8-Nov-2003

Aare 0mm → 6mm again

		S1π	S1π*RF	S1π*RF×γ (NaI)
Aare 6mm Berg 22mm Himmel 18 Halle 19	Setting (A)	16.5M/10^6p	13.5M/10^6p	5983/10^6p
	Setting (B)	17.0M/10^6p	14.4M/10^6p	5936/10^6p

2:06 #6022 π° S1*NaI*Xe (A) Aare 6mm

1857μA

end: 17m 53s rate $\frac{6000-1073}{1073}$ = 4.6 Hz

#6023 S1*NaI*Xe (B) Aare 6mm

1851μA

end: 15m 20s rate $\frac{6000-920}{920}$ = 5.5 Hz

↓ Inconsistent with #5996 !

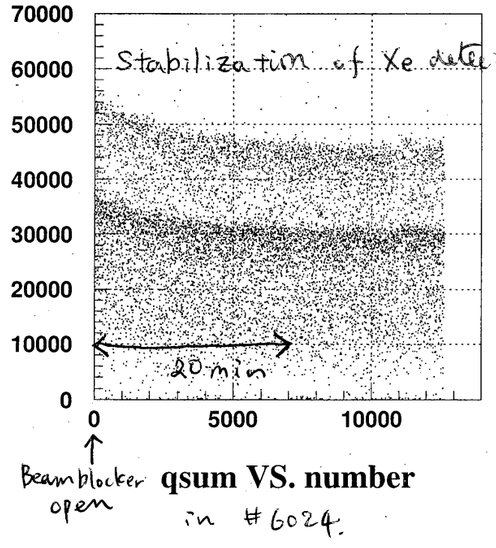
accuracy of slit position?

☆

2:48 Beam blocker closed

3:18 #6024 same as #6023

- Just after 30min Beam OFF period.
- To see the stabilization of Xe detector



qsum VS. number in #6024.

Should carefully see the events in the first 30 min after the beam blocker is opened.

See also Ryu's plot on Nov. 1

8/Nov/03

Aare ~~0~~ 9mm again

		S1π	S1π*RF	S1π*RF×γ (NaI)
Aare 9mm Berg 22mm Himmel 18mm Hölle 19mm	setting (A)	17.3M/10^6p	13.8M/10^6p	6751/10^6p
	(B)	18.9M/10^6p	16.0M/10^6p	6766/10^6p

4:01 #6025 JUNK

#6026 π° run S1*NaI*Xe (B) setting

Aare 9mm

proton 1856μA

end: ~~23m 33s~~ 13m33s $\frac{6000-813}{813}$ = ~~6.38 Hz~~

4:34 #6027 π° run S1*NaI*Xe (A) setting

proton 1854μA

17min 41s $\frac{6000-1061}{1061}$ = 4.7 Hz

5:07 "meg111pis1g.set" loaded

S1π	S1π*RF	S1π*RF*γ
15.8M/10^6p	13.4M/10^6p	6836/10^6p

#6028 JUNK

#6029 π° run S1*NaI*Xe "meg111pis1g.set"

proton 1855μA

16m 59s $\frac{6000-1019}{1019}$ = 4.9 Hz

~~#60~~

8/Nov/03

Aare 12mm again

		S1π	S1π·RF	S1π·RF·γ(NaZ)
Aare 12mm	(A)	18.0 M/10^6p	13.9 M/10^6p	6513/10^6p
Berg 22mm				
Himmel 18	(B)	20.1M/10^6p	16.9M/10^6p	6930/10^6p
Hölle 19				

5:46 #6030 π° run S1 * NaZ * Xe (A) (meg111 pi S1. set)

proton 1855 μA

16m:58s $\frac{(6000-1018)}{1018} = 4.9$ Hz

#6031 JUNK

#6032 π° run S1 * NaI * Xe (B)

proton 1853 μA

13m 27s $\frac{6000-80\%}{80\%} = 6.4$ Hz

Aare 15mm again

		S1π	S1π·RF	S1π·RF·γ(NaZ)
Aare 15	(A)	~~20.8M~~ 18.6M/10^6p	~~17.2M~~ 13.8M/10^6p	5369/10^6p
	(B)	20.8M/10^6	17.2M/10^6p	8644/10^6p

6:13 #6033 π° run S1 * NaI * Xe (B)

proton 1855 μA

$\frac{6000-790}{790} = 6.6$ Hz

6:50 #6034 JUNK

#6035 π° run S1 * NaI * Xe (A)

proton 1852 μA

18m 25s $\frac{6000-1105}{1105} = 4.4$ Hz.

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7:23 #6036 pedestal BEAN ON Circ OFF

#6037 LED (3&7) "

7:36 #6038 LED (1&5) "

7:43 #6039 alpha "

7:50 Beam Broken closed

8cm Aare Berg

Remove TC.	HV for them set to be zero.
TC1	1876 V
TC2	1900 V
TC3	1793 V
TC4	2000 V

TC veto is also off. 1500V → 0V.

Pb wall setting.

Aare	9mm	Himmel	18mm
Berg	16mm	Hölle	19mm

8:20 Beam broken opened.

Data set to be taken in weekend with current Pb wall setting

① Xe Trigger only (w/o S1, w/o NaI) to compare with #5721~5723

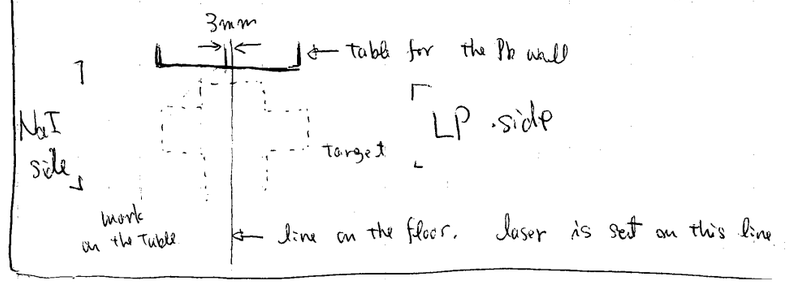
② Xe (8 Front 4 back) * NaI (Central 4) * S1 ~300000 events.

③ Xe (") * NaI (QUAD) * S1 (width ~ 650ns) "

④ Xe (") * S1 "

⑤ Same as ② but with collimator for NaI with beam magnet setting (B) meg111 pi2ddog.set

Pb wall and the table under it alignment was checked by using laser



8-Nov-2003.

20:19 Run #6055 — test run to see the effect of the beam blocker, using α.

21:08 #6056 pedestal
21:09 #6057 LED 3 of 7

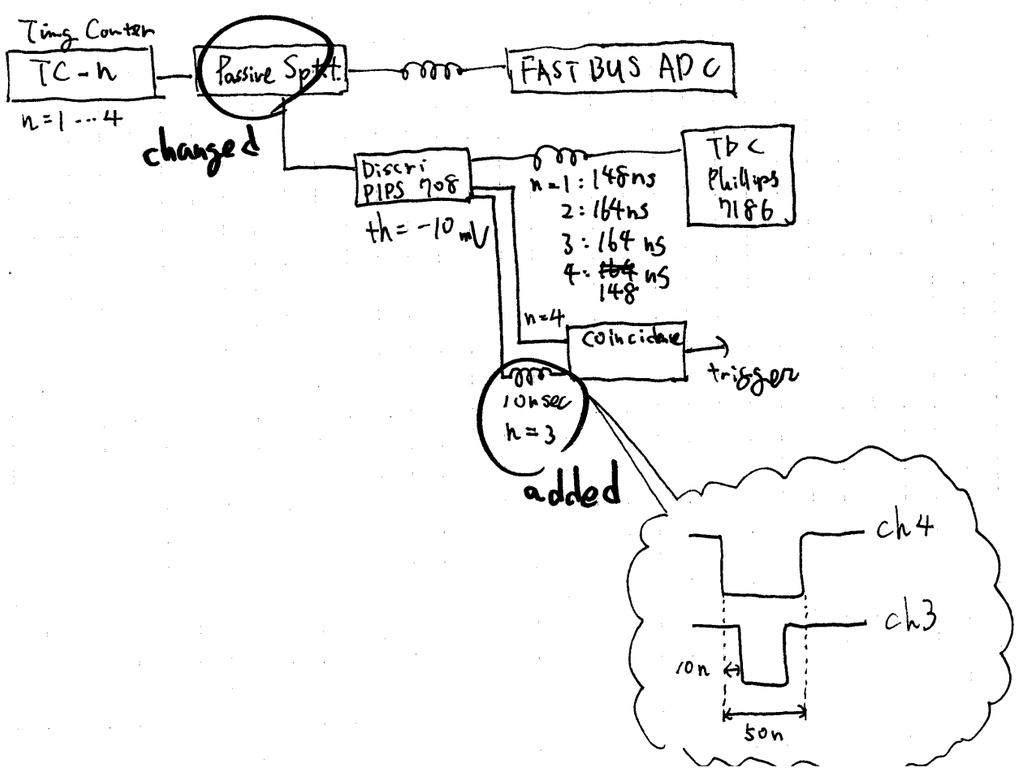
beam shutter open
proton current ~ 0 mA

21:15 #6058 LED 1 of 5
21:22 #6059 α
21:30 #6060 CR

Beam will not be back till tomorrow noon.

22:48 close beam shutter
stop 6060

change splitter for TCs to passive one.
add delay cable (10 nsec)



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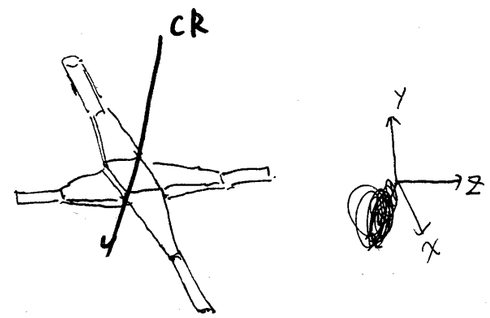
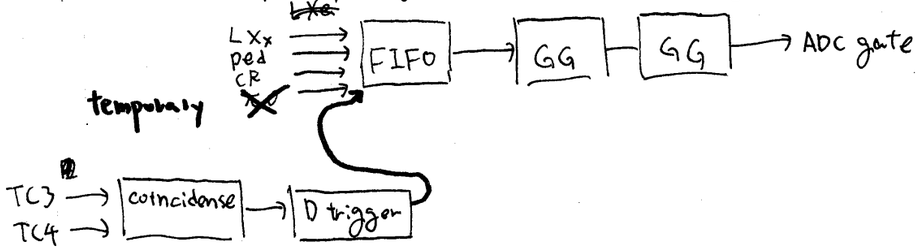
put timing counters for CR measurement.



temporary logic circuit for timing counter CR measurement.



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0:23	#6061	pedestal	shutter close w/o circulation
0:27	#6062	CR with TC trigger	

junk

frontend restart

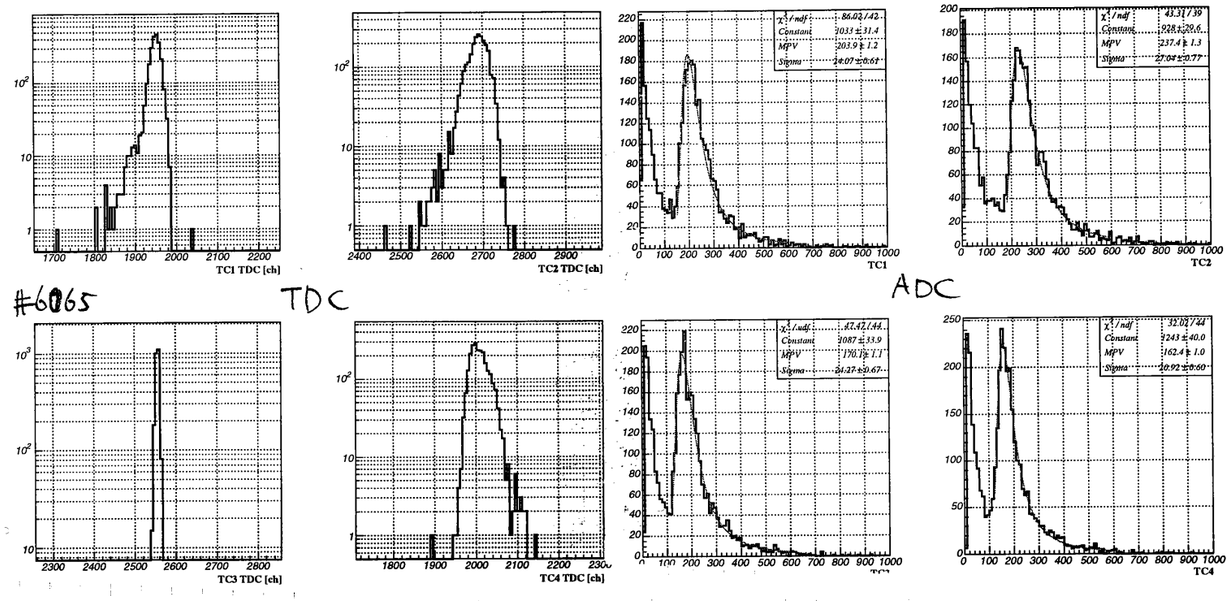
1:19	#6063	pedestal
1:20	#6064	CR with TC trigger

CAMAC TDC 7186 @ station #23 is broken (all channels returns "0")
⇒ replaced to new one

3:30 #6065 CR with TC trigger & passive splitter
TC4 HV -2000V ⇒ ~~correct~~? ok.

