

# CNAO: TEST DEL KINDER (e DP)

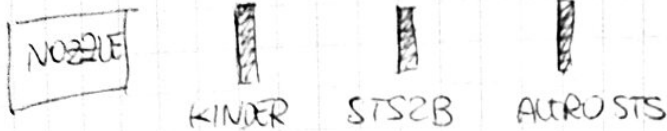
Soglie canali capelli 30 mV ; STS 900 V

Multianodo 4000 V; Discriminatori 10 ns

Canale HV: multianodo  
 1 : STS2B  
 2 : AURO STS

19 NOV  
 SERA

(Foto Vincenzo)

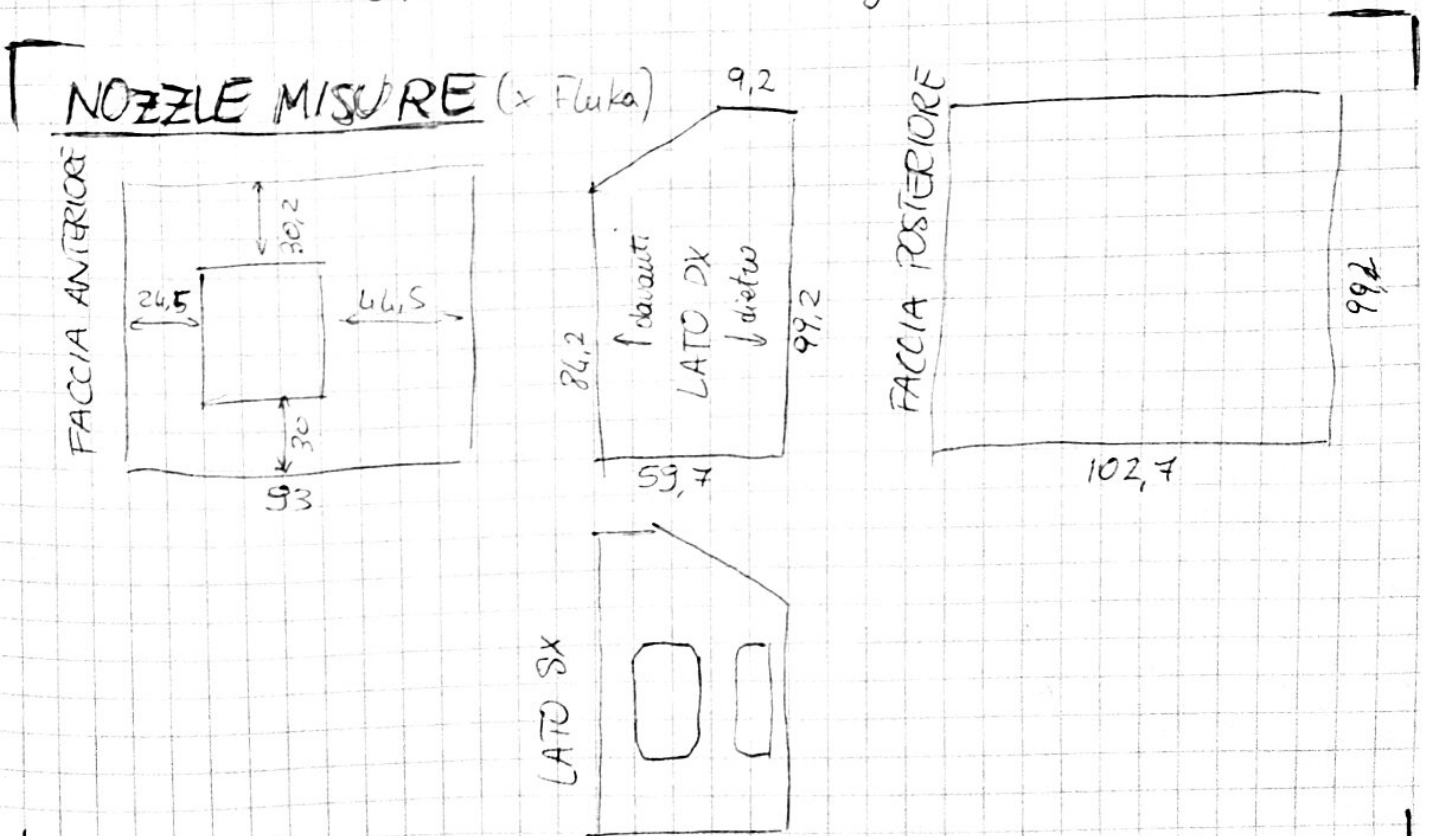


Soglie degli STS: 50 mV ; Gate: 100 ns

Oscilloscopio: 192. 168. 1. 5

largh segnali discriminati degli STS: 30 ns

Oscilloscopio: ch 1 → trigger (coincidenza 2 piani)  
 ch 2 → analogico dell' STS  
 ch 3 → D.12 discriminato (or del multianodo)  
 ch 4 → " analogico



