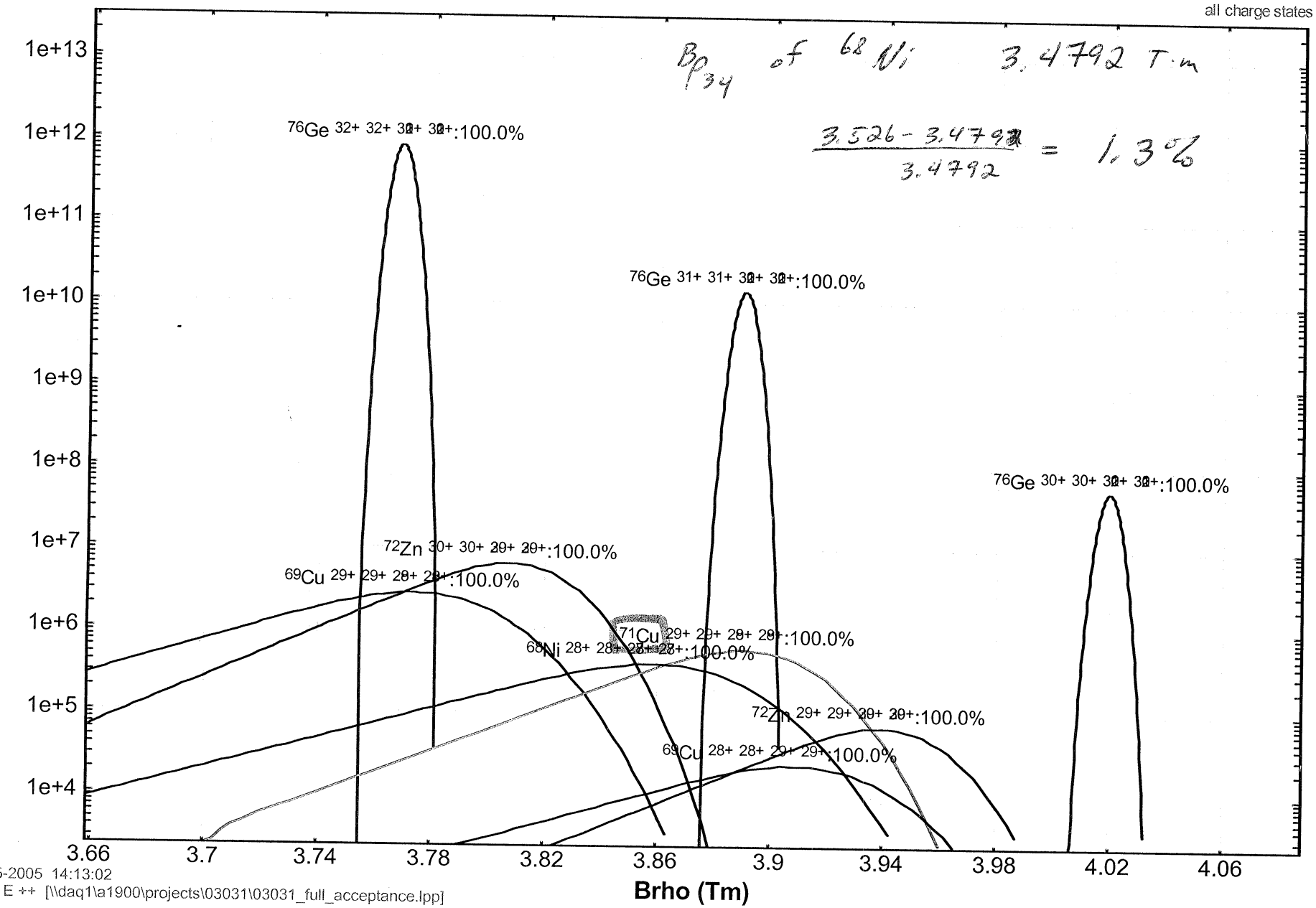
I2_slits-BrhoPlot

^{76}Ge (131.4 MeV/u) + Be (245.1 mg/cm^2); Settings on ^{71}Cu 29+ 29+ 29+ 29+; Config: DDSWDDMSMMM
dp/p=100.00% ; Wedges: Be (249.7 mg/cm^2); Brho(Tm): 3.8303, 3.8303, 3.5260, 3.5260



05-2005 14:13:02
S E ++ [\\daq1\a1900\projects\03031\03031_full_acceptance.lpp]

9 May 2005

∞ secondary beam tuning

.32 mg/cm² Al - viewer at S800 target position.

