

3.4 nA → 200 Hz  
 1.5 nA → 50 Hz

2 nA → 70 Hz

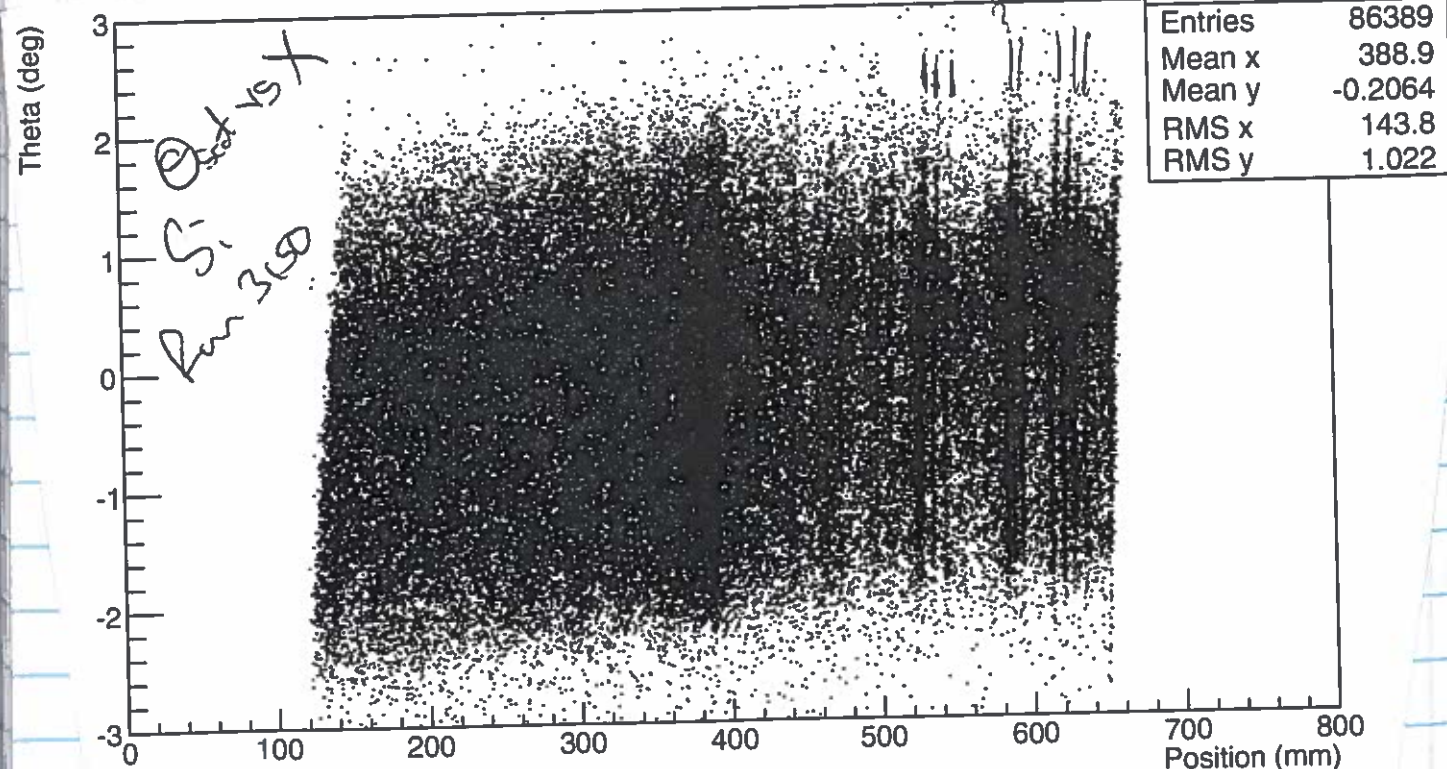
Run comment: DLC 12 not C  
 Run #: 3149  
 Start: 19:34 Current: 2.0 nA Trigger rate: 220 Hz  
 Stop: 20:16 CI Range: 6n Data rate: 90 kB/s  
 Target: DLC #5 Collimator: #3 Trigger evts: 358575  
 Target angle: -118° Scaler evts: 1907

K600 angle: 0 deg K600 field:  
 Q: S A VDC efficiency  
 D1: A A X1 93  
 H: M A U1 94  
 D2: E A X2 87  
 K: E A U2 95

Run comment: Slion  
 Run #: 3150  
 Start: 20:18 Current: 1.6 nA Trigger rate: 100 Hz  
 Stop: 21:18 CI Range: 6n Data rate: 40 kB/s  
 Target: #4 Slion Collimator: #3 Trigger evts: 532232  
 Target angle: -118° Scaler evts: 3496

K600 angle: 0 deg K600 field:  
 Q: S A VDC efficiency  
 D1: A A X1 93  
 H: M A U1 94  
 D2: E A X2 87  
 K: E A U2 95

ThSCAT vs X1



Clearly see a ~~big~~ # of distinct states - <sup>28</sup>Si @ ~9-12 MeV.

Run comment: 24 Mg #3  
 Run #: 3151  
 Start: 21:20 Current: 2.4 nA Trigger rate: 200 Hz  
 Stop: 22:28 CI Range: 6n Data rate: 100 kB/s  
 Target: 24 Mg Collimator: #3 Trigger evts: 972626  
 Target angle: -118° Scaler evts: 3980

K600 angle: 0 deg K600 field:  
 Q: S A VDC efficiency  
 D1: A A X1 93  
 H: M A U1 94  
 D2: E A X2 86  
 K: E A U2 95

Run comment: Ad6 → Listing of Lysd:  
 Run #: 3152  
 Start: 22:29 Current: 3.2 nA Trigger rate: 130 Hz  
 Stop: 22:40 CI Range: 6n Data rate: 55 kB/s  
 Target: MT Collimator: #3 Trigger evts: 89127  
 Target angle: -118° Scaler evts: 622

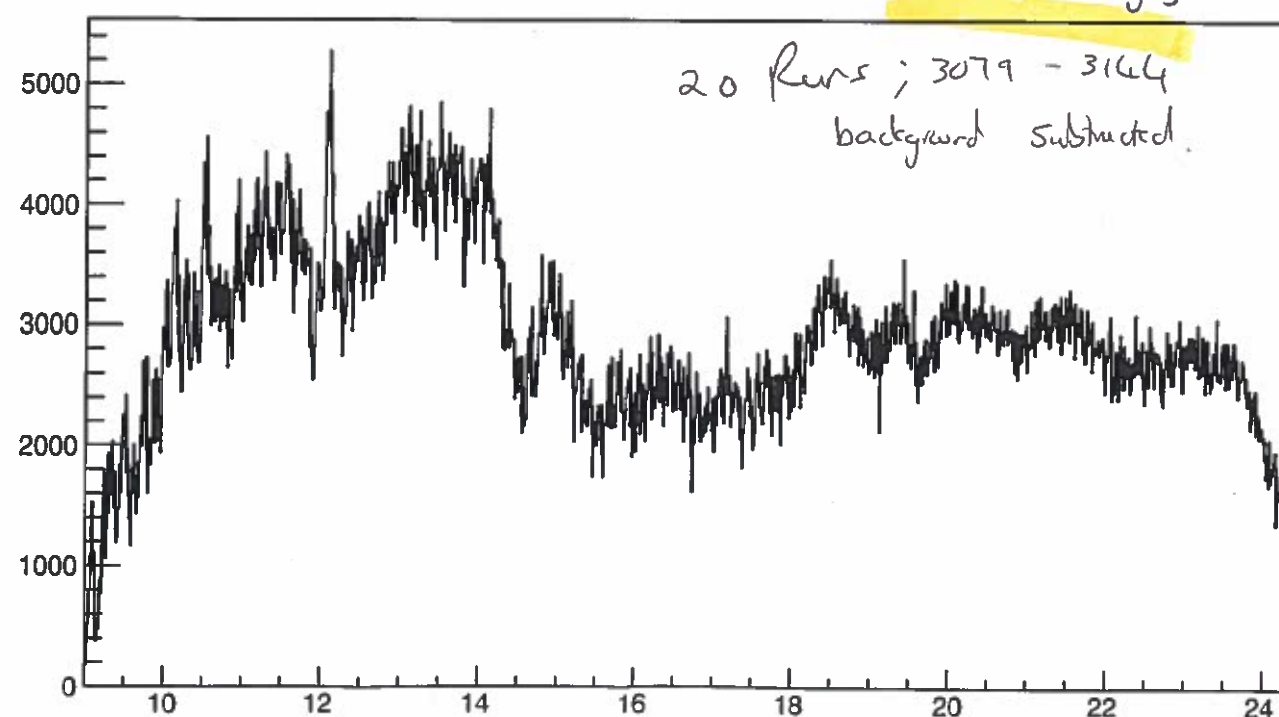
K600 angle: 0 deg K600 field:  
 Q: S A VDC efficiency  
 D1: A A X1 93  
 H: M A U1 94.6  
 D2: E A X2 86  
 K: E A U2 92

