17:24forgot to change CAMAC
thresholdCAMAC threshold $12\text{mV} \rightarrow 10\text{mV}$

19:25 #4557 started

• e-beam shifted by 5mm
• CAMAC threshold 10mV

20:04 #4557 stopped

20:40 Beam Dumped

pstamp12. disk full

4326	
C:\online\data\run 04505 .mid ~ run04505.mid"	
↓	moved
	<u>1.9GB</u>
Fi:\lreksr\	
-021121_021209_lreksr\	

DATA OF RUN #4554 ~ #4557 NOT
 RECORDED

20:56

#4559 pedestal

20:58 #4560 LED run.

21:06 α RUN

21:16 HV off

21:18 injection.

HV on

21:22 #4562 e-run. ... re-take of #4557.

{	Septum current: 732A
	CAMAC threshold: -10mV
	e-beam shift: 5mm to the right. (same as #4555)

21:40 #4562 stopped

21:45 Injection HV on

21:48 #4563 e-run same as #4562

22:00 #4563 stopped HV off
beam dumped

ETC is shifted back to the center

22:10 Injection septum current changed 732A \rightarrow 726A

22:15 #4564 started w/ CAMAC th 12mV

rate is maximized.


139,601 events triggered

22:45 beam dumped.
accelerator off.

22:55 pedestal #4565.

22:55 LED #4566

22:05 α #4567

23:30. CIRCULATION ReSTART. 

23:53. RUN #4568. COSMIC Ray RUN.
START.

04/Dec./02.

1:30. HT error @ MW#9-10. (L24). enabled.

2:20. "INHIBIT" @ FASTBUS crate.

⇒ RUN #4568 STOPPED, FAL stop. and FASTBUS restart.

RUN #4569 "COSMIC" start.

7:12 #4569 (CR) stopped.

7:12 Circulation stopped.

~~gain adjustment. HV adjust = 1.
#4570 pedestal
Current limit set to 200µA.
#4572 LED run for HV adjust. gain = 3 × 10⁶~~

9:50
beam / accelerator check.
10:00

of LED steps = 10

⊙ Gain Adjustment run. gain = 3 × 10⁶. current limit = 200µA. HV adjust = 1.

11:07. 10:00	#4570	pedestal	< "3eb. hvadj 0_021204.hv"	LED # 87, 88, 89, 90, 91, 92, 93, 94, 96, 98, 99
	#4571	LED	< "... hvadj 1..."	10 set 1000 CRTS/SEC
	#4572	ped	< "... hvadj 1..."	(EDS = 87, 88, 89, 90, 91, 92, 93, 94, 96, 98, 99)
	#4573	LED	< "... hvadj 2..."	
	#4574	ped	< "... hvadj 2..."	
	#4575	LED	< "... hvadj 3..."	
	#4576	ped	< "... hvadj 3..."	
	#4577	LED	< "... hvadj 4..."	
	#4578	ped	< "... hvadj 4..."	
	#4579	LED	< "... hvadj 5..."	
	#4580	ped	< "... hvadj 5..."	
	#4581	LED	< "... hvadj 6..."	
	#4582	ped	< "... hvadj 6..."	
	#4583	LED	< "... hvadj 7..."	

↑ HV adjust = 1
↓ HV adjust = 0

loaded "3eb_hvad3_3_021204.hv"] NOT CALIBRATED AT ALL!!
 12:16 #4584 pedestal
 12:18 #4585 LED
 most of pedestals have big RMS so that FAL cannot estimate right RMS and Mean.