CAMBIATO SALA: dalle 3 alle 1 (lettimo e suo pc bloccati)



1h 00:30

(Foto Vincenzo e Giacomo)

Canali HV non sono stati modificati - Posizione di STS2B e STACTRO sul lettino sono state ricalibrate.

Sistemate posiz lettino



1h 00:50

(Foto mie)

HV e altre cose della pag prima sono invariate

1h 01:12

non-calib (00)

intens ~~10<sup>6</sup>~~ 10<sup>6</sup> circa (ordine grand)  
 12C 150 mm range  $\Rightarrow$  230 MeV/n  
 $\sim$  2000 ev  
 eventi con busy fisso a 100 ms

1h 01:20

(01)

stesso fascio di prima  
 vediamo  $\sim$  10<sup>6</sup>

1h 01:28

(02)

scandalo di neutrons  
 Dato schermo controllo sembra che siano  
 scesi da 50k a 10k (da  $\ln p \times \sim 628$ )  
 una noi vediamo ancora 10<sup>6</sup> circa  
 come prima e non un neutrons scalato  
 di un fatt 5 -

(03)

come gli altri nei precedenti

Il busy è  
 un arte  
 pto è stato  
 abbassato  
 a 10 ms\*

Accesso in sala: che dobbiamo togliere il busy (controllare  
 con una freq detratte dal busy  $\Rightarrow$  a per datacama  
 molti trigger) - Nel ch2 oscilloscografia colica di STS -

1h 01:30

(04)

(Il (04) è stato acquisito? Forse no!)

12C vengono sparati in bunches: 2 o 3 ogni 400 ns - Num  
 di C per bunch segue statistica Poisson con medie  $\sim$  2.

1h 01:50

(05)

In teoria mesi di intensità -

1h 01:58

(06)

Come prima (fascio non è stato interrotto)  
 Dall'oscilloscopio, con trigger su ch 1,  
 vediamo 1,5 MHz -

In tutti i tum fatti finora l'acquisiz dello scaler 260  
 era sbagliata  $\Rightarrow$  i tum sono tutti da buttare -

1h 02:50

Acquisito waveforms con l'oscilloscopio  
 (cartella oscilloscopio: (NAO, nov 2017)

(\* non so in quale tum)

$\rightarrow$  rate 1e6  
 rate 6e6

h0250

07

Siamo partiti con rate dell'ordine  $\sim 10^6$  e poi siamo scesi a un certo punto ( $\sim 6 \times 10^4$ ) parecchio

Accesso in sala:

x controllare gate del QDC  $\Rightarrow$  QDC era fuori gate  $\Rightarrow$  alziamo multiamodo a 1030V e ritardiamo segnale dell'ultimo diodo + farlo entrare nella gate del QDC

con un modulo NIM opposto

h0327

08

Intensità a sorpresa! Abbiamo visto: primi 3 spill alti, poi giù a  $\sim 200$  kHz (picco) (medio  $\sim 100$  kHz) Acquisito anche con oscilloscopio (folder rate 1e5)

h0342

09

non-spennello

Spennellata ad fascio:  $12 \times 12$  cm<sup>2</sup> a passi di 3 mm, muon tot spot 1600, intensità  $\sim 10^6$  Acquisito anche con oscilloscopio (folder spennellata)  $\Rightarrow$  NON STIAMO SPENNELANDO  $\Rightarrow$  FASCIO DRITTO. Intensità fino a  $10^8 \Rightarrow$  mai non me vedemo così tanti.