6:16 #6066 same as #6065

6:48 #6067 CR with TC trigger & active fan-out



8:35 #6067 stopped after ~ 50.000 events

#6068 pedestal run ~ 5000 events

8:50 #6069 CR with TC trigger & active fanout.

10:40 The beam seems on again but is extremely unstable. Anyway I did the RUNDGANG process, and wait for a better beam as the foregoen 11:00 o'clock message.

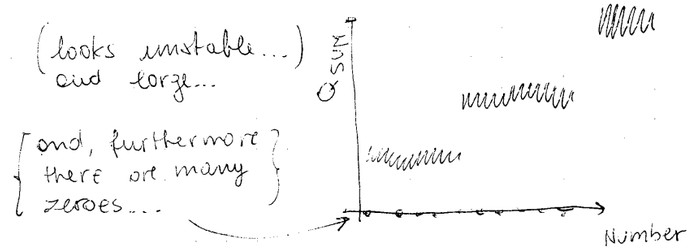
11:00 Run 6069 stopped after collecting 50.000 events

Run 6070 pedestal + beam blocker closed (= beam off)

11:05 The message on the monitor says "High energy setup" let's wait...

11:08 LED 1&5, beam blocker closed.

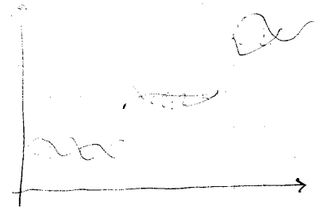
#6071



let me analyse this run...

» THIS FILE IS VERY BAD «

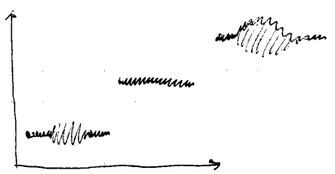
#6072 Idem. The zeroes are due to the TC3 ⊕ TC4 trigger, which was now unplugged: the zeroes disappear but the file seems still bad. WHY ??? ...



I unplugged & replugged the lemo cables on CAMAC led driver & the signals now look good.

» ARE WE MEASURING THE GAINS OR THE LED FLUCTUATIONS ?? «

Sometimes is bad again !!



12:15 ONE OF THE 2 OUTPUTS OF CAEN LED DRIVER SEEMS NOT TO WORK. I'll CHECK AFTER LUNCH!

« --- there and back again ... »

13:00 # 6073 LED 1 ALONE !! How good are these gains? After that we will check LED driver

IF I TOUCH THE CABLE ON LED DRIV CH 1 IS A MESS!(

Replaced 3ns cable that goes from PHILLIPS cylindrical attenuator to CAEN LED DRIVER Ch. 1.

! Now if I pull the cable nothing happens! (unless I pull very hard!)

LED #1 : left box attenuation 0,39 x 0,94
LED #5 : right box attenuation 0,34

This seems a good choice of light output.
In this way the qsum peaks are ~ 50 MeV, ~ 100 MeV, ~ 150 MeV etc...

13:25 #6074 LED RUN. LED 1&5 NEW CONFIGURATION !
13:30 #6075 IDem to check stability
#6076 // ~~beam on~~ shutter open at 1/2 run but no beam!! I=0 !

please after check don't change LED anymore!!!

I'd like to have somehow less light during calibration, in order to have all the PMTs working in a range that is similar to the "real" photons from π^0 decay. If I increase the attenuation the LED's don't switch on so I try to reduce the DAC value in fal.c (...oops frontend.c sorry Stefan!)
Instead of 93 95 97 99 101 103 I try
89 91 93 95 97 99

#6077 Run w. LED 1&5 with the amplitude 89, 91....

I add some points @ low intensity

89 90 91 92 93 95

#6078 LED 1&5 still lower intensity

(In the meanwhile the beam is always unstable)

#6079 LED 1&5 changed to {90 92 94 96 98 100}

Conclusion: The gain calibration seems now stable and can be done with this setting without unplugging & changing LED's. I will check the stability with time in future (of course I need to wait for some time!!)

#6080 pedestal @ beam off. $\sigma \sim 36$ channels. ok.

15:10 Replugged π^0 COINCIDENCE ON FANIN – FANOUT.
Open beam shutter

15:16 #6081 α-run to see the effect of beam blocker.
Open beam blocker at ~ ~~10000~~ events ~5000 events

15:23 #6082 α-run to see the effect of beam blocker
(Continued.)

15:31 #6083 α-run, same as #6082

15:39 #6084 α-run. same as #6082

15:47 #6085 π^0 trigger. S1 * NaI4 * LXe fr8 bk.4 (same as 6053)
Aare 9 mm Berg 16 mm
↳ JUNK. wrong trigger setting.

15:55 #6086 π^0 trigger. Same as #6085.

JUNK.

trigger rate ~ $1260/2\,\text{min}\ 19\,\text{sec} - 1 = 1.9$ Hz. ??

S1 trigger was unplugged during the Run. It was ~ 6 Hz in run #6053

	S1π	S1π*RF	S1π*RF*~~Rate~~ γ(Na)
trigger rates:	5.47M/10^6P	4.63M/10^6P	1751/10^6P

16:10 re-loaded mes 111pi7 0deg. set (B)

trigger rates:	17.3M/10^6	15.1M/10^6P	6027/10^6P

⇒ ok !!

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16:45 #6086 Stopped

beam blocker Study

16:20 #6087 α-run to see the effect of beam blocker

16:22 beam blocker closed (@ ~~15000~~ 14000 events)

16:28 #6087 end.

16:29 #6088 α-run, same as #6087

16:36 #6089 α-run, same as #6087

16:44 #6090 α-run, same as #6087

16:45 beam blocker opened (@ ~14000 events)

16:51 #6091 end.

16:51 #6092 α-run, same as #6087

16:58 #6093 α-run, same as #6087

~~17~~ 17:07 #6094 α-run. same as #6087

17:20 #6095 pedestal ADC 64, 105, 228, 229, 237, 238 (28) α>3.0

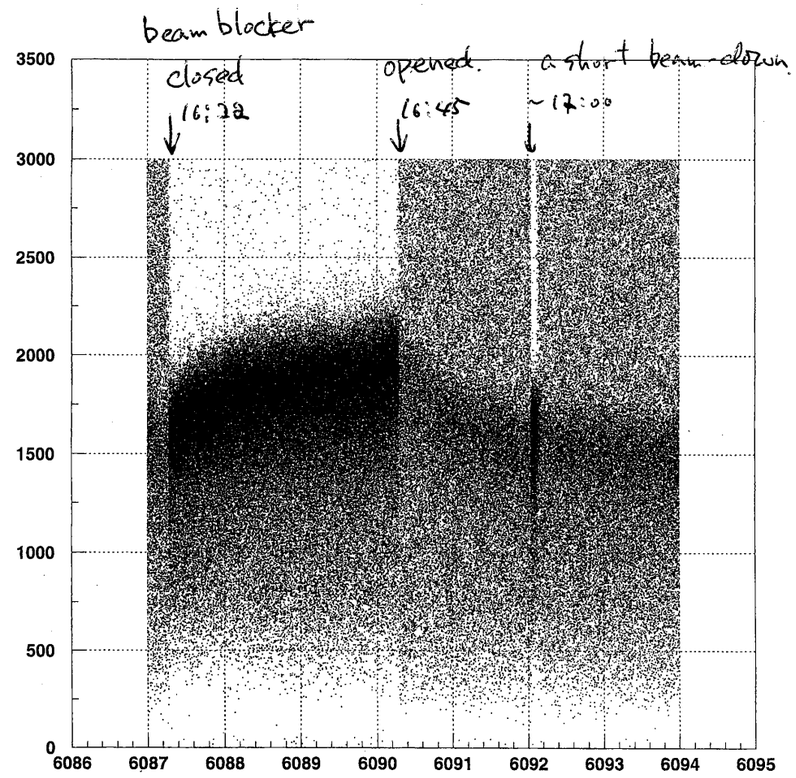
17:24 #6095 LED (185)

17:30 #6096 π⁰ (S1 * NaI4 * LXe fr.8 bk4) : same as #6053
Aare 9mm Berg 16mm
~50000 events (27×10⁴ total)

19:40 #6097 π⁰ same as 6096.
~50000 events (32×10⁴ in total.

#6098 JUNK.

9-NoV-2003



φ95mm Collimeter

See offline/kumac/beam blocker.kumac @ ~~the~~ elc.

9-Nov-2003

beam blocke study #2.

the 95 mm-ϕ collimeter in front of LXe was replaced to Pb brick : i.e. 0mm collimeter (5cm t)

23:12 Run #6099 α-run to see the effect of beam blocker.
23:19 beam blocker closed (@ ~12000 events)
23:24 end #6099

23:24 Run #6100 α-run. same as #6099
23:33 Run #6101 α-run same as #6099

23:40 Run #6102 α-run same as #6099
23:42 beam blocker ~~closed~~ open (@ ~14000 events)
23:48 end #6102

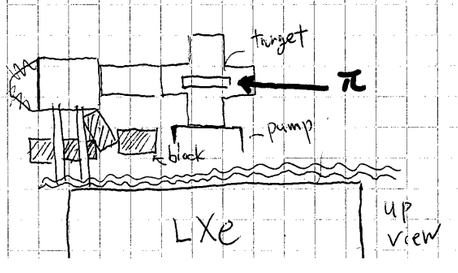
23:48 Run #6103 α-run, same as #6099
23:56 Run #6104 α-run, same as #6099
24:04 Run #6105 α-run, same as #6099

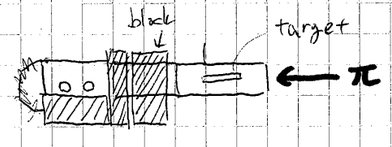
Pb block in front of LXe was replaced to 95 mm ϕ collimeter.

Put some Pb blocks ~~on~~ beside refregerator for LH_2 target

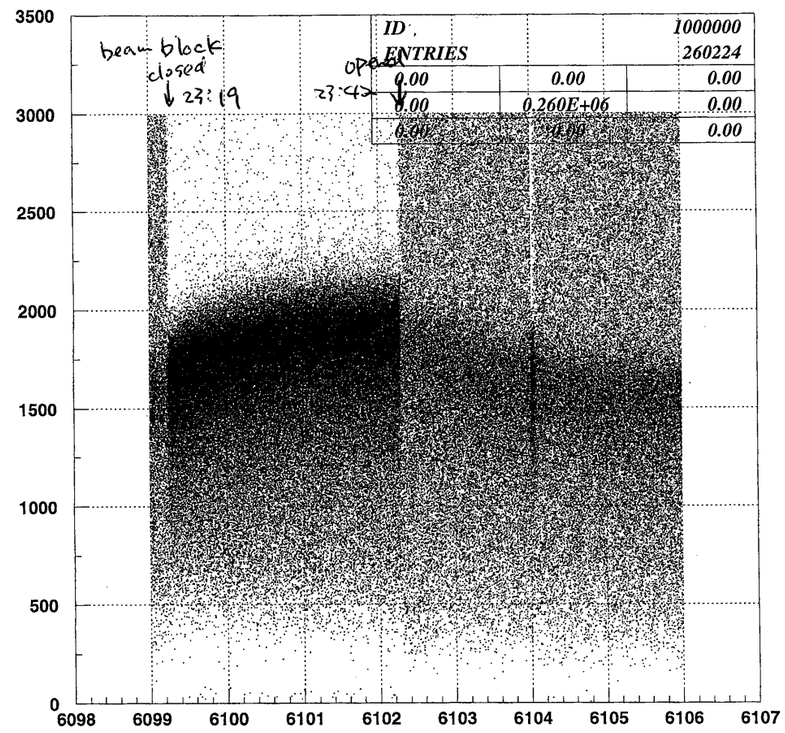
10/Nov/03

0:50 beam blocker open
0:54 #6106 α-run same as #6099
0:58 beam blocker closed (~26000 events)





side view from Xe side



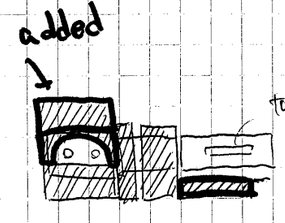
q_raw VS. (run+number/50000.)

Pb brick instead of ϕ 95 mm collimeter

offline/kumac/beamblocker.kumac

@LLe

1:02 #6107 α-run same as #6099
1:09 #6108 〃
1:14 beam blocker open (~33000 events)
same variation can be seen as #6099 ~ #6106
1:25 ~~added~~ three ~~two~~ Pb block are put in front of refrigerator additionally.