"adcalib.c" backed to Gaussian fitting adjustment
 "adcalib.slowcalib.c"

12:42 #4586 pedestal, HV adjust = 1

12:52 #4587 LED, HV adj = 1

HV table saved as "3eb_hvad3_7_021204.hv"

13:11 #4588 pedestal, HV adjust

13:13 #4589 LED, HV adjust

HV saved as "3eb_hvad3_8_021204.hv"

13:30 #4590 pedestal, HV adjust

13:32 #4591 LED, HV adjust

HV saved as "3eb_hvad3_9_021204.hv"

14:06 #4592 pedestal, HV adjust

14:08 #4593 LED, HV adjust

HV saved as "3eb_hvad3_10_021204.hv"

14:25 #4594 pedestal, ~~HV adjust~~

HV saved as "3eb_021204.hv"

14:28 #4595 LED, ~~HV adjust~~

14:44 #4596 α

15:23 Injection HV on load 3eb_021204.hv

15:38 ~~#4597~~ Injection again

15:40 #4597 e-run with gain of 3×10^6 for test

(accelerator is not stable)

15:50 #4597 stopped @ 5×10^4 evts

#4598 start same condition as #4597

16:03 #4598 stopped for re-injection

32

16:05 Injection HV-on
16:08 #4599 e-run same as #4598
16:16 #4599 stopped

⊗ Use gain 4600 ped. par. instead of gain 4595 - ped. par. cov.

#4597 - #4599 • 4 PMT near the center (F14, 15, 20, 21) saturated ADC.

attenuator (-10 dB) put ~~low~~ the divider and CIA for F14, 15, 20, 21.

16:37 Injection HV-on → this is probably not taken into account in the MIDAS (should be checked) in F14, 15, 20, 21.
16:43 #4600 e-run w/ 3×10^6 gain and attenuator
17:05 #4600 stopped ~~stopped~~ HV off
17:07 Injection HV on
17:10 #4601 e-run same as #4600
17:47 #4602 e-run same as #4600
18:01 #4602 stopped

HV off → injection → HV on.

18:03 HV off → dump → HV on (4 attenuators removed (-10dB))

HV adjustment to 5×10^6 #4603 ~

HV table saved as "5eb_hvadj1_021204.hv" = "3e6_021204.hv"

Likelihood is used for pedestal fitting.

19:35 ~~18:33~~ #4603 pedestal
19:38 ~~18:38~~ #4604 LED < "...hvadj2..."
19:59 #4605 pedestal
20:03 #4606 LED < "...hvadj3..."
20:22 #4607 pedestal
20:26 #4608 pedestal
20:31 #4609 LED
HV adjust finished.

HV file saved as "5eb_hvadj4_021204.hv" and "5eb_021204.hv"

- 20:51 #4610 pedestal run
- 20:53 #4611 LED run → HV adjust incompleter for ch 155, 178
 #4612 α 222
Very low gain PMTs
... supplied 1250V
- 21:45. HTV OFF.
- 21:20. New injection and. HV configuration file loaded.
- 21:26 RUN # 4613. @ RUN @ $5e^6$ GAIN. atten. (-20dB)
for F14, 15, 20.
21.
- 21:35 # 4613 stopped @ 5×10^4 events
- 21:40 New injection HV-on
- 21:44 # 4614 started same cond. as #4613
- 22:00 # 4614 stopped @ 82756 evts.
- 22:05 New injection HV-on
- 22:12 # 4615 started ~~same~~ same cond. as before
- 22:19 # 4615 stopped @ 36075 evts ↓
HV of L14
not applied.
- 22:21 # 4616 started same as before
- 22:36 # 4616 stopped @ 44462 evts
- 22:37 # New injection HV-on
- 22:39 # 4617 started same as before
- 23:00 # 4617 stopped @ 106095 evts
- 23:03 New injection HV-on
- 23:05 # 4618 started ~~same~~ same cond. as before → BT9
HV not applied.
- 23:09 # 4618 stopped
- 23:11 # 4619 started
- 23:19 # 4619 stopped @ 43997 evts
- 23:23 # 4620 started
- 23:39 # 4620 stopped @ 85203 evts
- 23:40 New injection HV-on
- 23:45 # 4621 started → stopped ⇒ BT9 HV not applied.
- 23:49 # 4621 started
stopped @ 59940 evts HV off. Dump Beam.

0:15 sec 102

0:05 5e6_021204.hv loaded for PMT calibration.

