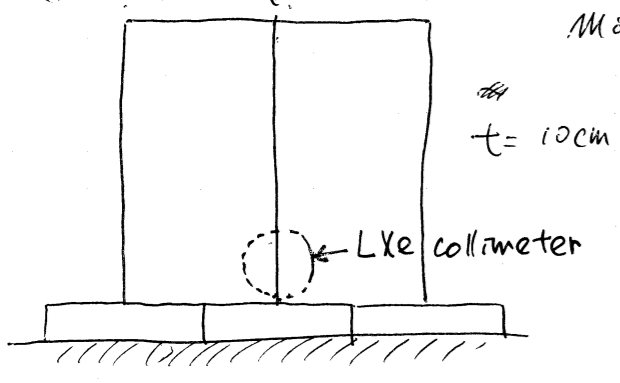


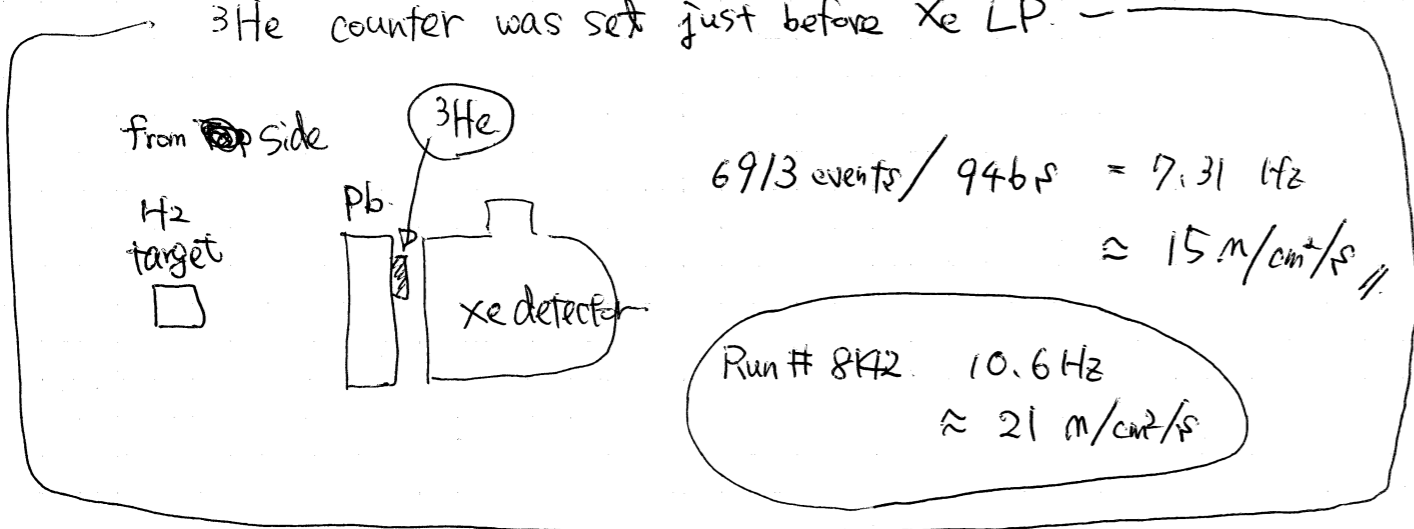
8-00-2004

modified polyethylene arrangement.



- 23:15 # 8083 pedestal } beam ON
- # 8084 LED
- # 8085 α
- # 8086 π^0

^3He counter was set just before Xe LP.



6913 events / 946 s = 7.31 Hz
 $\approx 15 \text{ m/cm}^2/\text{s}$

Run # 8142 10.6 Hz
 $\approx 21 \text{ m/cm}^2/\text{s}$

23:50 Beam Blocker closed.
 # 8087 pedestal.

modified polyethylene arrangement to that of PP. 124.

- # 8089 pedestal beam ON.
- # 8090 LED
- # 8091 α
- # 8092 π^0

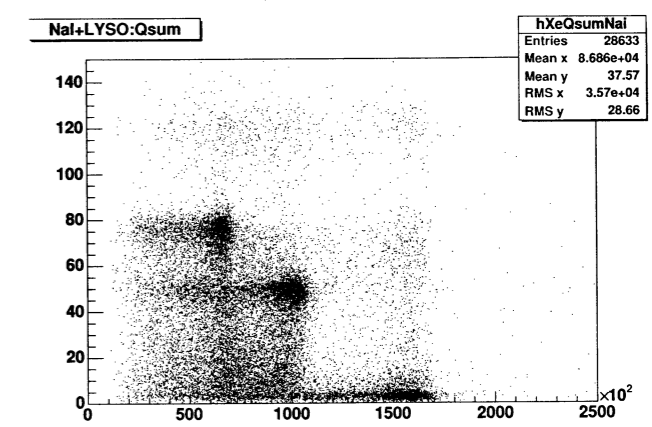
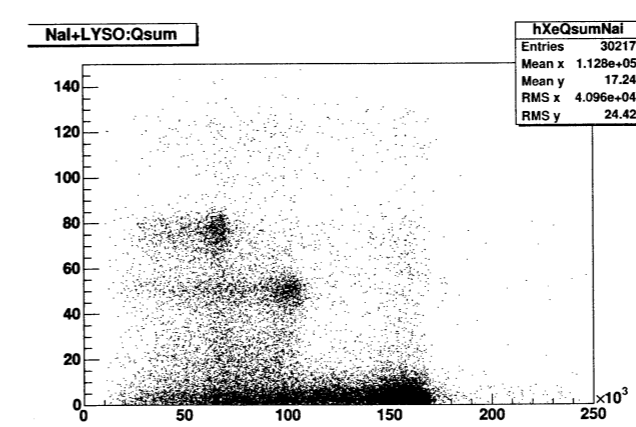
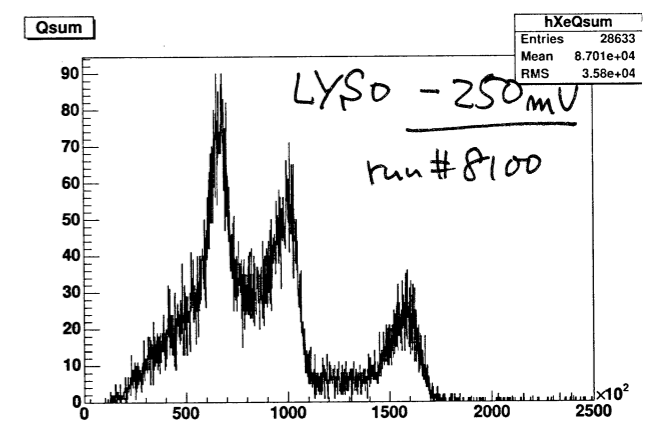
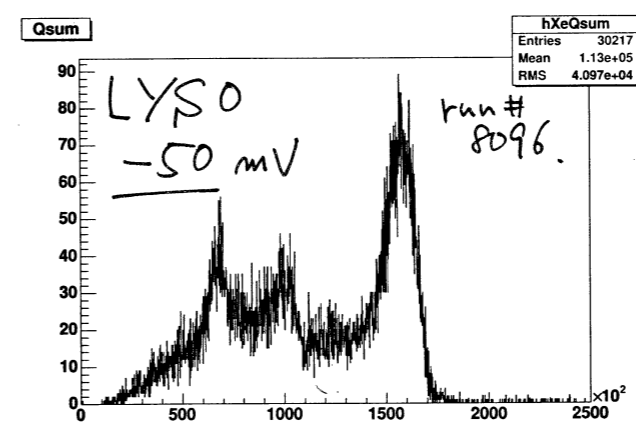
polyethylene put back to that of PP. 122

- 7:37 # 8093 pedestal } beam on.
- # 8094 LED } ~~use # 8098~~
- # 8095 α
- 7:53 # 8096 π^0 } trigger rate $\frac{30217}{23 \text{ min } 13 \text{ s}} = 21.7 \text{ Hz}$

- 3:25 LYSO threshold changed from -50 mV to -250 mV
- # 8097 pedestal } beam ON
- # 8098 LED } N.G. use 8094. See PP. 127
- # 8099 α
- 3:52 # 8100 π^0 } trigger rate $\frac{6888}{15.5 \text{ min}} = 7.4 \text{ Hz}$
- 4:47 ~ 4:45 beam down (RF down due to thunder ???)

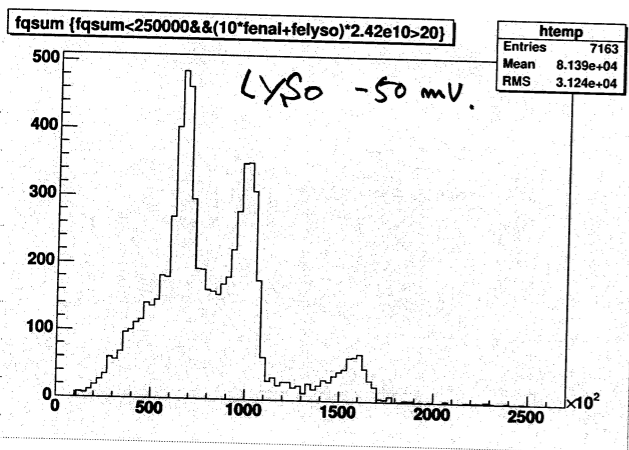
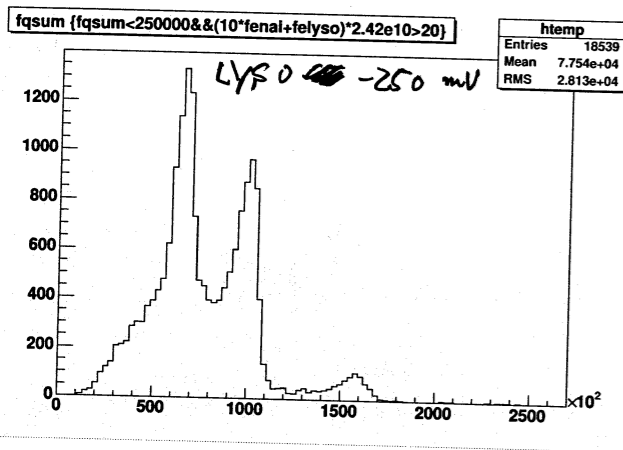
LYSO thre. -50 mV.

-250 mV.

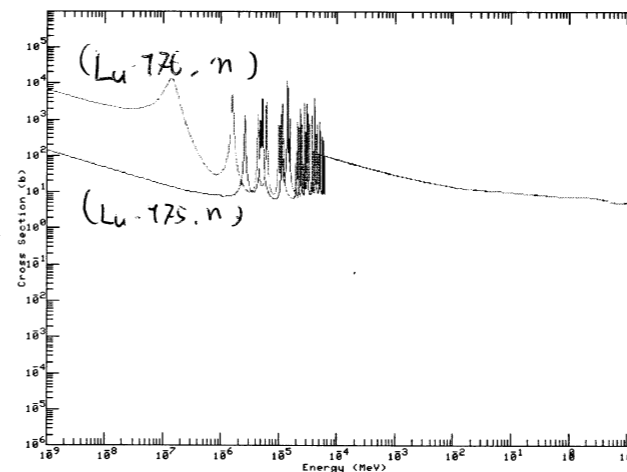


9-Oct-2004

Qsum spectrum w/ NAI+LYSO > 20 cut



run# ~~8702~~ 8101 pedestal ← JUNK.
 run# 8702 pedestal. } beam ON.
 #8103 LED
 #8104 TiO



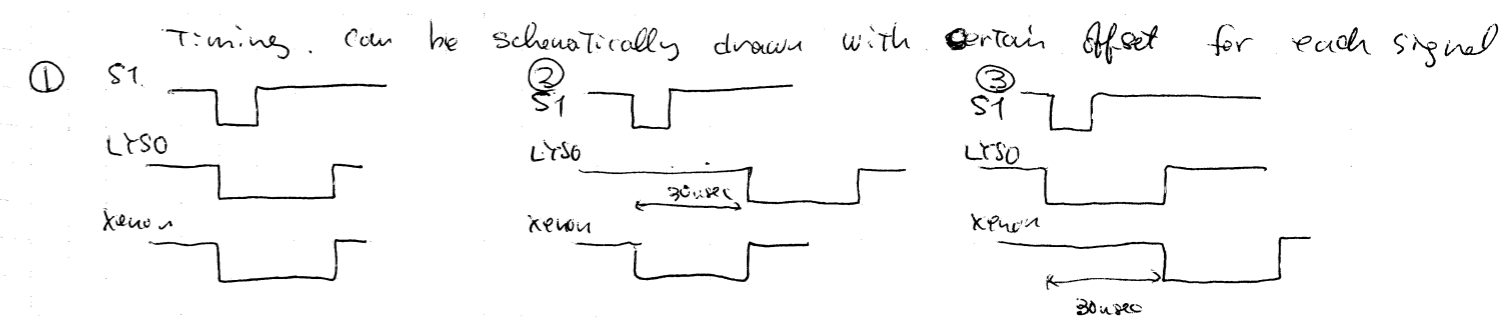
Total CROSS SECTION of (Lu, n) reaction

Lu has large cross section for neutron around $E_n \sim 10$ MeV (even).
 " $\sigma \sim 4$ barn". This means that LYSO crystal has "large" efficiency also for neutrons from radiative capture.

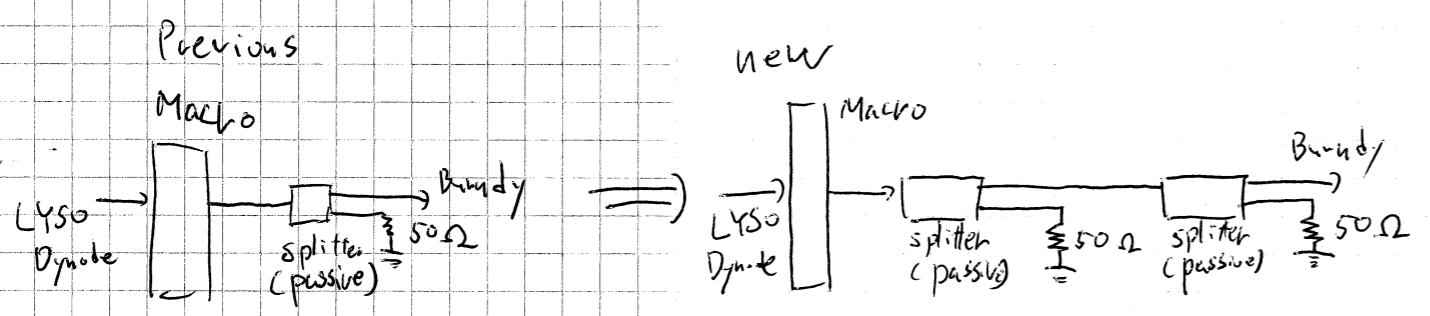
This is a reason why we could see huge Qsum peaks at radiative capture γ energy (729 MeV) with low threshold for LYSO and suppressed after changing the threshold level.

Trigger setting yesterday night was to take ① and ② listed below

	LYSO	Xenon	
①	γ	γ	π^0
②	n	γ	Radiative capture
③	γ	n	"

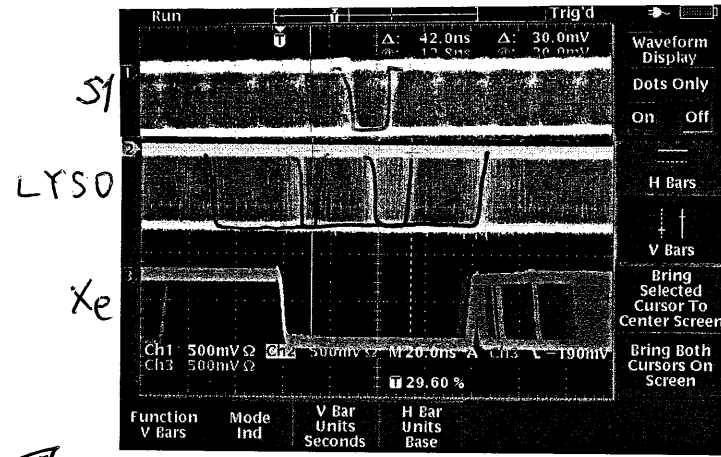


8:45 Added attenuation for LYSO ADC



9/10/04

Trigger setting was changed for the capability of ~~trigger~~ taking all of the three type of data listed in P131 (1~3)

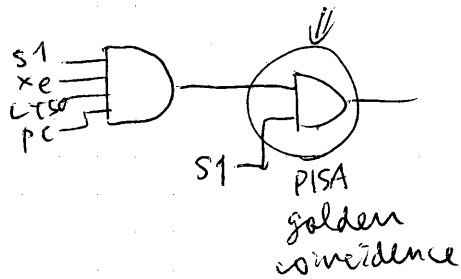


Xe LYSO
 ① γ γ
 ② n γ
 ③ γ n

Relative timing at the input of triple coincidence

~~PISA golden coincidence~~

Coincidence between S1 and the output of triple coincidence was removed to supply ABC gate well before the signal arrive.

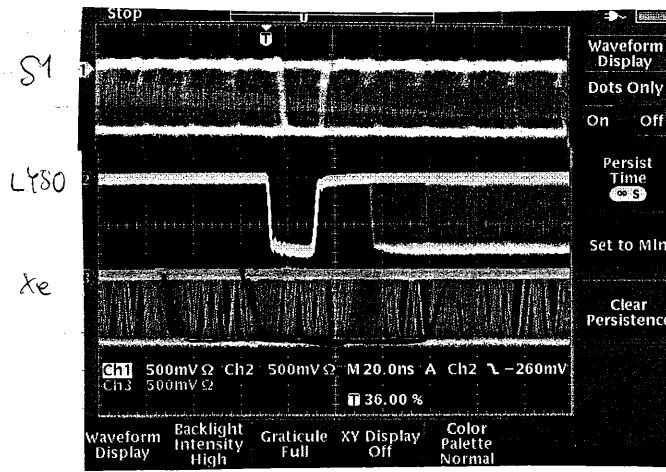


This will give us 10 nsec safety margin at ABC gate timing.

probably Xe threshold changed here from -625mV to -165mV

17:14 #8110 π^0 run S1 * LYSO * Xe
 Threshold Xe -165mV
 LYSO -80mV

17:30 #8111 π^0 run S1 * LYSO * Xe
 Threshold Xe -160mV
 LYSO ~~80mV~~ -250mV



TRIGGER coincidence timing 133 was modified because we suffered from chance coincidence between S1 & LYSO (almost every 20 nsec), which gave us peculiar TDC spectrum shape.

