

3/8/11

- Added more shielding around the Laser, Lead + poly^{3"}
 - Removed pair spectrometer and pair spec sweep magnet^(+stands) out of beam^{4"}
- So now there is nothing between the downstream collimator and target.

picture 17

0.5A, 2ns, 30V 25MeV

Kicker magnet on (105A) bending down.

- D₂O target in, Radiator In

8:37am

Run # 1938

IRINA: 5313 counts / 25:58:25 min

9:25am

- added a Lead tunnel to Natali due to high counting rates.
 - Rad in, D₂O Physics target.
 - all no detectors at -200 mV thresh.
 - Kicker bending down, 105A
- ⇒ Natali still counting too high.

Run # 1939

9:52am

- Built a wall ~~upstream~~ upstream of Natali (concrete, + lead) ~ 3' high.

Run # 1940

IRINA: 13473/hour Natali: 69251 / 1 hour
gun pulse

scope

pic

0000

Analog signal from no detector Natali wRT start signal + blue

ol Nim pulse from translator

ol Gun pulse ~~trigger~~, ~~between~~ between w/ trigger for VME crate between pulse. Trigger in VME crate goes to control 1

$$C = 3 \cdot 10^8 \frac{\text{m}}{\text{s}}$$

$$10\% \cdot C = 0.1 \cdot 3 \cdot 10^8 \frac{\text{m}}{\text{s}} = 0.3 \cdot 10^8 \frac{\text{m}}{\text{s}}$$

$$t = 1 \text{ ns} \Rightarrow l = 0.3 \cdot 10^8 \frac{\text{m}}{\text{s}} \cdot 1 \cdot 10^{-9} \text{ s} = 0.3 \cdot 10^{-1} \text{ m}$$

$$= 0.03 \text{ m}$$

$$1 \text{ m} = 100 \text{ cm}$$

$$0.03 \text{ m} = x \text{ cm}$$

$$\Rightarrow l = 3 \text{ cm}$$

For 10% C / 1 ns

$$\frac{3 \text{ cm}}{1 \text{ ns}}$$

For shift 20 ns we have 60 cm

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$$5\% c = 0.05 \cdot 3 \cdot 10^8 \frac{\text{m}}{\text{s}} = 0.15 \cdot 10^8 \frac{\text{m}}{\text{s}}$$

$$t = 1 \text{ ns} \Rightarrow l = 0.15 \cdot 10^8 \frac{\text{m}}{\text{s}} \cdot 10^{-9} \text{ s} = 0.15 \cdot 10^{-1} \text{ m} \\ = 0.015 \text{ m}$$

$$l = 1.5 \text{ cm}$$

$$\frac{1.5 \text{ cm}}{1 \text{ ns}}$$

10% c	$\Rightarrow \frac{3 \text{ cm}}{1 \text{ ns}}$	$E_n = 4.7 \text{ MeV}$
5% c	$\Rightarrow \frac{1.5 \text{ cm}}{1 \text{ ns}}$	$E_n = \frac{2.35}{1.175} \text{ MeV}$

$$E_n (10\% c) = \frac{m_n}{2} \cdot \left(3 \frac{\text{cm}}{\text{ns}}\right)^2 = \frac{m_n c^2}{2} \cdot \frac{1}{c^2} \cdot 9 \frac{\text{cm}^2}{\text{ns}^2}$$

$$= \frac{939.5 \text{ MeV}}{2} \cdot \frac{1}{(3 \cdot 10^8)^2 \frac{\text{m}^2}{\text{s}^2}} \cdot 9 \frac{\text{cm}^2}{\text{ns}^2}$$

$$= 469.75 \text{ MeV} \cdot \frac{1}{9 \cdot 10^{16} \frac{\text{m}^2}{\text{s}^2}} \cdot 9 \frac{\text{cm}^2}{\text{ns}^2}$$

$$= 469.75 \text{ MeV} \cdot \frac{1}{10^{16} \frac{\text{s}^2}{\text{m}^2}} \cdot \frac{\text{cm}^2}{(10^{-9} \text{ s})^2}$$

$$= 469.75 \text{ MeV} \cdot \frac{1}{10^{16}} \cdot \frac{\text{s}^2}{(100 \text{ cm})^2} \cdot \frac{\text{cm}^2}{(10^{-18}) \text{ s}^2}$$

$$= 4.7 \text{ MeV}$$

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11:02am

- Switched polarity on Kicker magnets (beam up now w/ 95A)
- D2O physics target
- Radiator in

Run # 1942

IRINA: 16746 / 75 minutes

Natali: 62643 / 75 minutes

12:20 pm

Scope pictures:

- 4 - ^{light} blue TDC start, ^{dark blue} stop out from disc ORTEC CF8000, Green gun pulse
- 5 - light blue trigger start VME crate, Green - gun pulses
- 6 - trigger signal up close.