0:06 #4623 pedestal RUN

0:12 #4624 LED RUN

0:25 #4625 α RUN

0:35 Turn off the HV for replacing the fan-out with the passive splitters.

20 dB attenuators still coupled to F14, F15, F20, F21 (ADC channels 31, 28, 29, 30)

DIVIDER EXCHANGE : Active \rightarrow Passive

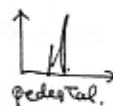
\rightarrow see P39.

4:00 complete!

4:05 Turn on the HV. ~~also~~ 5e6_021204.hv loaded

4:10 RUN #4626 Pedestal

\Rightarrow The first half channels of CIA (CPADC) in the slot 11 have rather large RMS. Most of channels above 10. And double peak \rightarrow



AC noise?

Replace the reference canal ...

5:00 The reference canal for the CIA in slot 11 is replaced. (CPADC)

\Rightarrow No effect - we can see still the double peaks pedestal distribution.

If we unplug the ADC delay cable, the pedestal is truly sharp, which means that the CIA module is okay.

6:05 Cabling was re-done for above noisy channels.

6:10 #4627 Pedestal RUN

Looks to be better than before, typical RMS ranges 5~10.

6:21 #4628 LED RUN

6:31 #4629 α RUN6:40 #4630 COSMIC @ 5×10^6 Gain

6:46 #4630 stop.

05/Dec./02.

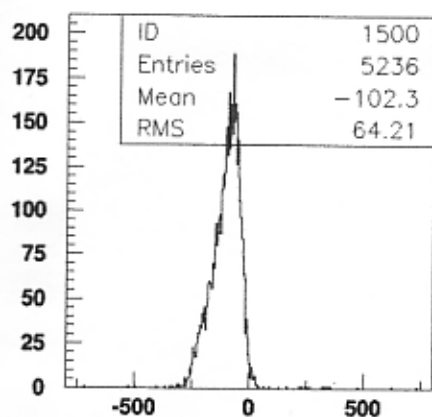
6:46. Noise level estimation.

4631; pedestal.

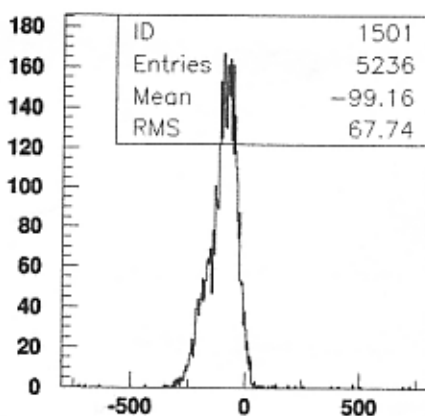
4632: ~ #4634 Test.

RUN #4635: pedestal

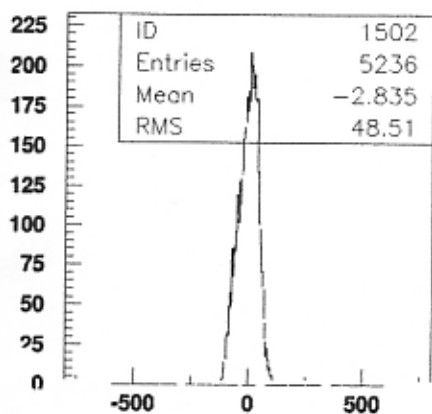
RUN #4636: Noise level estimation run, triggered by clock.



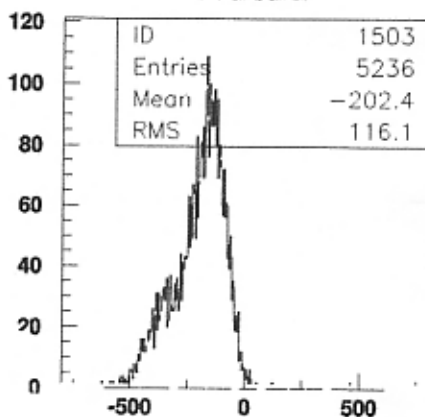
Even sum



Odd sum



Even sum - Odd sum



Even sum + Odd sum

⊙ Noise Level Summary
@ PASSIVE F/O.