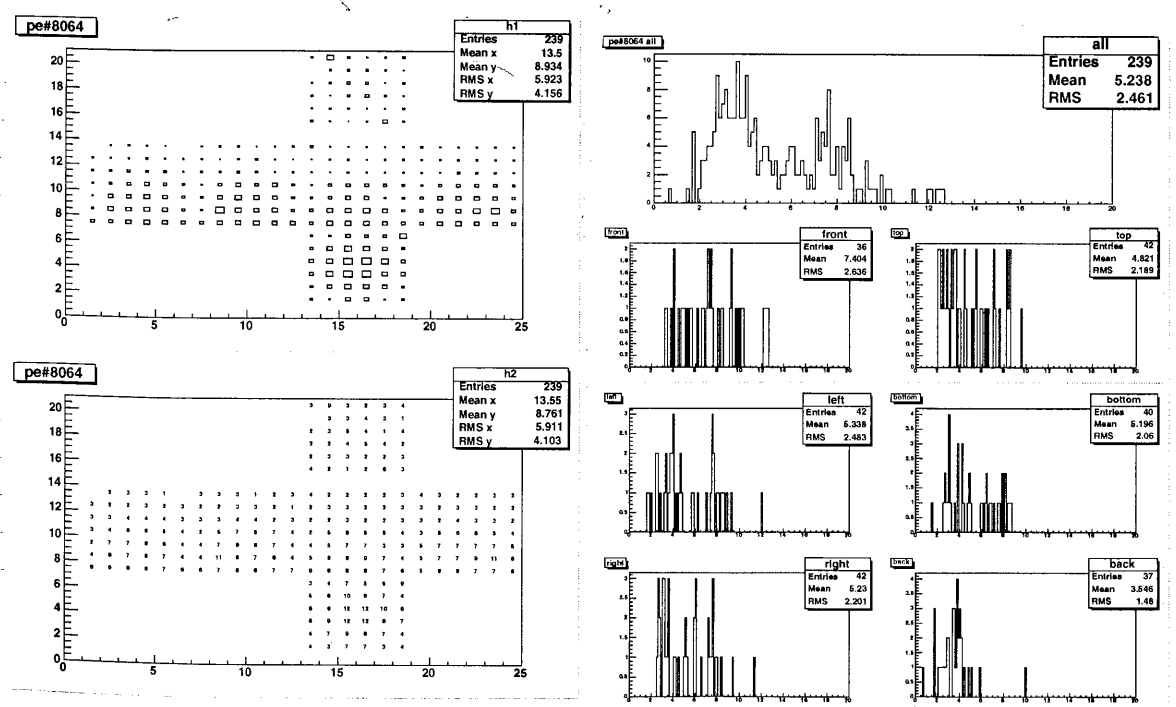
was tightened otherwise we cannot take GOOD TDC data.

We decided to give up to take Radiative capture event of

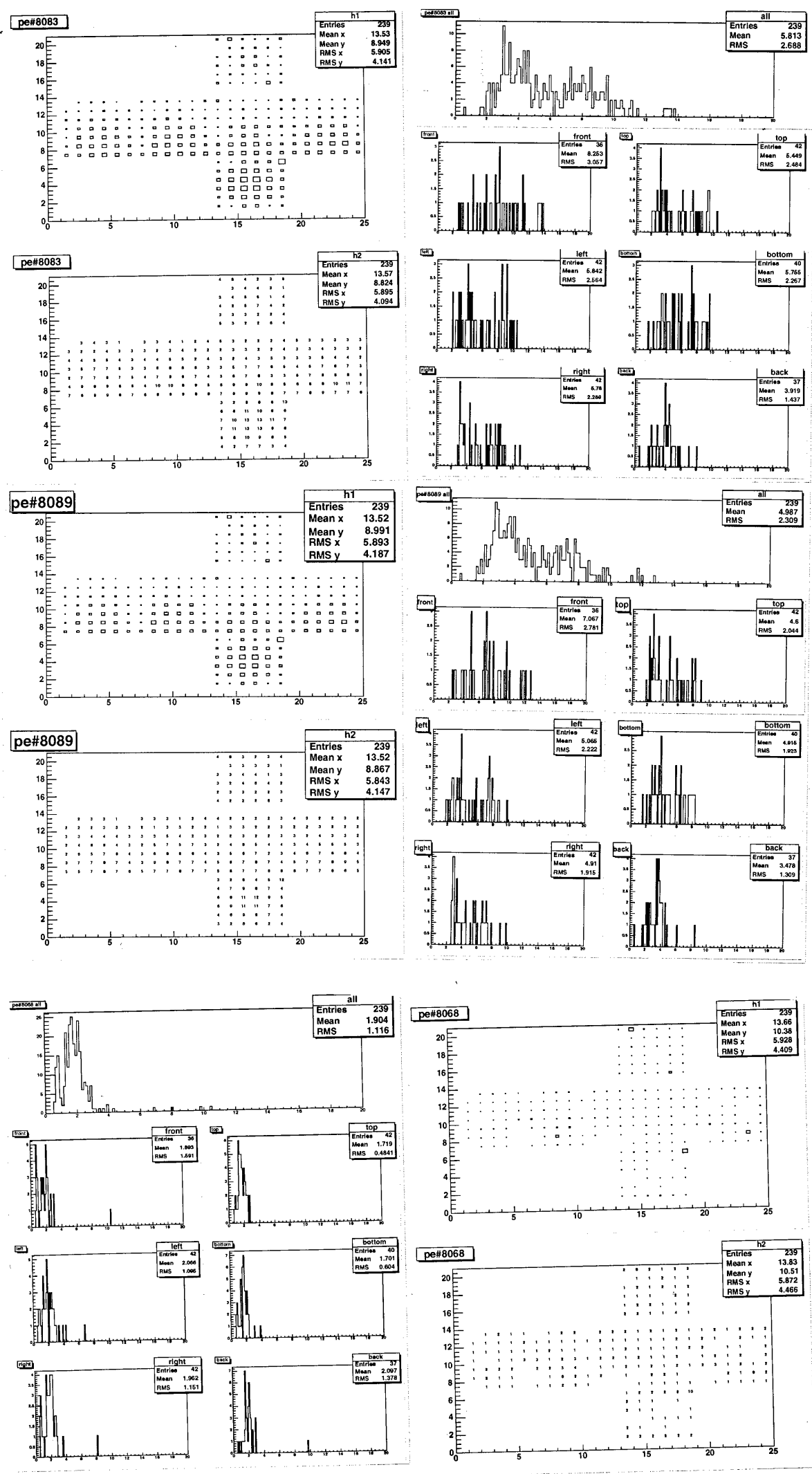
Xe	LYSO
γ (~130 MeV)	n (9 MeV)

Opposite combination (Xe = n, LYSO = γ) can be taken.

Check of pedestal distribution with beam on condition



page 122 condition



polyethylene
t=10 cm
LXe collimeter
see page 128

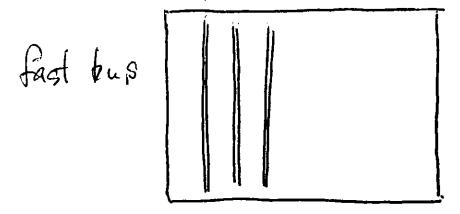
t=40 cm
polyethylene
LXe collimeter
see page 124

with no beam

- ⊙ Added delay (3 m.) to FB-TDC #112-127 signal. 135
- ⊙ Added delay to FB-TDC start signals:

21 (TDC 0~63)
19 (TDC 64~127)
17 (TDC 128~191)

slot 21	16 ns
19	24 ns
17	16 ns



- 1808 #8118 T0 TDC test.
- 1811 #8118 Stop due to beam down.
- 1816 #8119 T0 TDC test.

- ⊙ changed delay cable to FB-TDC17 start from 16 ns → 10 ns
- 2309 #820 T0 TDC test.
- 2314 #8121 T0 TDC test

- ⊙ FB-TDC ~~start~~ start signal delay } 21: 16 ns → 24 ns
- 3301 #8122 T0 TDC test. } 19: 24 ns → 32 ns

FB-TDC start signal SUMMARY:

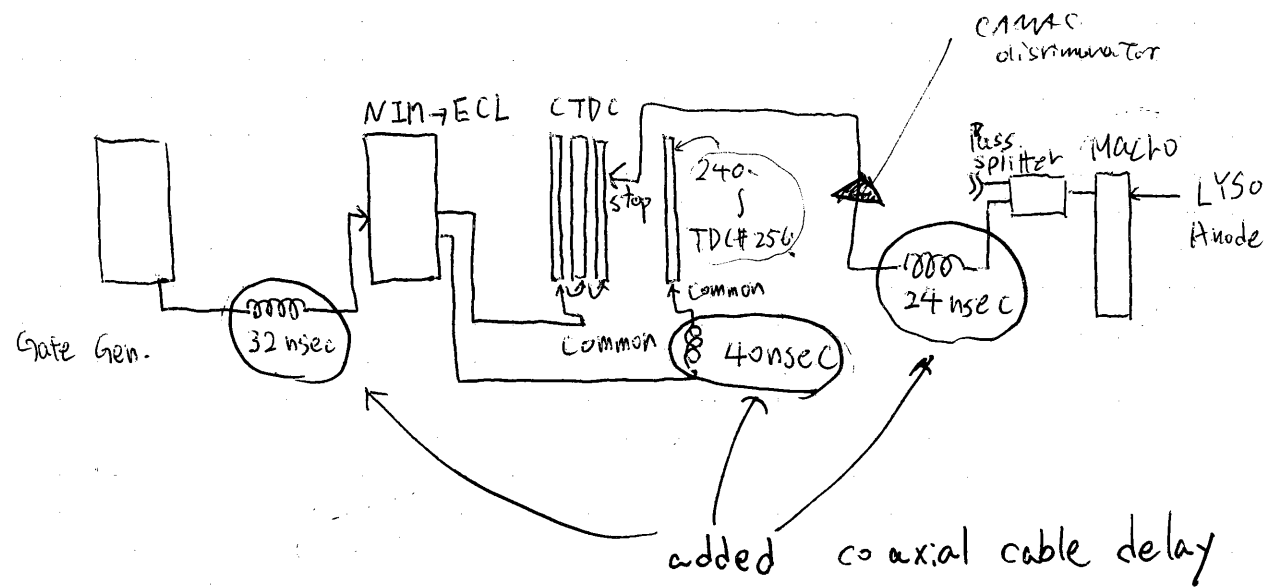
slot	start signal delay added
21	24 ns
19	32 ns
17	10 ns

11.

10-Oct-2004

3:08 #8123 pedestal
 #8124 LED
 #8125 α
 3:23 #8126 π^0 w/ new FB TDC start timing

CAMAC TDC Timing Adjustment



10:45 RUN #8137 π^0 events ~ 110000 ~ 14 Hz
 15:40 #8138 pedestal beam on
 15:41 #8139 LED beam on
 16:00 #8140 alpha beam on
 16:20 #8141 π^0 run events ~ 140000 ~ 13 Hz

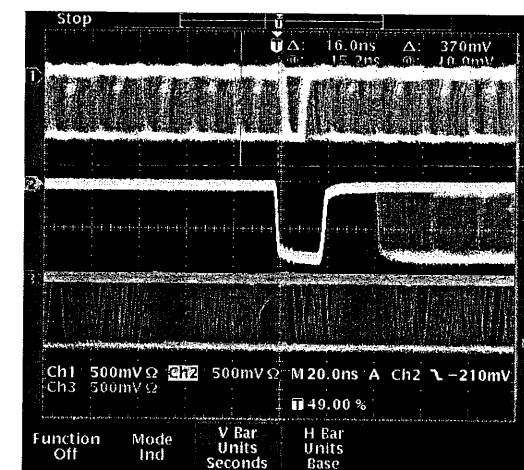
137

5:39 Beam Blocker close for beam off calibration
 7:04 RUN #8128 pedestal beam off
 #8129 LED
 #8130 Alphas (beam off)
 #8131 Pedestal beam off
 8:00 Beam Blocker opened
 8:09 RUN #8133 pedestal beam on
 #8134 Junk
 #8135 LED beam on
 #8136 π^0 events ~ 100000

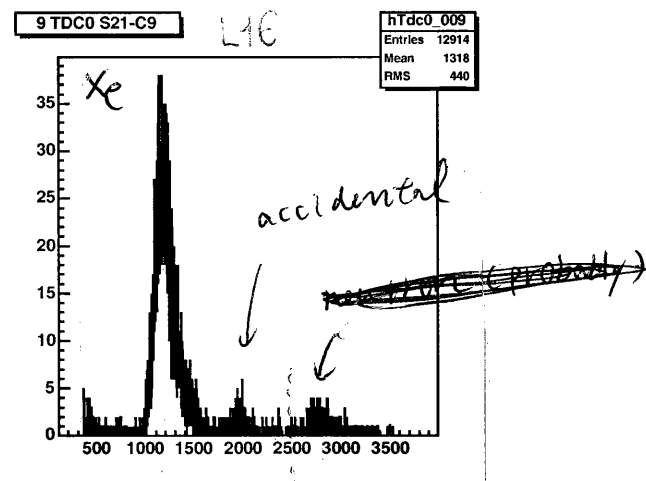
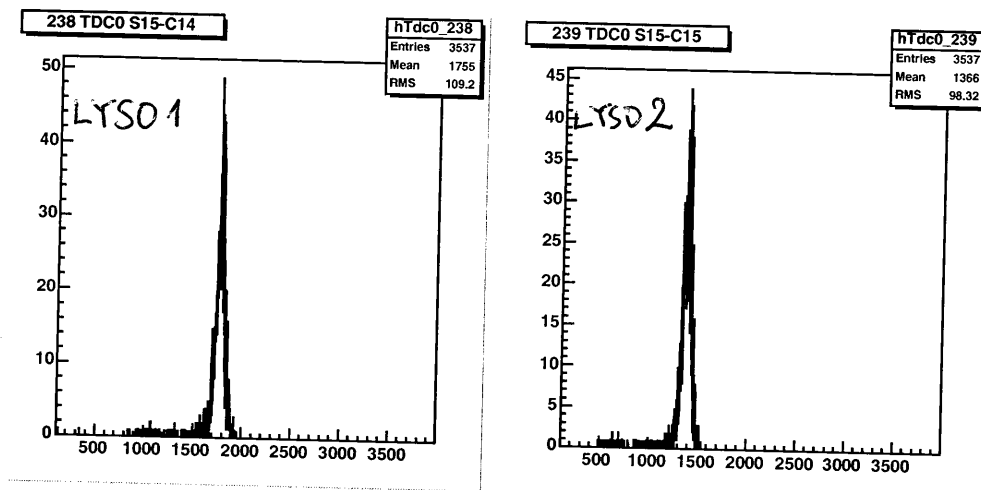
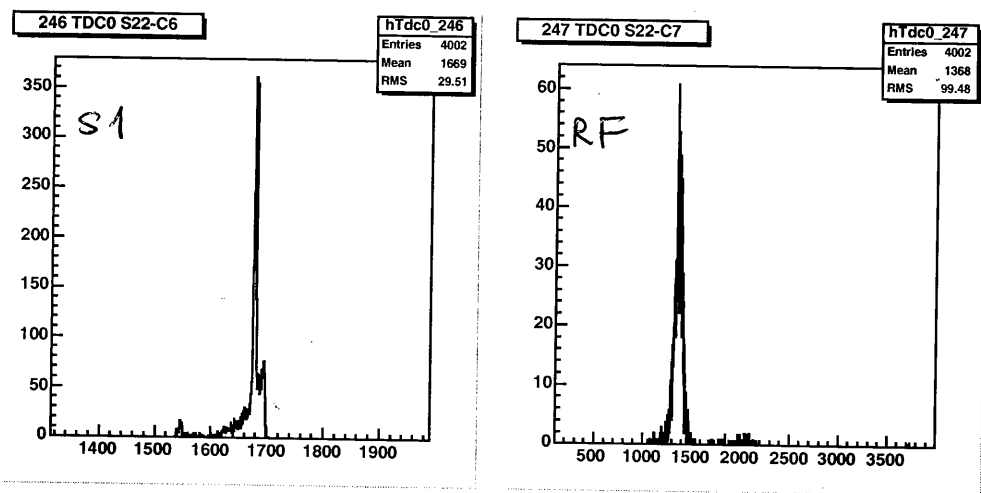
20:42 #8142 π^0 run S1 * Xe * LY50 higher threshold for S1

S1 threshold changed -160 mV \rightarrow -240 mV
 in order to further reduce the pileup.
 After this run S1 threshold changed back to -160 mV

- Coincidence timing was modified to reduce the accidental coincidence with ~~the~~ the wrong S1 bunch (electron coming 8 ns earlier...)
- To make the coincidence tighter.
 - S1 gate width 15 ns \rightarrow 7 ns
 - LY50 delayed by 4 ns.



TDC spectrum after modifying coincidence timing



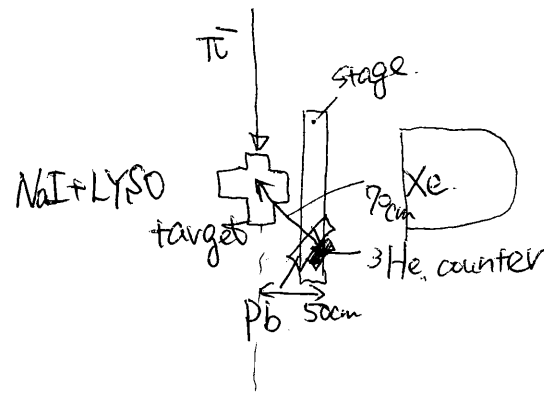
neutron should be around there.

22:19 # 8144 π^0 run SI * Xe * LYSO tight coincidence timing.

11 - Oct. 2007.

1:35 # 8145 pedestal beam on
 1:37 # 8146 LED beam on
 1:44 # 8147 alpha beam on

^3He counter position changed.



Scaler ch0 introduced from # 8123 for ^3He counter.

(module replaced.)

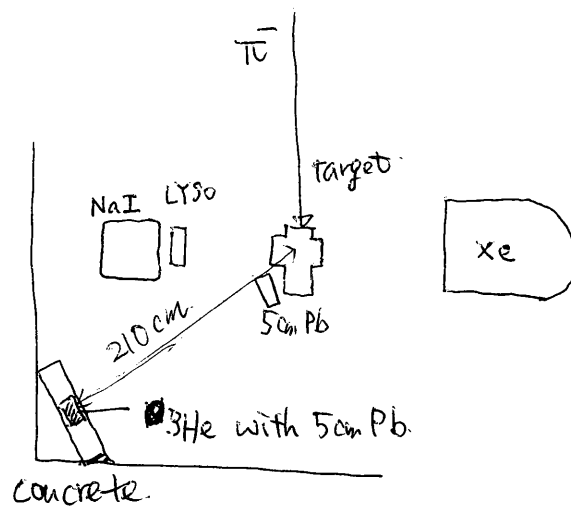
Now, scaler input:

ch # 0	^3He
1	trigger request
2	accepted.
3	SI
4	α trigger rate
5	proton current.