h

non-spennello

NO

si è piantato dose delivery

Accesso in sala: messo multiamodo a 1100V

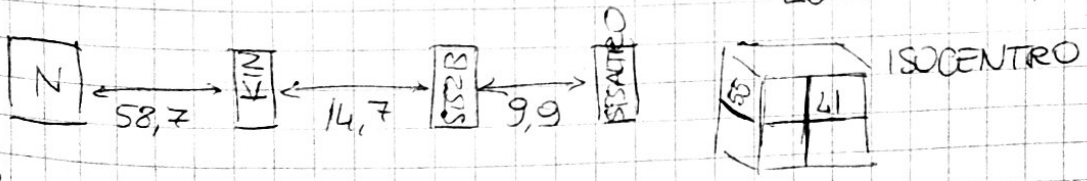
h0329

non-calib

10

Vediamo 3 MHz dal pannello di monitoring. Carica STS è + basso risp a prime

LUN 20/NOV/2017



NB! Abbiamo scoperto che ieri, non si sa qnd, la tens dell'STS ALTRO era stata portata a 1100V

Soglia STS 50 mV

Oscilloscopio: Ch1 Gate  
Ch2 STS2B (canale 1 HV)  
Ch3 Trigger (AND tra primi xykinde)  
Ch4 DIZ analogico

Riccardo fa foto al monitor del CNAO

h2313

non-calib (11)

Leggiamo  $\sim 10^4$  (12C) ~~mede~~ 150 mm) Non vediamo la gate all'oscilloscopio. Pseudiamo segnali dell'STS stage 5.

Accesso in sala: ritardato STS2B e STSAURO per farli entrare nella gate

h2343 | (12) Vediamo 10-20 kHz

h2353 | (13) Vediamo ~400 kHz  
Acceso betatrome (Polla)

h0004 | (13bis) Vediamo ~40 kHz  
Acquisito 40k eventi

h0011 | (13ter) Vediamo ~50 kHz

Scendiamo in energia a 220 MeV/n (100 mm range)

h00 | (14) Prima di acquisire aspettiamo che il fascio si stabilizzi -  
Vediamo < 40 kHz -

~~h001~~ ~~h002~~ ~~h003~~ ~~h004~~ ~~h005~~ ~~h006~~ ~~h007~~ ~~h008~~ ~~h009~~ ~~h010~~ ~~h011~~ ~~h012~~ ~~h013~~ ~~h014~~ ~~h015~~ ~~h016~~ ~~h017~~ ~~h018~~ ~~h019~~ ~~h020~~ ~~h021~~ ~~h022~~ ~~h023~~ ~~h024~~ ~~h025~~ ~~h026~~ ~~h027~~ ~~h028~~ ~~h029~~ ~~h030~~ ~~h031~~ ~~h032~~ ~~h033~~ ~~h034~~ ~~h035~~ ~~h036~~ ~~h037~~ ~~h038~~ ~~h039~~ ~~h040~~ ~~h041~~ ~~h042~~ ~~h043~~ ~~h044~~ ~~h045~~ ~~h046~~ ~~h047~~ ~~h048~~ ~~h049~~ ~~h050~~ ~~h051~~ ~~h052~~ ~~h053~~ ~~h054~~ ~~h055~~ ~~h056~~ ~~h057~~ ~~h058~~ ~~h059~~ ~~h060~~ ~~h061~~ ~~h062~~ ~~h063~~ ~~h064~~ ~~h065~~ ~~h066~~ ~~h067~~ ~~h068~~ ~~h069~~ ~~h070~~ ~~h071~~ ~~h072~~ ~~h073~~ ~~h074~~ ~~h075~~ ~~h076~~ ~~h077~~ ~~h078~~ ~~h079~~ ~~h080~~ ~~h081~~ ~~h082~~ ~~h083~~ ~~h084~~ ~~h085~~ ~~h086~~ ~~h087~~ ~~h088~~ ~~h089~~ ~~h090~~ ~~h091~~ ~~h092~~ ~~h093~~ ~~h094~~ ~~h095~~ ~~h096~~ ~~h097~~ ~~h098~~ ~~h099~~ ~~h100~~ ~~h101~~ ~~h102~~ ~~h103~~ ~~h104~~ ~~h105~~ ~~h106~~ ~~h107~~ ~~h108~~ ~~h109~~ ~~h110~~ ~~h111~~ 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~~h1000~~

Oscillosc: ch1: D12 analog  
ch2: Dimodo M13  
ch3: trigger  
ch4: Dimodo M38

h0110 | (14bis) Stesso fascio di prima -  
Ad un certo punto alziamo la rate -

h0133 | (14ter) dal 2 al 12

Accesso in sala: sp. cambiato canale del QDC per l'M13 e  
inserito meglio i pin del multianodo  
+ lui nella vista + vediamo una stecca  
si e una no ~~stecca~~

h0150 | (14qua) Problema dei canali che non vedavamo  
risolto => non erano inseriti bene -