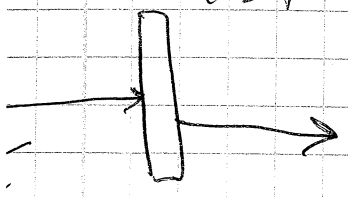
pected ^{64}Ni energy is 97.6 MeV

$B\rho(A/q=2) \sim 2.339$ Tm

$B\rho(A/q=2.5) = 2.9824$ Tm

$B\rho(^{64}Ni^{+28}) = 2.6458$, $B\rho(^{64}Ni^{+27}) = 2.2438$ Tm

Be (376 mg/cm²)



→ 2.657 Tm - should be

; 2 MeV $B\rho = 3.2885$ Tm

am ^{64}Ni is coming. $E(^{64}Ni) \sim 95.2$ MeV

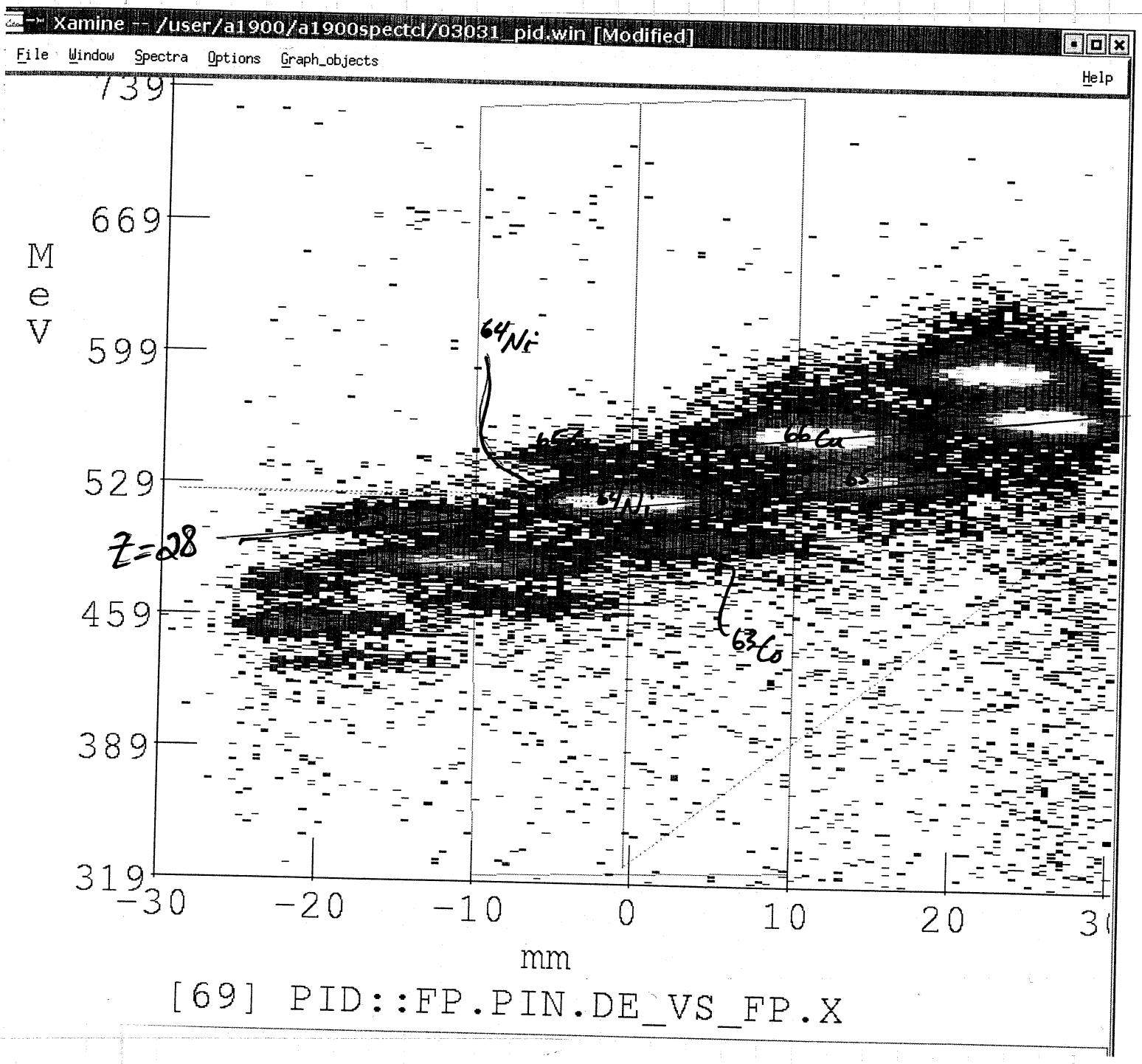
50% ~ purity

$I_{beam} \approx 300$ enA of ^{76}Ge $N(^{64}Ni) \sim 73000$ cps ~ $= 7.3 \cdot 10^4$