Run comment: DLC  
 Run #: 3153  
 Start: 20:41 Current: 3.7 nA Trigger rate: 400 Hz  
 Stop: 23:42 CI Range: 6n Data rate: 180 kB/s  
 Target: DLC #5 Collimator: #3 Trigger evts: 1.064m  
 Target angle: -118° Scaler evts: 3589

K600 angle: 0 deg K600 field:  
 Q: S A VDC efficiency  
 D1: A A X1 92  
 H: M A U1 94  
 D2: E A X2 85  
 K: E A U2 95

N.B. We're using #4 (Si) not #5 (SiO<sub>2</sub>).

<sup>208</sup>Pb(α,α) at 0° offline analysis





Run comment: Silicon Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3154  
 Start: 23:44 Current: 1.9 nA Trigger rate: 120 Hz Q: S A VDC efficiency  
 Stop: 00:44 CI Range: 6n Data rate: 60 kB/s D1: A A X1 93  
 Target: Si Collimator: #3 Trigger evts: \_\_\_\_\_ H: m A U1 94  
 Target angle: -118° K: E A X2 87  
 Scaler evts: \_\_\_\_\_ U2 95

→ I beam -p to 3 nA

RN noticed earlier that the pumps to the spectrometer were off. This was mitigated by the beam dump keeping the vacuum. Check every couple of hours to see that it's still ok.

Run comment: 24h Magnesium data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3155  
 Start: 00:45 Current: 3.2 nA Trigger rate: 142 Hz Q: S A VDC efficiency  
 Stop: 01:15 CI Range: 6nA Data rate: 90 kB/s D1: A A X1 94  
 Target: 24Mg Collimator: #3 Trigger evts: 373841 (-1753) H: n A U1 94  
 Target angle: -118° K: E A X2 86  
 Scaler evts: 1753 U2 94

Run comment: MT K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3156  
 Start: 01:16 Current: 3.5 nA Trigger rate: 87 Hz Q: S A VDC efficiency  
 Stop: 01:26 CI Range: 6nA Data rate: 30 kB/s D1: A A X1 94  
 Target: \_\_\_\_\_ Collimator: #3 Trigger evts: \_\_\_\_\_ H: n A U1 93  
 Target angle: \_\_\_\_\_ K: E A X2 88  
 Scaler evts: \_\_\_\_\_ U2 95

→ ODB error: expected size 832  
 size in odb 912 2/6

Run comment: IC data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3157  
 Start: 01:28 Current: 3.2 nA Trigger rate: 294 Hz Q: C A VDC efficiency  
 Stop: 02:28 CI Range: 6nA Data rate: 120 kB/s D1: A A X1 92  
 Target: IC Collimator: #3 Trigger evts: \_\_\_\_\_ H: n A U1 94  
 Target angle: -118° K: E A X2 86  
 Scaler evts: \_\_\_\_\_ U2 95

→ some ODB error, data are coming in  
 I guess the DAG is going ok.

Run comment: Si data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3158  
 Start: 02:24 Current: 1.7 nA Trigger rate: 100 Hz Q: S A VDC efficiency  
 Stop: 03:24 CI Range: 6nA Data rate: 40 kB/s D1: A A X1 94  
 Target: nat Si #4 Collimator: #3 Trigger evts: \_\_\_\_\_ H: n A U1 94  
 Target angle: -118° K: E A X2 87  
 Scaler evts: \_\_\_\_\_ U2 95

pumps are still running...

Run comment: 24h Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3159  
 Start: 03:31 Current: 2.4 nA Trigger rate: \_\_\_\_\_ Hz Q: S A VDC efficiency  
 Stop: 04:02 CI Range: 6nA Data rate: \_\_\_\_\_ kB/s D1: A A X1 93  
 Target: 24Mg #3 Collimator: #3 Trigger evts: 306144 H: n A U1 94  
 Target angle: -118° K: E A X2 87  
 Scaler evts: 1798 U2 95

Run comment: MT K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3160  
 Start: 04:03 Current: 3.5 nA Trigger rate: 77 Hz Q: S A VDC efficiency  
 Stop: 04:13 CI Range: 6nA Data rate: 35 kB/s D1: A A X1 95  
 Target: MT Collimator: #3 Trigger evts: 53658 H: n A U1 95  
 Target angle: -118° K: E A X2 85  
 Scaler evts: 552 U2 95

Run comment: IC Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3161  
 Start: 04:14 Current: 2.8 nA Trigger rate: 266 Hz Q: S A VDC efficiency  
 Stop: 05:14 CI Range: 6nA Data rate: 100 kB/s D1: A A X1 92  
 Target: IC #5 Collimator: #3 Trigger evts: 902732 H: n A U1 94  
 Target angle: -118° K: E A X2 86  
 Scaler evts: 3448 U2 94

Run comment: Silicon Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3162  
 Start: 05:16 Current: 3.5 nA Trigger rate: 200 Hz Q: S A VDC efficiency  
 Stop: 06:16 CI Range: 6nA Data rate: 80 kB/s D1: A A X1 93  
 Target: nat Si #4 Collimator: #3 Trigger evts: 487844 H: n A U1 94  
 Target angle: -118° K: E A X2 87  
 Scaler evts: 3440 U2 95

Run comment: 24h Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3163  
 Start: 06:17 Current: 2.2 nA Trigger rate: 150 Hz Q: S A VDC efficiency  
 Stop: 06:49 CI Range: 6nA Data rate: 60 kB/s D1: A A X1 93  
 Target: 24Mg #3 Collimator: #3 Trigger evts: \_\_\_\_\_ H: n A U1 94  
 Target angle: -118° K: E A X2 88  
 Scaler evts: \_\_\_\_\_ U2 94

Run comment: NT K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3164 Q: S A VDC efficiency  
 Start: 06:50 Current: 2.6 nA D1: A A X1 94  
 Stop: 07:01 CI Range: 6nA H: A A U1 94  
 Target: pi Collimator: #3 D2: E A X2 86  
 Target angle: -118° Trigger rate: 47 Hz Data rate: 14 kB/s  
 Trigger evts: \_\_\_\_\_ Scaler evts: \_\_\_\_\_ K: \_\_\_\_\_ A U2 95