2:36 # 8148 π^0 run SI * Xe * LYSO same as # 8144

^3He count rate.

70cm from target 32.9 Hz @ # 8148
 120cm " 10.6 Hz @ # 8142
 210cm " 39.7 Hz @ # 8153



spectrum of oscilloscope has some structure of "background". Is it enough to put ~10cm Pb?

5:32 # 8149 test.

11 - Oct. - 2009

6:28 #8150 pedestal

6:29 #8151 LED

6:36 #8152 alpha.

6:43 #8153 π^0 Si * LYSO * Xe tight coincidence timing.

9:00 #8154 same as #8153.

11:41 It seems that odb pedestal data is wrong. Maybe LPFramework (ROME analyzer) failed to update the database in RCN #8150. Stop this RCN and take pedestal data again for on-line monitoring.

Pedestal data in odb can be found at
ODB /LPFramework/ APT.ADCCalib.

11:44 #8155 Pedestal beam on

to update online data base (ODB). pedestal data. Keep running LPFramework. when you take pedestal data so that the ODB data is updated automatically. This is important for online monitoring of ADCs.

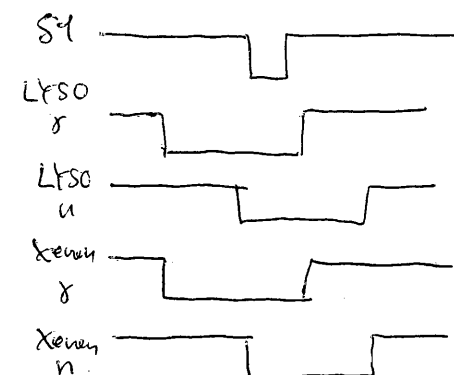
11:48 #8156 same as #8153

SUMMARY OF WORK ON TRIGGER & TDC'S OVER WEEKEND 141

- Since we found that LYSO has a large efficiency for neutrons we tried to cover all processes by adjusting trigger timing as shown in the right.

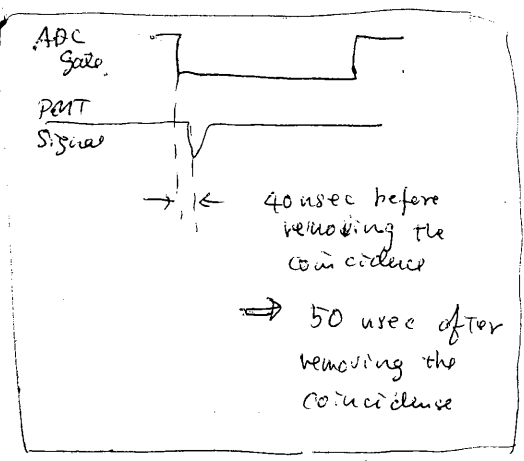
List of processes

	Xenon	LYSO	
①	γ (55 MeV)	γ (83 MeV)	Charge Exchange (CEX)
②	n (8.9 MeV)	γ (130 MeV)	Radiative Capture (RC)
③	γ (130 MeV)	n (8.9 MeV)	"

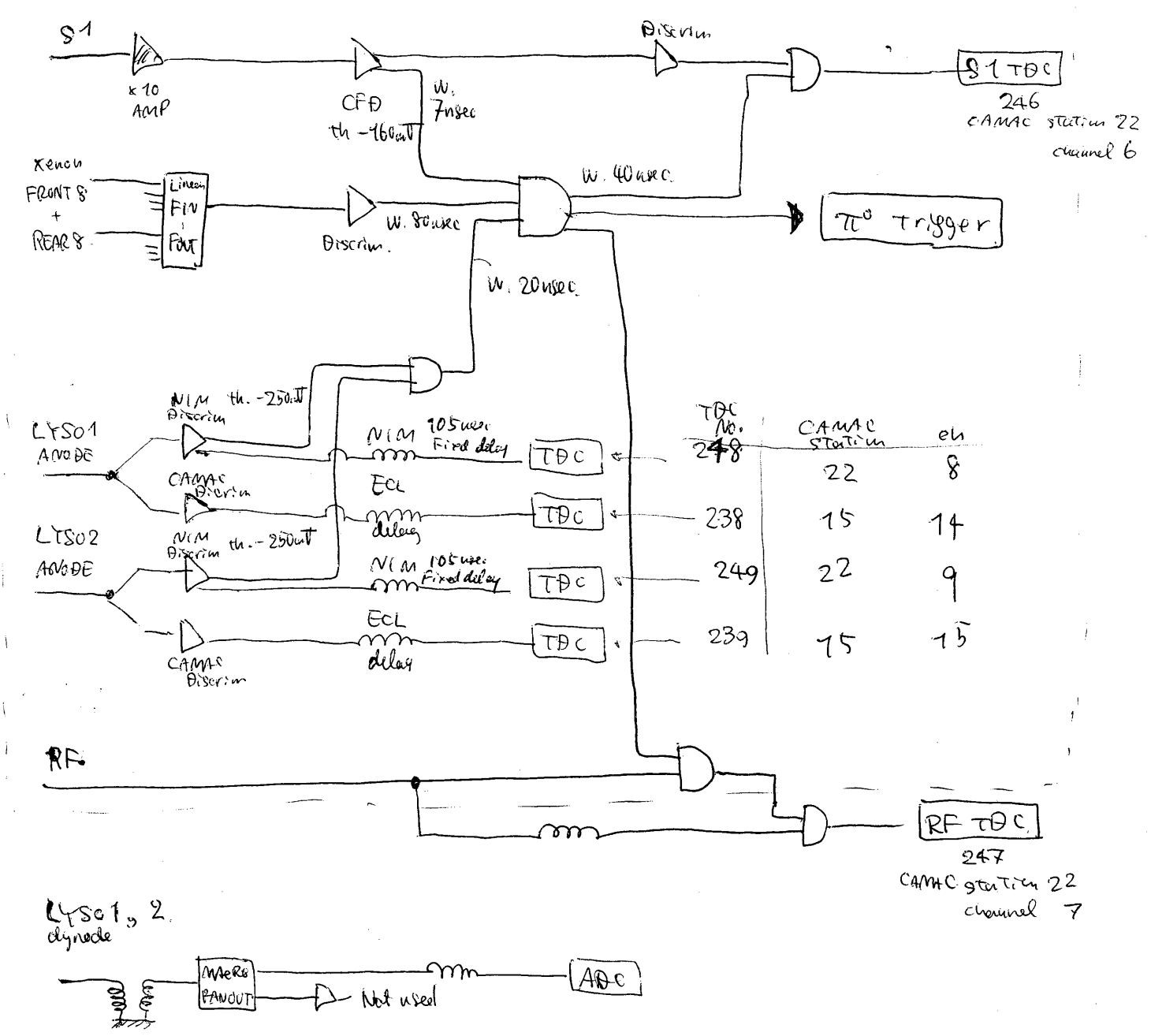


- However, LYSO efficiency is rather high for neutron (low energy). than for γ , if we set up the timing as shown above, more than half of triggered events will be RC, where neutron enters LYSO and γ enters xenon. In this case DAQ efficiency decreases down to 60% due to high counting rate.
- Because our main interest in this test is timing and energy resolutions for 55 MeV, taking RC event data is not urgent issue. This data can be taken later by preparing another trigger like high-threshold-xenon trigger.
- So we decided to give up to take RC events where neutron enters LYSO and γ enters xenon in the ~~same~~ trigger setting for π^0 .
- For radiative capture event, where neutron enters xenon and γ enters LYSO (+NaI), we can take the π^0 trigger by keeping 80 nsec coincidence width of xenon.
- For determining trigger start timing more sharply & reducing pile up events - we at last reduced coincidence width of Si & LYSO as shown in the hardcopy of oscilloscope window on P137.

Because we found that there was not enough margin in ADC timing we removed coincidence (in PISA Golden master) of Triple coincidence-out and S1. Without this coincidence, we can obtain now stable start timing due to reduced coincidence width



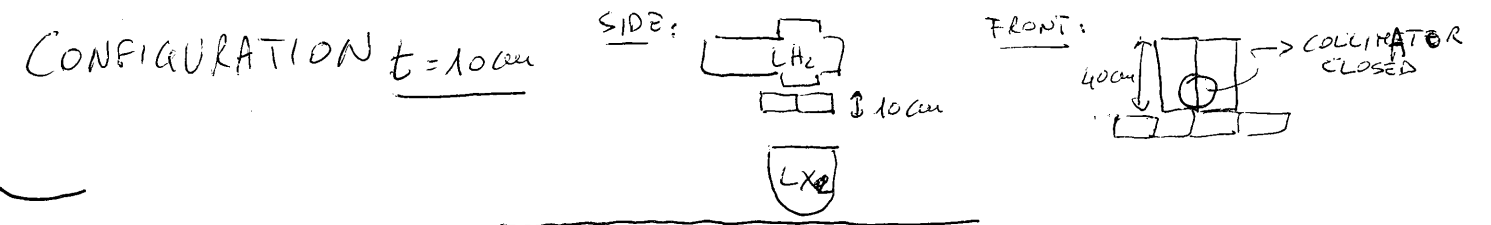
Current TRIGGER Logic & S1, RF TDC input



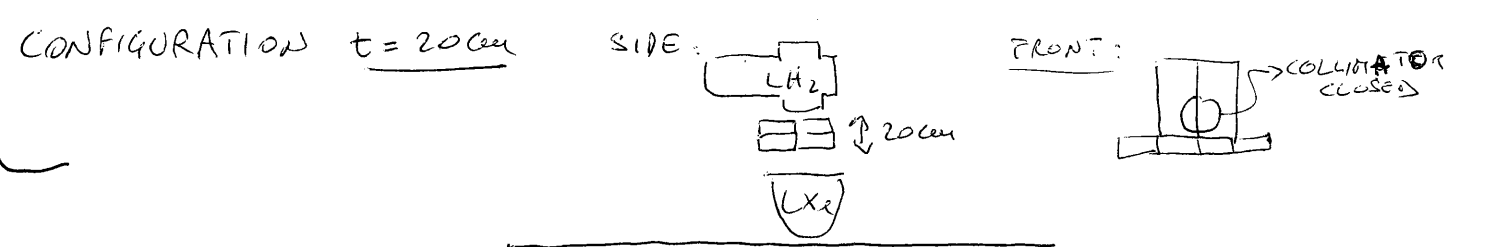
For a trigger, see diagram on p123.

14:53 #8157 α P.W. with polyethylene block (10cm) between the target & LP.

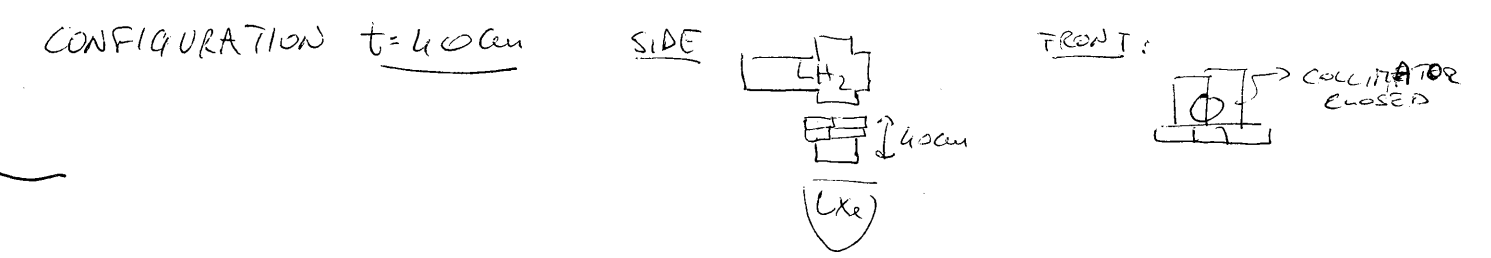
- 15:15 #8158 pedestal beam ON
- 15:20 #8159 LED beam ON
- 15:25 #8160 α beam OFF $\sim 30K$ $t=10cm$ polyethylene
- 15:30 #8161 ped. BEAM OFF
- 15:33 #8162 LED BEAM OFF



- 15:45 #8163 α BEAM OFF $t=20cm$ polyethylene
- 15:55 #8164 α BEAM ON $t=20cm$ u

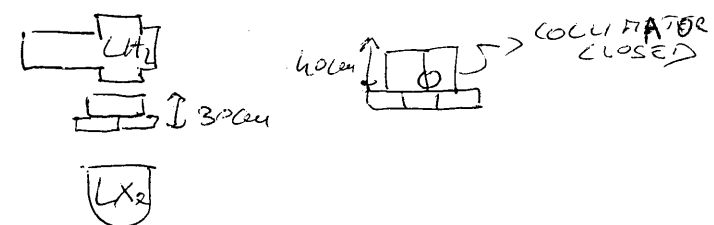


- 16:05 #8165 α BEAM OFF $t=40cm$ polyethylene
- 16:10 #8166 α BEAM ON $t=40cm$ u



- 16:25 #8167 α BEAM OFF NO POLYETHYLENE
 - 16:35 #8168 α BEAM ON u u
-

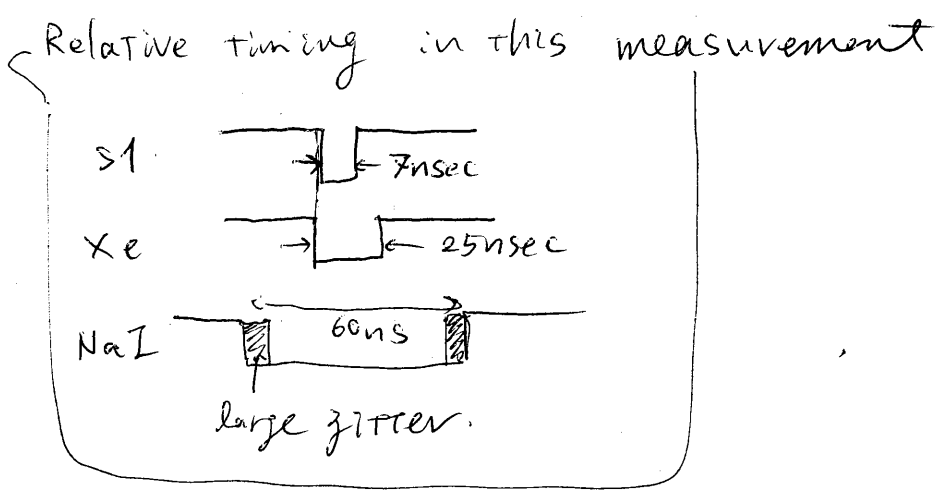
CONFIGURATION $t = 30 \mu\text{m}$ polyethylene



RUN 08169 α BEAM OFF $t = 30 \mu\text{m}$ polyethylene
 RUN 08170 α BEAM ON $t = 30 \mu\text{m}$ u

17:00

- We measured the coincidence rate for $S1 * Xe * \underline{NaI}$ instead of $S1 * Xe * LYSD$
- To make $S1, Xe$ and NaI coincident
 - Xe delayed by 105 ns
 - $S1$ delayed by 59 ns
 - Xe gate width $75 \text{ ns} \rightarrow 25 \text{ ns}$
 - NaI gate width $42.8 \text{ ns} \rightarrow 60 \text{ ns}$



Results

Coincidence rate	Xe threshold		
	-160mV	-230mV	-300mV
$S1 * Xe * NaI$	52 Hz	30 Hz	27 Hz
$S1 * Xe$	8.3 kHz	6.6 kHz	5.8 kHz

↓
This includes radiative capture event

19:00 All settings (Timing and threshold) back to normal one. 145 and shielding.

19:17 # 8171 π^0 run $S1 * Xe * LYSD$.
 22:21 # 8172 same as #8171.
 R3 (0-1-6) tripped.

12-Oct-2007.

0:19 # 8173 pedestal
 0:20 # 8174 LED } beam on.
 0:33 # 8175 alpha

Discriminator thresh. $0.57 \text{ V} \rightarrow 0.3 \text{ V}$ in P.123. (Discr V1).

1:25 FS41 L-R $80 \rightarrow 72$ //
 1:29 # 8176 pedestal with FS41 LR 72 beam on.
 $S1$ rate. $1.44 \times 10^6 \text{ Hz}$.
 1:50 # 8177 pedestal with FS41 LR 70 beam on.
 2:22 # 8178 "
 2:39 # 8179 LED. with FS41 LR 70 beam on

#8180 ~ #8186 test run. ($S1$ rate $1.6 \times 10^6 \text{ Hz}$? increasing??)

3:52 #8187 alpha. with FS41 LR 70 " It takes some time to be stable. $1.3 \times 10^6 \text{ Hz}$ at #8186

alpha peak still affected by too many backgrounds

Discriminator thresh. (Discr V2) also $0.57 \text{ V} \rightarrow 0.3 \text{ V}$.

12-Oct. 2007.

4:38 #8188 alpha beam on.

FS41LR 70 & Discr (V1/V2) thresh. - 300 mV
↓
Veto above two hits.
only 1 hits allowed.

5:31 #8189 alpha beam on

FS41LR 70 & Discr (V1/V2) thresh. - 300 mV
Discr 8, 9, 10, 11 trigger into FIFO removed.

#8190 test

5:51 #8191 pedestal beam on
Discr 8, 9, 10, 11 removed.

See pag 123

Bad α runs when
beam is on from
run #8072

5:52 #8192 LED "

6:01 #8193 alpha. "

6:05 beam off. during #8193. (BB closed)

6:15 #8194 continued.

6:32 #8195 "

6:33 BB opened.

6:45 #8196 alpha beam on

6:54 #8197 π^0 SI * LYSO * Xe.

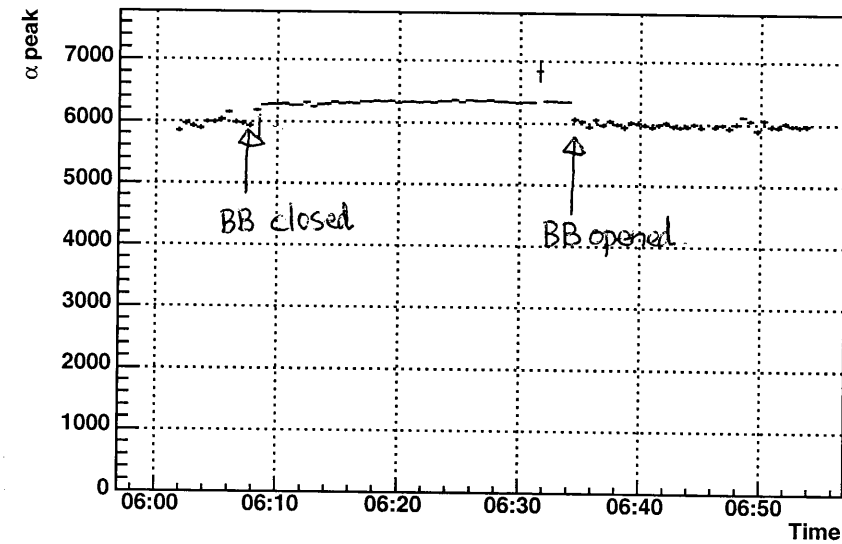
FS41LR 70 ~ 4Hz trigger rate,

12-Oct. 2007.

low beam intensity run.