Accesso in sala: messo attenuatore <sup>passivo</sup> di due STS => attenuati ~~di~~

h0206 (15) Scesi in energia a 70 mm range in H<sub>2</sub>O. 181 MeV/n - Vediamo sul 100 kHz -

h0222 (15bis) Vediamo sotto i 50 kHz con i soliti spike -

h0228 (15ter) Scesi ancora di rate: vediamo ~10 kHz, spostato in x -

h0235 (15qu) Saliti di intens. Il fascio è ritornato nella pos in x di prima (mentre nel run 15ter lo vediamo tra due stecche, ora è in una sola) -

h0242 (16) Scendiamo in eu a 50 mm di range in H<sub>2</sub>O - Dopo un po' di spill siamo neri sotto i 10 kHz - 150 MeV/n -

h0255 (17) Scesi di rate: vediamo 2-3 kHz -

h0305 (18) Passati a 70 mm range - Vediamo ~4-5 kHz -

h0317 (19) Passati a 100 mm range, 220 MeV/n - Picco piano scende sul 1 kHz - Ci sono + spike di prima -

h0329 (20) Passati a 150 mm, 280 MeV/n - Dopo che si stabilizza arriviamo a vedere sopra i 3 kHz - Poi scende ulteriormente e intorno al kHz

Accesso in sala: cambiamo il trigger => AND ai due SIS x fare le efficienze

h0346 (21) ~ kHz - Stesso fascio di prima -

h0355 (22) Torniamo a 70 mm, 180 MeV/n - 111 MeV

h0405 run - calib p (23) Cambiato ai **PROTONI** a 90 mm range Ancora trigger con l'AND degli SIS - Partiti intorno a 400 kHz e dopo 40s siamo arrivati sotto i 2 kHz

Accesso in sala: rimesso il trigger come prima => OR tra le stecche di una vista e AND tra le viste

h0413 (24) Stesso fascio di prima - Abbiamo 300 Hz - Da ernumber 28000 siamo saliti di rate (picchi ~ MHz)

Accesso in sala per acquisire i pedestalli (pedestal.dat)

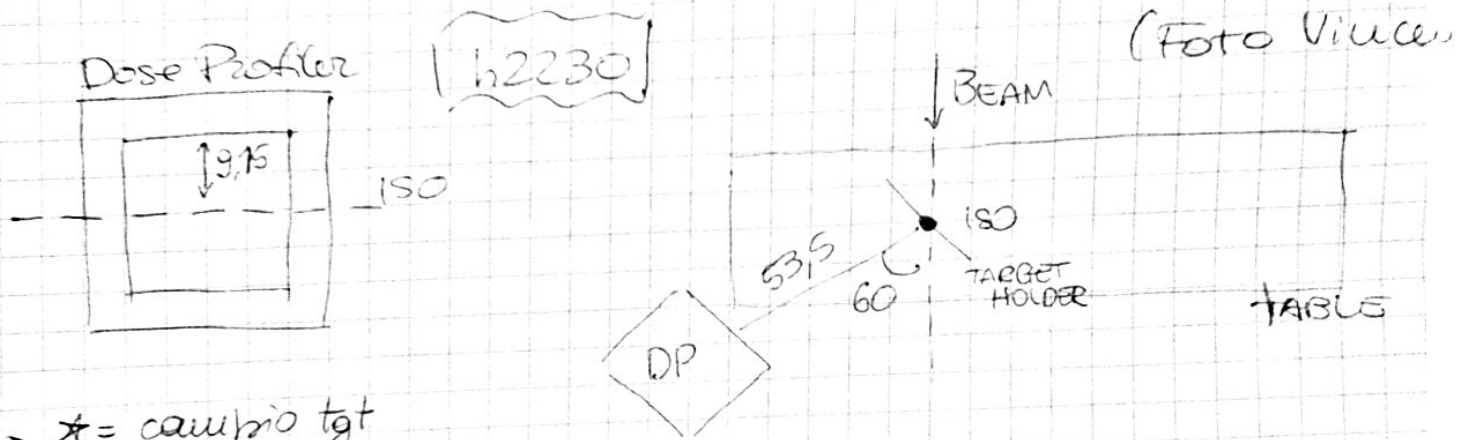
MAR 21/NOV/2017

Targets: pallina 4mm  
 pallina 6mm  
 filo 2mm  
 Rando } 60° a dist ≠ in tripla e  
 a un paio di eu