10/Nov/'03

1:36 #6109 α same as 6099

1:43 #6110 α "

1:44 beam blocker open (~8000 events)

1:52 #6111 α same as 6099

#6112 "

#6113 "

2:08 beam blocker close (~4000 events)

#6114 same as 6113

take away Pb blicks around refrigerator for LH_2

2:32 beam blocker open

3:00 #6115 pedestal beam on

3:02 #6116 LED 1/5

3:08 #6117 α

S1 * (Xe $^{\delta\,fr}_{4\,bk}$) * (NaI Quad) start

3:21 #6118 pio S1 * (Xe $^{\delta\,fr}_{4\,bk}$) * (NaI Quad) event rate ~55 Hz

3:43 #6119 same as 6118

4:10 #6120 "

4:35 #6121 "

4:56 #6122 "

5:13 #6123 "

← 300000 events in total

S1 * (Xe $^{\delta\,fr}_{4\,bk}$) start

5:31 #6124 S1 * (Xe $^{\delta\,fr}_{4\,bk}$) 50000 events ~100 Hz.

5:40 #6125 same as before.

6:45 #6126 same as before.

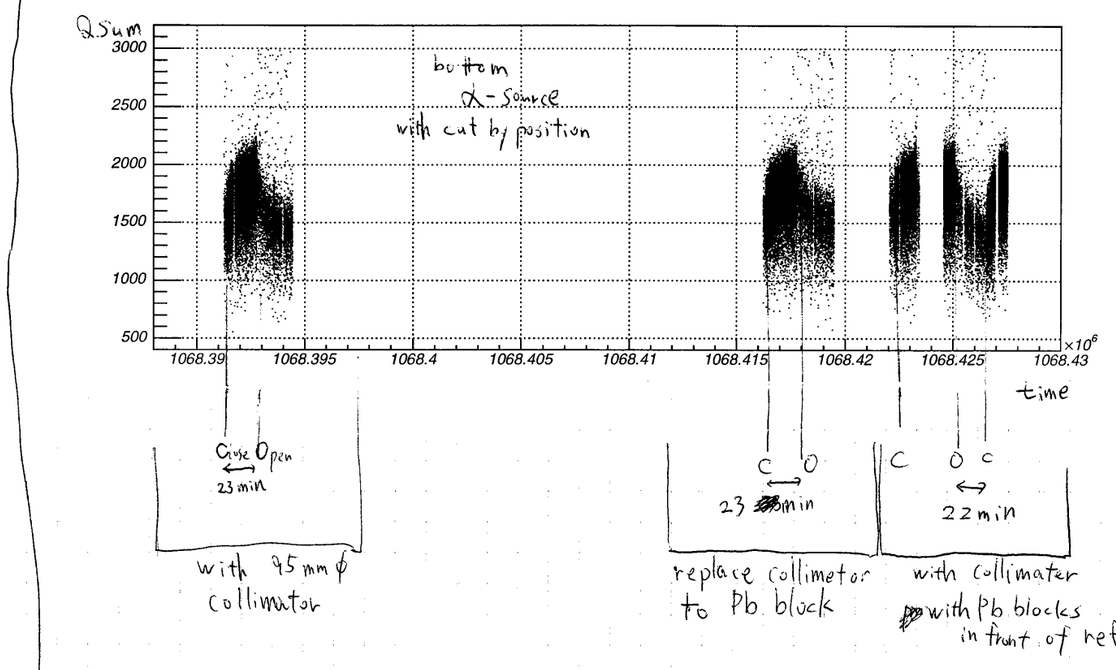
7:02 #6127 same as before

7.12 #6128 Same as before

#6129 same as befor

300000 events in total

beam block study summary



- Same variation can be seen in α data as PIO data
- variation was not changed in
  - with 45 mmφ collimater
  - Pb block instead of collimater
  - with Pb shield in front of refrigerator

The lead wall has been put again in front of NaI.
A collimator ϕ 3 cm has been put in the center
@ 20 cm from the NaI face.

9:47 # 6131 pedestal beam off

9:50 6132 LED 185 beam off.

10:25 RUNDGANG was not done!! Now I'll open the shutter and wait >30 minutes

6133 LED while opening the shutter (opened at ~ 10000)

I recompiled frontend.c ~~with~~ putting a constant LED intensity (=96) for all LED calibration steps.

12:14 # 6134 Led RUN @ constant

@ ~ 7000 events I open the shutter

Q_raw(beginning) ~ 72500.

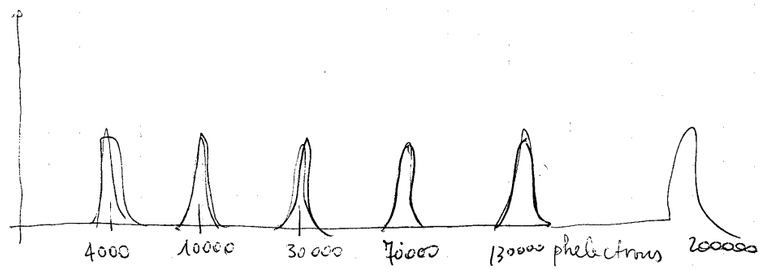
6135 again (shutter open)
6136 again (the shutter is closed @ event ~ 6000)
6137 again (shutter closed)
6138 again (" ")
6139 again (shutter closed)
6140 pedestal
6141 again open @ ~1000
6142 " (shutter open)

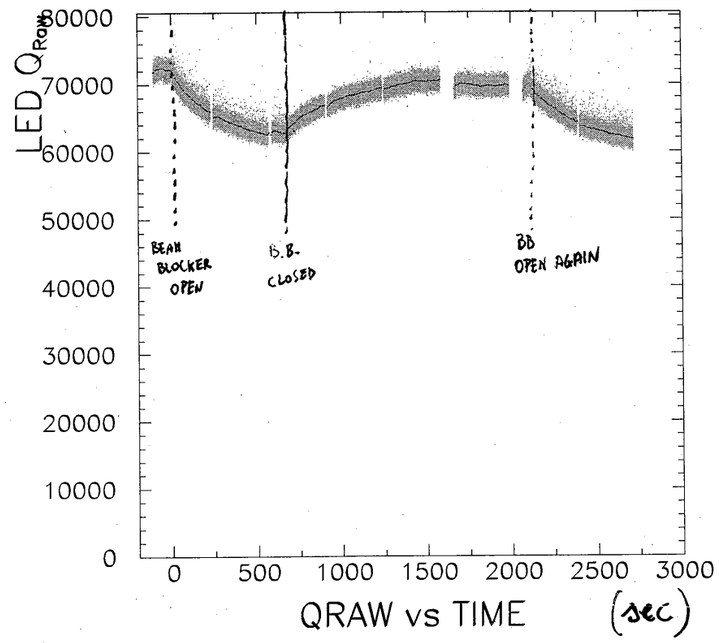
13:05 shutter closed

13:20 go to lunch

13:40 Restored frontend.c to its original configuration with the minor change to set the first led value to 91 instead of 90 because it was almost always discarded from the analysis.

The QSUM peaks now are at





RUN # 6134 ⟶ 6142

14,10 We want to study the rate of low energy background with the beam shutter open & closed because there is the suspect that a high rate (~ MHz) is present and could spoil the PMTs performances.

1) chose 4 PMTs to fan-in
2) measure the rate as a function of a threshold.

16:20 Opened Shutter. Please wait ~ 1hr then ped/~~led~~/ data

16:47 Large pedestal run to evaluate neutron background rate

	#6144	50000 events
	#6145	50000 events
	#6146	50000 events

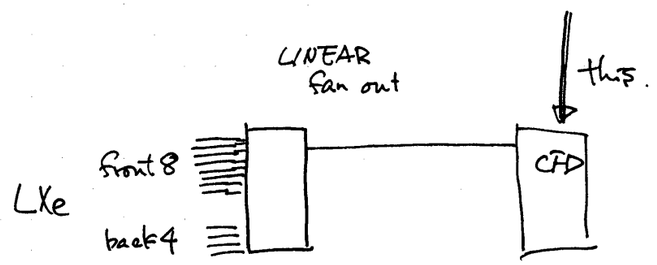
17:10 #6147 LED 1Q5 after 50" opened shutter

17:30 disk c is almost full
Data files before #6145 moved to disk E

18:05 #6148 α. 50000 events

10-Nov-2003.

Background study. by changing the threshold of CFD



initial value = −0.1461 V

18:16 Run #6149 S1 * NaI4 * LXe front 8 back 4 . −0.146 V.

trigger rates 2.4 Hz req.
2.4 Hz accept.

21:24 end #6149 ~ 20000 events.

21:32 Run #6150 LXe front 4 back 4, −0.146 V.

request/accept = 674.6 Hz / 83.2 Hz

27:33 beam blocker closed (@ ~12000 events).
21.8 Hz / 12.5 Hz

22:11 end #6150 (50000 events)

22:17 Run #6151. same as #6150.

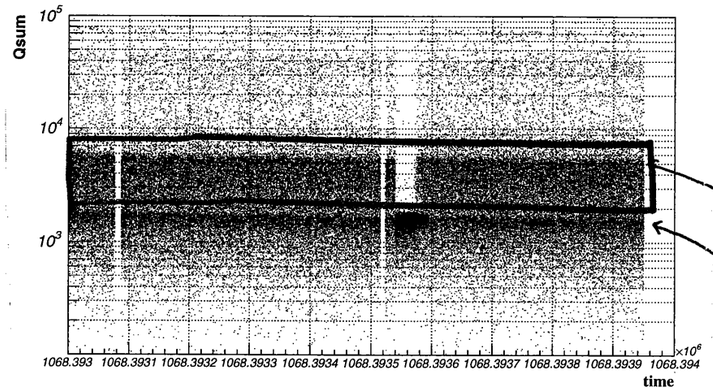
22:29 beam blocker opened (@ ~12000 events)
request/accept = 888.0 Hz / 100.5 Hz

22:35 end #6151 (50000 events)

22:39 Run #6152 same as #6150
request/accept = 892.6 Hz / 101.9 Hz

22:49 end #6152 (50000 events)

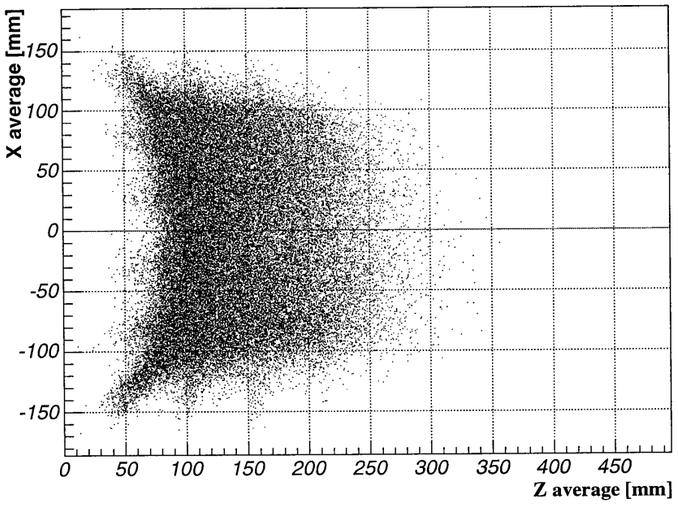
22:58 Run #6153 same as #6150.



← α trigger with beam

~8 MeV

α peak

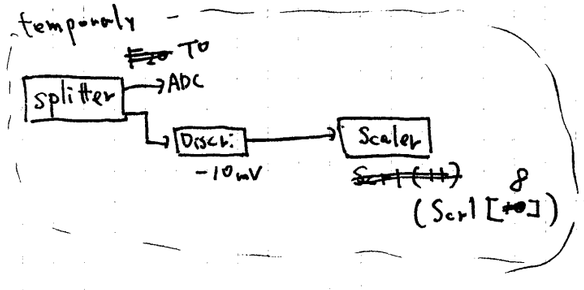


(neutron ?) backgrounds come ~~from front~~.

due to trigger

(2000 < Qsum < 8000)

23:25 CFD threshold chaged to −1.00V. **(minimam value)**



23:34 Run #6154 Lxe front 4 + back 4. threshold = ~~−1.00~~ −0.100V.

request / accept / ~~F20~~ To = 1081.9 Hz / 107.2 Hz / ~~2222.0~~ 1696.0 Hz

23:40 Run #6155 Same as #6154

23:41 beam blocker closed (@ ~6500 events)

23.9 Hz / 19.1 Hz / 107.7 Hz

~~trigger~~

7233.5 Hz / 121.3 / 139.5

once trigger rate decreased, and then increased again.

trimmer of ~~CFD~~ CFD threshold seems unstable.
threshold adjusted again to ~~−1.00~~ −0.100V.

23:51 Run # 6156 Start.

23.4 / 18.6 / 191.4. Hz.

23:53 beam blocker opened. ↓

999.7 / 108.0 / 1948.5 Hz.