FS41LR : 70

fqsum:TimeStamp {fqsum<8000}



#8193 ~ 8196

α trigger same as
#8071 or older
except for the 0.3V //

Baseline shift observed.

This shift is consistent with the pedestal data shift
as already observed by Natori-kun. (when beam on, pedestal go down.)
Output decreasing with any time constant was not observed at this condition.
But the sigma of pedestal is still wide when beam on.

7:30 lpframework.exe crashed.

8:03 #8198 pedestal beam on FS41LR : 70

#8198 ~ #8199 junk.

8:06 #8200 pedestal beam on

#8200 ~ #8202. junk => several times, lpframework.exe crashed.

8:15 #8203 pedestal.

8:18 #8204 π^0 SI * LYSO * Xe. FS41LR70 50k events

12:00 #8205 Alpha beam on

13:00 #8206 π^0 SI * LYSO * Xe FS41LR70 26k

12/10/04

14:50 FS41 LR 70 → 80.

Beam intensity increased. for neutron background study using α data.

Study of α & n spectra with/without Polyethylene in front of LXe.

t = 0 cm polyethylene

All measurements made with polyethylene CLOSE to the TARGET

14:55	# 8207	pedestal	beam off	(10k)
14:56	# 8208	LED	beam off	
15:00	# 8209	Alpha	beam off	(40k)
15:07	# 8210	pedestal	beam on	(10k)
15:09	# 8211	LED	beam on	
15:15	# 8212	Alpha	beam on	(40k)

t = 10 cm polyethylene

	# 8213	pedestal	beam off	(10k)
15:28	# 8214	LED	"	
15:34	# 8215	Alpha	"	(40k)
15:41	# 8216	pedestal	beam on	(10k)
	# 8217	LED	" on	
15:30	# 8218	Alpha	" "	(40k)

t = 20 cm polyethylene

16:03	# 8219	pedestal	beam off	(10k)
16:07	# 8220	LED	beam off	

16:16 #8221 Alpha beam off (~40k)

16:25 #8222 pedestal beam on

16:30 #8223 LED beam on

16:38 #8224 Alpha beam on (40k)

t = 30 cm polyethylene

16:50 #8225 pedestal beam off

16:56 #8226 LED beam off

17:04 #8227 Alpha beam off (40k)

17:15 #8228 junk

17:15 #8229 pedestal beam on

17:18 #8230 LED beam on

17:25 #8231 Alpha beam on (40k)

17:35 #8232 π^0 (trigger S1 * Lyso * Xe)
trigger request ~ 8 Hz

t = 40 cm polyethylene

18:05 #8233 pedestal beam off

18:10 #8234 LED beam off

18:15 #8235 Alpha beam off

18:25 #8236 pedestal beam on

#8237 LED beam on ~ probably something went wrong

18:40 #8238 ~~LED beam on~~ junk

18:40 #8239 LED beam on

18:50 #8240 Alpha beam on

18:58 #8241 π^0 junk

18:58 #8242 π^0 trigger request ~ 5.8 Hz

19:15 removed poly-ethylen bricks (all)

change LED setting

ch 2	118	124	126	127	129	131
ch 3	100	106	108	109	111	113

19:18 #8243 pedestal FS41 LR = 80
 #8244 LED "
 #8245 α "

↑
 during this run
 FS41 LR is changed to 70

19:43 #8246 pedestal FS41 LR = 70
 #8247 LED "
 #8248 alpha

20:00 #8249 pedestal beam off
 8250 Junk
 #8251 LED "
 #8252 α "

- Polyethylene blocks stacked again as usual way.
- Reduce beam intensity by closing FS41 further.

FS41 LR 70 → 57

Beam intensity (S1 discriminator OUT) 13 MHz → 2.4 MHz
above threshold

20:54 #8253 Pedestal (FS41 LR 57) 151
 Beam ON S1 count 2.4 MHz

21:00 #8254 LED Beam on (FS41 LR 57)
 (LED setting was not changed after
 RUN 8243)

21:03 #8255 π^0 run
 With reduced beam intensity
 FS41 LR = 57
 0.3 Hz trigger rate.

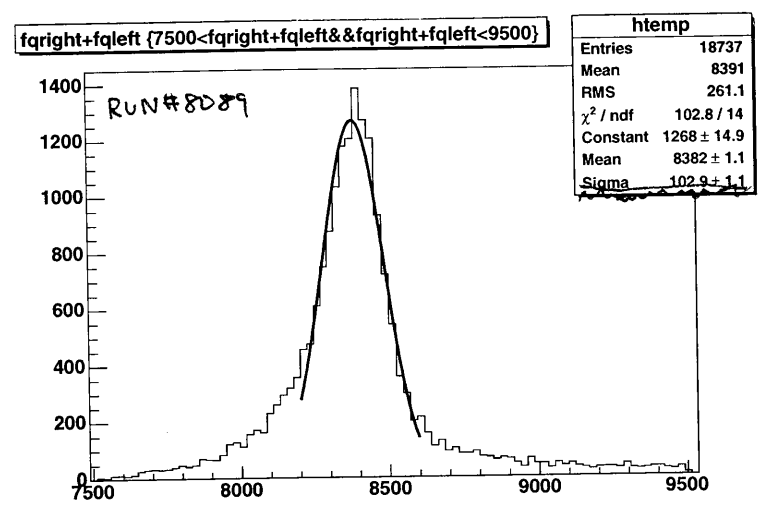
#8256 Junk

22:02 #8257 π^0 run FS41 LR = 57

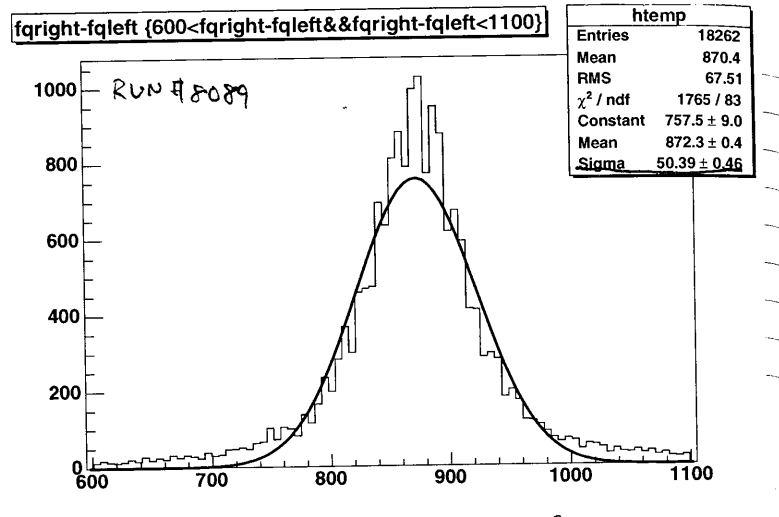
LED setting got back to the normal one

ch 2	124	125	126	127	129	131
ch 3	106	107	108	109	111	113

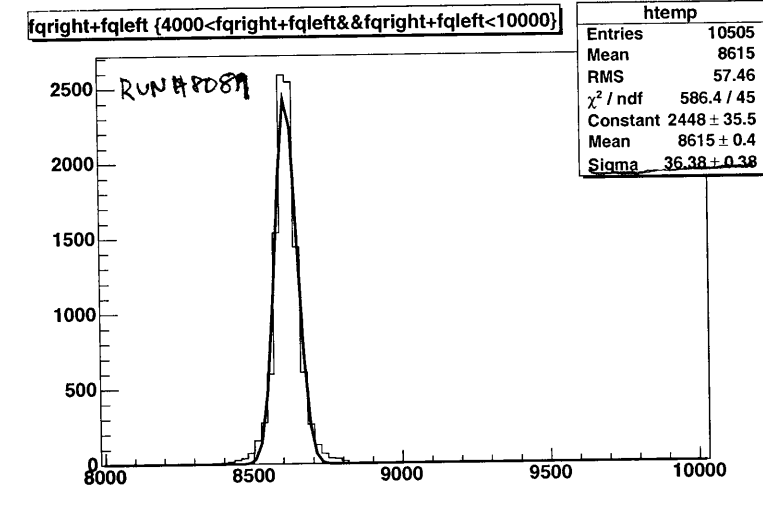
pedestal distribution



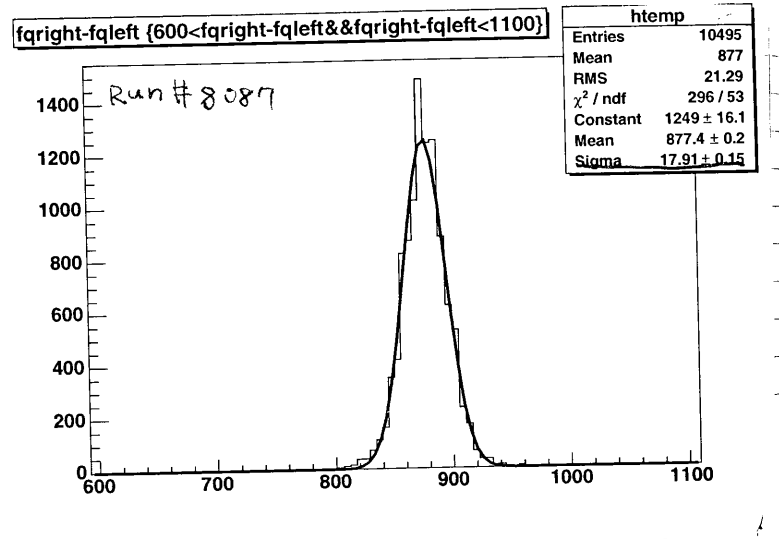
(sum of right face pedestal and left face pedestal in beam on condition)



(Difference between right face and left face pedestal in beam on condition)



(sum of right & left beam off condition)

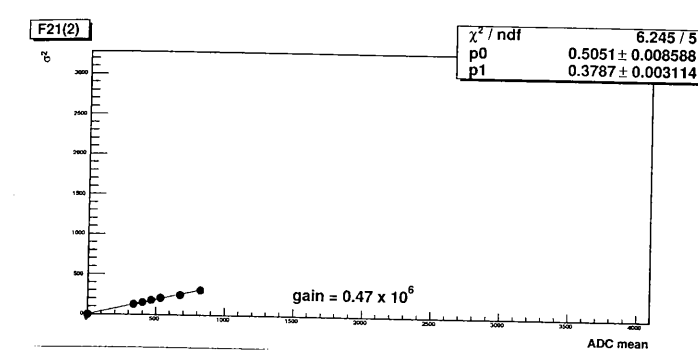


(difference between right & left beam off)

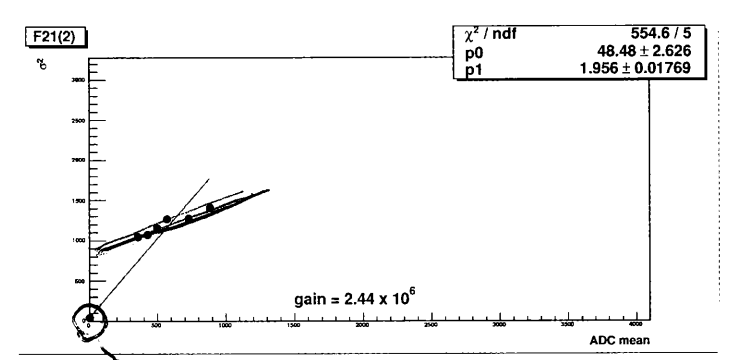
It seems that coherent part is bigger, about 3 times in both beam on/off conditions.
 Width of pedestal distribution in beam on condition is about 3 times bigger than beam off condition.
 *: The range of axis is not same.

Investigation on LED calibration with beam ON 153

Mean - α^2 curve ~~without beam~~



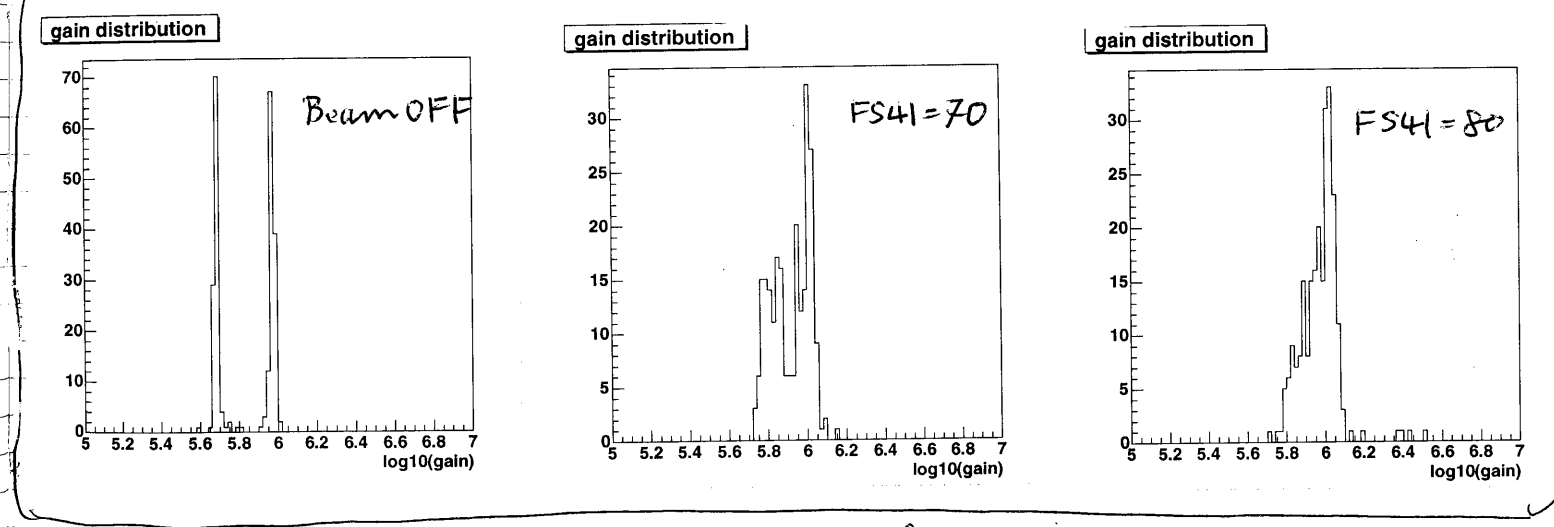
Mean - α^2 curve with beam



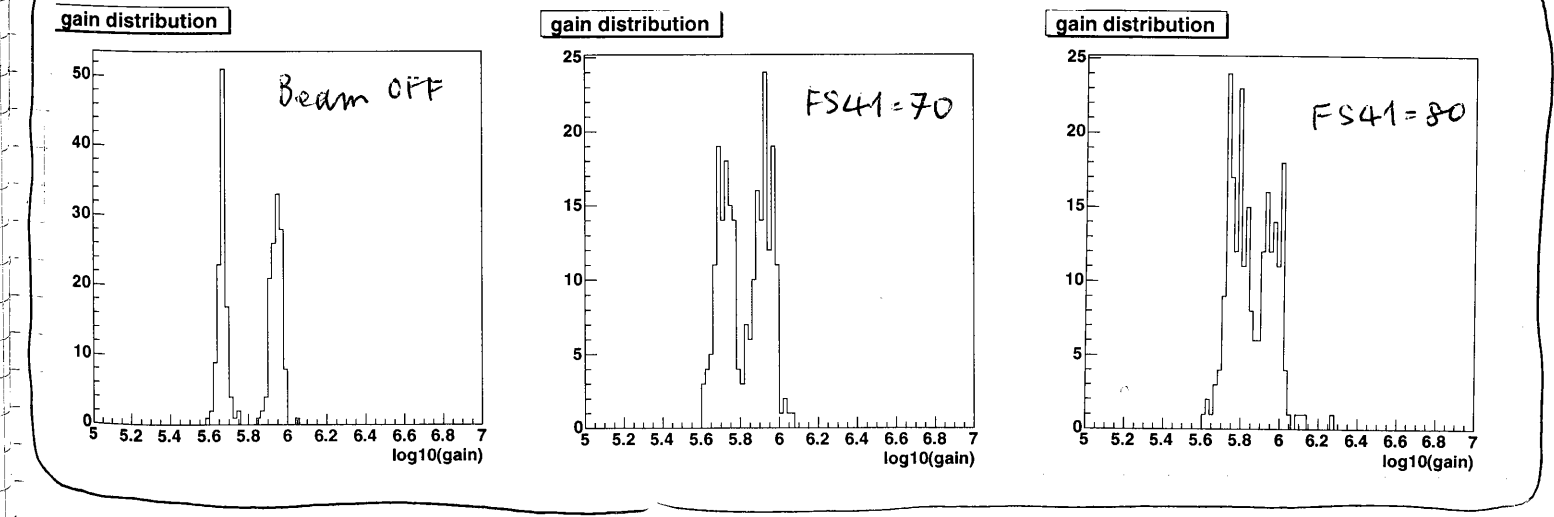
This point (pedestal data) gives higher gain

We tried to ~~estimate~~ calculate the gain without using pedestal data (the first point)

With pedestal data



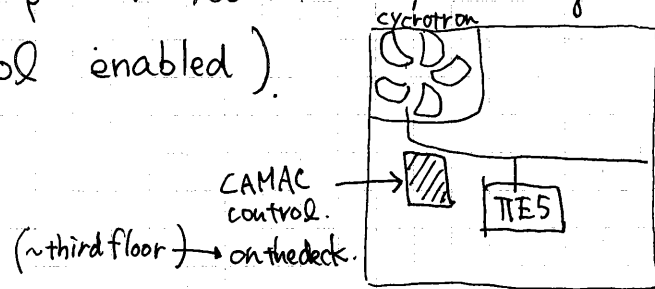
Without pedestal data



It looks better not to use pedestal data

13-Oct. 2007.