7:00 the beam goes on, SPC1 flooded...  
 As die screen meet by sheep

Run comment: 12C data K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3165 Q: S A VDC efficiency  
 Start: 07:07 Current: 2.5 nA D1: A A X1 93  
 Stop: 07:08 CI Range: 6nA H: A A U1 95  
 Target: 12C Collimator: #3 D2: E A X2 86  
 Target angle: -118° Trigger rate: 243 Hz Data rate: 100 kB/s  
 Trigger evts: 837991 Scaler evts: 3421 K: \_\_\_\_\_ A U2 95

Run comment: Si #4 K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3166 Q: S A VDC efficiency  
 Start: 08:05 Current: 2.6 nA D1: A A X1 93  
 Stop: 08:06 CI Range: 6nA H: A A U1 94  
 Target: #4 Collimator: #3 D2: E A X2 88  
 Target angle: -118° Trigger rate: 175 Hz Data rate: 72 kB/s  
 Trigger evts: 458627 Scaler evts: 3527 K: \_\_\_\_\_ A U2 94

Run comment: #13 4Mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3167 Q: S A VDC efficiency  
 Start: 09:08 Current: 1.6 nA D1: A A X1 93  
 Stop: 09:39 CI Range: 6nA H: A A U1 94  
 Target: #13 4Mg Collimator: #3 D2: E A X2 87  
 Target angle: -118° Trigger rate: 91 Hz Data rate: 40 kB/s  
 Trigger evts: 210815 Scaler evts: 1776 K: \_\_\_\_\_ A U2 95

Run comment: EMPTY K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3168 Q: S A VDC efficiency  
 Start: 09:41 Current: 1.3 nA D1: A A X1 94  
 Stop: 09:53 CI Range: 6nA H: A A U1 91  
 Target: #1 Collimator: #3 D2: E A X2 87  
 Target angle: -118° Trigger rate: 37 Hz Data rate: 18 kB/s  
 Trigger evts: 63490 Scaler evts: 698 K: \_\_\_\_\_ A U2 93

Run comment: DL C. K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3169 Q: S A VDC efficiency  
 Start: 09:57 Current: 1.5 nA D1: A A X1 92  
 Stop: 10:58 CI Range: 6nA H: A A U1 93  
 Target: #5 Collimator: #3 D2: E A X2 84  
 Target angle: -118° Trigger rate: 410 Hz Data rate: 163 kB/s  
 Trigger evts: 1261M Scaler evts: 3512 K: \_\_\_\_\_ A U2 93

Checked on the pumps. Both still running. Vacuum around  $2 \times 10^{-5}$

Run comment: Si K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3170 Q: S A VDC efficiency  
 Start: 11:02 Current: 2.6 nA D1: A A X1 93  
 Stop: 12:02 CI Range: 6 H: A A U1 94  
 Target: Si Collimator: #3 D2: M A X2 86  
 Target angle: -118.0 Trigger rate: 184 Hz Data rate: 82 kB/s  
 Trigger evts: 606463 Scaler evts: 3501 K: \_\_\_\_\_ A U2 94

Run comment: 24 Mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3171 Q: S A VDC efficiency  
 Start: 12:04 Current: 1.7 nA D1: A A X1 93  
 Stop: 12:38 CI Range: 6nA H: A A U1 92  
 Target: #14 #3 Collimator: #3 D2: M A X2 86  
 Target angle: -118° Trigger rate: 146 Hz Data rate: 61 kB/s  
 Trigger evts: 325438 Scaler evts: 1958 K: \_\_\_\_\_ A U2 94

Run comment: MT K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3172 Q: S A VDC efficiency  
 Start: 12:44 Current: 1.8 nA D1: A A X1 \_\_\_\_\_  
 Stop: 13:02 CI Range: 6 H: A A U1 \_\_\_\_\_  
 Target: MT Collimator: #3 D2: M A X2 \_\_\_\_\_  
 Target angle: -118.0 Trigger rate: 84 Hz Data rate: 35 kB/s  
 Trigger evts: 103454 Scaler evts: 1235 K: \_\_\_\_\_ A U2 \_\_\_\_\_

Run comment: Si:O K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3173 Q: S A VDC efficiency  
 Start: 13:07 Current: 1.8 nA D1: A A X1 91.9  
 Stop: 13:13 CI Range: 6 H: A A U1 94.1  
 Target: Si:O Collimator: #3 D2: M A X2 84.8  
 Target angle: -118.0 Trigger rate: 2526 Hz Data rate: 1.040 kB/s  
 Trigger evts: 1.004M Scaler evts: 383 K: \_\_\_\_\_ A U2 94.6

Very high current. Strong peak at 620  
 This looks like the carbon spectrum

Run comment: 12C K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3174 Q: S A VDC efficiency  
 Start: 13:17 Current: 1.8 nA D1: A A X1 93.2  
 Stop: 14:18 CI Range: 6 H: A A U1 94.2  
 Target: 12C #5 Collimator: #3 D2: E A X2 87.1  
 Target angle: -118.0 Trigger rate: 208 Hz Data rate: 35 kB/s  
 Trigger evts: 855757 Scaler evts: 3511 K: \_\_\_\_\_ A U2 94.8