▲ TOTAL Noise component:

$$\Rightarrow \sum(\text{pedestal}) = 116.1 \text{ ch RMS.}$$

▲ Coherent Noise Spectrum.

$$\text{CNS} = \sqrt{\text{TNS}^2 - \text{RNS}^2}$$

$$= 105.47$$

$$\text{RMS(CNS)} \approx 105 \text{ ch.}$$

7:48 # 4637. COSMIC ray.

10:23 Injection. H.V. on

10:27 #4638 electron @ 5×10^4 Gain passive divider (3.7 k counts/sec)10:40 #4639 electron @ 5×10^6 Gain " " (~1 K counts/s)

10:45 Run #4639 stopped. ADC ch 28, 29, 30, 31 ~~some~~ out of range for most events. Need to use attenuators. Beam dumped.

couple 10 dB attenuators to F14, F15, F20, F21

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LED pulse conf. modified (See Page 30)

LED5 = {87.88, 89.90(91), 92.93, 94.96, 98}

~~#055~~11:00 Injection HV. on (5x10⁴) (8.5 k counts/sec)

11:05 #4640 pedestal

11:07 #4641 LED (2.5 k counts/sec)

11:21 #4642 alpha.

~~11:21~~ ~~Dump~~ HV off → Injection → HV on
4.8 k cts/sec

11:30 #4643 pedestal for online monitor

11:39 #4644 ~~containing mono~~ e⁻-run 3.1 × 10⁴ evts. passive div, 60MeV, -10dB.

12:01 Injection (2.0 k cts/sec)

12:06 #4645 pedestal

12:08 #4646 e⁻-run 50000 evts

HV off. New injection, HV ON.

12:34 #4647 e⁻-run. ~~about~~ approximately
life 405sec
50000 evts

12:42 HV. off. 12:44 INJECTION. HV load.

#4648. e⁻-run.

13:09 #4648 stopped @ 40420

13:11 # New injection

13:13 #4649 e⁻-run

13:28 stop 4649 174773 events

13:30 Injection

13:33 #4650 e⁻-run

13:46 #4650 stopped @ 68260 evts

13:50 New injection HV on

13:52 #4651 started
stopped 91002 evts

14:09 new injection

14:20 #4652 started
S

X {ADC#31 (F14), ADC#28 (F15) No signal
~~generated~~ HV were not supplied by an error.
trip!

#4652 stopped

14:32 #4653 started
S

14:38 #4653 stopped trig rate ~190 Hz, evt rate ~50 Hz 17900 events

14:39 injection (13.6 kcts/sec max)

14:42 #4654 pedestal (with beam on???)

14:44 #4655 e⁻ run (7 kcts/sec → 200 cts/sec)

15:03 stop 4655 98700 evts

15:07 Injection (1 kcts/sec max)

15:11 #4656 (568 cts/sec → 220 cts/sec)

15:18 # stop 4656 25707 events

15:20 Injection (3.7 k cts/sec max)

15:30 # 4657 (1.4 k cts/sec → 121 cts/sec)

15:45 ~~#46~~ stop 4658 37722 events.

15:50 Injection (6.5 kcts/sec max)

15:54 #4659 (4.6 k cts/sec → 100 cts/sec)

16:20 stop 4659 90,606 events

16:25 Injection (~~4.9~~^{12.9} k cts/sec max)

16:27 #4660 (11.1 k cts/sec → 90 cts/sec) 120,702 events

16:54 #4661 pedestal

16:56 #4662 LED

17:09 #4663 α

17:45 * We put the delay (10ns) ~~to~~ to the GATAC
discr. to see the effects on the cross talk.
TDC ch 2, 8, 39, 22. for test

* Start signal also delayed by 20 nsec

17:45 New injection

17:50 # 4664 started w/ 10 nsec delay in ch 2, 8, 22, 39.