0:00. Peter logged on the y-messenger.
 CAMAC system hang up → recovered. by rebooting.
 (FS41LR control enabled)



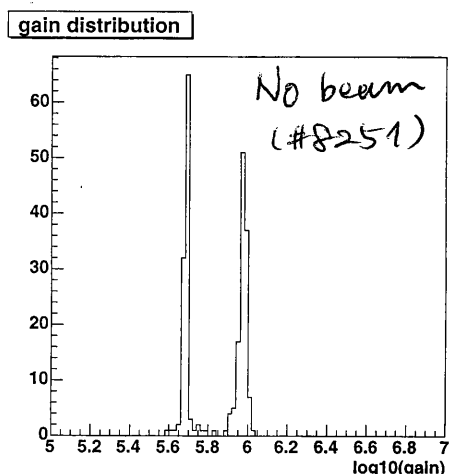
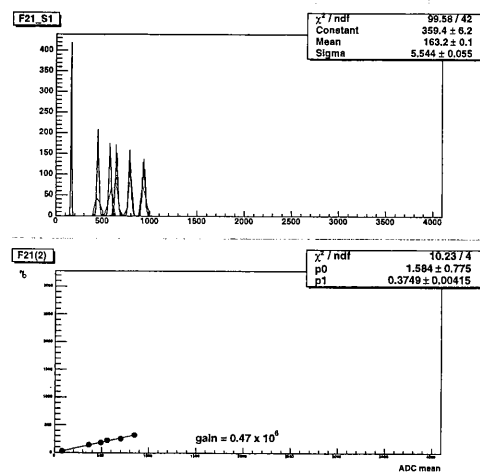
0:01 #8258 pedestal beam on FS41LR : 57.
 0:03 #8259 LED
 0:11 #8260 alpha.

▷ Investigation on LED calibration with beam, cont'd

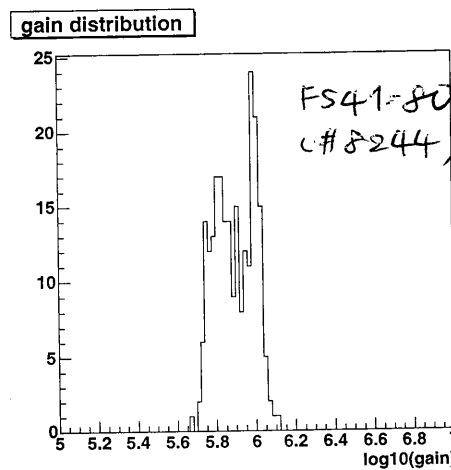
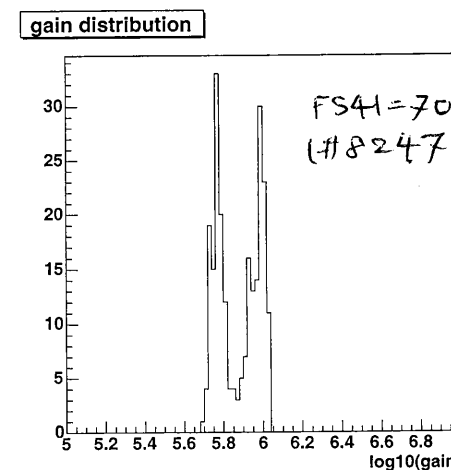
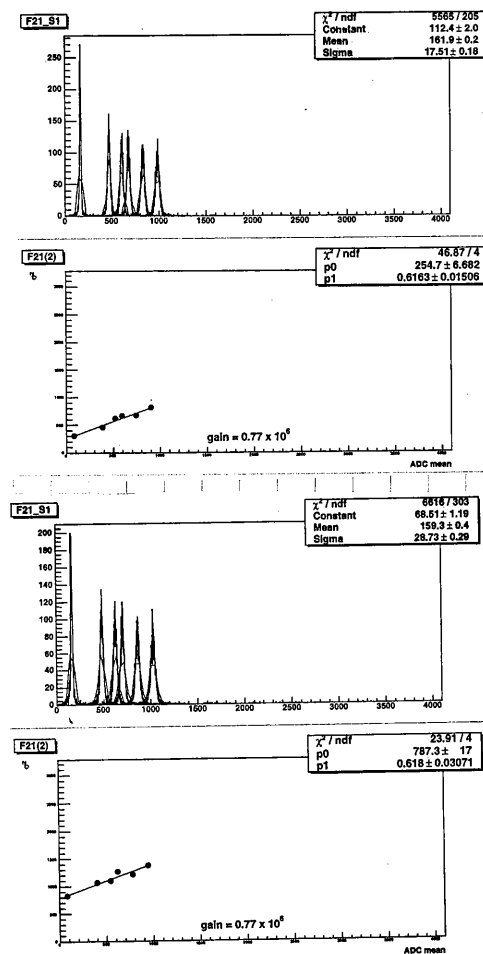
• New LED setting is tried. between #8244 → #8254 where the first value is set to be lower than the LED threshold voltage.

Normal ch 1 124, 125, 126, 127, 129, 131
 ch 2 106, 107, 108, 109, 111, 113

• This first point may give more reasonable pedestal spread during the LED run.



These are not good!



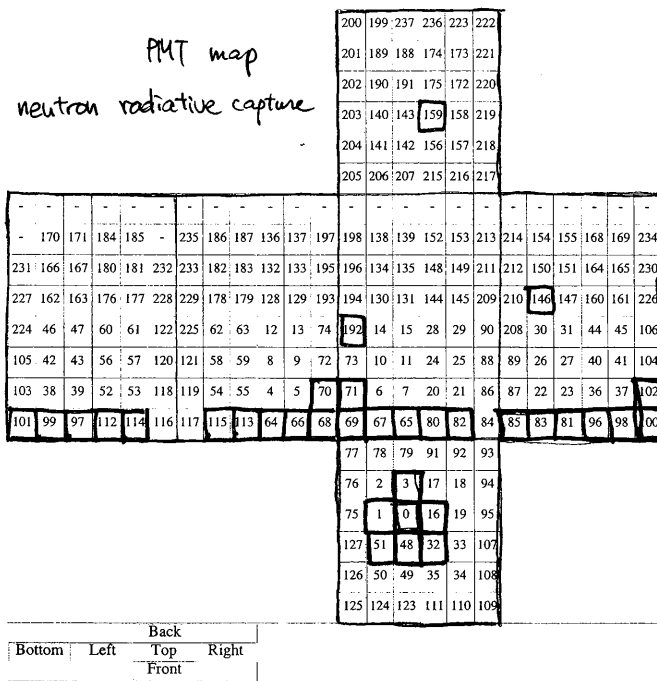
• Pedestal data is not used in these calibrations.
 Normal

• Much wider pedestal distribution during LED calibration might be due to

- Noise caused by LED driver?
- Some intrinsic fluctuation in LED?

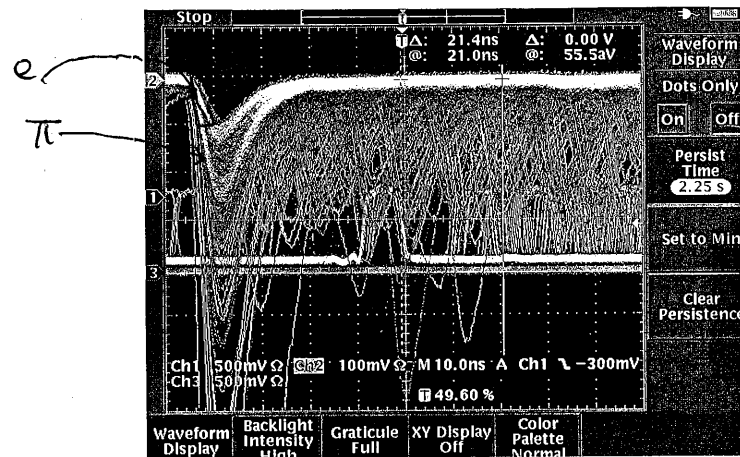
13-Oct-2007

This PMT map show the PMTs in which TDC spectrum sign of neutron radiative capture was seen.



biased by trigger
(This data was taken with S1 * LYSO * Xe)

1:00. S1 trigger rate was 5 MHz @ FFS 41 LR: 57 (previous ~ 2.7 MHz)



#1. S1 discr.

#2. S1 analog.

π^- & e^- signal can be seen.

• S1 PMT gain recovered during low intensity run?
If S1 thresh. -50 mV \rightarrow -98 mV.

S1 rate 2.4 MHz, normal. //

• FFS 41 LR 57 \rightarrow 60.

S1 thresh. -130 mV, S1 rate 3.6 MHz

13-Oct-2007

2:00 #8261 pedestal FFS 41 LR: 60.
2:01 #8262 LED
2:09 #8263 junk.
2:21 #8264 alpha
2:22 #8265 π^0 S1 * LYSO * Xe
1.2 Hz trigger rate.

7:15. Proton current went down to 0 stop the run.

7:22 #8266 pedestal beam off.

7:24 #8267 LED "

7:31 #8268 alpha "

7:42 #8269 CR "

6:20

• CR TDC error timing was modified because TDC stop signal comes almost at the same timing as start signal.

since the CAMAC TDC timing adjustment done on Oct 10 (P.136).

\Rightarrow No TDC data for CR since then.

• 32 nsec delay cable added in CR TDC stop signal and TDC start signal changed from 40 nsec to 24 nsec.
Delay cable in the ~~to be added~~

Attention:

The timing for S1, RF, LYSO1 & LYSO2 TDC stop shifted by 16 nsec hereafter because of this modification

16:13 #8270 eR beam off

8271-8272 also Cosmic

20:21 Beam as back

#8273 Pedestal RUN beam off

20:22 #8274 LED beam off

ERROR MESSAGE appeared during this RUN

"No ADC gate"

RUN STOPPED intermediate frontend stopped and started

20:25 #8275 LED beam off

ERROR MESSAGE again!

Found that the flip-flop for trigger was at 1μsec Range, (Gate Generator)

→ changed to correct setting.

20:31 #8276 LED beam off

21:02 #8277 α beam off 30k events

Beam Blower Opened Momentum slit
FS 41 LR = 60

S1 discriminator output 3.5 MHz

21:15 #8278 pedestal beam on

Seems to fail to update oab pedestal data
Take another pedestal RUN

21:18 #8279 pedestal beam on

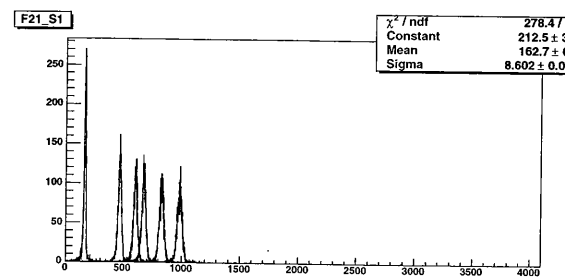
OK this time updated!

21:20 #8280 LED beam on

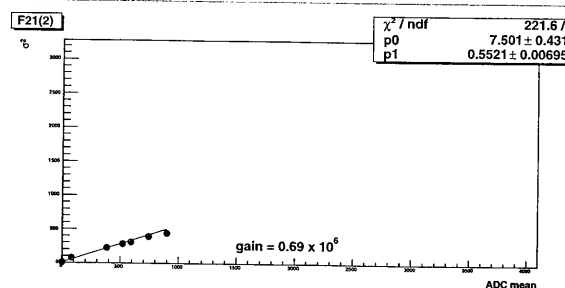
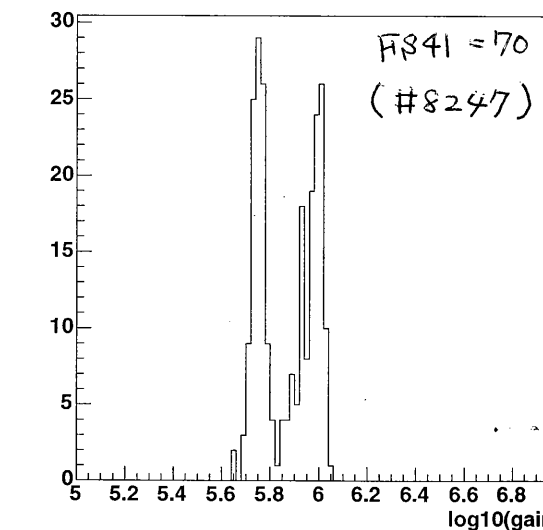
21:27 #8281 α beam on 30k events
Trigger Request 1.35kHz

21:35 #8282 α ~40k events

LED investigation



gain distribution



Fitting method was modified by Ryu.

previous selection

new selection

} Event Number } → } Event Number }
} qraw } } qraw }
} Peak ± 1.5σ region }

Previous one was good for low background environment, but at higher rate, many chance coincidence events make big charges. So σ of fitting was broaden. Now, σ of pedestal is also consistent with LED data. → should be checked which one is the best.

14 - Oct - 2007

7:23. too many "No ADC gate" messages occurred.
run stopped. (many junk events included into # 8282 ~40k)

Neutron counter ^3He returned to the position
in front of the LP Xe detector.

7:40. #8283 junk.
trigger frontend restarted!
because of same messages "No ADC gate".

7:43	#8284	pedestal	} beam on
7:45	#8285	LED. ^{~5000} 30000	
7:52	#8286	alpha. <u>30000</u>	
8:02	#8287	pedestal	} beam off
8:05	#8288	LED	
8:15	#8289	alpha	
8:28	#8290	π^0 run	

too many "No ADC Gate!" "No TDC Common signal!"
message occurred. → JUNK.

#8291 ~ #8296 used for testing DAQ.

After investigation for several hours, we succeeded to
recover DAQ by rebooting all machines and softwares.

One modification in hardware was made although it was
not clear whether this was effective or not.

FASTBUS controls NIM input (trigger request)
is changed from 1st to 2nd.

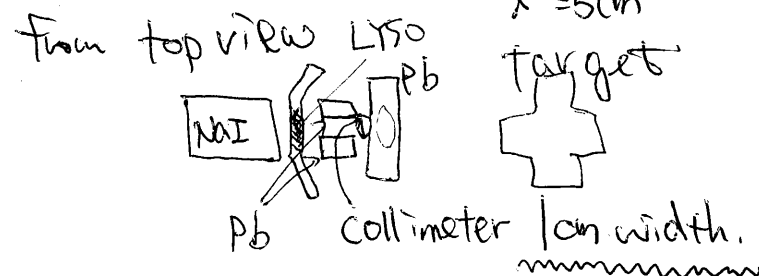
14/Oct/2007 161

12:01	Run #8297	π^0 RUN	FS41 LR 60
14:46	#8298	π^0 run	FS41 LR 60
15:13	#8299	pedestal	beam off
15:14	#8300	LED	beam off
15:22	#8301	α	beam off
15:32	#8302	pedestal	beam on
15:34	#8303	LED	beam on
15:41	#8304	α	beam on
15:50	#8305	π^0 run	FS41 LR60
22:55	#8306	pedestal	beam off
22:58	#8307	LED	beam off
23:13	#8308	α	beam off
		• FS41 LR 80	S1 rate 10.7 MHz
23:28	#8309	pedestal	beam on
23:31	#8310	LED	beam on
23:40	#8311	α	beam on

15-Oct-07 0:00	#8312	π^0 run	FS41 LR 80
		• FS41 LR 100	S1 rate 10.8 MHz
0:11	#8313	pedestal	beam on
0:13	#8314	π^0 run	FS41 LR100

This was found to
be 80 later

From #8309 Pb collimeter was put in front of LYSO.



15/02/04

13:34 RUN 8315 FS41 = 100 This was found to be 80 later
LYSO Timing Resolution estimation RUN
with Lead Bricks in front of LYSO detector.

15:30 We found that the momentum slit stacked at 80 (FS41)

Probably the slit stacked before the run 8312 and stayed at 80. This is the reason why S1 counting rate did not change between before and after run 8312.

Please check the APC value when you change slit setting! (shown on the right of DAC values)

FS41 control enabled as was done on 13/02.

See the ELOG how to recover., posted by WO

15:46 RUN 8315 ends. 20k events
Beam Blocker Closed for area access

15:50 RUN 8316 pedestal beam off

15:52 RUN 8317 LED beam off

15:59 RUN 8318 α beam off

Beam Blocker Opened FS41 = 80

16:09 RUN 8319 pedestal beam on

16:12 RUN 8320 LED beam on

16:20 RUN 8321 α beam on.

Take one more RUN for evaluation LYSO timing resolution

16:26 RUN 8322 π^0 RUN FS41 80
with two lead bricks in front of LYSO center.

19:15 end of 8322 30k

19:28 #8323 pedestal beam off
19:30 #8324 LED beam off
19:37 #8325 α beam off

163

FS41 80 \rightarrow 60 Lead Bricks in front of LYSO removed.

19:44 Beam Blocker Opened.

19:46 #8326 pedestal beam on

19:47 #8327 LED beam on

19:54 #8328 α beam on

20:01 #8329 π^0 RUN FS41 60 1.54Hz trigger.

It seems that we failed to update on-line pedestal data.

16/02/2004

1:29 Stop 8329 33k events

#8330) pedestal
#8331

1:36 #8332 π^0 FS41 60 Junk

1:46 #8334 π^0 FS41 60

Now lptree works.

• problem was that I linked Dictionary for offline Tree.

• Periodical tree update ~~was~~ implemented.

You can specify update interval with "-t" option

default = 30 [sec]

16/Oct/2004

- ① Normal gain ($0.5e6$ R9288 / $1.0e6$ R6041) FS41 = 60 500,000 events
- ② Normal gain FS41 = 70 500,000 events
(100,000 first, others later)
- ③ High gain ($1.0e6$ R9288 / $5.0e6$ R6041) FS41 = 60 500,000 events
(100,000 first, others later)
- ④ High gain FS41 = 70 500,000 events
(100,000 first, others later)
- ⑤ Normal gain $51 \times Xe$ FS41 = 60
(~~upper~~ threshold) higher

07: #

- Beam ~~CLOSED~~ CLOSED.
- # 8342 pedestal run @ BEAM OFF.
- # 8343 LED calibration @ BEAM OFF.
- # 8344 Alpha run @ BEAM OFF.

07: 12

- Beam OPEN.
- # 8345. π^0 RUN. FS41 = 60.

08: 13

- LP framework was hanged up.
- # 8345 stopped. ~700 events taken, but maybe this run was junk.
- # 8346. π^0 RUN FS41 = 60. again. 26k events

①

8265	21 K
8282	89 K
8290	
8294	6 K
8295	5 K
8296	5 K
8297	12 K
8298	2 K
8305	30 K
8329	33 K

↑ 187 K events in total

We need another 52 hours data taking

- 6:37 stop 8334 ~~28186 events~~ (Sorry, write flag was 'n')
- # 8335 pedestal beam on.
 - # 8336 LED ") Junk, mlogger aborted
 - # 8337 α ")
 - # 8338 α beam on Junk data was not written
=> reboot PC.
 - # 8339 α beam on ~~Junk mlogger aborted~~
started mlogger
 - # 8340 LED Junk mlogger aborted
 - # 8341 LED again

16:04 # 8347 pedestal FS4 LR = 60 beam ON

83 5) Junk
45
49

19:28 # 8350 pedestal FS4 LR = 60

8351 LED " Junk

19:34 # 8352 LED Junk

19:59 # 8353 LED Beam ON

~~20:00 # 8354~~

Interruption of DAQ due to online machine trouble.

We tried to reboot online machine (megoln01) to fix the problem, but did not succeed. Actually we ~~could not~~ ^{failed to} reboot (frontend hung-up) the machine several times and finally we succeeded by unplugging ~~the~~ CAMAC & VME interface CABLES. The cables were plugged after the machine rebooted.