- Switched polarity on kicker magnets (now beam down (105A))
- Rad in, D2O physics target

Run # 1942

- bad gate generator, plugged in a new one.

EG15-ESN GG 8000-01

1:20pm

Run # 1944

used 2nd channel from top

2:23pm

Switched polarity, beam up (95A), Rad in, D2O target.

Run # 1945

* Note: TDC CF8000 ORTEC CF 8000

Out A → level translator

Out B → scaler

Channel (1.) TDC 15

(2.) TDC 14

(3.) TDC 13

(7) TDC 12

Delay generators were triggered

via EG15-ESN GG 8000-01 used as external trigger

1st delay gen: TRIG → Ext A = T + 60ns

$A \square B \rightarrow B = A + 100ns$ (fake stop ch # 1 in level translator)

$C \square D$ (VME trigger)

$C = T + 3ms 201ns$ (50Ω, TTL)

$D = C + 30ns$

$E \rightarrow$ scaler (High Z, TTL, Normal)

2nd sen : TRIG \rightarrow Ext

"T₀" \rightarrow goes to ch # 4 in the scope

$$A = T + 0$$

$$B = A + 130 \text{ ns}$$

$$C = T + 1 \text{ ms } 040 \mu\text{s}$$

$$D = C + 50 \text{ ns}$$

A & B \rightarrow TDC start (~~kick~~ 50 ns, NIM)

A & B \rightarrow Dual timer CAEM N39B start (width 100 μs)

out of \rightarrow goes to VME V792 common gate

V775 cable : \uparrow TDC upward.

Level translator: cable goes to the right slot
 \uparrow ECL upward.

C \rightarrow scaler (High Z, TTL, Manual)

3:39pm

Radiator Out, Beam bending up, D₂O physics target
Run # 1946

3:56pm

Radiator In, Beam bending up H₂O physics target
Run # 1947

4:17pm

Switched polarity in kicker magnets Now bending down 105 A
H₂O target in.
Run # 1948

4:40pm

Beam ^{bent} down (105A), Radiator In, DU target in
 Run #1949 - 20 minute Run. @ 45° wRT beam.

Commands to create root file: in window (x-term)
 type: source CODA/setup

1) go to /data

2) type /home/dag/CODA/CODAreader/Using ROOT in EVIO/
 Oleksiy/evio2nt -f r1942.dat > /dev/null
 file name

3) type mv r1942 r1942.root

4) root r1942.root

3) .X plot2.C

Commands to start FC GUI:

in x-term terminal type: source CODA/setup

1) go to /home/dag/CODA/CODAreader/
 Using ROOT in EVIO/Oleksiy/FCDis

2) type before starting a run: hsimple -prescale 1

Commands to start GUI for TDC (-dev 0) as
 ADC (-dev 1)

Type in x-term window: source CODA/setup

1) go to /home/dag/CODA/CODAreader/Using ROOT in EVIO/Oleksiy/
 Monitor

2) type: hsimple -chan 11 -dev 0
-prescale 1 > /dev/null

3) to kill the GUI type: 1) fg
2) ctrl-c

To change the scale of TDC (resolution):

in a term window type: source CODA/setup

go to: /home/dag/CODA/2.5/readoutlist/PhotoFis

1) Open w/ gedit the file gen_int_list.crl

2) find c775 Set FSR (TDC-ID, 500)

↑
the whole
scale of TDC in "ns".

3) save

4) type: makeList gen_int_list.crl ppc

5) in CODA GUI: press 1) "abort"

2) "Configure" (PhotoFis)

3) Read From "root"

4) "Download"

To stop firewall: login as a root

type: /sbin/service iptables stop