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0:49 #6157 same as 6156 beam on

request	1000 Hz
accept	108 Hz
~~F20~~ To	1948.5 Hz

0:52 beam blocker close (~24600 events)

0:54

request	21.4
accept	17.4
~~F20~~ To	117.8

1:37 #6158 same as 6157

1:42 beam blocker open

1:43

request	1115.3
accept	107.4
~~F20~~ To	1931.8

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CFD th changed to initial value. -0.146 V

change scaler input from T0 → F21

1:58 #6159 Xe δ cluster or

request	31682.7
accept	120.4
F21	6945.6

1:59 beam blocker close

2:00

	5951.9
	119.6
	312.6

2:03

	6035.2
	119.8
	328.3

2:05 #6160 same as 6159

2:07

	6086.6
	118.1
	328.8

2:15 #6161 same as 6160

2:26 #6162 same as 6161

	6135.0
	114.8
	317.4

2:29 • beam blocker open

	34559.1
	118.8
	6918.4

2:34 #6163 same as 6162

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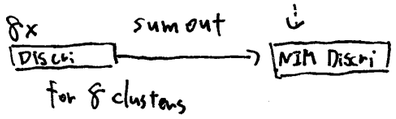
changed NIM Discriminator th from -75mV → -40mV



2:51 #6164 (Xe δ clusters - or) NIM th = -40 mV

request	120573.4
accept	120.6
F21	6974.6

2:53 beam ~~shut~~ blocker close

	6909.8
	117.8
	3069

3:00 #6165 same as 6164

3:11 #6166 same as 6165

	6991.8
	118.6
	324.2

3:19 #6167 same as 6166

3:24 open beam blocker

	129200.7
	122.7
	7017.0

3:27 #6168 same as 6167

changed NIM Discriminators th to initial value (~ -75 mV)

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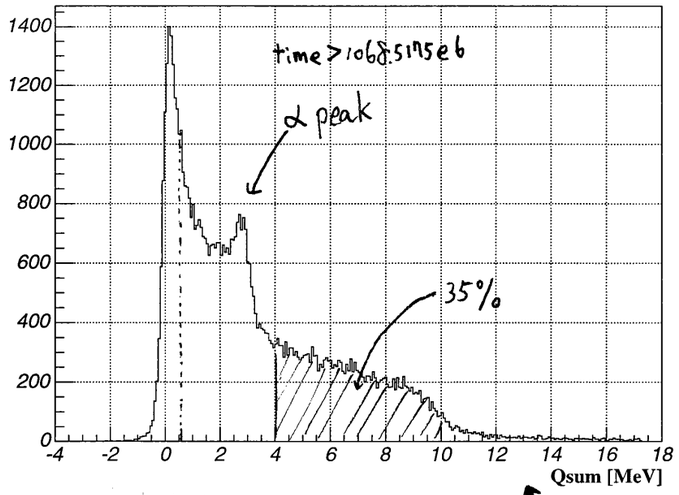
Back to normal data taking.

#6164~#6167

Xe self (8 clusters or)

NIM Disc. th = -40 mV

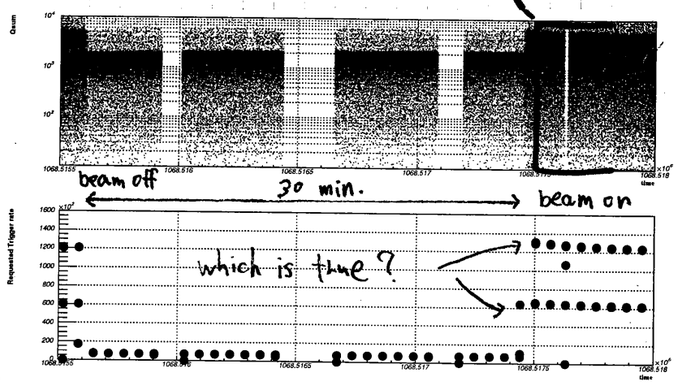


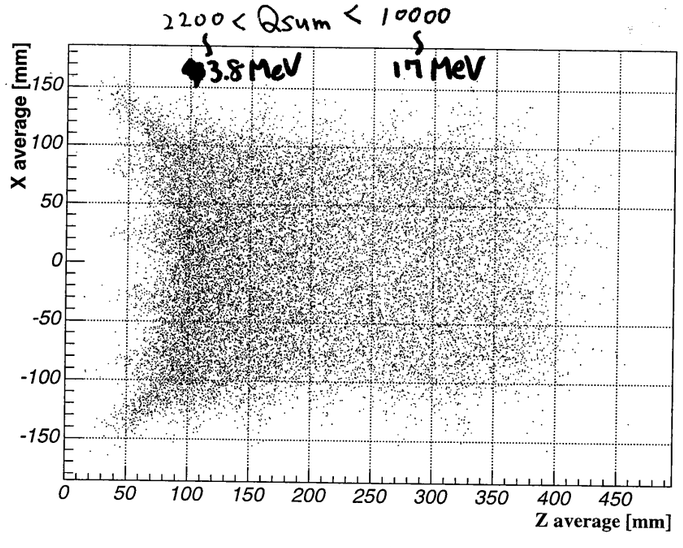
60 kHz × 35 % ~ 20 kHz

20 kHz of neutrons (probably)

~~are coming~~.

come and deposit more than 4MeV in LXe.





simple waited mean of 228 PMTs

time > 1068.5175e6 (it means beam is on)

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3:54	#6169	pedestal	beam on
3:55	#6170	LED	1 of 5
4:02	#6171		
4:10	#6172	S1 * (NaI center) * (Xe 8 front & 4 back)	
		Collimator (NaI 4 cm ϕ ; Xe 9.5 cm ϕ	

8:10	#6173	pedestal after ~30000 events
	#6174	LED Run to check stability.
	#6175	S1 * (NaI Center) * (Xe 8 front & 4 back)

Collimators { NaI ϕ 40 mm ; LXe ϕ 95 mm (useless, < thin window!)

(SAME AS 6172)

Necessary steps to improve the resolution →

- Since each time I analyze the data I apply position cuts on LXe I'd better place the small collimator on LXe side and ϕ57 mm on NaI side [the solid angle acceptance is the same!) but more events are used in the analysis.]
- [Another thing that should be taken is a single-spectrum of LXe alone, with no S1 & No NAI, to see if really we can see the low energy background (maybe already taken ill the previous page)]
- Third: the gains of the PMTs should be brought back to 1×10⁶!!
- 4th: shrink the ADC gate at least to 400 ns.

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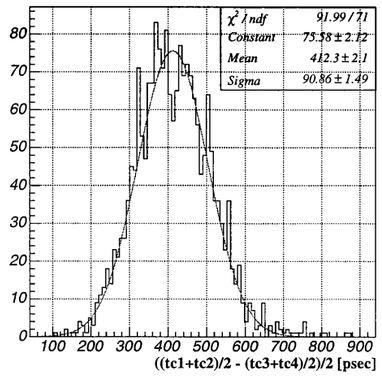
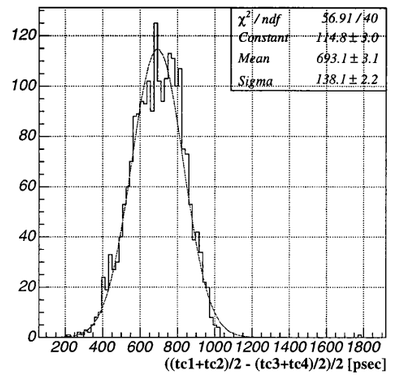
Timing resolution of Timing counter ~~with~~ from CR data



Active Splitter

$\sigma(t) \sim 90$ psec

after time walk correction



Passive Splitter

$\sigma(t) \sim 140$ psec

after time walk correction.

13:00 Run 6175 stopped @ ~35000 events

6176 pedestal

6177 LED 185 @ beam on

13:10 6178 π^0 Same as 6172–6175

(The beam went off several times during this run. be careful)

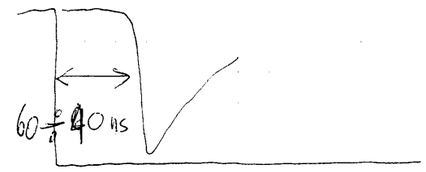
16:10 6179 pedestal

6180 alpha source

6181 junk

We checked the timing of the gate for the various RUN_MODES

For the α-source is



While for γ-s is $\simeq$ 20÷40 ns !

we try to take 2 α-runs with a supplementary gate delay of 20 ns.

GATE + 20 ns delay !

This means that gate width was not changed but gate was delayed relative to the signal by 20 nsec ?

#6182 pedestal

6183 alpha w/ 20 ns delay in gate signal

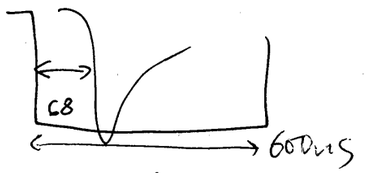
(Removed 6 ns from TIME UNIT TO gate) so the GATE now comes ~6 ns earlier ADC

20 nsec delay added before RUN 6182 was removed.

6185 pedestal

6186 Junk

6187 (Xe 8F + BF4) only proton 1850 μA In this configuration the distance between gate edge and signal is ~ 68 ns



While in normal π^0 decay is 30÷40 ns

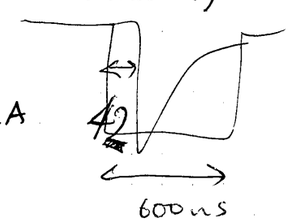
6188 LED

18:00 6189 pedestal ← add 26 ns to the gate signal (20 ns later than usual.)

Junk

6190 pedestal

6191. (Xe 8F+4BF) only proton 1851 μA

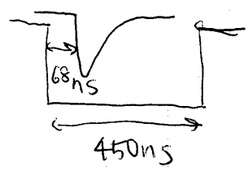


18:30 We reduced the gate width to 450 ns and removed the 26 ns gate delay.

6192 Pedestal gate 450 ns w/ no delay
(6ns earlier than original timing)

6193 LED

#6194 (18:40) ~~π°~~ π° run (Xe F8 BK4 only)

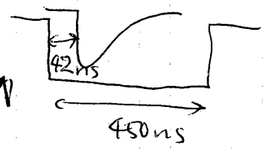


trigger request rate 9.9KHZ
accept 104HZ

→ Beam UNSTABLE

18:46 #6195 π° run same as #6194

18:58 #6196 pedestal gate 450ns w/ 26ns delay



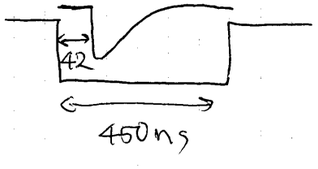
#6197 LED

#6198 π° run (Xe F8 BK4) only

19:20 ~~#~~ #6199 pedestal gate width 450ns w/o delay (6ns earlier than orginal timing)

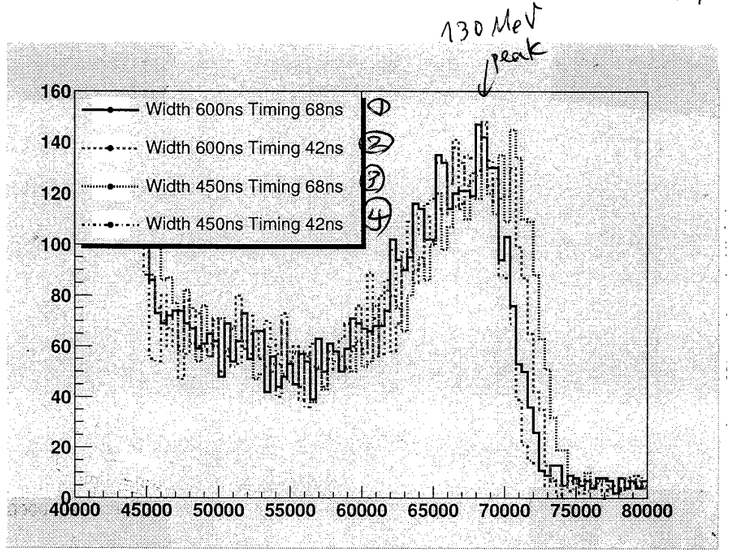
#6200 LED "

#6201 (S1) * (NaI4) * (Xe F8 BK4)
w/ gate width 450ns
proton 1654μA



Refrigerator status Heating power 7.95%
⇒ better to regenerate tomorrow

Comparison among ~~2~~ different gate width and timing
(130MeV ~~π° capture~~ radiative capture peak)
Same calibration data (#6188) is used for comparison.



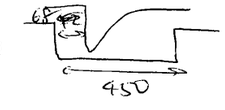
How about pedestal?
Same or different?
⇓
Different pedestal data

peak position ① = ④ < ② < ③ understandable?

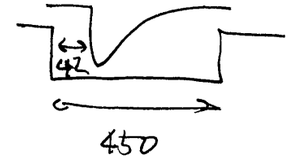
~~#6202 pedestal~~

#6202 ~~(Xe F8 BK4)~~ pedestal w/ gate width 450ns

#6203 (Xe F8, BK4) only w/ gate width 450ns
to check reproducibility.



#6204 (S1) * (NaI4) * (Xe F8 BK4) w/ gate width 450ns
same as #6201



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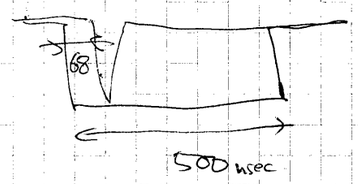
23:57. RUN #6206. start for GATE width study.

Trigger: (Xe Fr8, Bk4) only.

Gate width : 500 nsec.

◉ 30000 events taken.



12/Nov./2003.