18:00 # 4664 stopped @ 44449 evts

18:30 New injection HV-on
4665 started w/ 10 nsec delay in "

18:35 New Injection HV-on

18:56 # 4666 started w/ 10 nsec delay in "
(stopped after taking 50000 evts)
Switched off the event limit switch.

19:08 # 4667 started w/ 10 nsec delay in "

19:15 stop 4667 17601 events

19:25 Increased current of Linac filament +0.1 V
Injection (7.2 k cts/sec max)

19:27 # 4668 started w/ 10 nsec delay in "

19:45 stop 4668 ← (HV error during #4668 L24)

20:00 New injection HV-on

20:05 # 4669 e-run w/ same cond. as before ←

20:20 # 4669 stopped @ 69072 L24 tripped

20:47 accelerator re-tuned.
New injection HV-on

20:50 # 4670 e-run same as # 4669

21:14 stop 4670 79891 events

21:17 Injection (14 k cts/sec max)

21:20 # 4671 e-run same as #4670 (10 k cts/sec → 95 cts/sec)

21:45 stop 4671 114719 events ~~(14 k cts/sec max)~~

- 21:48 Injection (14 kcuts/sec max)
- 21:50 #4672 e-run same as #4671 (11 kHz \rightarrow 130 Hz)
- 22:20 #4672 stopped 11,093 events triggered.
- 22:25 #4673 e-run same as #4672 (14 kHz
FIB HV trip. Stopped ~5800 events triggered.
- 22:30 #4674 same as #4673 (29,565 events
- 23:00 #4675 pedestal (still gain 5×10^6)
- #4676 LED
- #4677 alpha @ 81527 evts

We found the attenuators for ^{F14.15.20.21} ~~ch 2, 8, 39, 22~~ ~~was~~ were installed before passive splitter! (#4626 - #4677)

\Rightarrow should be ~~be~~ bw splitter & CIA #4640
4638, 4639: w/o Attenuator

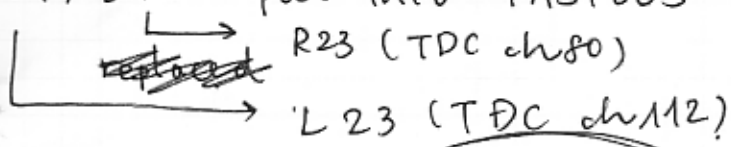
\Rightarrow We should take e-~~run~~ data w/ passive splitter and attenuators bw splitter & CIA tomorrow morning.

~~* 48 delay (10ns each)~~

* 10 ns delay added in the following channels

- TDC ch ^{start from 1}
- 2, 8, 11, 22, 39, 43, 48, 49, 54
 - 56, 59, 63, 75, 79, 81, 89, 91
 - 97, 109, 111, 113, 127

* ET1, ET2 put into FASTBUS TDC (CAMAC TDC input moved to FASTBUS)



see p44

- #4678 pedestal
- #4679 LED
- #4680 alpha
- #4681 cosmic \rightarrow L21 HV trip
- #4682 no valid data ^{6:09}

6:49 # 4683 cosmic sam as #4681.

~~#4683~~ #4684 test

7:50 # 4685 cosmic

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8:36. RUN #4685. Stopped.

#4686 Delay time check for new setup of Trigger Counter w/ FASTOUT DAC.

→ OK.

L23, R23 have been not terminated,

SO, RUN # 4678 ~ 4685, signals are refracted @ L23, R23.

9:45. HV off. & New Injection

9:50. HV configuration file "5x10⁶ gain", loaded.10:01. RUN #4687. e⁻ run @ 5x10⁶ GAIN & PARSED F/O.