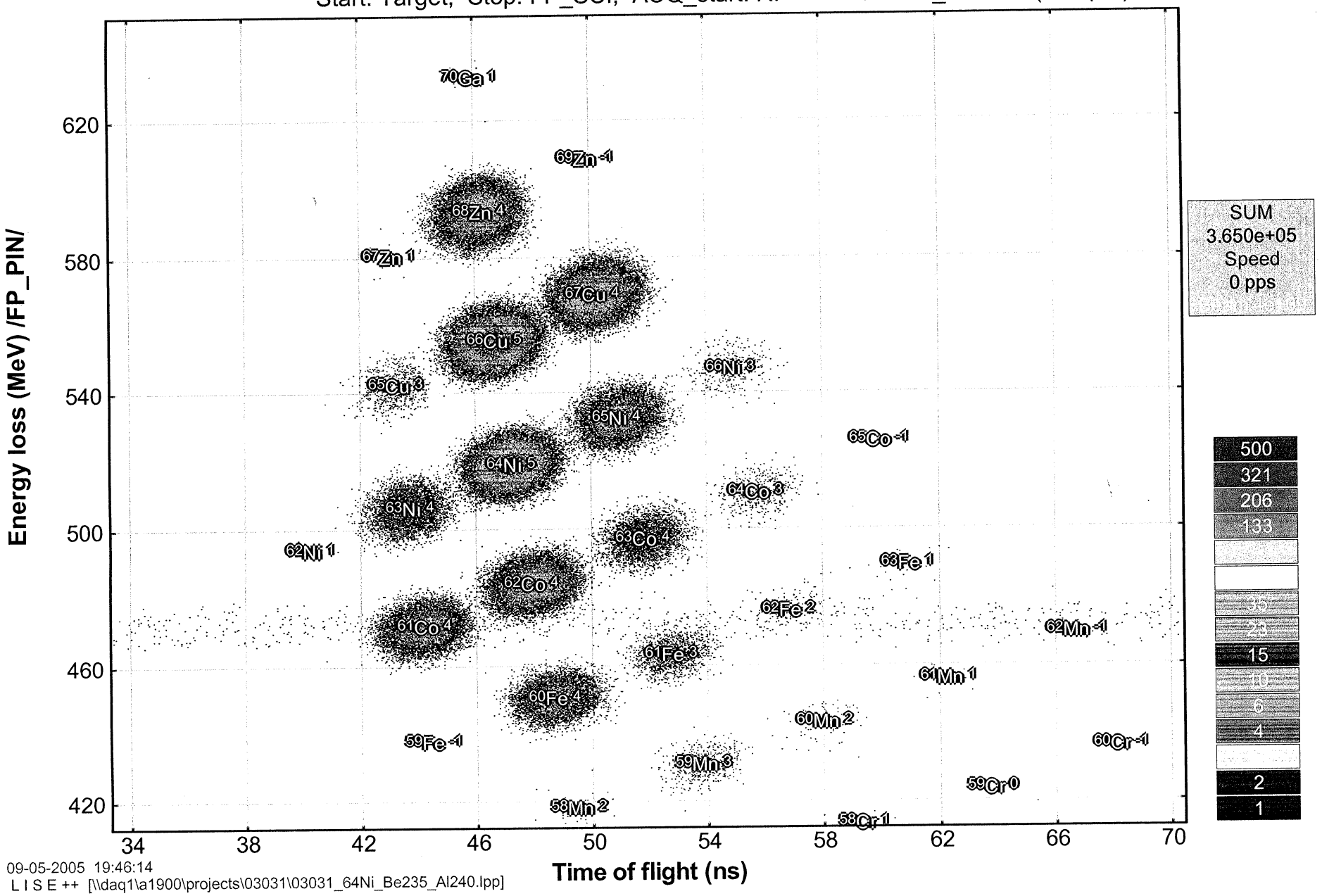
expected intensity $4.5 \cdot 10^5$

$\Delta p/p \sim 0.5\%$ for ^{64}Ni

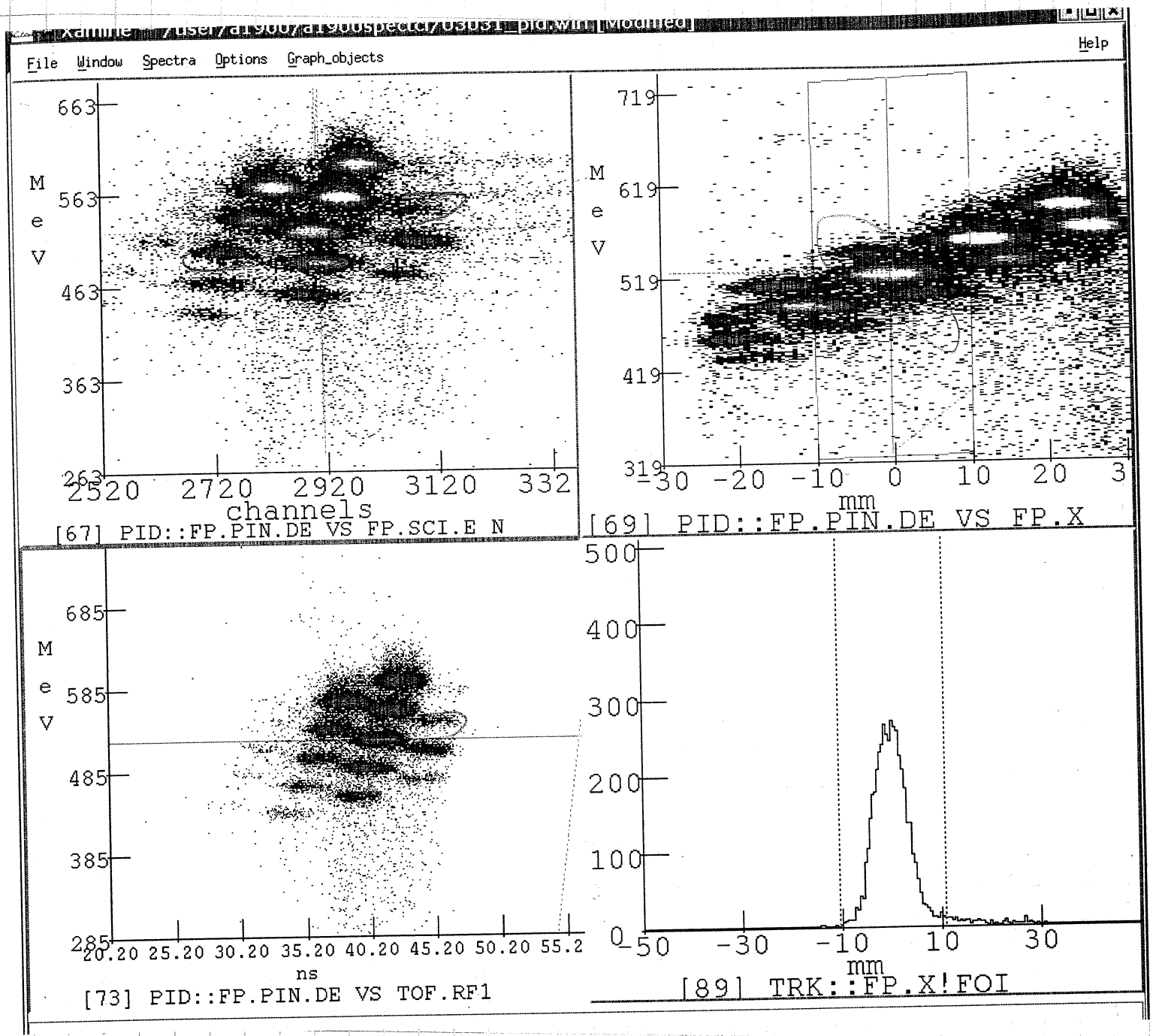
IDC comm 35956.23


Xamine -- /user/a1900/a1900spectcl/03031_pid.win [Modified]
File Window Spectra Options Graph_objects
Help
739
669
599
529
459
389
319
MeV
64Ni
66Cu
65
64Ni
Z=28
63Co
−30
−20
−10
0
10
20
mm
[69] PID::FP.PIN.DE_VS_FP.X