0:02 RUN #6207. pedestal.

RUN #6208. LED.

#6209 is SONK.

GATE width set to 450 nsec.

0:14 RUN #~~6209~~ 6210. (Xe Fr8.+ Bk4). Gate width 550 nsec.

0:22 RUN #6211. pedestal

RUN #6212. LED.

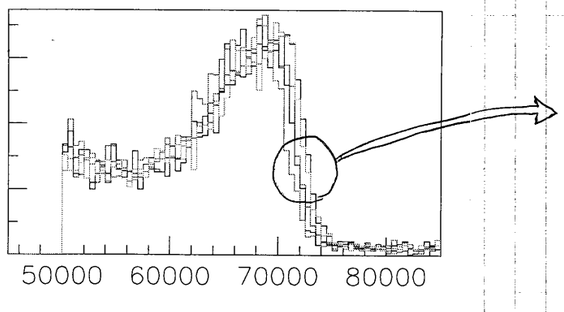
RUN #6213. (Xe Fr8.+Bk4). Gate width 650 nsec

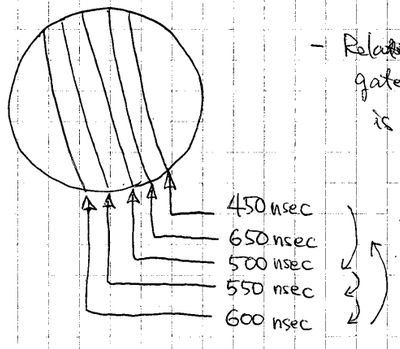
RUN #6214. pedestal.

RUN #6215. LED

RUN #6216 (Xe FRONT 8 + BACK 4) gate width 550 nsec again

◉ Comparison of various gate width setting. (450 nsec ~ 650 nsec)



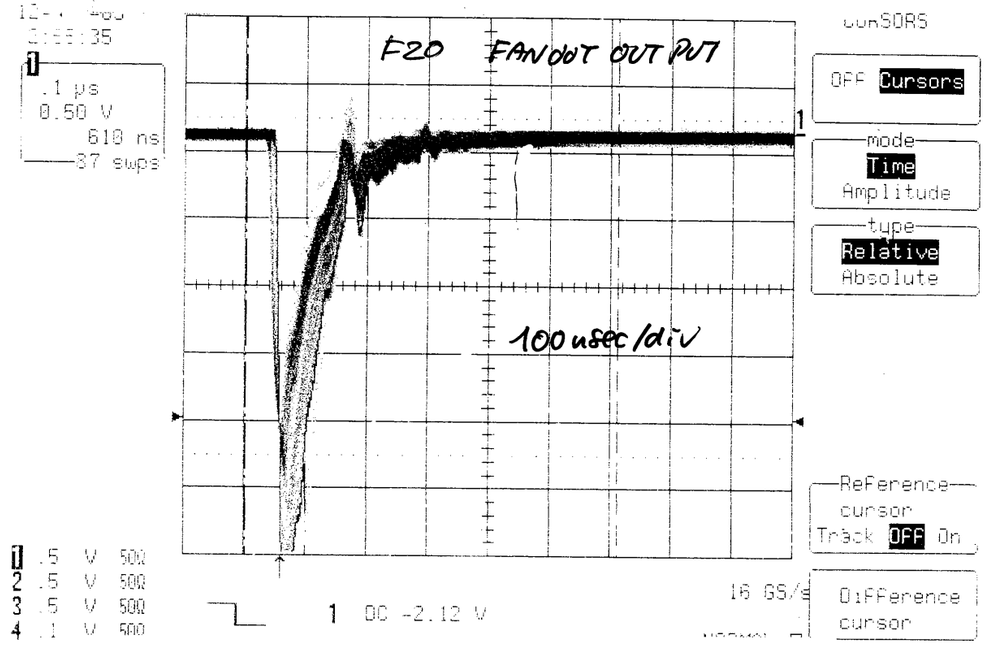


- Relationship between gate start and signal is 68 nsec for all case

- All the data was calibrated by same LED calibration (#6288). with each pedestal data.

130 MeV radiative captured peak (cf. previous page).

12/Nov/03



400 nsec gate width is probably too short, 450 nsec may be a minimum, 500 nsec at least but we start to suffer from overshoot.

Gate width study at the 55 MeV peak is necessary.

We have many data with 600 nsec gate and ~30000 events of 450 nsec gate (RUN # 6201).

So, we take the data with 500 nsec gate and 550 nsec one from now on.

01:48 Gate width ⇒ 500 nsec.

RUN # 6217 pedestal.

RUN # 6218. ↺ RUN.

Trigger: (S1)* (Na14) * (Xe. Fr8 + Bk4.).

Counting rate : ~1.1 Hz

proton current : ~1.8 mA

~10000 events

⚠ It was found that RF signal was not in, from the begging of this RUN. We many have no RF data for recent RUNS. This may be caused by TDC replacement on 9/Nov morning. Now the LEMO cable was plugged to the end and we can see the signal.

12/Nov/03.

3:23 #6219. LED for RUN 6218 Gate width 500 nsec

GATE width → 550 nsec.

03:30 RUN #6220. Pedestal.

RUN #6221. π^0 RUN. [S1*(NaI 4)*(Ke Fr.8+Brt)]. ~10000 events

RUN #6222 LED for RUN 6218 Gate width 550 nsec

GATE width → 600 nsec

5:09. RUN #6223 d. with Beam ON

During this RUN - beam intensity was reduced

FSH52 350 → 75.

17.4M /10^6p → 2.53M/10^6p S1 RATE

⇒ 15% of the usual intensity

5:24 RUN #6224 d with Beam ON

5:31 Ok detector must be stabilized... but be careful for your analysis. Beam intensity was reduced 20 minutes ago.

5:32 RUN #6225 Pedestal. Beam ON (15%)

5:35 RUN #6226 LED Beam ON (15%)

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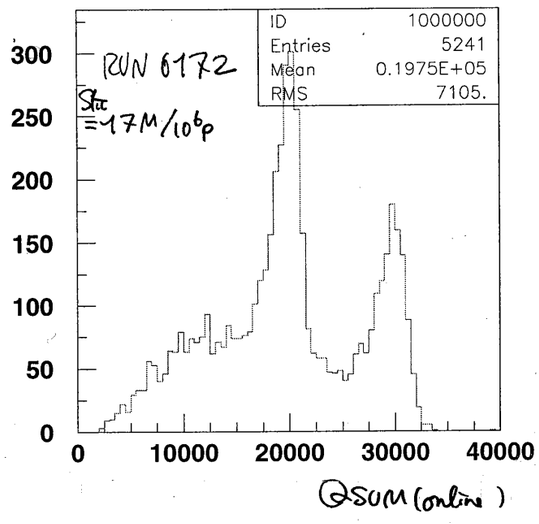
5:42. RUN 6227 π^0 RUN

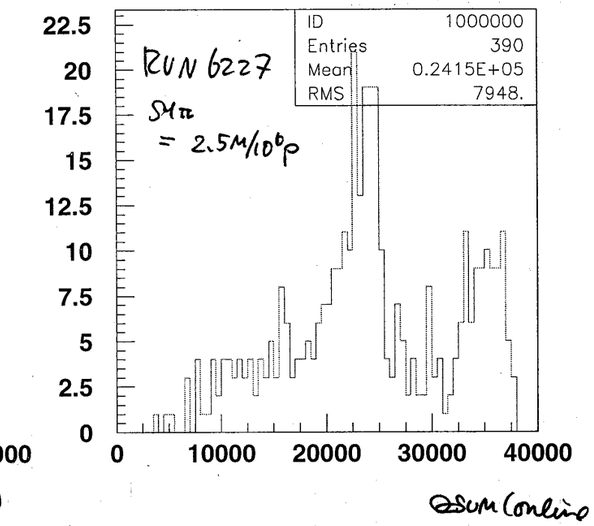
600 nsec. GATE WIDTH

15% Beam intensity

10 events/92 sec ~ 0.11 Hz

(On-line RUN COMMENT is WRONG! Not (NaI QUAD) but (NaI central 4.))





7:30 beam off for weekly maintenance. RUN 6227 stopped after 8204 events

IMPORTANT FOR THE FUTURE (TRIGGER, TIMING....)

12:30 WE SHORTENED THE CABLES FROM NAI 4 SUM LOGIC TO THE BARRACK BY 22 ns. IS TAGGED (NaI 4 SUM NEW)

(A) THE CABLE FROM THE 4-FOLD FAN IN TO THE BARRACK WAS CHANGED FROM 64 ns TO 32 ⊕ 16 = 48 ns

(B) THE CABLES FROM THE NAI TRIGGER MODULES TO THE + ATTENUATORS FROM 10 ns TO 4 ns = 4 ns

(C) THE NIM CRATE MOVED ON TOP OF THE OTHER 74 ns Vs. 52 ns

22 ns gain!

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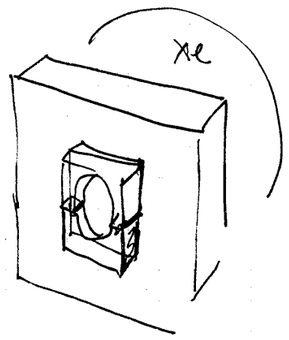
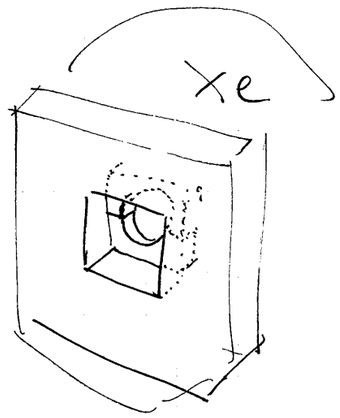
The collimator on LXe side was moved ~~between~~ between the LEAD wall and the Al thin window.

BEFORE



AFTER



2:45 refrigerator regeneration (heating power ~8%)

Compressor stop
Cold head (CH) set point ~~290~~ 270 K

3:00 CH temperature reached at 270 K

#6228 PEDESTAL RUN WITHOUT BEAM

~~#6229~~ LED @ 100 Hz : the LED driver is still unstable!!
↘ JUNK

#6229 LED RUN TAKEN @ CONSTANT ~~AMPLITUDE~~ BUT AT 100 kHz
@ 20000 back to 100 Hz

#6230 LED RUN TAKEN @ 10 kHz
~~back to 100 Hz @~~

#6231 LED RUN Taken @ 1 kHz

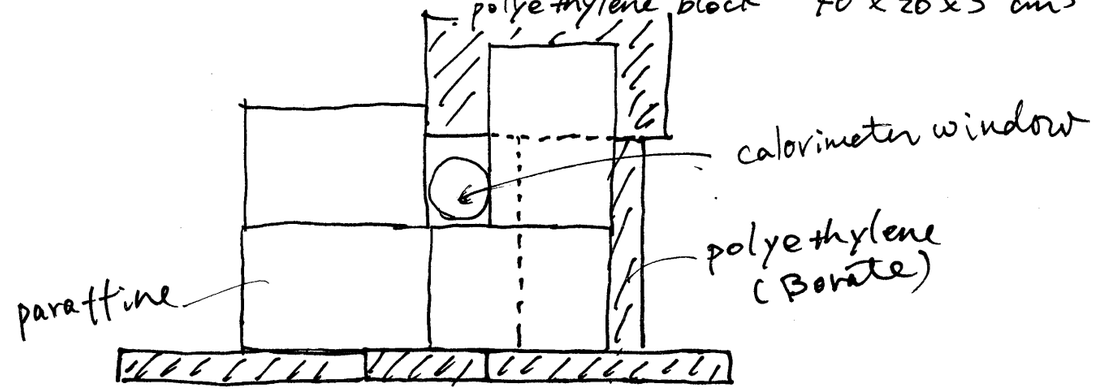
16:00 compresser on
CH set point 170 K

#6232 LED @ 100 Hz constant intensity.

17:00 heating power 41.6 %

Paraffin and polyethylene blocks placed in front of Xe calorimeter.

paraffin block 30 x 20 x 20 cm³
polyethylene block 40 x 20 x 5 cm³



@ • Secondary SBS-Bit3 card (model 617, identical to the primary) was installed to pctmp 7x.

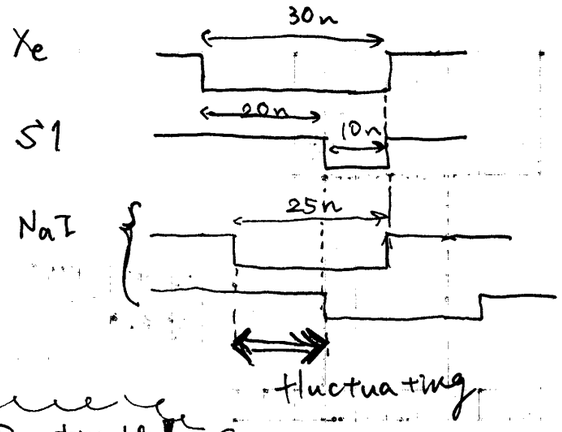
• a wrong device driver was installed by mistake – driver for model 616, ver3.1.
↳ uninstalled and correct driver was re-installed.