Short interlock trip in the middle of this run



Run comment: Si Run

K600 angle: 0 deg K600 field: \_\_\_\_\_

Run #: 3175

Start: 14h20 Current: 2.1 nA

Trigger rate: 210 Hz

Q: S A VDC efficiency

Stop: 15h40 CI Range: 6

Data rate: 87 kB/s

D1: A A X1 93.1

Target: Si #4 Collimator: #3

Trigger evts: 967659

H: M A U1 94.6

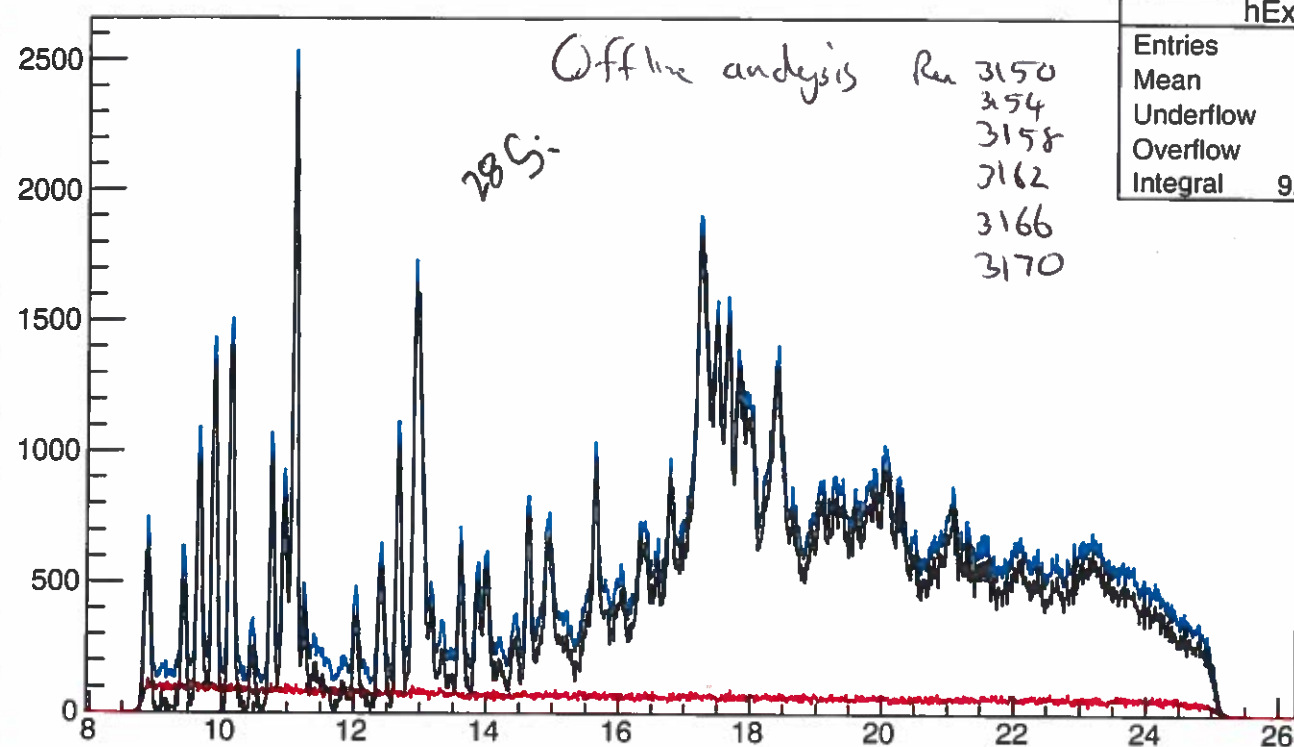
Target angle: -118.0

Scaler evts: 11684

D2: F A X2 86

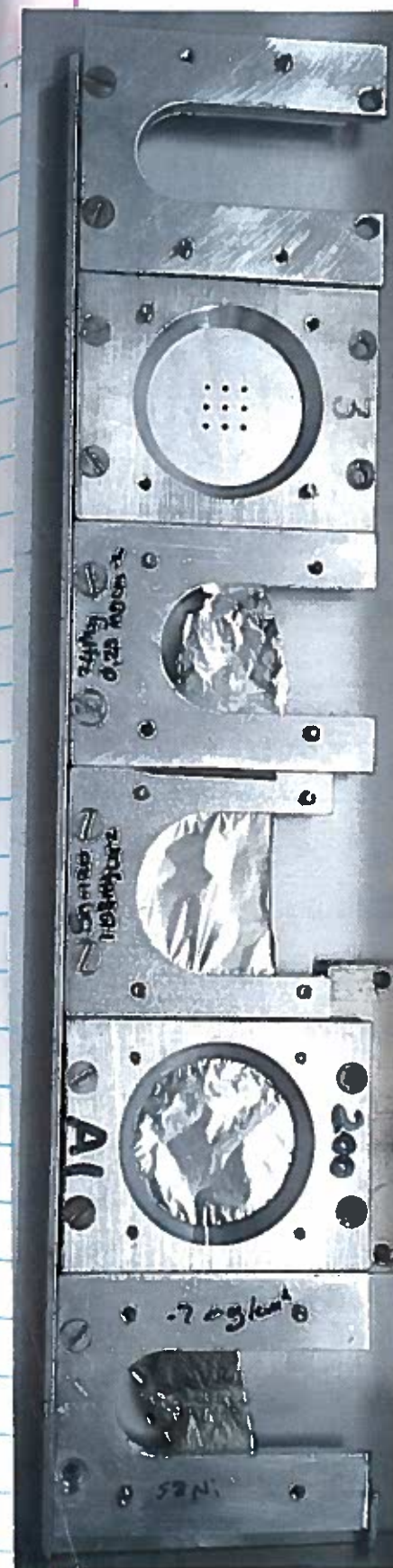
K: F A U2 96.7

### Excitation energy



hEx	
Entries	952391
Mean	17.49
Underflow	0
Overflow	0
Integral	9.524e+05

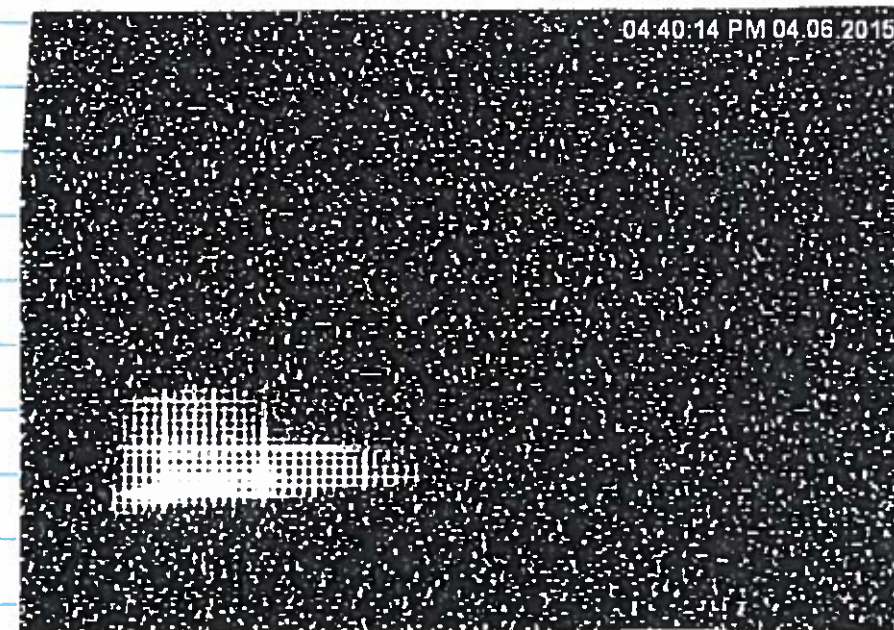
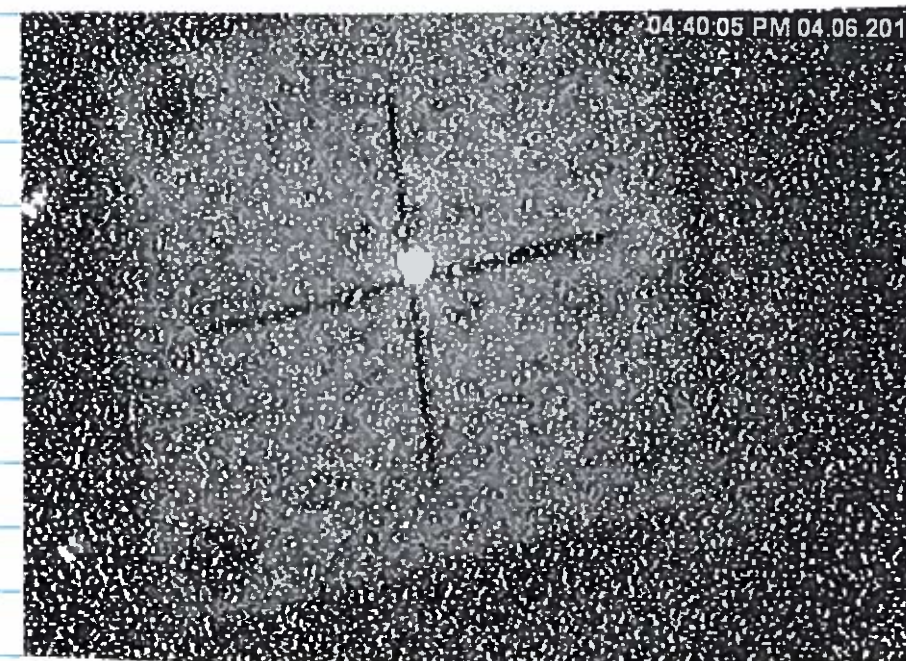
Mundy Change target ladder.  
15h40



17:00

Locked at viewer  
Beams on lower right on target  
to left on Hatanaka.