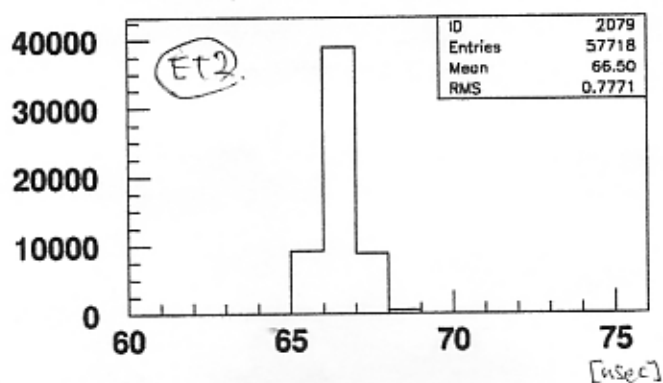
L27 is not filled significant spectrum, filled only pedestal.

~ 50000 events.

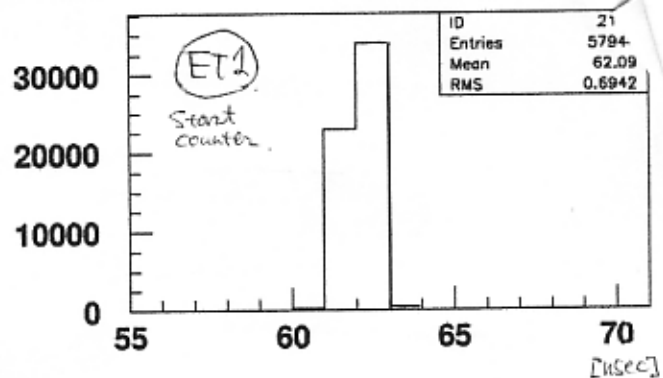
10:12. RUN #4688. e⁻ run, same as previous setting.

~ 10000 events RUN STOPPED

HV off & New Injection

10:27 RUN #4689 e⁻ RUN same as previous setting

TDC R23



TDC L23

Electron Trigger Counter TDC distributions. Should be "mono-peak" but have "width", suggesting that the start signal has jitter.

10:50. Stop the RUN 74000 events.

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HV off & new injection

10:53 RUN # 4690 e⁻ RUN SAME AS PREVIOUS

11:16. HV off. & New injection.

11:21. RUN # 4691. e⁻ RUN same as previous setting.

11:40 Stop the RUN 83800 events

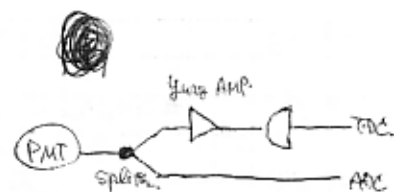
HV off & new injection

11:45 RUN # 4692. e⁻ RUN NAME as previous setting

12:06 Stop the RUN 100000 events.

Beam dump.

Yury's AMP installed @ F15 & F20.



12:31. RUN # 4694. pedestal run (#4693 is failure)

RUN # 4695. LED calibration run.

RUN # 4696. α. ~ 40000 events taken

Not Completed
Empty

12:44. HV off.

12:46. New injection & HV set file loaded.

RUN # 4697. Failure. DISK FULL!!

C:\critical data → F:\data → Temporarily one.

13:14. HV off, New injection, and HV ON.

13:18. RUN # 4698. e⁻ run. w/ Yury AMP. ~ 30000 events taken

HV off. New injection. and HV ON.

13:46. Machine conditioning. by Shirai-SAN.

13:46. RUN # 4699. e⁻ run w/ Yury's AMP.

14:06 Stop the RUN 105050 event.

HV off & new injection

14:12 RUN # 4700 e⁻ RUN ~ 100000 events

14:34 Beam dumped

14:36 RUN # 4701 pedestal

14:38 RUN # 4702 LED

14:52 RUN # 4703 α

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Switch back to Active Divider

20dB attenuator
for central 4 channels

16:33 #4704 pedestal

16:35 #4705 LED

16:46 #4706 alpha

16:55 New injection

16:59 #4707 e-run w/ active splitter gain 5×10^6
50000 events

17:56 Injection

18:00 #4708^{e-run} (10k cuts/sec \rightarrow 178 counts/sec)
 ~ 100000 events

18:23 Injection

18:25 #4709 e-run

18:43 stop 4709 96721 events

18:45 New injection HV-on

18:50 #4710 e-run

19:00 stop @ 81535

19:02 injection. Set HV set loaded.