• The order of PCI cards was changed during the ~~re~~ installation of the Bit3 card.

↳ Windows 2000 claims to install device drivers for two "Other PCI Bridge Device" (← two Bit3 cards) and a "PCI Device", (← CAMAC-PCI card.) at its boot time (every). ~~I don't know how to.~~ Just click on the cancel buttons, for the moment.

22:45 Beam stable
almost

- To start taking π^0 data quickly, ~~Hardware~~ timing of NaI center is ~~set~~ changed to the usual one by simply putting 22ns delay back.
  See GS's work in 3 pages before.
- Current trigger timing.



- For completely this work, we need to shorten the long cables for Xe, and remove some delay cables for S1.
- For shortening cables for Xe, we need short AMP-LEMO cables.
- After that we have to adjust all TDC timing again.

SM.

fluctuating.

SCFE trouble!

Error in communication with LRS1440 (HV for NaI).
After investigation for a few hours, it was found that the cable on the HV power supply was not plugged correctly.
This may have been caused by NaI recabling ????
Now the connection is OK!

Same problem occured when we installed the PCI card for VME interface and this time also, the problem was fixed in a same manner. So the previous problem is (propably) not only due to cable connection unstability,

⇨ We decided to move NaI (& Cosmic Ray Counter) HV controll onto another machine.

3:37 HN SM

Accordingly "frontend.c" for SCFE was modified.
"LRS1445A" was removed from the list.

13/Nov/03.

0:25 Beam Blocker opened π^- beam with full intensity.

RUN 6235 Pedestal beam on.

0:29 RUN 6236 d beam on 1.89k.Hz (trigger rate)

0:43 RUN 6237 d RUN again 1.72kHz (Trigger rate)

Check π^0 data quickly to see the paraffin effect.

0:55 RUN 6238 π^0 Trigger π^- beam full intensity.

TRIGGER Rate 1.06 Hz

Beam has gone ooooo ooooo

full beam intensity

lower beam intensity

full beam intensity w/ paraffin & polyethylen blocks

→ HE vacuum problem, next message ⇒ 4:00 AM.

⇒ 9:00 AM. !!!

No beam before 9 am.

For prepairing. HV tables for various gain settings. frontend.c is modified to keep consistent relation between HV & ADC numbers

4:48 RUN 6239 LED WITHOUT BEAM

THIS RUN IS FOR TESTING Gain matching routine.

13/Nov/03

6240, 6241 Test of gain adjustment routines

... something wrong

To day's plan

① take α data with full intensity beam
{ without putting paraffin in front of beam window of LXe
with "
without any neutron shield.

② low gain run
5×10^5 ~ 30 k ~ 50K events
3×10^5 ~ 30 k ~ 50K events

③ HV. adjust to 1×10^6
but we need modification of frontend
to enable auto adjust.

8:25 make backup adccalib.c (frontend.c) at online/src_script_backup/031113/
modified some "if-else" bracket around line 381 of adccalib.c
(I think we ~~should~~ had better write "{}" even if there is only 1 line in "if looop".
of caase "while" or "do" loop also. R.S.

8:35 #6242 test run for analyzer (adjust HV=0 in ODB)
run_mode = 2
there is xls file.

8:41 #6243 same as 6242 but adjust HV = 1 stopped at 6000 event
there is not xls file. why?

8:51 #6244 same as 6243 stopped 6000 events automatally
because LED_N_EVENTS_HVADJ = 1000

9:19 #6245 same as 6244

beam does not come yet.
trigger frontend stopps after 40000 events

analyzer does not boot.
even if use backuped files....

14:00 beam has come back.

17:00 SR Kind of half finished with VME TDC's

Added following:
frontend.h #define/undef RO_VME_TDC
frontend.c
vme_tdc_map (base address set via rotary switches to 0x00000, 0x10000 0x20000 and 0x30000)
frontend_init() check access to TDCs
read_trigger_event() check TDC's for data and read

Problems/Items left:

- First TDC does not blink BUSY LED when trigger, must be different firmware, maybe some config register set wrong...
- When reading TDC's, data + header + EOB has to be decoded correctly, need some real data for that...

13 / Nov / 2003

changed frontend.c
sleep 2 minutes after every 1000 events
if adjust_hv=1 during LED run
to wait fitting.
If you have more sophisticated way. Please change it.

17:18 #6245 test run for HV match (adjust HV = yes)
analyzer & frontend was not killed after the run but, there is not xlsfile

17:30 Beam is still unstable

(analyzer begin not to run again
commented out temporary, line 6137 ~ line 6141 in mana.c
I will ask Stefan to fix it tomorrow)

20:00 Proton current a bit lower (1780μA)
but looks seable

#6247 pedestal BB closed circ off. proton 1774μA
20:25 #6248 ~~LED~~ LED //

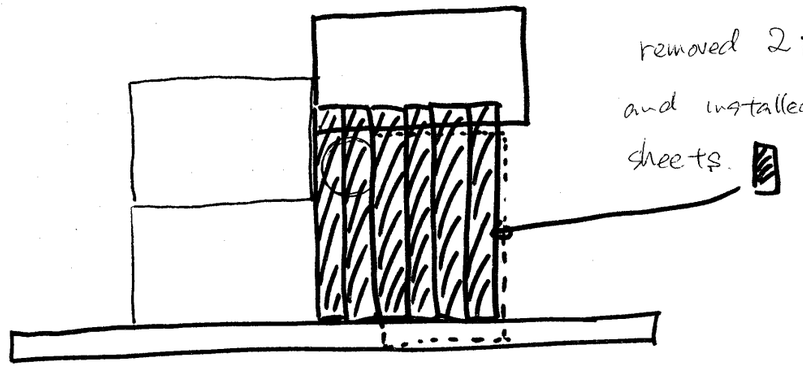
20:32 BB open proton 1780μA
20:32 #6249 pedestal BB open circ off
33 #6250 alpha trigger rate 18.4 kHz (request)

⇒ 20:52 stopped 1.45×10^5 events

21:07 #6251 pedestal
21:07 #6252 alpha trigger rate 17.2 kHz
#6253 LED

21:22 BB closed proton 1778μA
22 #6254 pedestal

21:23 #6255 alpha trigger 5.2kHz 1.0×10^5 evts
21:46 #6256 alpha 5.1×10^4 evts
22:03 #6257 alpha 2.5×10^4 evnts
22:06 #6258 pedestal
22:07 #6259 LED



removed 2 paraffine blocks and installed 6 polyethylene sheets.

- Borate polyethylene blocks placed in front of calorimeter window (See above)

22:18 BB open 1790μA
22:18 #6260 pedestal
#6261 alpha trigger 17.04kHz
22:38 #6262 alpha trigger 16.2 kHz beam 1782μA
0:07 #6263 alpha run trigger rate 16.3kHz beam 1850μA
0:13 #6264 pedestal
0:14 #6265 LED

0:42 BB closed
0:42 #6266 pedestal.
0:43 #6267 alpha trigger rate 5.13 kHz proton 1851μA
5×10^4 counts
0:50 #6268 alpha trigger rate 5.25kHz 1856μA
1:01 #6269 alpha 5.17kHz 1852μA

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1°09 RUN 6270 pedestal

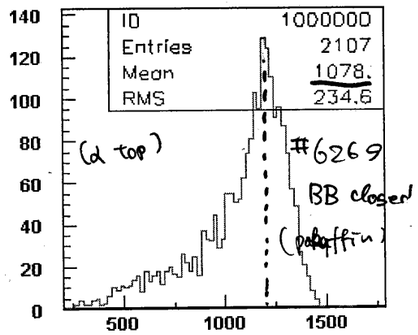
1°11 RUN 6271 LED

⊖ Removed polyethylene and put paraffine again.

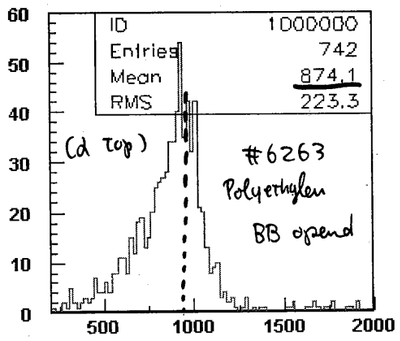
1:38 | BB opened | To confirm the Q_raw distributions below.

1:38 ⊖ RUN#6272 pedestal

1:39 RUN # 6273 α trigger ~ 19.3kHz beam 1859 μA

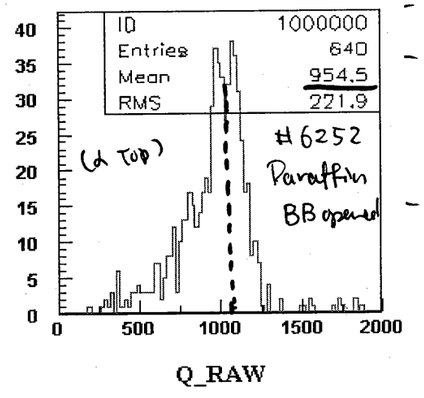


Q_RAW



Q_RAW

- using the same position cut.
- α peak position shifts less with paraffin block than with polyethylen blocks
- Paraffin block. entrance of LP opened.
  Polyethylen block " closed



Q_RAW

1°49. RUN #6274 α again. 18.0 kHz 1858 μA

1°57 RUN #6275 α again 18.0 kHz 1854 μA

2°05 RUN #6276 Pedestal

2°06 RUN #6277 LED

2°10 | BB closed |

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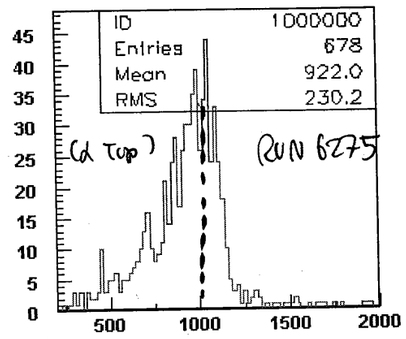


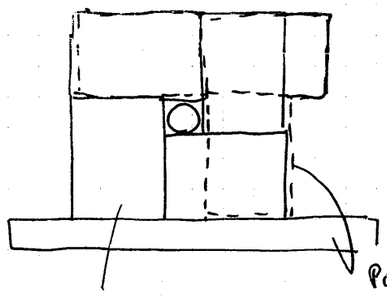
Q_RAW

Ok. the spectrum could be reproduced!

Paraffin is more effective than Polyethylen ??

☞ Place more ~~Polyethylen~~ Paraffin!

⚠ Run 6263 was taken ~2 hours after the blocker was closed.



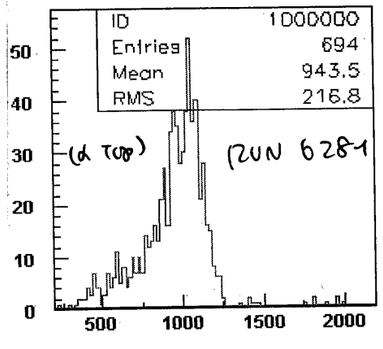
Polyethylen blocck (behind paraffins)

×4 Paraffin block.

2°37 | BB opened |

2°38 RUN # 6278 pedestal.

					Beam
2°39	RUN # 6279	α RUN	trigger	18.5kHz	1852 μA
2°46	RUN #6280	α RUN		18.1kHz	1853 μA
2°54	RUN #6284	α RUN		17.7kHz	1857 μA
3°03	RUN #6282	pedestal			
3°04	RUN #6283	LED			



Q_RAW

mmm ...

no significant difference from RUN 6275 ...