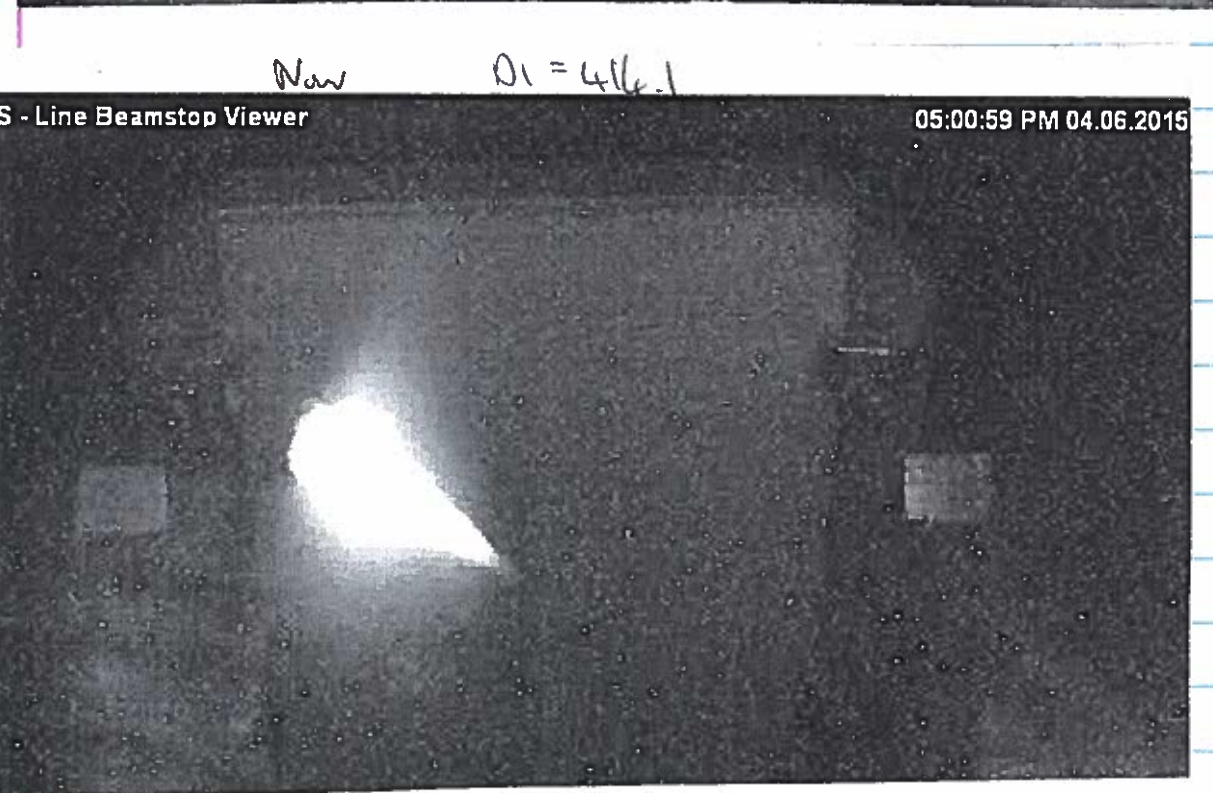
Fixed alignment  
change





S - Line Beamstop Viewer

05:00:07 PM 04.05.2015



S - Line Beamstop Viewer

05:00:59 PM 04.06.2015

Run 3176 halo tuning run

End with 70 Hz @ 2uA

Loaded at beamstop viewer.  
Need beam close to UDC's

NOTE: K600 fields were changed!!

177

Run comment: 24Mg  
Run #: 3177  
Start: 17:36 Current: 20 nA Trigger rate: 16 Hz  
Stop: 17:54 CI Range: 6 Data rate: 167056 kB/s  
Target: 24Mg Collimator: #3 Trigger evts: 1047  
Target angle: -118° Scaler evts: 1047

K600 angle: 0 deg K600 field:

Q: -155.606 A VDC efficiency  
D1: 44.1 A X1 934  
H: -2862 A U1 739  
D2: 271862 A X2 88  
K: 2862 A U2 944

Run comment: 120Sn  
Run #: 3178  
Start: 17:55 Current: 21 nA Trigger rate: 300 Hz  
Stop: 18:57 CI Range: 6 Data rate: 123 kB/s  
Target: 120Sn Collimator: #3 Trigger evts: 1.011M  
Target angle: -118° Scaler evts: 3626

K600 angle: 0 deg K600 field:

Q: 5 A VDC efficiency  
D1: 5 A X1 92  
H: A A U1 94  
D2: 2 A X2 84  
K: A U2 94

Run comment: Aluminium 22Al.

Run #: 3179  
Start: 19:00 Current: 1.2 nA Trigger rate: 131 Hz  
Stop: 20:00 CI Range: 6nA Data rate: 56 kB/s  
Target: #5 Al. Collimator: #3 Trigger evts: 448293  
Target angle: -118° Scaler evts: 3485

K600 angle: 0 deg K600 field:

Q: 5 A VDC efficiency  
D1: 5 A X1 93  
H: 5 A U1 94  
D2: 5 A X2 88  
K: A U2 94

Run comment: EMPTY.

Run #: 3180  
Start: 20:01 Current: 1.4 nA Trigger rate: 37 Hz  
Stop: 20:15 CI Range: 6nA Data rate: 15 kB/s  
Target: #1 Collimator: #3 Trigger evts: 31368  
Target angle: -118° Scaler evts: 754

K600 angle: 0 deg K600 field:

Q: 5 A VDC efficiency  
D1: 5 A X1 96  
H: 5 A U1 96  
D2: 5 A X2 86  
K: A U2 94

Run comment: 24Mg

Run #: 3181  
Start: 20:17 Current: 1.3 nA Trigger rate: 76 Hz  
Stop: 20:37 CI Range: 6nA Data rate: 32 kB/s  
Target: #3 24Mg Collimator: #3 Trigger evts: 126750  
Target angle: -118° Scaler evts: 1188

K600 angle: 0 deg K600 field:

Q: SA A VDC efficiency  
D1: SA A X1 93  
H: MC A U1 94  
D2: MC A X2 88  
K: A U2 94

Run comment: 120Sn

Run #: 3182  
Start: 20:39 Current: 1.6 nA Trigger rate: 204 Hz  
Stop: 21:52 CI Range: 6nA Data rate: 40 kB/s  
Target: #4 120Sn Collimator: #3 Trigger evts: 925798  
Target angle: -118° Scaler evts: 4224

K600 angle: 0 deg K600 field:

Q: 6 A VDC efficiency  
D1: 10 A X1 93  
H: SA A U1 94  
D2: SA A X2 85  
K: A U2 94



Run comment: 58N; Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3183 Q: S A VDC efficiency  
Start: 21:54 Current: 1.7 nA D1: A A X1 93  
Stop: 22:54 CI Range: 6n H: M A U1 94  
Target: 58N; Collimator: #3 D2: E A X2 87  
Target angle: -118° Trigger rate: 140 Hz Trigger evts: 793712 K: \_\_\_\_\_ A U2 94  
Scaler evts: 3530

Run comment: MT Hdo check K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3184 Q: S A VDC efficiency  
Start: 22:56 Current: 2.5 nA D1: A A X1 93  
Stop: 23:06 CI Range: 6n H: M A U1 94  
Target: MT Collimator: #3 D2: E A X2 86  
Target angle: -118° Trigger rate: 90 Hz Trigger evts: 53579 K: \_\_\_\_\_ A U2 94  
Scaler evts: 584

Hdo: 90 Hz @ 2.5 nA

Run comment: 24Mg Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3185 Q: S A VDC efficiency  
Start: 23:07 Current: 2.4 nA D1: A A X1 93  
Stop: 23:27 CI Range: 6n H: M A U1 94  
Target: 24Mg Collimator: #3 D2: E A X2 87  
Target angle: -118° Trigger rate: 170 Hz Trigger evts: 266101 K: \_\_\_\_\_ A U2 94  
Scaler evts: 1178