Tripla = coincidenza tra 3 bipiani + scintillat } trigger  
 due doppie = " " " " }

Rando: 60° a distanza ≠ (2 punti)  
 40°  
 90° } trigger  
 30, 50 cm } quadruple

⇒ facciamo con percorsi di 3 energie



\* = cambio tgt  
 \* Target pallina 4mm all' ISO - DP a 60°, distante 53,5  
 cm dal target.

h2256 run\_stor4\_01 12C 100 mm 220 MeV/n alta inter  
 ~ 10<sup>8</sup>/s  
 trigger in tripla, 500k eventi

- |       |    |                            |             |                 |
|-------|----|----------------------------|-------------|-----------------|
| h2300 | 02 | stesso fascio              | 500k eventi | tripla          |
| h2303 | 03 | "                          | "           | tripla          |
| h2306 | 04 | "                          | "           | quadruple       |
| h2309 | 05 | "                          | 340k eventi | "               |
| h2314 | 06 | "                          | 500 k       | "               |
| h2322 | 07 | 12C 70 mm                  | 180 MeV/n   | tripla, 500k ev |
| h2325 | 08 | come prima                 |             |                 |
| h2328 | 09 | come prima ma in quadruple |             |                 |
| h2333 | 10 | 12C 50 mm                  | 150 MeV/n   | tripla          |

h2355  
h2361  
h2375

- 11) Come prima, ma in quadruplo
- 12) 120 **30** mm 115 MeV/n tripla
- 13) Come prima ma in quadruplo

★ Accesso in sala: cambio target  $\Rightarrow$  filo Al 2mm  $\phi$

h2356  
h358  
h0002  
h0003  
h0007  
h0008  
h0012  
h0014

- 14) ~~100 mm 220 MeV/n~~, tripla, 300k eventi
- 15) Come prima, quadruplo, 300k ev
- 16) 70 mm, 180 MeV/n, tripla, 300k ev
- 17) " " quadruplo "
- 18) 50 mm, 150 MeV/n, tripla, 300k ev
- 19) " " quadruplo, "
- 20) 30 mm, 115 MeV/n, tripla, "
- 21) " " quadruplo "

Accesso in sala: allontanato il DP  $\Rightarrow$  dist tra il tgt e il feeder del DP  $\approx$  69,5 cm, sempre  $60^\circ$

h0023  
h0025  
h0029  
h0031

- 22) 100 mm, 220 MeV/n, 300k ev, tripla
- 23) " " " quadruplo
- 24) 50 mm, 150 MeV/n, " tripla
- 25) " " " quadruplo

Accesso in sala: allontanato il DP a 83 cm, sempre  $60^\circ$

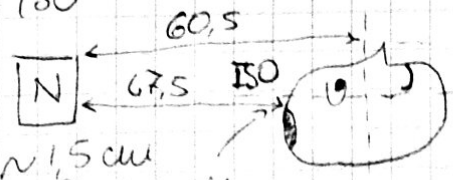
h0039  
h0041  
h0046  
h0048

- 26) 100 mm, 220 MeV/n, 300k ev, tripla
- 27) " " " quadruplo
- 28) 50 mm, 150 MeV/n, 300k ev, tripla
- 29) " " " quadruplo

★ Accesso in sala: stesso RANDO



maso = 150



(Foto Vincenzo: occhio che le prime foto hanno l'150 in y più in basso  $\rightarrow$  abbiamo abbassato poi Rando)

h0123 / run\_rando (30)

12C 100 mm  $1 \times 10^9$  part, ~~tr~~  
quadrupla  
Il fascio è arricchito diversi  
minuti dopo l'inizio  
dell'acquisizione (h0135)

h0137 /

(31)

70 mm  $1 \times 10^9$  part, quadrupla

h0139 /

(32)

150 mm " "

h0141 /

(33)

200 mm " "

h0143 /

(34)

50 mm " "

h0149 /

(35)

MATRICE  $3 \times 3 \text{ cm}^2$ , 9 punti,  $1 \times 10^9$  per spc  
100 mm quadrupla  
tot  $9 \times 10^9$  part

h0151 /

(36)

proseguimento del run 35  $\Rightarrow$  gli eventi  
di acquisizione (500k) non hostavano

h0153 /

(37)

come il 36 (proseguimento del 35)

Accesso

in sala: messo il DP a 42 cm dall'180 e a 45°

h0159 /

(38)

stesso fascio di prima, stessa matrice,  
quadrupla