3°10 | BB closed |

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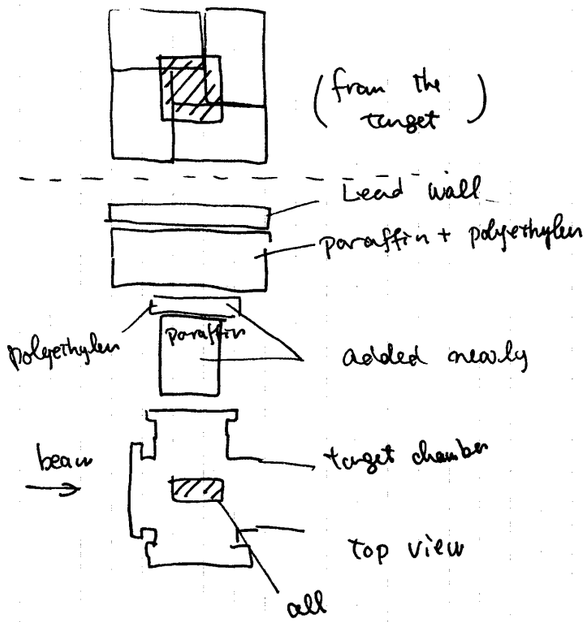
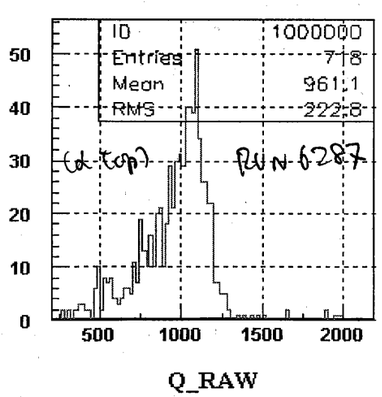
Another Paraffin block is placed between the Target and the paraffin wall



3:30 **Beam Blocker opened**

			TRIGGER RATE	PROTON current
3:31	RUN 6284	Pedestal		
3:32	RUN 6285	α	16.3 kHz	1855 nA
3:40	RUN 6286	α	15.6 kHz	1850 nA
3:52	RUN 6287	α	15.5 kHz	1853 nA

~4:00 **Beam Blocker closed**



~~First block between the two~~

No significant difference

⇨ Not due to neutrons from the target

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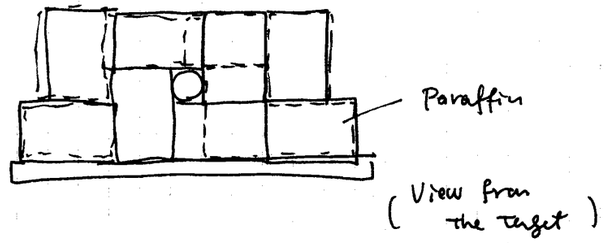
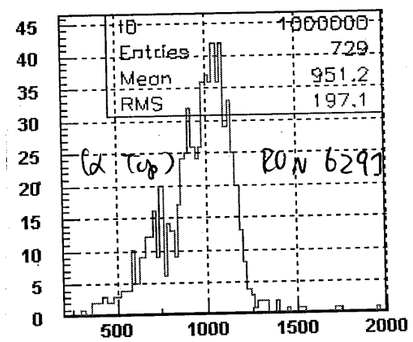
Newly added paraffin block is removed and additional 4 blocks are placed



			TRIGGER RATE	PROTON current
4:32	**Beam Blocker opened**			
4:33	Pedestal	RUN 6288		
4:34	α	RUN 6289	17.6 kHz	1853 μA
4:43	α	RUN 6290	17.0 kHz	1842 nA
4:54	α	RUN 6291	16.6 kHz	1850 μA
5:04	Pedestal	RUN 6292		
5:04	LED	RUN 6293		



No significant differences...

5:10 **Beam Blocker closed**

All paraffin & polyethylen blocks are removed! To see their effect...

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5:30 BB opened

~~pedestal run~~

			TRIGGER RATE	PROTON CURRENT
5:30	RUN 6294	pedestal		
5:32	RUN 6295	α	24.4k	1859 μA
5:~~50~~	RUN 6296	α	22.8k	1854 μA
5:50	RUN 6297	α	22.3k	1855 μA
	Take one more!			
6:00	RUN 6298	α	22.0k	1848 μA

6:06 BB closed

6:06 RUN 6299 Pedestal.

6:08 RUN 6300 α

5.13kHz 1847 μA

6:21 RUN 6301 α

5.21 kHz 1856 μA

6:30 RUN 6302

5.26Hz 1851 μA

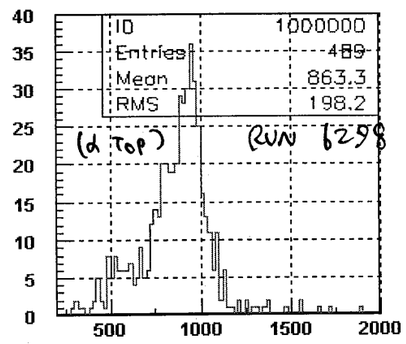
OK. α-peak returned to the normal position.

6:32 RUN 6303 pedestal.

6:33 RUN 6304 LED

failed due to disk full.

6:38 RUN 6305 LED



Paraffin, Polyethylen blocks certainly work to reduce background count, but not perfect

STack Paraffin Blocks!

8 paraffin blocks are placed as shown in the previous page.

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Today's plan

① beam intensity scan → search optimam intensity
② low gain run
③ HV adjust to 1E6
④ collect sufficient amount of data

Beam Intensity Scan

7:39 #6306 pedestal beam off

7:40 #6307 LED

7:46 #6308 α

7:51 BB open wait 30 min at least

8:24 #6309 pedestal

~~BB open~~
proton 1857
FSH52 350
S1 ~~1556~~ 1556 Hz M

8:25 #6310 LED

8:31 #6311 S1 · (NaI 4) · Xe(F8 B4) NaI 40mm Xe 95mm col

8:40 #6312 α

8:48 FSH52 350 → 300

8:49 #6313 α

proton 1859
FSH52 300
S1 ~~1229~~ Hz M

1.13

9:15 #6314 pedestal

9:21 #6315 LED

9:27 #6316 α.

9:35 FSH52 300 → 250

9:46 FSH52 250 → 350

proton 1835
FSH52 250
S1 ~~1068~~ Hz M

1.07

Watarn suggests to take PIO data also.

I will start from FSH52=350 again.

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FSH52 = 350

10:20 #6317 pedestal beam intensity was low

10:27 #6318 pedestal S1 scaler (off line 1.29 MHz)
S1 ~~1.29~~ MHz
proton 1878

#6319 LED

10:37 #6320 α (peak 1392 nphe bottom, caribrated with 6306 6307)
(peak ~~1392~~ 1121 on-raw online bottom)

10:45 #6321 S1× (Xe Fr8 Bk4)

10:54 FSH52 350 → 300

FSH52 = 300

11:26 #6322 pedestal proto 1795 1.058
S1 ~~1.058~~ MHz

11:28 #6323 LED S1 scaler (off line 1.06 MHz)

11:34 # 6324 α (peak 1393 nphe bottom, calibrated with 6306 6307)

19:45 We realized that MSCB Labview control PC does not work
maybe since ~9:30
⇒ restart PC

~~Inner pressure rose up to 0.118 MPa~~
Inner pressure and temperature were NOT changed so much

11:51 #6325 S1 * (Xe F8 Bk4)

FSH52 = 250

12:19 FSH52 300 → 250

12:44 #6327 pedestal

#6328 LED proton 1873
S1 · Scaler 1.17 MHz

12:52 #6329 α (peak 1422 nphe bottom calibrated with 6306 6307) S1 Acum (S1 2.10×10^8 proton 6.21×10^7)

12:59 #6330 PIO (Same as 6325) S1 · scaler (off line) 584.1 KHz

---

FSH52 = 200

13:09 FSH52 250 → 200

13:10 #6331 PIO (Same as 6325)

13:19 #6332 〃

13:31 #6333 〃

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13:38 #6334 pedestal

13:39 #6335 LED

13:46 #6336 α (peak 1407 nphe bottom calibrated with 6306 6307)

13:56 #6337 S1 * (Xe F8 BF4)

proton 1870
S1 Scaler 165.2 K
S1 Acum 3.83×10^9
Proton Acum 4.22×10^9
S1 Scaler (off line 167.3 KHz)

FSH52 = 150

14:07 FSH52 200 → 150

14:07 #6338 S1 * (Xe F8 BF4)

14:18 #6339 same as before → beam stopped once during this run

proton 1872μA
S1 scaler 1.28 MHz
S1 accum 3.43×10^8
Proton accum 6.35×10^7

14:39 #6340 〃

14:45 #6341 pedestal

14:45 #6342 LED

#6343 Junk.

14:54 #6344 alpha

#6345 Junk

15:04 #6346 S1 * (Xe F8 BF4)

Boeer

Check of S1 rate for each FSH52 setting taken by multiscaler in Peter's rack

FSH52	S1	S1·RF	TIME
350	17.2M/10^6p	15.0M/10^6p	5.64M/10^6p·M
300	15.7	13.8	〃
250	13.9	12.2	〃
200	11.3	10.0	〃
150	8.06	7.16	〃
125	6.28	5.64	〃
100	4.44	3.97	〃
75	2.52	2.27	〃

- CAMAC scaler count is INCOSISTENT with multi scaler (scaler count by) in Peter's rack for FSH52 ≥ 200
- ~~This is the problem of the minimum width of CAMAC scaler (PSI. 550A)~~ ?

FSH52 = 100 16:50 FSH52 150 → 100

16:51 # 6347 (S1) * (Xe F8 BK4) Beam down ⇒ JUNK
6348 (S1) * (Xe F8 BK4)

16:56 Error message "mrpc_call : msend_~~udp~~tcp() failed"
found in SCFE terminal ⇒ SCFE restart
fixed.

proton 1874 μA
S1 CAMAC scaler 748 KHz
// S1accum. 4.98×10^6
// proton accum. 1.08×10^8

17:06 # ~~6349~~ 6349 (S1) * (Xe F8 BK4) same as #6348
⇒ JUNK

17:16 # 6350 same as 6348

17:30 # 6351 pedestal
6352 LED

17:39 # 6353 alpha
6354 (S1) * (Xe F8 BK4)

~~FSH52 = 75~~ ~~15:47~~ ~~17:50~~ 20:45 FSH52 ~~100~~ → 75

~~21:05 Beam unstable~~

- We measured (Xe 8 cluster) self trigger rate for different FSH52 values

- NIM threshold for Xe 8 cluster is lowered ~~to~~ from −75mV to −45mV

18:26 # 6355 FSH52 = 75 request trigger rate 13 KHz
18:27 FSH52 75 → 100
18:28 # 6356 FSH52 = 100 request 17 KHz
18:32 FSH52 ~~to~~ 100 → 150
18:34 # 6357 FSH52 = 150 request 24.6 KHz
18:35 FSH52 150 → 200
18:37 # 6358 FSH52 = 200 request 31 KHz
19:05 FSH52 200 → 250
19:06 # 6359 FSH52 = 250 request 36 KHz
19:10 FSH52 250 → 300
6360 FSH52 = 300 request 40 KHz
19:15 FSH52 300 → 350
6361 FSH52 = 350 request 42.6 KHz

- NIM threshold changed back to −75 mV

FSH52 = 75 20:45 FSH52 100 → 75
21:05 Beam UNSTABLE
21:20 # 6362 S1 * (Xe F8 BK4) proton 1878 μA
S1 scaler ~~45~~ 42 KHz
S1. acc. 2.1×10^6
protn.acc 1.3×10^8

21:29 # 6363 pedestal
6364 LED

21:36 # 6365 alpha.

FSH52 = 125 22:15 FSH52 75 → 125

22:40 # 6366 pedestal
6367 LED
proton 1873 μA
S1. scaler 1.02 MHz
S1. acc. 6.14×10^7
prtn. acc. 1.09×10^7

22:~~45~~ # 6368 alpha
22:55 # 6369 S1 * (Xe F8 BK4)

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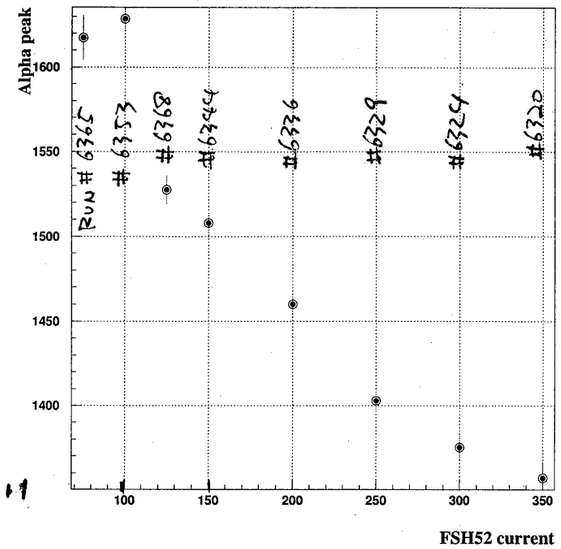
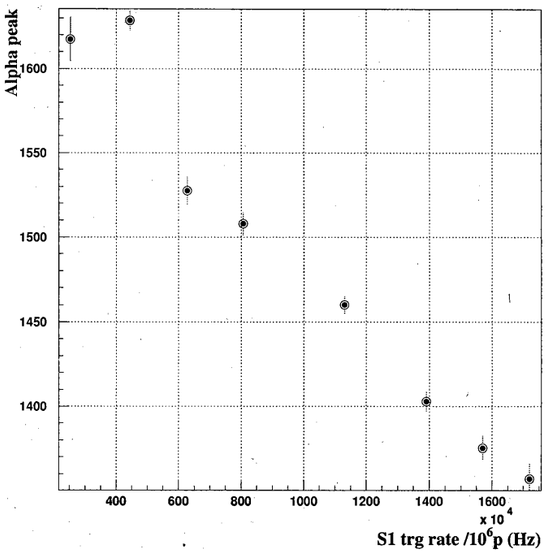


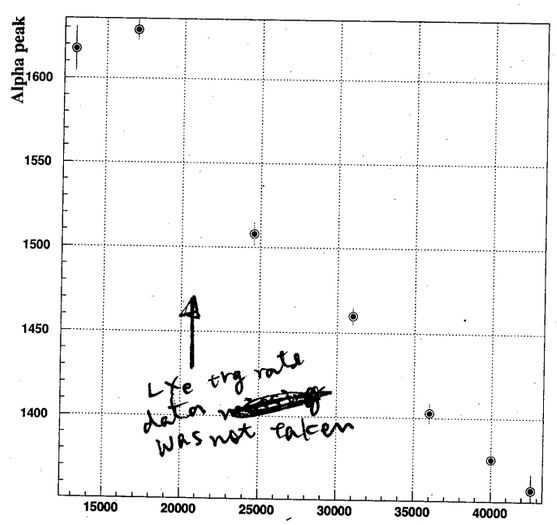
Beam Intensity Scan

(alpha peak position as a function of beam intensity)