Run comment: 120Sn Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3186 Q: S A VDC efficiency  
Start: 23:29 Current: 2.0 nA D1: A A X1 93  
Stop: 00:32 CI Range: 6n H: M A U1 94  
Target: 120Sn Collimator: #3 D2: E A X2 84  
Target angle: -118° Trigger rate: 250 Hz Trigger evts: 1.101M K: \_\_\_\_\_ A U2 94  
Scaler evts: 3661

Run comment: 27Al Data K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3187 Q: S A VDC efficiency  
Start: 00:35 Current: 2.2 nA D1: A A X1 93  
Stop: 02:33 CI Range: 6n H: M A U1 94  
Target: 27Al Collimator: #3 D2: E A X2 87  
Target angle: -118° Trigger rate: 200 Hz Trigger evts: 1.373M K: \_\_\_\_\_ A U2 94  
Scaler evts: 6918

Doing 2 hr runs now.  
AL 2 hr  
24Mg 20 min  
MT 10 min  
120Sn 2hr

Lower current 1.5 nA  
Upper " " 6.5 nA

Tripped VDCs → Target bopper hadn't finished. :-

Run comment: 24Mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3188 Q: S A VDC efficiency  
Start: 02:36 Current: 4.1 nA D1: A A X1 93  
Stop: 02:59 CI Range: 6n H: M A U1 94  
Target: 24Mg Collimator: #3 D2: E A X2 87  
Target angle: -118° Trigger rate: 240 Hz Trigger evts: 346895 K: \_\_\_\_\_ A U2 94  
Scaler evts: 1351

Run comment: MT K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3189 Q: S A VDC efficiency  
Start: 03:01 Current: 4.1 nA D1: A A X1 93  
Stop: 03:10 CI Range: 6n H: M A U1 94  
Target: MT Collimator: #3 D2: E A X2 86  
Target angle: -118° Trigger rate: 120 Hz Trigger evts: 58619 K: \_\_\_\_\_ A U2 94  
Scaler evts: 531

Run comment: 120Sn K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3190 Q: S A VDC efficiency  
Start: 03:12 Current: 3.3 nA D1: A A X1 92  
Stop: 05:18 CI Range: 6n H: M A U1 94  
Target: 120Sn Collimator: #3 D2: E A X2 86  
Target angle: -118° Trigger rate: 400 Hz Trigger evts: 2.938M K: \_\_\_\_\_ A U2 94  
Scaler evts: 7345

Run comment: 24Mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3191 Q: S A VDC efficiency  
Start: 05:20 Current: 2.7 nA D1: A A X1 93  
Stop: 05:40 CI Range: 6n H: M A U1 94  
Target: 24Mg Collimator: #3 D2: E A X2 88  
Target angle: -118° Trigger rate: 165 Hz Trigger evts: 191101 K: \_\_\_\_\_ A U2 94  
Scaler evts: 1168

Run comment: MT K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3192 Q: S A VDC efficiency  
Start: 05:42 Current: 2.7 nA D1: A A X1 94  
Stop: 05:52 CI Range: 6n H: M A U1 94  
Target: MT Collimator: #3 D2: E A X2 86  
Target angle: -118° Trigger rate: 80 Hz Trigger evts: 43108 K: \_\_\_\_\_ A U2 95  
Scaler evts: 582

Run comment: 120Sn K600 angle: 0 deg K600 field: \_\_\_\_\_  
Run #: 3193 Q: S A VDC efficiency  
Start: 05:54 Current: 3.9 nA D1: A A X1 92  
Stop: 07:14 CI Range: 6n H: M A U1 94  
Target: 120Sn Collimator: #3 D2: E A X2 84  
Target angle: -118° Trigger rate: 480 Hz Trigger evts: 1.734M K: \_\_\_\_\_ A U2 94  
Scaler evts: 4683

Beam tripped.



Run comment: 120Sn K600 angle: 0 deg K600 field:         
Run #: 3194 Q: S A VDC efficiency  
Start: 07:14 Current: 22 nA D1: A A X1: 93  
Stop:        CI Range: 6n Hz Data rate: 110 kB/s H: 9 A U1: 94  
Target: 120Sn Collimator: #3 Trigger evts:        D2: E A X2: 95  
Target angle: -118° Scaler evts:        K:        A U2: 94

Run comment: 24 Mg K600 angle: 0 deg K600 field:         
Run #: 3195 Q: S A VDC efficiency  
Start: 08:16 Current: 25 nA D1: A A X1: 935  
Stop: 08:24 CI Range: 6n Hz Data rate: 60 kB/s H:        A U1: 94  
Target: 24Mg Collimator: #3 Trigger evts: 299423 D2: E A X2: 88  
Target angle: -118° Scaler evts: 2292 K:        A U2: 946

Run comment: 120Sn K600 angle: 0 deg K600 field:         
Run #: 3196 Q: S A VDC efficiency  
Start: 08:57 Current: 19 nA D1: A A X1: 926  
Stop: 09:55 CI Range: 6nA Hz Data rate:        kB/s H: A A U1: 942  
Target: 120Sn Collimator: #3 Trigger evts: 994019 D2: h A X2: 845  
Target angle: -18° Scaler evts: 3375 K:        A U2: 963

Tuesday Stop and change target and add Hager.

12:35 Hager now in DAQ  
Also CHEN amplifier output to 90 ch patch #14  
and ADC gate to 50 ch patch #20

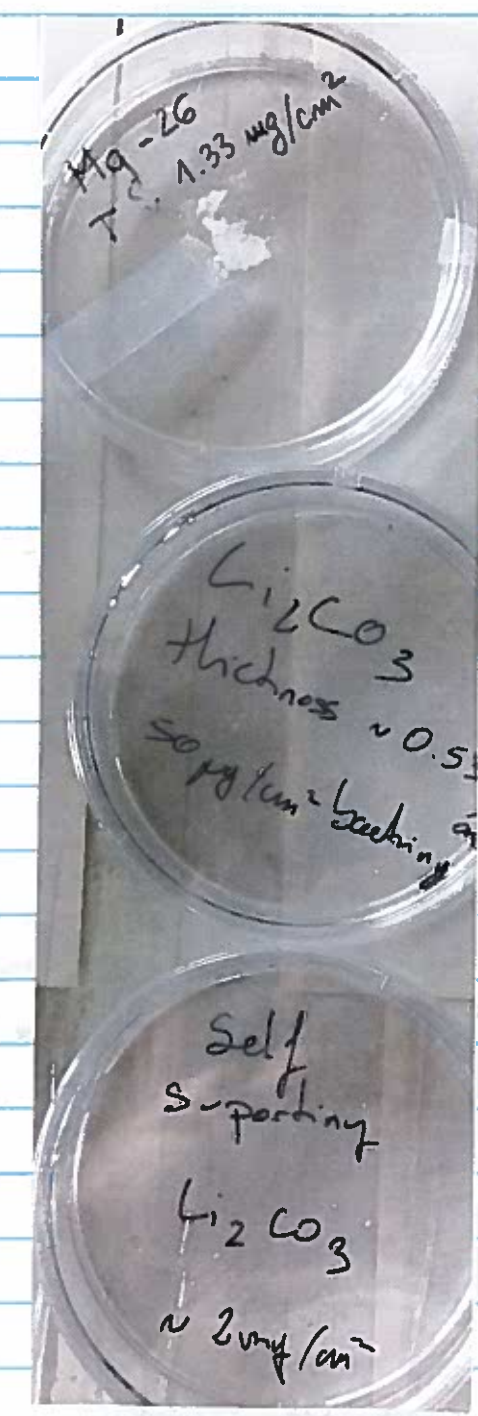
rough Hager calibration runs: <sup>66</sup>Ge run# 3208  
no source run# 3209