Then, another problem occurred, the frontend stacked again and we could not access to the CAMAC (No pulse out from the LED Driver). This problem was fixed, anyhow (rebooting frontend program...) but it seems that "lptree" is suspicious.

20:06 # 8354 alpha Beam ON
8355 pedestal Beam off
8356 LED Beam off
20:27 # 8357 alpha Beam off

20:35 Beam Blocker OPEN

20:40 # 8358 π^0 FS4 LR = 60

20:35 stop # 8358 20606 events.

17/Oct/2004

Xenon 129 MeV

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8359 test

0:46 # 8360 pedestal beam on FS4 LR = 60

8361 LEP "

8362 α "

8363 pedestal beam off

1:09 # 8364 LED "

8365 Junk

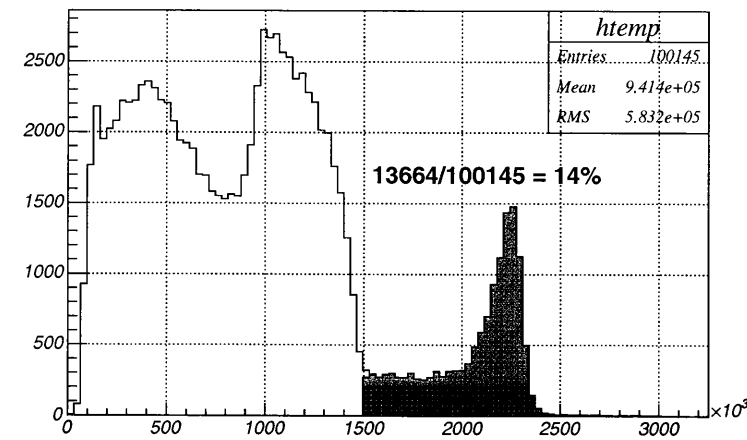
8366 α beam off

changed Trigger for π^0
to S1 * Xe

(same thresh. Id)
as before

1:29 # 8367 FS4 LR = 60

~ 74 Hz (trigger accept)
~ 11 kHz (trigger request)



8367

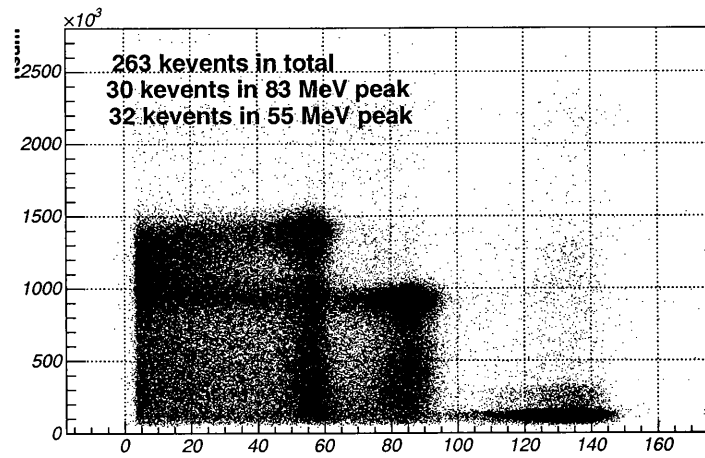
14% of all events
are 129 MeV

8368 ~ # 8376

same as # 8367 100 kevents each

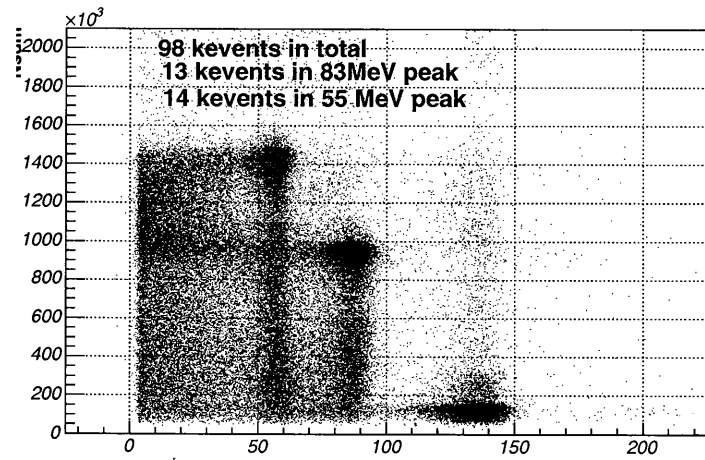
⇒ 140 k events (129 MeV) are expected.

What we have taken.



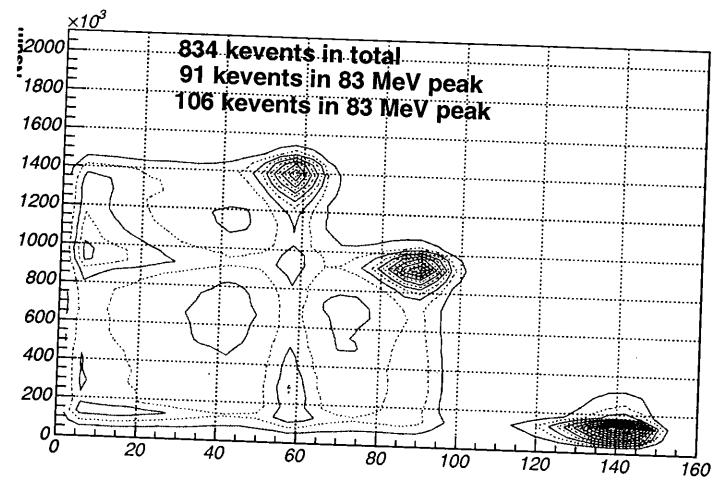
Normal gain

FS4LR = 60



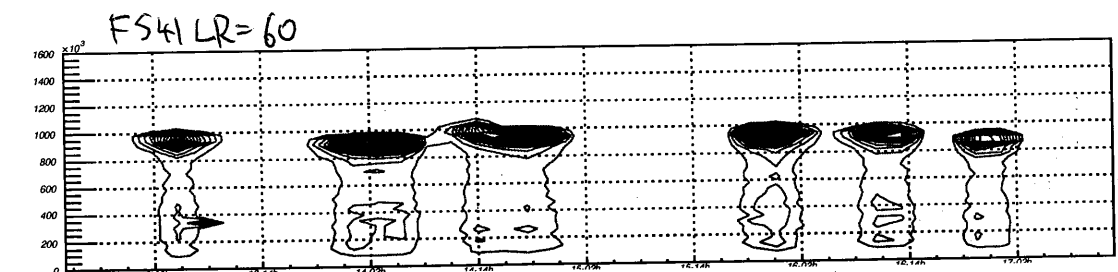
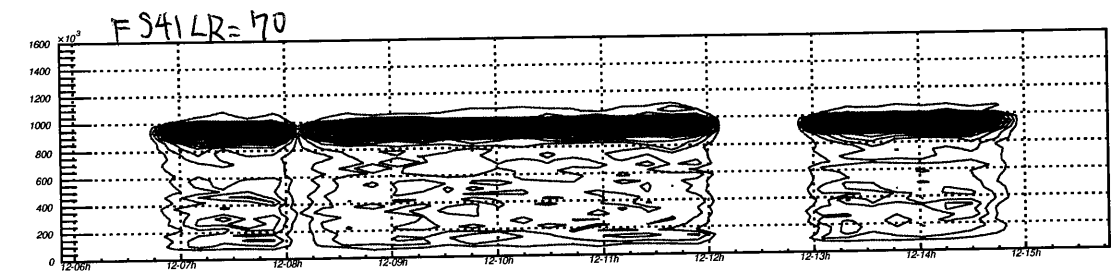
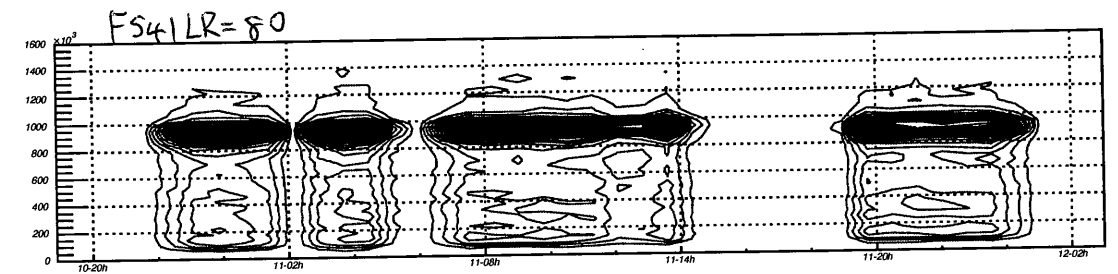
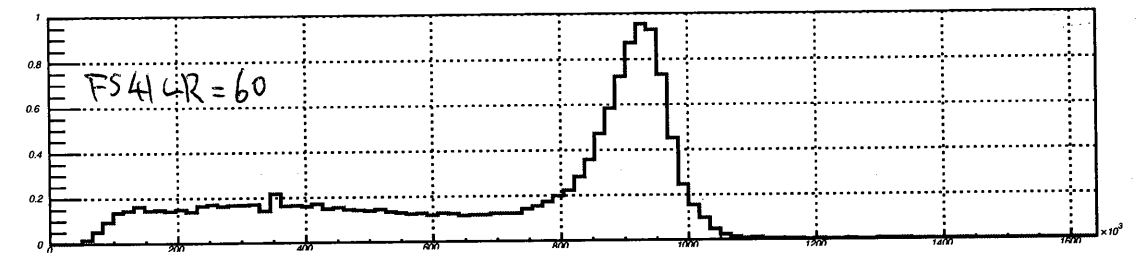
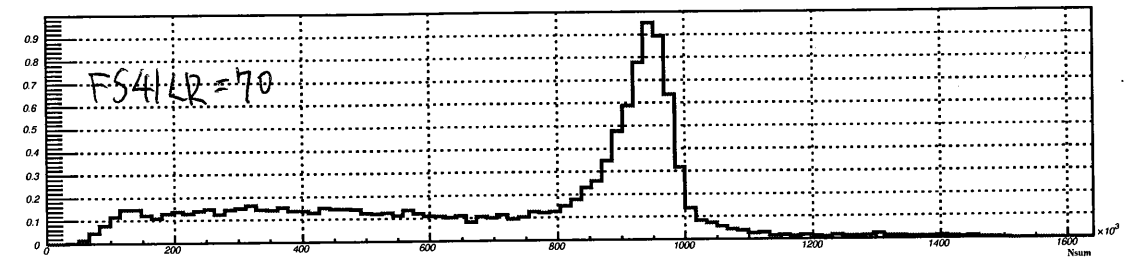
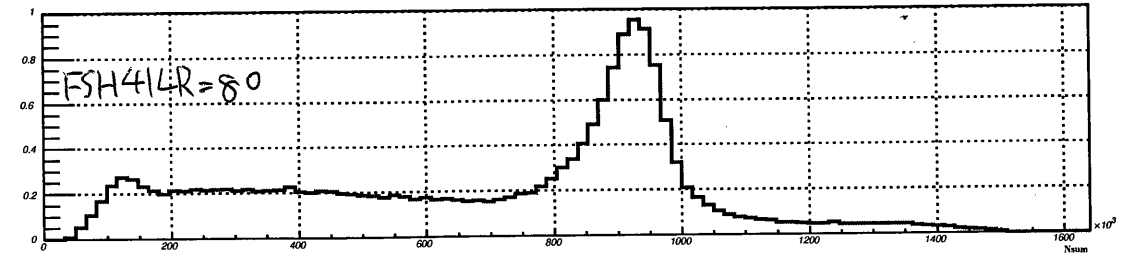
Normal gain

FS4LR = 70



Normal gain

FS4LR = 80



gain adjust for high gain run (R6041 5eb
R9288 1eb)
save current gain as "041017_1.hu"
↑
normal gain

BB close

6:03 #8377 pedestal for gain adjustment

#8378 LED

#8379 "

#8380 "

LED setting 119 120 121 122 123 124
101 102 103 104 105 106

#8381 "

#8382 "

#8383 "

#8384 "

LED setting 117 118 119 120 121 122
99 100 101 102 103 104

#8386 pedestal for gain adjust

#8387 "

#8388 LED for gain adjust

#8389 "

#8390 ~ 8392 Junk

#8393 LED for gain adjust

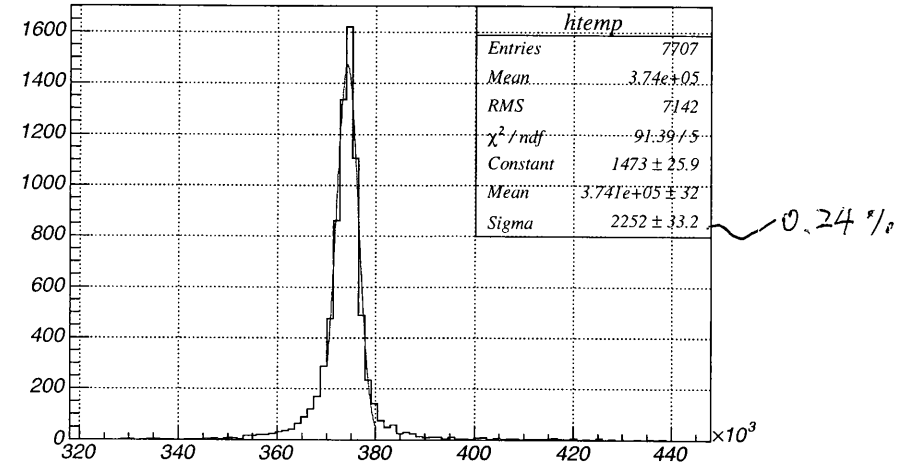
#8394 "

#8395 "

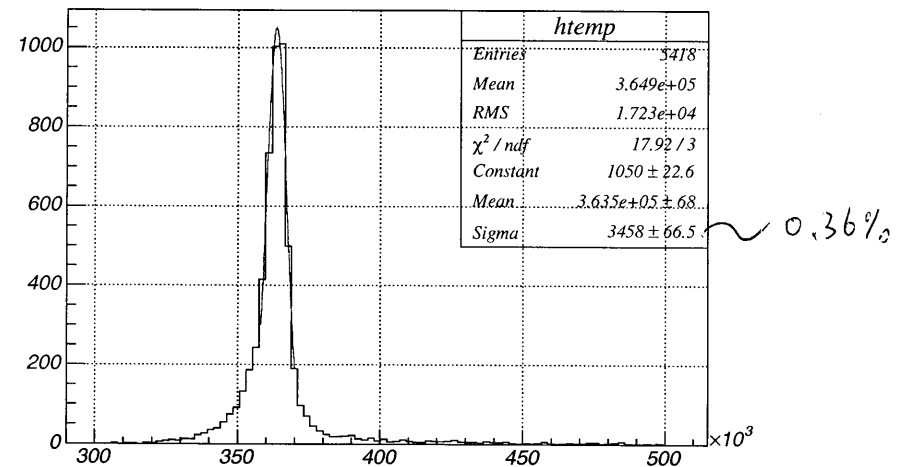
finished ⇒ save as "041017_2.hu"
high gain ↑

Pedestal distribution with the same gain, QE calibration
horizontal axis is # of photons 171
(Nsum in page 169)
~ 9500 = 1% of 55 MeV Peak

FS41 = 60

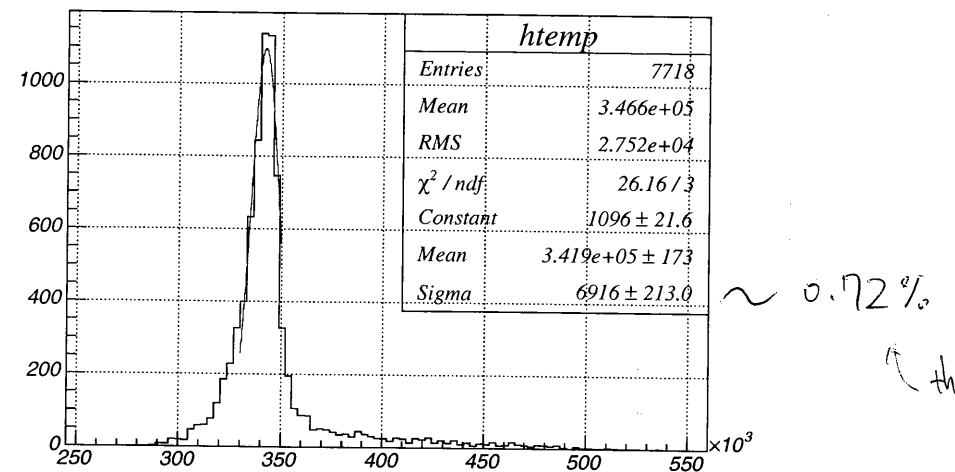


FS41 = 70



↑ acceptable but upper tail

FS41 = 80



↑ this is dangerous for Energy resolution analysis

17/ Oct / 2004

7:30 ~~7:30~~ load normal gain hv set
change led setting for normal gain

FS41LR 60 → 70

Pi0 trigger S1 * Xe → S1 * Xe * LYSO

7:32	# 8396	pedestal	} beam off
7:33	# 8397	LED	
7:40	# 8398	alpha	
9:16	# 8399	pedestal	} beam on
9:19	# 8400	LED	
9:26	# 8401	alpha	
9:35	# 8402	π° FS41LR 70	
12:50	Stop #8402	50k events	

Higher Intensity with FS41 = 70

Accelerator is UNSTABLE

BB close Proton Current changes 80 ~ 600 uA.