19:13 #4711 (9.8kcts/sec \rightarrow 120 cts/sec) 19:34 Stop. ~ 10000 events triggered.

HV off, New injection, hED set file loaded.

19:38 #4712. 19:55. stop. ~ 10000 events taken.

19:58 #4713. pedestal.

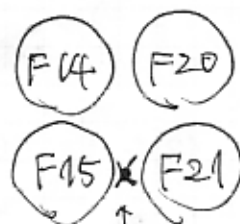
20:01. RUN #4714. hED calibration.

20:11. RUN #4715. α .Detector shifted upward. by 31mm

21:15 Injection HV-on

21:20 #4716 e-run 50,000 evts.

21:37 #4717 e-run



impinging point

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21:47 #4718 pedestal run.

21:54 #4719 LED

22:04 #4720 α

20:15 ~~#4721~~ Injection.

#4721 e⁻ run (9kcts/sec →

22:40 stop @ 102961

#4722 pedestal

#4723 LED

#4724 alpha

Detector shifted upward by 31mm ~~to~~ to left by 31mm.
from original point.



center of ADC#30



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0:01 #4725 pedestal

0:02 #4726 LED

0:13 #4727 α (30,000 evts)

~~septum current slightly changed to~~

0:32 #4728 e-run gain 5×10^6

shift 31mm up, 31mm left.

#4728 stop @ 72719

0:45 New injection

0:49 #4729 e-run same cond. as #4728

0:55 #4729 stopped @ 18839

~~0:57 #4730~~ new injection

1:39 #4730 e-run same cond. as #4729

stop @ 14152

1:49 #4731 e-run same as before

stop @ 53586

2:04 #4732 pedestal

2:05 #4733 LED

#4734 alpha

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2:30 ~~recovery~~ start

* #4678 - #4703
ADC ch 28 & 29 may possibly be swapped.
(F15) (F20)

8:00 4 More ELFs ordered to Tomoe-Shokai.
simultaneous suspensions

10:20 Xe level meter and teflon lower temp. show Xe level already became lower than the lowest PMT window, although not sure when it did so.

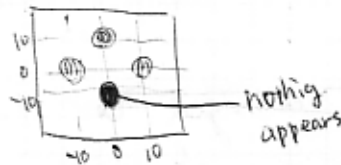
HV on to prepare for gas Xe run with α source.

alpha run in Gas Xe $P = 1.8 \mu\text{atm}$, $T \sim -90^\circ\text{C} \sim -95^\circ\text{C}$
"lxeksr_1eb_021202.lv" loaded

10:34 #4735 pedestal for α in GXe

10:36 #4736 LED for α in GXe

10:46 #4737 α in GXe (?) = 30,000 evs



⇒ Xe surface level has not reached the level of the lowest quartz windows!! yet

⊗ That was my imagination. In fact, it was just a problem with threshold levels for triggers.

11:30 Set NIM module's thresholds as below.

α on top -105mT

α on right -60mT

α on left -60mT

α on bottom -30mT

$G = 1 \times 10^6$ $P = 1.7 \mu\text{atm}$

#4738 11:49 pedestal for α in GXe

#4739 11:50 LED for α in GXe

#4740 12:01 α in GXe . 50,000 events

⊗ Xe surface has reached the bottom of the inner chamber!!

⊗ recovery paused.

12:10 loaded "5eb-021204.hv"

HV trip

address	HV ch	HV
L35	10-10	976 → 0
L1	2-2	1135 → 0
BT19	7-5	1084 → 0
BT22	6-5	1198 → 0

$$G = 5 \times 10^6, P = 1.7 \text{ atm}$$

12:29 #4741

pedestal for α in GXe

12:30 #4742

LED for α in GXe

12:51 #4743

 α in GXe, gain = 5×10^6 , threshold = 20mV, 5000verts.

] BT2 had been in HV trouble.

HV off