~~Handwritten scribbles~~

### TARGET LADDER:

- |   |                                 |   |
|---|---------------------------------|---|
| 1 | EMPTY                           |   |
| 2 | VIEWER                          |   |
| 3 | 24 Mg                           | 0.23 mg/cm <sup>2</sup>                     |
| 4 | 26 Mg                           | 1.33 mg/cm <sup>2</sup>                     |
| 5 | Li <sub>2</sub> CO <sub>3</sub> | 0.53 mg/cm <sup>2</sup> thin, with backiner |
| 6 | Li <sub>2</sub> CO <sub>3</sub> | 2 mg/cm <sup>2</sup> thick, self-reporting  |





- Bedm on target

Run comment: LiCO<sub>3</sub> thick self-supporting + HAGAR K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3211  
 Start: 12:43 Current: 1.9 nA Trigger rate: 1170 Hz  
 Stop: 13:48 CI Range: 6 Data rate: 1300 kB/s  
 Target: LiCO<sub>3</sub> #6 Collimator: #3 Trigger evts: \_\_\_\_\_  
 Target angle: -118.0 Scaler evts: \_\_\_\_\_  
 Q: \_\_\_\_\_ A VDC efficiency  
 D1: S A X1 \_\_\_\_\_  
 H: N A U1 \_\_\_\_\_  
 D2: E A X2 \_\_\_\_\_  
 K: \_\_\_\_\_ A U2 \_\_\_\_\_

## HAGAR GAIN SETTINGS

```
-rwxr-xr-x 1 online online 28566 Apr 7 10:49 n568bshow
-rwxr-xr-x 1 online online 31023 Apr 7 10:49 n568bctrl
-rwxr-xr-x 1 online online 561 Apr 7 12:05 n568-1-hagar.sh-
-rwxr-xr-x 1 online online 561 Apr 7 12:17 n568-1-hagar.sh
```

[online@daqioc PR236]S ./n568bshow 1

The module has answered : 'N568 Version 1.0' (16)

N568B @ 1 Global Offset=1

N568 @ 1 Ch 0: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 1: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 2: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 3: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 4: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 5: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 6: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 7: cg=2 fg=50 pz=0 st=1 op=0 oc=1  
 N568 @ 1 Ch 8: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch 9: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch10: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch11: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch12: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch13: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch14: cg=4 fg=110 pz=20 st=0 op=1 oc=1  
 N568 @ 1 Ch15: cg=4 fg=110 pz=20 st=0 op=1 oc=1

[online@daqioc PR236]S

Run comment: LiCO<sub>3</sub> thin K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3212  
 Start: 13:51 Current: 2.0 nA Trigger rate: 300 Hz  
 Stop: 14:25 CI Range: \_\_\_\_\_ Data rate: \_\_\_\_\_ kB/s  
 Target: LiCO #5 Collimator: \_\_\_\_\_ Trigger evts: \_\_\_\_\_  
 Target angle: \_\_\_\_\_ Scaler evts: \_\_\_\_\_  
 Q: \_\_\_\_\_ A VDC efficiency  
 D1: S A X1 \_\_\_\_\_  
 H: A A U1 \_\_\_\_\_  
 D2: h A X2 \_\_\_\_\_  
 K: E A U2 \_\_\_\_\_

↳ DAE crashed... STOP & START  
 Reboot volume 1

Run comment: 26mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3213  
 Start: 14:27 Current: 1.9 nA Trigger rate: 330 Hz  
 Stop: 14:44 CI Range: 6 Data rate: \_\_\_\_\_ kB/s  
 Target: 26mg Collimator: #3 Trigger evts: \_\_\_\_\_  
 Target angle: \_\_\_\_\_ Scaler evts: \_\_\_\_\_  
 Q: \_\_\_\_\_ A VDC efficiency  
 D1: S A X1 93  
 H: A A U1 94  
 D2: h A X2 88  
 K: E A U2 94

DAE crashed again.

Restart Volume 1 (after reboot)

Fixed all windows on K600 day and restarted DAE.

Run comment: 26mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3214  
 Start: 14:52 Current: 1.8 nA Trigger rate: 313 Hz  
 Stop: 15:12 CI Range: 6 Data rate: \_\_\_\_\_ kB/s  
 Target: 26mg Collimator: #3 Trigger evts: \_\_\_\_\_  
 Target angle: \_\_\_\_\_ Scaler evts: \_\_\_\_\_  
 Q: S A VDC efficiency  
 D1: A A X1 \_\_\_\_\_  
 H: A A U1 \_\_\_\_\_  
 D2: h A X2 \_\_\_\_\_  
 K: E A U2 \_\_\_\_\_

History plot continues without a problem. Nope, I does go hang  
 Very difficult to stop run. Stuck transition? mid-air  
 "Failed watchdog test"

Run 3215 26mg BAD (only restarted FE process)

Simply restarting FE process is not good: have to reboot Volume 1

Run 3216 26mg  
 Run comment: 26mg K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3216  
 Start: 15:31 Current: 1.7 nA Trigger rate: 302 Hz  
 Stop: 16:31 CI Range: 6 Data rate: 330 kB/s  
 Target: 26mg Collimator: #3 Trigger evts: 1301M  
 Target angle: -118.0 Scaler evts: 3511  
 Q: S A VDC efficiency  
 D1: A A X1 86.7  
 H: A A U1 88.7  
 D2: h A X2 82.6  
 K: E A U2 88.2

Run comment: LiCO<sub>3</sub> thin K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3217  
 Start: 16:36 Current: 2.2 nA Trigger rate: 348 Hz  
 Stop: \_\_\_\_\_ CI Range: 6 Data rate: 379 kB/s  
 Target: LiCO<sub>3</sub> thin #5 Collimator: #3 Trigger evts: 409977  
 Target angle: -118.0 Scaler evts: 1561  
 Q: S A VDC efficiency  
 D1: A A X1 \_\_\_\_\_  
 H: h A U1 \_\_\_\_\_  
 D2: h A X2 \_\_\_\_\_  
 K: E A U2 \_\_\_\_\_

Crashed after ~21 min - 26 min

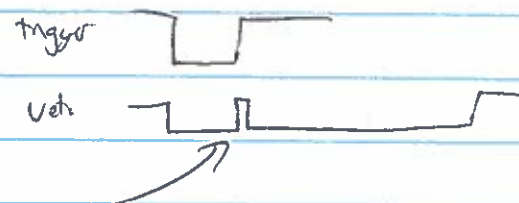
Run comment: LiCO<sub>3</sub> thin K600 angle: 0 deg K600 field: \_\_\_\_\_  
 Run #: 3218  
 Start: 17:22 Current: 2.5 nA Trigger rate: 356 Hz  
 Stop: 17:32 CI Range: 6 Data rate: 389 kB/s  
 Target: LiCO<sub>3</sub> thin #5 Collimator: #3 Trigger evts: 211258  
 Target angle: -118.0 Scaler evts: 609  
 Q: S A VDC efficiency  
 D1: A A X1 93.4  
 H: h A U1 93.9  
 D2: h A X2 87.6  
 K: E A U2 94.5



Run 3219  $\text{LiCO}_3$  thin Start 17h34 Stop 17h44  
 Run 3220  $\text{LiCO}_3$  thin Start 17h45 Stop 17h55  
 Run 3221  $\text{LiCO}_3$  thin Start 17h56 Stop 18h06  
 Run 3222  $\text{LiCO}_3$  thin Start 18h06 Stop 18h15

Run 3223 Pulsar Run.

The veto looked like this:



This was due to a slightly too short trigger output. Increased width of trigger cut and now



So nothing can slip past veto any more.