14:10	# 8403	pedestal	} beam off
14:11	# 8404	LED	
14:18	# 8405	alpha	
14:23	# 8406	Cosmic Ray	
15:10	Beam seems to be back	# 8407 pedestal beam off	
	# 8408	pedestal beam on	
15:12	# 8409	LED	"
15:20	# 8410	alpha	"
15:26	# 8411	pi0	
19:14	# 8411	pi0	stop 60K events

19:14	# 8412	pedestal	} Beam on
	# 8413	LED	
	# 8414	alpha	

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FS41LR 70

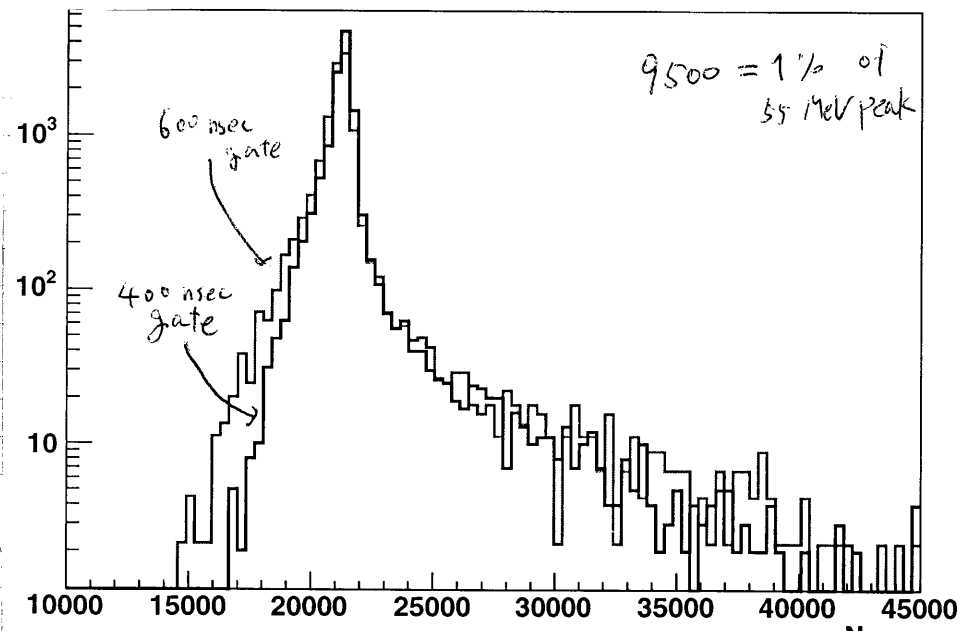
19:33	# 8415	pedestal	} Beam off.
	# 8416	LED	
	# 8417	alpha	

19:51 # 8418 pi0

23:09 stop 8418 ~54 kevents.

Narrow ADC Gate change ADC gate from 600 usec → 400 usec

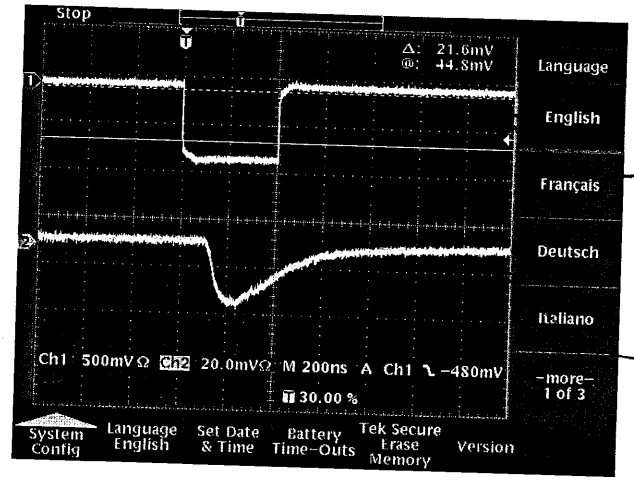
# 8419, 8420	Junk
# 8421	Pedestal FS41LR = 70 with 400 usec gate
# 8422	LED "
# 8423	α "
# 8424	pedestal beam off
# 8425	LED "
# 8426	α "



There is no significant improvement with ADC gate change. For pedestal.

18 Oct / 2004

0:41 #8428 π^0 FS4/LR = 70 400 nsec gate
 3:56 Stop 8428 ~ 50 kevents
 3:57 #84289 pedestal beam off
 #842930 LED "
 #84301 α
 #84312 pedestal FS4/LR = 70 400 nsec gate
 #8433 LED "
 #84334 α "
 4:54 #8435 π^0 "
 7:06 stop 8435



ADC gate
 NaI

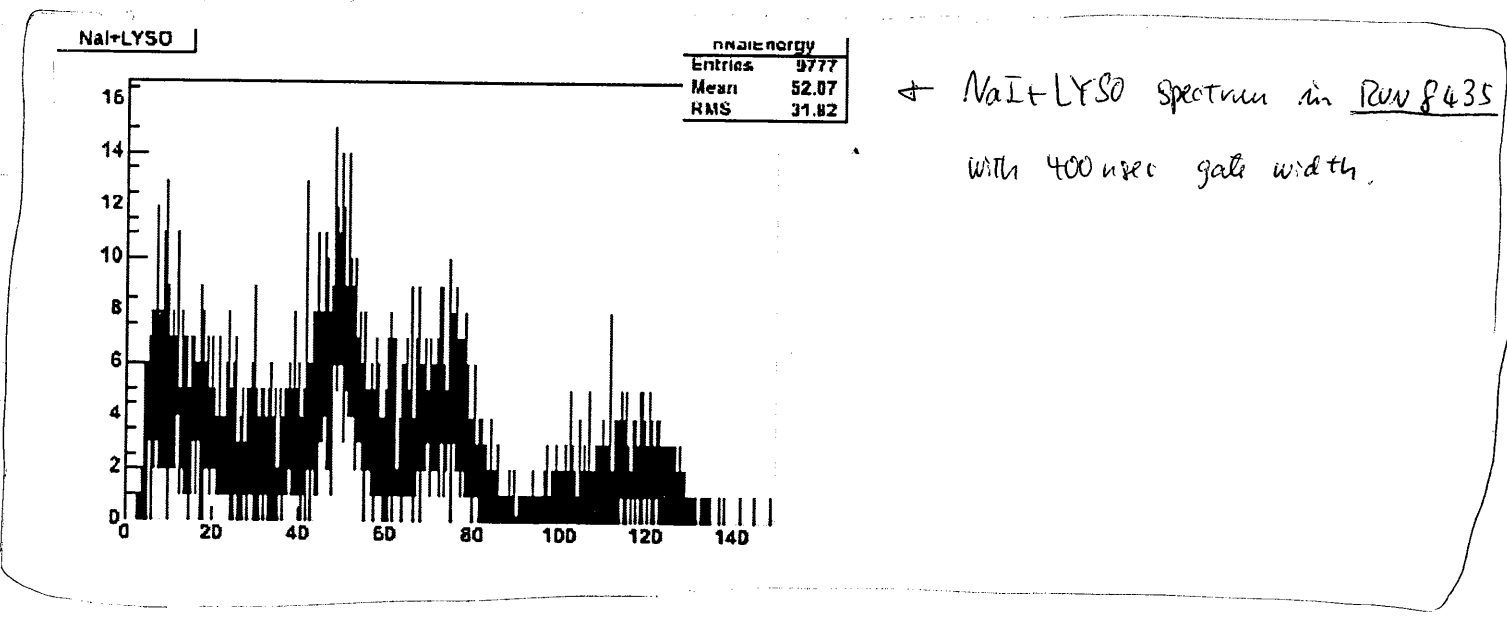
400 nsec is not enough for NaI
 but probably α for separating 55 MeV and 83 MeV gammas \rightarrow See the figure on the next page

\Rightarrow change ADC gate from 400 \rightarrow 600 nsec

7:10 load ~~#8430~~ 0410 17.2 hr (high gain) High Gain
 7:28 #8436 pedestal beam off
 7:31 #8437 LED beam off
 7:39 #8438 α beam off \leftarrow Junk
 7:47 #8439 α beam off
 o disable Veto for α (more than 2 patch)
 o change Xe sum threshold for Pi0 trigger from 160 to 320 mV

These are only for High Gain RUN

8:14 #8440 α beam off Junk
 #8441
 #8442 CR Junk
 9:34 ~~8:15~~ #8442 CR Junk
 9:45 #8443 CR beam off
 10:40 #8444 α beam off
 10:52 #8445 pedestal } FS4/LR 70 ADC gate 600 nsec
 10:55 #8446 LED }
 11:08 #8447 π^0 \leftarrow Junk
 11:05 #8448 π^0 FS4/LR 70 ADC gate 600 nsec
 14:02 #8448 STOP
 Beam Blocker Close
 14:03 #8449 pedestal } beam off
 14:05 #8450 LED }
 14:21 #8451 α }
 Beam Blocker Open }
 14:33 #8452 pedestal } FS4/LR 70 ADC gate 600 nsec
 14:35 #8453 LED }
 14:41 #8454 α }
 14:46 #8455 π^0 FS4/LR 70 ADC gate 600 nsec
 17:37 Stop 8455 57k events



\leftarrow NaI+LYSO spectrum in Run 8435 with 400 nsec gate width.

RUN SUMMARY RECORDED UP TO NOW

(as of 18/01 updated 27/01)

	FS41	RUN NUMBER	
Normal Gain	60	8265	8358
		lots	
	70	8402	50k
		8411	60k
		8418	54k
High Gain (for TDC)	70	8448	48k
		8455	51k
		8463	70k
		8644, 57 (52)	800k
		8656	74k
Normal Gain Xenon 129 MeV	60	8367	
		S	
		8776	
		Total 140k	
		above 88 MeV	
		~ 700k events	
		around 129 MeV peak	
Narrow ADC Gate Normal Gain	70	8428	55k
		8435	32k
		8476	53k
		8477	55k
		8484	63k
		8490	36k
		8491	13k
		8513, 14	4k + 13k
		8515 - 8519	15k
		8576, 8589, 8590, 8597	47k

(Reduced proton current)
1200 nA ~ 1300 nA
all taken after changing
cable length b/w discrim
& FANOUT.

* after RUN 8557
Cable length b/w discriminator & FANOUT
was changed!

HV Gain setting
R6041 Q 5e6 } ~~Normal~~ Gain 041017-2. hv 177
R9288 1e6 } High
R6041 Q 1e6 } Normal Gain 041017-1. hv
R9288 5e5 }

17:38 RUN 8456 pedestal beam on.
17:39 RUN 8457 LED }
17:45 RUN 8458 d. }
Beam Blocker closed.
17:52 RUN 8459 pedestal.
17:53 RUN 8460 LED }
Beam Blocker was opened in this RUN by failure
17:56 RUN 8461 LED again } beam on
18:02 RUN 8462 d. }
18:11 RUN 8463 π^0 }
FS41 = 70. High Gain
ADC Gate 600 usec.
22:00 RUN 8463 stopped ~ 70k events
22:02 RUN 8464 Junk!
22:05 RUN 8465 pedestal }
22:12 RUN 8466 LED } beam on
22:12 RUN 8467 alpha }

22:22	RUN 8468	pedestal	} beam off
22:25	RUN 8469	LED	
22:30	RUN 8470	alpha	

Preparing the electronic for narrow ADC gate @ normal gain.

- enabled the veto for high energy events during α runs (see pag 123 and 174)
- Xe amplitude threshold for π^0 events back to 160 mV (from 320, see pag 174)
- ADC gate from 600 ns to 400 ns
- file 1041017_1.hv loaded
- FS41 LR = 60

~~RUN 8471~~ Test run, no data logging

23:41 We note that runs 8428 and 8435 were taken with FS41 at 70 - We go back!

- FS41 LR = 70

22:43	# 8471	pedestal	} beam on. normal gain FS41 L-R 70 ADC gate 400ms
	# 8472	LED	
	# 8473	α	

found that LED ~~setting was~~ was adjusted for "high-Gain".

↳ Set to Normal ones:

ch 1		724, 725, 726, 727, 729, 731
2		706, 707, 708, 709, 711, 713

0:06	#8474	LED	} beam on normal gain FS41 LR 70 ADC gate 400ms
	#8475	α	
0:22	#8476	π^0	
3:47	#8477	π^0	54k events (1017k in total)
7:21		stopped	~ 54k events
7:25	#8478	pedestal	} beam off ← HV re loaded
	#8479	LED	
	#8480	α	
7:49	#8481	pedestal	} beam on normal gain FS41 70 ADC gate 400nsec
	#8482	LED	
	#8483	α	
8:06	#8484	π^0	
12:15		stop 8484	60 K events (167k in total)
12:17	#8485	pedestal	} beam off
12:18	#8486	LED	
12:29	#8487	α	
12:43	#8488	pedestal	} beam on " "
12:44	#8489	LED	
12:50	#8490	π^0	
15:53		stopped	36 K events
15:54	#8491	π^0	beam on
16:30		stopped	13 K events

16:30	# 8492	pedestal ~ 6 keV.	} Beam ON
16:32	# 8493	LED	
16:39	# 8494	alpha ~ 60 keV.	
16:50	# 8495	pedestal ~ 8 keV.	} Beam OFF
16:52	# 8496	LED	
16:59	# 8497	alpha ~ 36 keV.	

17:24	# 8498	alpha	<u>crowding test</u>
17:24		beam-off	conditions:
17:29		beam-on	- 400 ns gate
17:39		beam off.	- Normal gain
			- FS41LR = 70
17:50	# 8499	alpha	<u>crowding test</u>
17:50		beam-off	conditions:
17:54		beam-on	- 400 ns gate
18:02		beam-off	- Normal gain
18:06		run stopped by himself??	- FS41LR = 75 ←

New beam slit value: FS41LR = 60

18:20	# 8500	pedestal 5 keV
18:25	# 8501 ^{junk} LED	This is a pedestal run!!
18:26	# 8502 ^{junk} LED	Runs 8502 and 8503 are Junk!!

megoulno1 crashed!

8504 ^{junk} LED
 # 8505 ^{junk} alpha

Beam off 181

Together with megoulno1 also the HV went off. Runs from 8501 to 8506 are junk. (There were no α triggers!)
 Start of a new series of calibration

19:32	# 8507	pedestal ~ 5 keV events	} Beam off
19:33	# 8508	LED	
19:39	# 8509	alpha ~ 25 keV events	
19:44		beam open	- ADC gate 400ns - Normal gain - FS41LR = 60
19:45	# 8510	pedestal ~ 5 keV events	} Beam on
19:49	# 8511	LED	
19:55	# 8512	alpha ~ 25 keV events	
20:00	# 8513	<u>Pi0</u>	- FS41LR = 60 - 400 ns gate - Normal gain 8" Bonner sphere/ ~ 4K evts shielding
	# 8514	<u>Pi0</u>	same as # 8513
22:22		<u>stopped</u>	13K events

at 18:10,
 Today the Bonner sphere detector has been placed in the area. The Ni crate and the control PC are on a table between COBRA and the magnet power supply. The detector trolley occupies the passage from the LP and the concrete wall. To remove it simply disjoin the two HV cable by unplugging the I-SHV connector.
 I'll take short π^0 runs, to change the

sphere set-up. After the beam on I'll wait 5 minutes before starting a new π^0 run.

22:24 beam off 0" Bonner sphere/shielding
 22:30 beam on
 22:35 # 8515 π^0 stopped 3 K events
 FS41LR=60
 Normal gain
 ADC gate=400ns

23:08 beam off 0" Bonner sphere/no shielding
 23:11 beam on
 23:15 # 8516 π^0 stopped 3.6 K events
 FS41LR=60
 Normal gain
 ADC gate=400ns

23:52 beam off 12" Bonner sphere/no shielding
 23:56 beam on
 20-Oct-2004 00:01 # 8517 π^0 stopped 2.8 K events
 FS41LR=60
 Normal gain
 ADC gate=400ns

00:31 beam off 5" Bonner sphere/no shielding
 00:34 beam on
 00:39 # 8518 π^0 stopped 3.2 K events
 FS41LR=60
 Normal gain
 ADC gate=400ns

01:16 beam off
 01:19 beam on Bonner sphere detector turned off and removed from the passage.

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01:24 # 8519 π^0 FS41LR=60 Normal gain ADC gate=400ns 183
 7:19 stopped
 at 7:00 beam stopped
 7:23 # 8520 pedestal LED α } beam off
 # 8521
 # 8522
 7:37 # 8523 Cosmic Ray
 12:47 # 8525 Cosmic Ray
 16:50 # 8526 pedestal beam off gate 400ns normal gain
 16:51 # 8527 LED "
 # 8528 alpha "

Crowding test by flashing LED during alpha run

LED intensity setting (LED #2 & #6)
 ch2 = 120 ch3 = 102 $Q_{sum} = 4.2 \times 10^4$
 ch2 = 118 ch3 = 100 $Q_{sum} = 2 \times 10^4 \Rightarrow \sim 9 \text{ MeV}$
 ch2 = 117 ch3 = 99 $Q_{sum} = 1.2 \times 10^4$
Qsum (online) was wrong!! The gain in the high gain setting was used for the Qsum calculation. Probably higher than 9 MeV.

We take the setting (ch2, ch3) = (118, 100) for the crowding test

Frequency is varied.

17:48 # 8529 alpha LED OFF
 17:52 LED ON (100 Hz)
 17:58 # 8529 stopped because of event limit (unexpectedly)
 18:08 # 8530 alpha LED OFF
 18:10 LED ON (100 Hz) again
 18:21 LED OFF

18:30 #8531 alpha LED OFF
 18:35 LED ON (1 KHz)
 18:50 LED OFF

We found a mistake in the logic to veto gamma event in the alpha trigger, after the run #8525 finished. Output of the FIFO after the NIM discr. was "OUT". This should be "OUT" (see p123)

~~We don't know since when~~

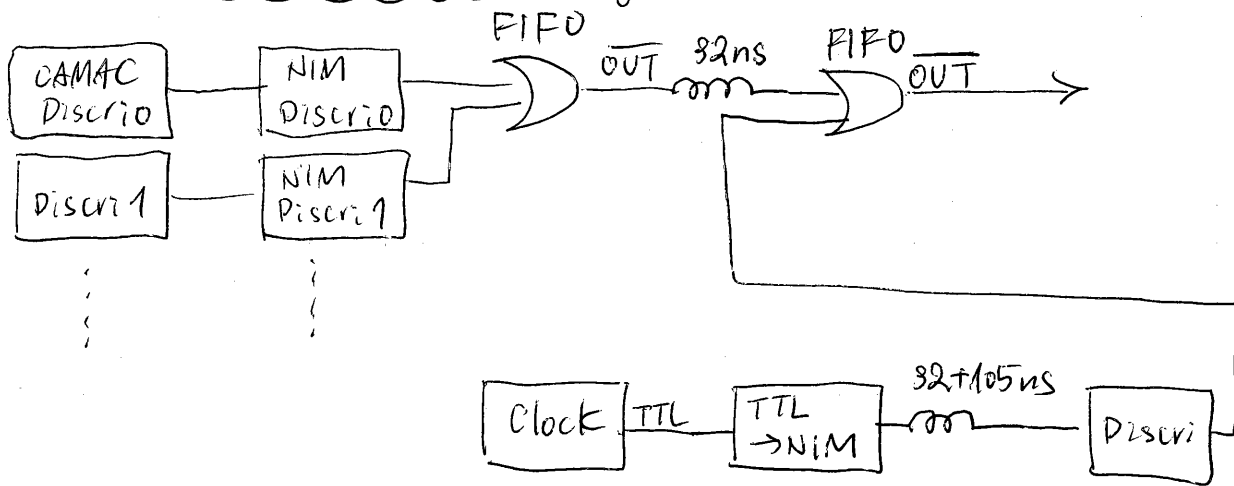
We also found the veto from the back side ("V2") was not connected to the 2nd FIFO (see also P123)

~~We don't~~ → It should be investigated when this happened.