1690

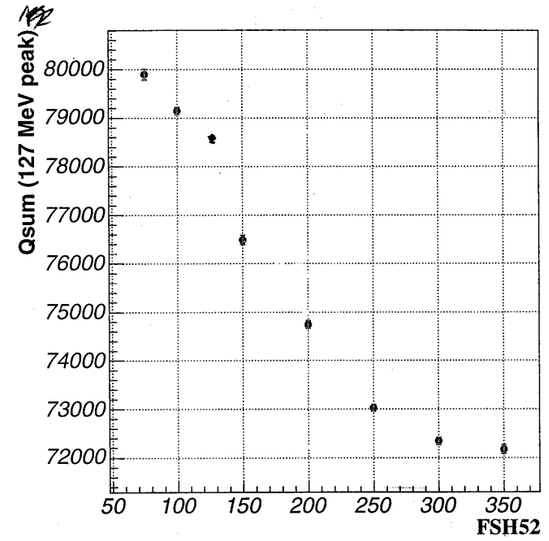


~3%

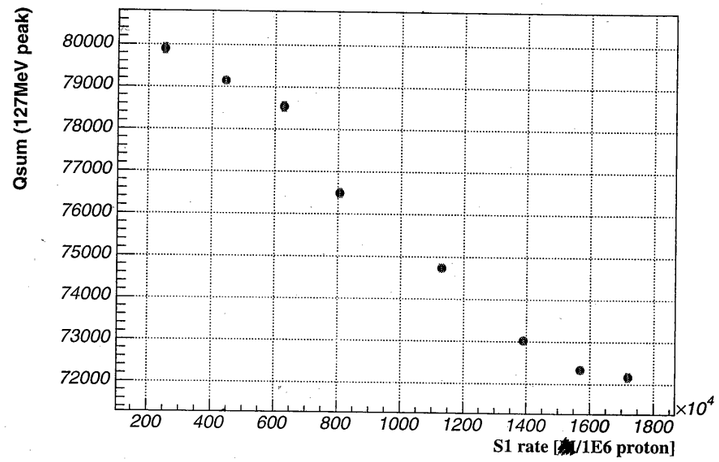


: requested

~1.25%



127 MeV peak position in S1*Xe run as a function of beam intensity.



- Different behavior @ low beam intensity between alpha and 130MeV peak position scan
- Bump in the alpha data @ low beam intensity (~ FSH52 ~ 100) is the bump which is usually seen in the rate dependence of PMT ?
- Which is the optimum point?
  ... (best)

15 / Nov. / 2003.

Low GAIN mode Study.

- new hv setting file : 1e6-50v_031115.hv.

All high voltage value −50 V. @ All PMTs (in Xe).

1:50 Beam Blocker closed.

2:00 New high voltage setting file loaded.

Waiting for PMT stabilized.... and coffee break....

2:55 Pedestal. RUN #6377.
(Beam OFF. circulation OFF. HV: 1e6 set -50v.)

2:58 RUN #6378 LED @ Beam OFF

3:03 RUN #6379 α @ BEAM OFF.

3:12 RUN #6380 π⁰ S1 * NaI 4 * LXe F8BK4.
CFC off, HV: 1e6-50v, FSH52=125
beam: 1.890 mA → JUNK.

3:14 Beam Blocker open

3:15 Beam Blocker closed

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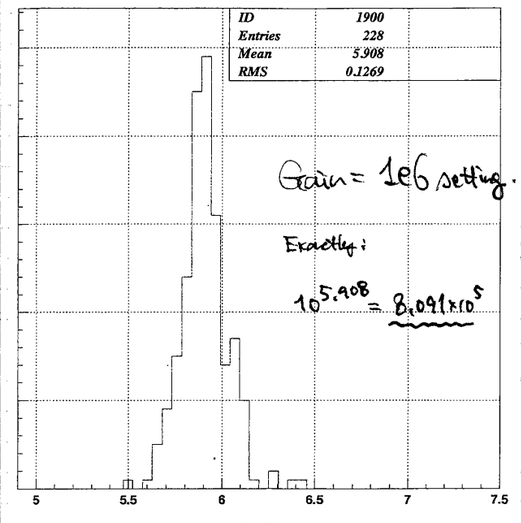
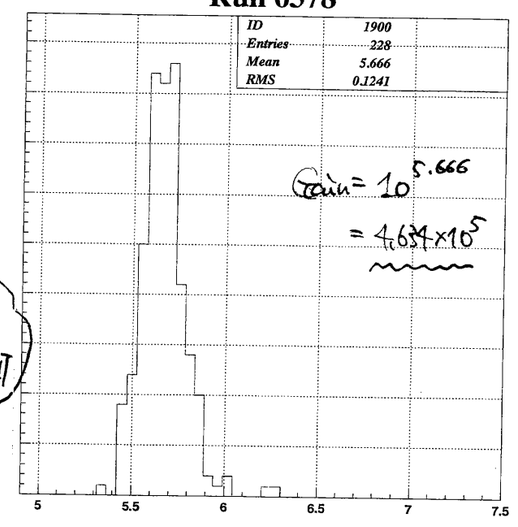
03:35

HV set value @ All PMT ⇒ −50 V. (1e6 set −100 V in total).
(⇒ new high voltage set file: 1e6-100v-031115.hv.)
waiting for HV stabilized...



⇒ −50V for All PMT



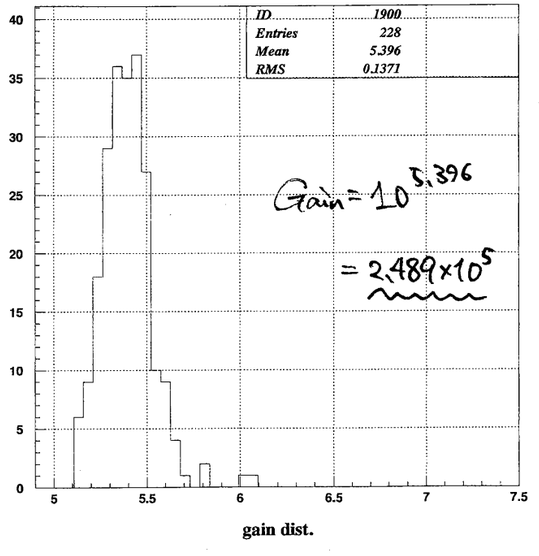
03:53 RUN #6381 pedestal
(@ Beam OFF / circ. off).

RUN #6382 LED.
for "1e6" − 100 V.

4:00 RUN #6382 α

−100 V

−50 V



· 15/ Nov. / 2003 ·

According to HV decreasing study:

1e6 gain setting ⇒ ~ 8.1×10^5 gain
1e6 − 50V setting ⇒ ~ 4.6×10^5 gain.
1e6 − 100V setting ⇒ ~ 2.5×10^5 gain.

Now: ~2.5×10^5 gain.

4:41 RUN # 6384. S1*(NaI4)*(Ke Fr8 Brk4). HV: 1e6 − 100V.
Beam Blocker closed.

2min. Beam Blocker Open.

1min. Stop the RUN # 6384. ⇒ Junk data.

FSH52 : DAC value is 125. ⇒ This is too small for π^0 RUN. triggering Rate.

FSH52: 125 ⇒ (350) ← original value.

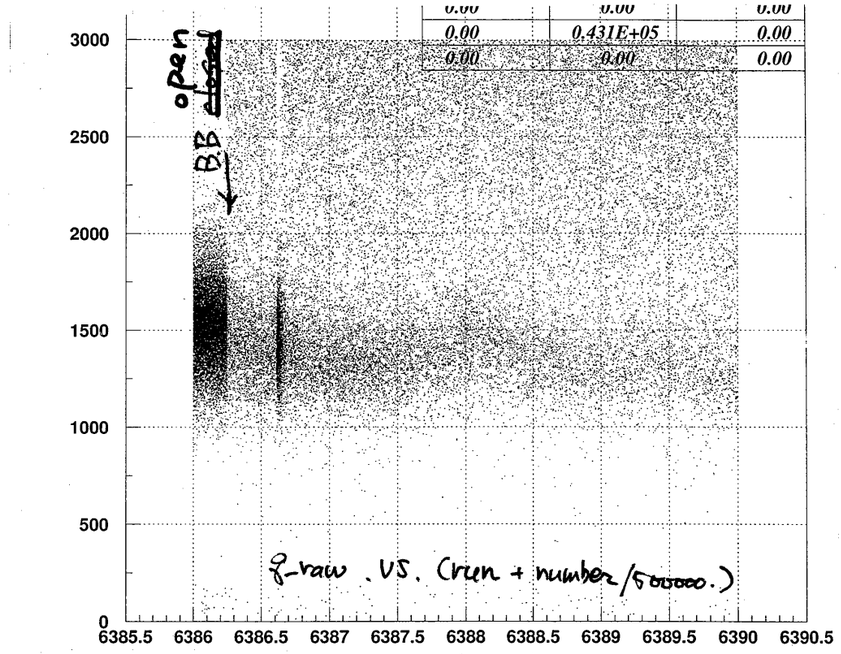
4:36 RUN # 6385 S1*(NaI4)*(Ke Fr8 Brk4). HV: 1e6-100V.
FSH52: 350, Beam Blocker. CLOSE.

2min. Beam Blocker Open.

4:49. Run Stop. & Beam blocker closed.
π^0 event triggering rate is Too low.
So, we carry out the Beam blocker effect study (OPEN/CLOSE) using "α" run.

05:26. RON # 6386. α run @ HV: 1e6-100V.
Beam Blocker closed.

1 min. (~10000 events). Beam Blocker Open.
RUN # 6387. Continue from previous run.
6388. "
6389. "



② Beam intensity SCAN for 2.5×10^5 Gain.

05:59. RUN #6390 S1*(Ke F8Brk4.). FSH52 = 350. (230Hz).
RUN #6391. S1*(Ke 8 cluster). for trigger rate Study. (1.32 kHz)
proton 1900 μA
S1 scaler 12.1 H /10⁶p
S1* RF 14.9 H /10⁶p

05:08. FSH52 ⇒300 :

06:32 RUN #6392. pedestal.
RUN #6393. α.
RUN #6394. same as before
06:58 RUN #6395. S1*(Ke Fr8. Brk4).

It is written as FSH 350 in comment of mid file these are mistakes

06:53. FSH52 ⇒ 250.

7:25 #6396 pedestal
7:27 #6397 LED
7:33 #6398 α

proton current = 0 !!
beam will not come till 12:00

Modifying online code of HV-MATCH

- One problem is that analyzer doesn't know event number exactly.
  - nevents in frontend and pheader→serial_number are not same.
  - Can I use "bm_request_event" function?

why there is only two messages in ELOG?

13:00 beam has come back, but it's unstable and low.

17:41 Beam is still unstable

- Frontend.c is slightly modified to get the serial number of the current event from the event header instead of having local counter, (n_event)
  New counter of the serial number in frontend.c is "ievents"
- HV adjusting mode does not work yet.

18:46 Beam is stable.

For completing ~~shi~~ shunsei an Hajime's work

- Data at FSH52=250 is taken.

18:50
- #6439 pedestal BB closed circ OFF
- #6440 LED 〃
- #6441 alpha 〃

19:05 BB open FSH52=250 proton 1876 μA
- 19:06 #6442 alpha
- 19:27 #6443 pedestal BB open
- #6444 LED)
- 19:32 #6445 alpha
- 19:37 #6446 π° (S1 * Xe~~8~~F 8K4)

19:42 FSH52 250 → 350 to take ~~Ped~~ (S1*NaI*Xe) @ low gain the calibration data

Low gain (2.5×10^5) run @ FSH52=350

20:00 #6448 pedestal 〃 BB open

20:01 #6449 LED ⇒ Bad calibration
gains of some PMTs were set to 10^6

20:07 #6450 alpha

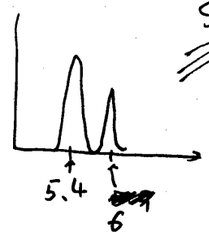
20:12 #6451 π° run (S1 * NaI * XeFB BK4) proton 1873 μA
⇒ dinner.

22:00 Gian changed to 4.6×10^5 (1e6-50V-031115.hV)

22:13 ~~#~~ #6453 pedestal BB open proton 1860 μA

22:14 #6454 LED BB open

22:25
Gain distribution in #6449 is strange
Gain is changed back to 2.5×10^5
to take LED data again



22:30 #6455 pedestal Gain 2.5×10^5
22:34 #6456 LED 〃 ⇒ OK

22:45 Gain changed to 4.6×10^5 again

23:08 Run #6457 pedestal BB open
23:10 Run #6458 LED BB open
23:44 Run #6459 α BB open

Data during this period are almost JUNK
because ~~some~~ gain of ~~the~~ some PMTs were set to 10^6