Run 3224  $\text{Li}_2\text{CO}_3$  thin Start 18:34 Stop 19:31  
 Run 3225  $\text{Li}_2\text{CO}_3$  thin Start 19:32 Stop 20:40  
 ↳ crashed at the end. Frontend reboot

Run 3226  $\text{Li}_2\text{CO}_3$  thin Start 20:46 Stop 21:50

~~Run 3227~~

Run 3227  $^{26}\text{Mg}$  target

Run 3227  $^{26}\text{Mg}$  Start 21:53 Stop 22:04

↳ crashed after 11 min

Run 3228  $^{26}\text{Mg}$  Start 22:10 crashed ~ 22:48

Run 3229  ~~$^{26}\text{Mg}$~~   $\text{Li}_2\text{CO}_3$  start 22:56

↳ 26 ng written in the webpage thingy

↳ EHAER/K600: lost synchronisation...

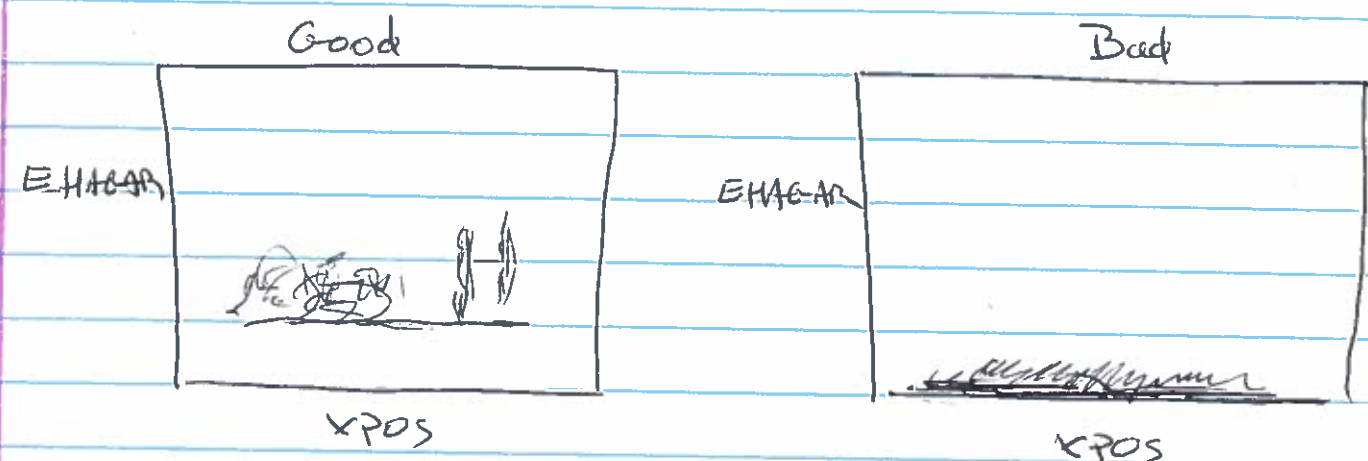
Run 3230 23:23 start crashed within 10 min...

Run 3231 23:37 start

Run 3232 00:00 start

Back to 26 ng

3233 start 00:15 stop 01:26  
 3234 start 01:27 stop ~ 03:15 crash  
 3235 start 03:38 stop 04:20  
 ↳ouch, lost ADC synchronisation  
 3236 start 04:20 Stop 04:48



I guess this results from loss of correlation

Looks like the system crashes easier with the  $\text{Li}_2\text{CO}_3$  target, give it a last go

3237  $\text{Li}_2\text{CO}_3$  target start 4:50 stop 5:04  
 ↳ didn't crash this time  
 I've got to go

END of run...



# Giant Resonance Studies Perspectives

Muhsin N. Harakeh

KVI, Groningen & GANIL, Caen

Joliot-Curie School

La Colle Sur Loup, 12-17 September 2011



La Colle Sur Loup, France: 12-17 September 2011



university of  
 groningen

Extracts from talk by Harakeh.  
Veg. useful!

Note on analysis

RN

7 April 2015

1. Resolution. In offline analysis of run 3195 I could get ~60 keV resolution for a subsection of THSART. A lot of effort should be put into analysis to ensure we get best possible resolution.

2. Target thickness

With faint beam on most weekends we looked at the  $\Delta E$  loss in targets as well as effect on width of the  $\alpha$  beam ~~there~~. These runs need careful analysis to understand energy resolution contribution by straggling etc.

3. Different targets

<sup>12</sup>C melamine <sup>13</sup>C K<sub>2</sub>Si <sup>28</sup>Si <sup>40</sup>Ca <sup>27</sup>Al <sup>58</sup>Ni <sup>90</sup>Zr <sup>120</sup>Sn <sup>208</sup>Pb  
<sup>24</sup>Mg <sup>26</sup>Mg Mylar <sup>6</sup>Li <sup>7</sup>Li <sup>12</sup>C <sup>13</sup>C <sup>14</sup>N <sup>15</sup>N <sup>16</sup>O <sup>17</sup>O <sup>18</sup>O <sup>19</sup>F <sup>20</sup>Ne <sup>21</sup>Ne <sup>22</sup>Ne <sup>23</sup>Ne <sup>24</sup>Ne <sup>25</sup>Ne <sup>26</sup>Ne <sup>27</sup>Ne <sup>28</sup>Ne <sup>29</sup>Ne <sup>30</sup>Ne <sup>31</sup>Ne <sup>32</sup>Ne <sup>33</sup>Ne <sup>34</sup>Ne <sup>35</sup>Ne <sup>36</sup>Ne <sup>37</sup>Ne <sup>38</sup>Ne <sup>39</sup>Ne <sup>40</sup>Ne <sup>41</sup>Ne <sup>42</sup>Ne <sup>43</sup>Ne <sup>44</sup>Ne <sup>45</sup>Ne <sup>46</sup>Ne <sup>47</sup>Ne <sup>48</sup>Ne <sup>49</sup>Ne <sup>50</sup>Ne <sup>51</sup>Ne <sup>52</sup>Ne <sup>53</sup>Ne <sup>54</sup>Ne <sup>55</sup>Ne <sup>56</sup>Ne <sup>57</sup>Ne <sup>58</sup>Ne <sup>59</sup>Ne <sup>60</sup>Ne <sup>61</sup>Ne <sup>62</sup>Ne <sup>63</sup>Ne <sup>64</sup>Ne <sup>65</sup>Ne <sup>66</sup>Ne <sup>67</sup>Ne <sup>68</sup>Ne <sup>69</sup>Ne <sup>70</sup>Ne <sup>71</sup>Ne <sup>72</sup>Ne <sup>73</sup>Ne <sup>74</sup>Ne <sup>75</sup>Ne <sup>76</sup>Ne <sup>77</sup>Ne <sup>78</sup>Ne <sup>79</sup>Ne <sup>80</sup>Ne <sup>81</sup>Ne <sup>82</sup>Ne <sup>83</sup>Ne <sup>84</sup>Ne <sup>85</sup>Ne <sup>86</sup>Ne <sup>87</sup>Ne <sup>88</sup>Ne <sup>89</sup>Ne <sup>90</sup>Ne <sup>91</sup>Ne <sup>92</sup>Ne <sup>93</sup>Ne <sup>94</sup>Ne <sup>95</sup>Ne <sup>96</sup>Ne <sup>97</sup>Ne <sup>98</sup>Ne <sup>99</sup>Ne <sup>100</sup>Ne  
Lots of things to analyze!

↳ PID plot

In  $\text{pid1 vs tdf}$  there are a couple of blobs. Each of these should be identified and gated on to see what the spectrum looks like.