We realized that the flashing LED easily triggered with the alpha trigger events

We introduced the LED veto in the alpha trigger

(It's only for the crowding test)



#8532 Junk

22:02 #8533 alpha ~~LED OFF~~ LED (1 KHz) with LED veto 185
 22:05 LED ON (1 KHz)
 22:20 LED OFF
 22:35 End of #8533

To reduce the trigger rate, we set the prescale = 20 msec which is a sleep time ~~every trigger~~ every trigger. This variable can be set in the ODB (Equipment/Trigger/Settings/Prescale)

22:57 #8534 alpha LED (500 Hz) with LED veto
 • prescale = 20 msec
 23:01 LED ON (500 Hz)
 23:14 LED OFF
 23:49 #8535 alpha LED (5 KHz)
 23:51 LED ON (5 KHz)
 24:04 LED OFF

~~24:37 #8536 alpha LED (10 KHz)
 24:39 ~~LED ON~~
 24:55 ~~LED OFF~~
 9:10 End of #8536~~

21-Oct-2004 #8536 LED run for investigating amount of light that each PMT receives

- LED intensity setting (temporal)
 - ch2 (115, 116, 117, 118, 119, 120)
 - ch3 (97, 98, 99, 100, 101, 102)
- Frequency 100 Hz

1:40 #8536 alpha LED (10 KHz)
 1:41 LED ON
 1:59 LED OFF
 2:19 #8537 Stop

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2:31 #8538 α LED (50 kHz)
 2:34 LED ON.
 2:50 LED OFF.
 3:08 #8538 Stop.

#8539 LED for investigating light intensity

LED intensity

ch2 (110, 111, 112, 113, 114, 115)

3 (92, 93, 94, 95, 96, 97)

LED frequency: 100 Hz.

#8540 LED for investigating light intensity

ch2 (105, 106, 107, 108, 109, 110)

3 (87, 88, 89, 90, 91, 92)

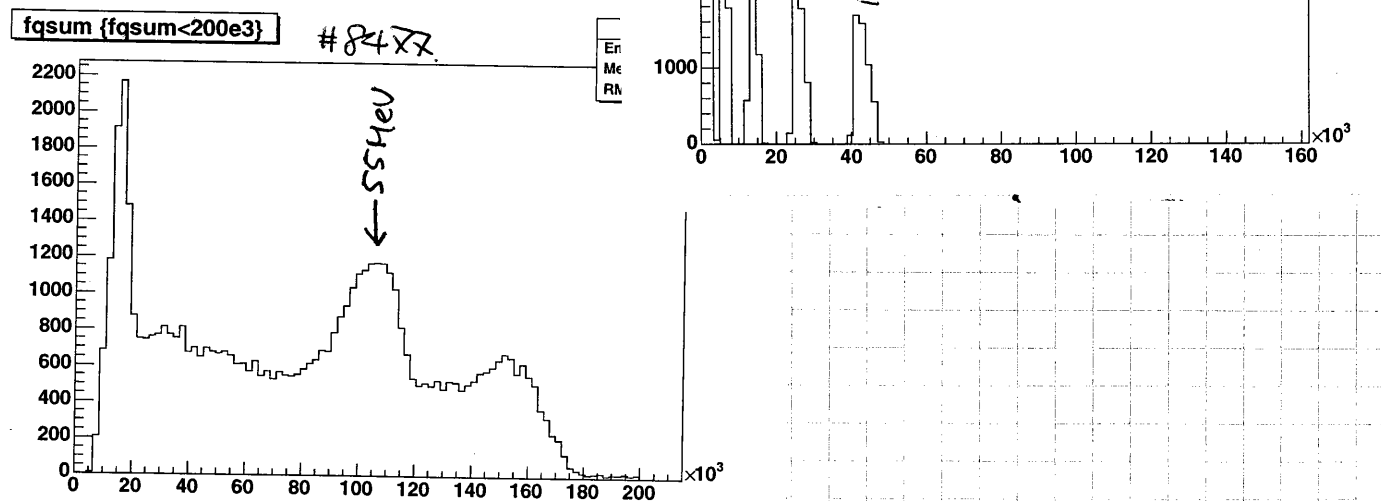
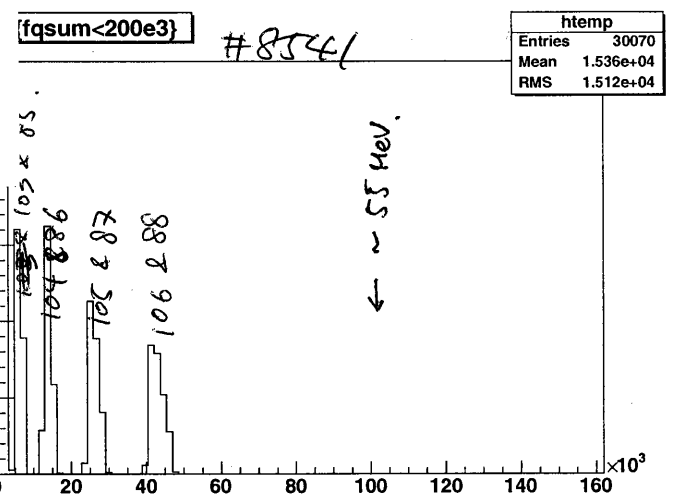
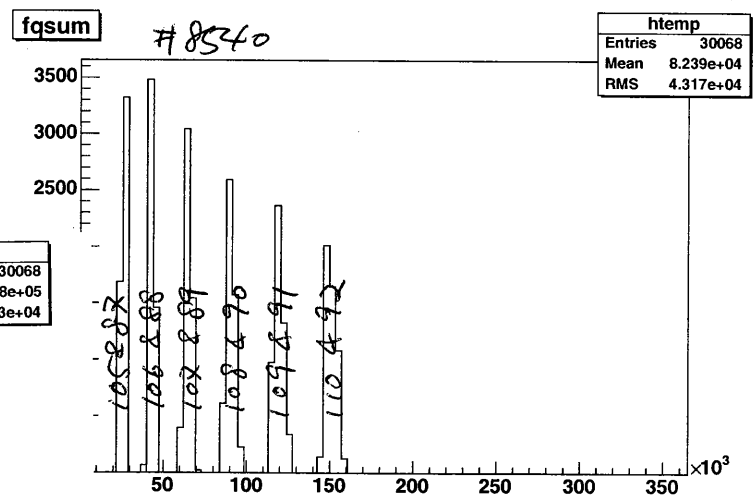
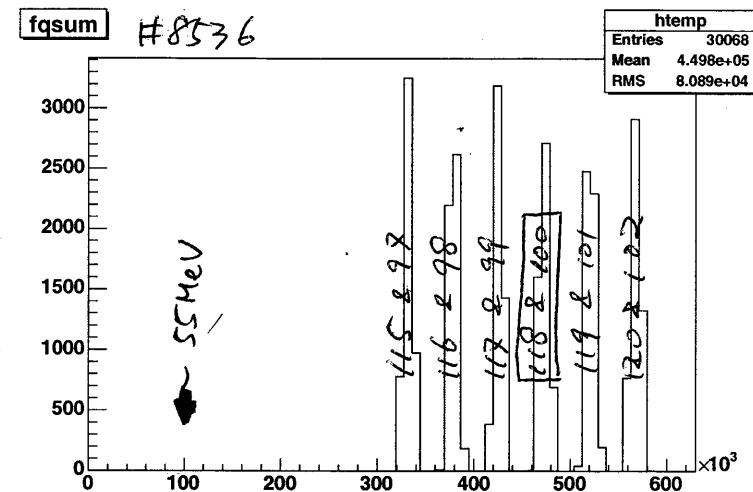
#8541 LED for investigating light intensity

ch2 (101, 102, 103, 104, 105, 106)

ch3 (83, 84, 85, 86, 87, 88)

LED ch2, ch3	LED Frequency (Hz)						
	100	500	7k	5k	10k	50k	100k
178, 100	Row	8534	8533	8535	8537	8538	
104, 86			8544	8545	8546	8547	
111, 93			8552		8553	8554	8555

LED intensity { ch2: 118 }
 { ch3: 100 }
 corresponds to ~ 230 MeV.



21-Oct-2004.

4:53 #8542 pedestal.
 #8543 LED ← N.G.

LED intensity setting (LED #2 & #6)
 ch 2 : 104
 ch 3 : 86.) ⇒ ~ 8 MeV

5:15 #8544 α. LED (1kHz)
 5:17 LED ~~off~~ ON
 5:31 LED off
 6:09 stop

6:12 #8545 α. LED (5kHz)
 6:14 LED ON
 6:30 LED off.
 6:55 stop.

6:58 #8546 α. LED (10kHz)
 7:00 LED ON
 7:15 LED off
 7:30 stop

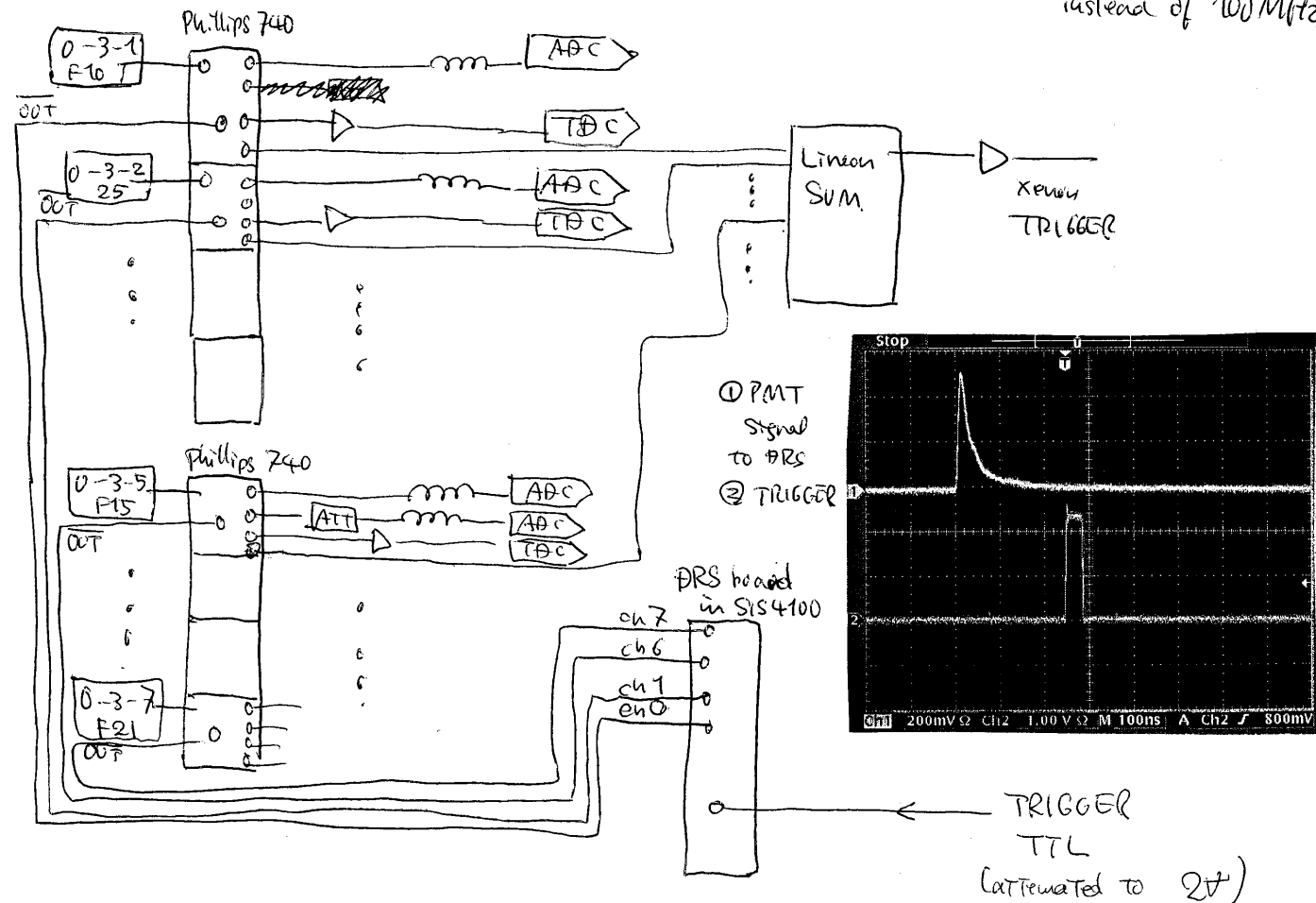
7:43 #8547 α. LED (50 kHz)
 7:47 LED ON
 8:06 LED off
 8:25 stop

16:20 Added 7 ns ~~to the~~ delay cable to LYSO ¹ mode signal before the passive splitter, in order to avoid cross-talk problems with discr. ¹⁸⁹

17:40 Preparation of electronics for DRS test.
 Following 8 channel signals will be fed into DRS module.

F7	Splitter OUT (MACRO FAN-OUT)
10	0-3-4
14	1
15	8
20	5
21	6
25	7
28	2
	3

We will use Linear FAN-IN/FAN-OUT modules instead of MACRO FAN-OUT to have wider bandwidth. (250 MHz instead of 100 MHz)



We switched the electronics setup back to that using MACRO-PANDET because Phillips 740 modules can bring additional noise to ADC Spectrum. We shall change the setup just before we start to test the DRS board.

- 17:15 #8549 pedestal beam (off) ?
- 17:16 #8550 LED "
- 17:26 #8551 alpha "

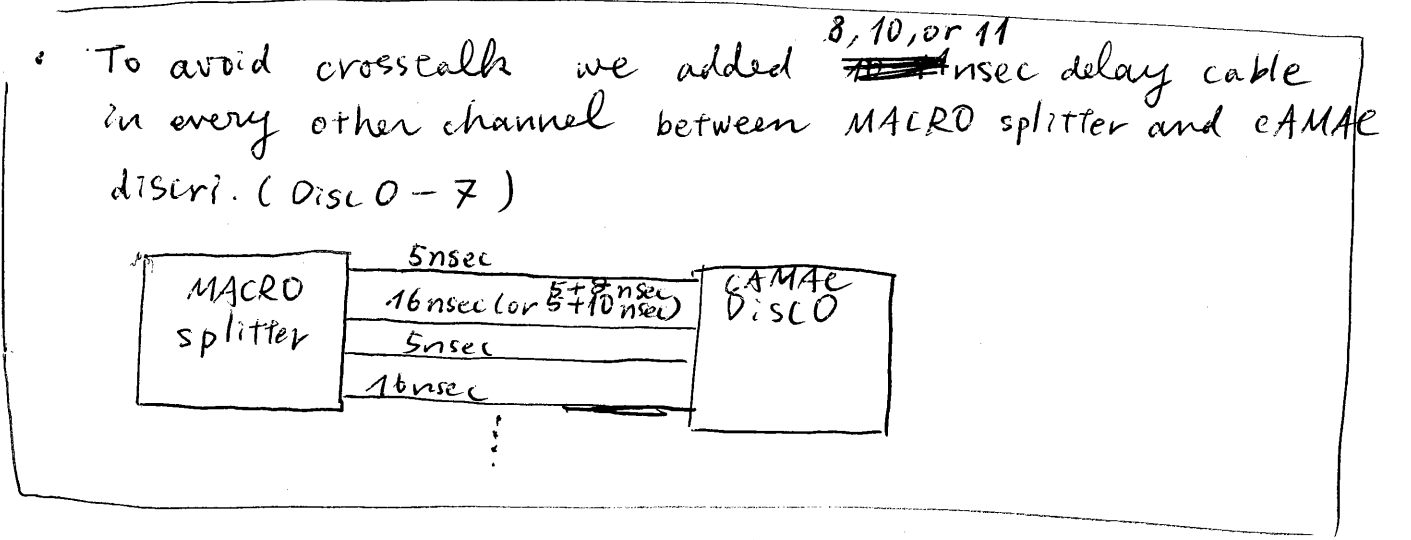
seems broken

Crowding test (cont'd)

- 17:47 #8552 alpha • LED (1KHz) • (ch2, ch3) = (111, 93) • prescale = 20ms
- 17:48 LED ON (1KHz)
- 18:02 LED OFF
- 18:15 End of #8552
- 18:17 #8553 alpha • LED (10KHz) • LED (111, 93) • prescale = 20ms
- 18:19 LED ON
- 18:35 LED OFF
- 18:50 End of #8553
- 18:50 #8554 alpha • LED (50KHz, (111, 93)) • Prescale = 20ms
- 18:53 LED ON
- 19:08 LED OFF
- 19:23 End of #8554
- 19:23 #8555 alpha • LED (100KHz (111, 93)) • prescale = 20ms
- 19:25 LED ON
- 19:40 LED OFF
- 20:01 End of #8555

End of crowding test
 • LED veto removed.
 • prescale = 0ms
 #8556 Junk

- 24:05 #8557 pedestal • normal gain 191
- #8558 LED • narrow gate (400ns)
- #8559 alpha



- 18:21 #8560 pedestal } FS41LR = 60
 - #8561 LED ← N.G. } normal gain
 - #8562 α } ADC gate = 400ns
 - #8563 LED
- found that HV01 was hung-up → rebooted.

- 20:13 #8564 pedestal
- #8565 LED N.G. hv dropped.
- #8566 LED
- #8567 α
- #8568 π⁰ → } No ADC gate

No TDC common signal.
 This was caused by TDCs (in other run mode than π⁰, TDC data is not taken, resulting in no error in the other RUN modes). We found that the cables for the common start are suspicious. The problem was finally fixed by unplugging and unplugging those cables (probably). Now we can take data.
 11:30 SM. WD

22 Oct 04

11:30 Beam came back 6 hours ago, and now it seems stable (at least for these 40 minutes)

11:37 Run 8569 Pedestal Beam ON. FS41 = 60

11:40 Run 8570 LED "

11:46 Run 8571 α "

Take π^0 Run to check all TDCs.

11:52 Run 8572 π^0 FS41 = 60
ADC gate = 400 nsec

Junk
TDC start cable
mis connected

13:00 Run 8573 π^0 FS41 = 60
ADC gate = 400 μ s \Rightarrow TDC problem happened again during this run

We realized the trigger timing is determined by LRSO since the delay cable was added in LRSO1 anode signal on Oct 21st (See P189)

The delay cable was removed and the input channel of LRSO2 in the discriminator was moved to ch 3 instead. (ch 0 for LRSO1)

15:40 # 8575

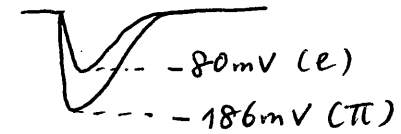
π^0 FS41 = 60
ADC gate = 400 nsec
normal gain

\Rightarrow TDC problem happened again!

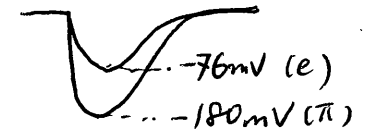
we also found S1 threshold was set to be -200mV
It was too high. changed to -160mV

S1 signal after x10 amplification

FS41LR = 70



FS41LR = 60



FS41LR = 80