^{76}Ge (131.4 MeV/u) + Be (254.1 mg/cm^2); Settings on ^{64}Ni; Config: DSDSWDDMSMMM
dp/p=0.50% ; Wedges: Al (249.7 mg/cm^2); Brho(Tm): 3.6179, 3.6179, 3.3310, 3.3310
Start: Target; Stop: FP_SCI; ACQ_start: RF ** dE: FP_PIN - Si (470 µm) without charge states



09-05-2005 19:46:14
L I S E ++ [\\daq1\a1900\projects\03031\03031_64Ni_Be235_Al240.lpp]


File Window Spectra Options Graph_objects
Help
663
563
463
363
263
MeV
2520 2720 2920 3120 332
channels
[67] PID::FP.PIN.DE VS FP.SCI.E N
719
619
519
419
319
MeV
-30 -20 -10 0 10 20 3
mm
[69] PID::FP.PIN.DE VS FP.X
685
585
485
385
285
MeV
20.20 25.20 30.20 35.20 40.20 45.20 50.20 55.2
ns
[73] PID::FP.PIN.DE VS TOF.RF1
500
400
300
200
100
0
-50 -30 -10 10 30
mm
[89] TRK::FP.X!FOI

estimation by M. Portillo

Fragment	Z	↓ **28**	**28**	**28**	↓ **28**	**28**	**28**
	A	**68**	**68**	**68**	**64**	**64**	**64**
[mg/cm2]	Be target	235	376	423	235	376	423
[T-m]	Brho12	3.8156	3.6255	3.5586	3.6076	3.4349	3.3744
[T-m]	Brho34	**3.5374**	3.2208	3.1336	**3.3310**	3.0337	**2.9539**
[MeV/u]	E12	112.3	101.9	98.4	113.3	103.2	99.8
MeV/u]	E34	97.5	**81.5**	77.3	97.6	**81.6**	77.5
					-0.06198		*-0.19756*
mg/cm2]	Wedge_I2	240	300	300	240	300	300
mrad]	angle2	-0.523	-0.653	-0.6534	-0.52272	-0.6534	-0.6534
mm]	Slits_I2 /2	45	45	45	90	90	90
mm]	FP slits /2	5.2	5.1	5.2	4.8	5.2	5.1
ps/pnA]	rate	13489	15123	15370	457790	641670	684260
ps/pnA]	sum	40425	38020	39270.57	690550.9	916887.6	741837
	% Transmission	34.1%	23.9%	21.6%	55.2%	48.4%	45.8%
	frac purity	33.4%	39.8%	39.1%	66.3%	70.0%	92.2%

Calculations based on LISE 6.6.3, config: A1900_2005A, option: A1900_2005A

imary beam characteristics

0 MeV/u	Ge-76	
Zin	32	
Ain	76	75.9214
Qin	32	
Ein	**130**	MeV/u
Brho-in	4.0324	T-m
beta	0.4795	
f	22.49795828	MHz

idities of charge states of primary beam at sections 1 and 2 (Brho12)

	Q \ Eout --->	113.9	103.4	99.8	113.9	103.4	99.8
o [T-m]	32	**3.755**	**3.569**	**3.502**	3.755	3.569	3.502
	31	**3.876**	**3.684**	**3.615**	3.876	3.684	3.615
	30	4.005	3.807	3.736	4.005	3.807	3.736
	29	4.144	3.938	3.864	4.144	3.938	3.864

30+

37.5 epA in FC

Run #3 Transm. Fin Check for ^{64}Ni

172 sec 10180/

S800/A1900 = 48.6 k / 73400 =

total trans. 66%

It was made by PPAC

Run #4 I72QA 0.792 for run #3

40epA I18QA } the ratio in optic

FC gibes the same 40 epA

172 sec 9580 transmition now

42.8 ps / pnA

$\frac{42.8}{73400} \sim 58\%$

We are going back with optics

slits to 10 - full gap

Run #5 transmission check at slits 10 mm

purity estimation is 82% for ^{64}Ni for

this run and previous run #4

for.

~~[illegible]~~ Started PPAC in for incoming momentum measurement

$^{64}Ni \sim 82\%$, ^{62}Co and Cu^{66} — contamination

21:30

Beam is off due to focal plane detector problem

To center the beam, $B\rho = 3.26$. E/A (beam) = 93.6 MeV/A

For night 10 May

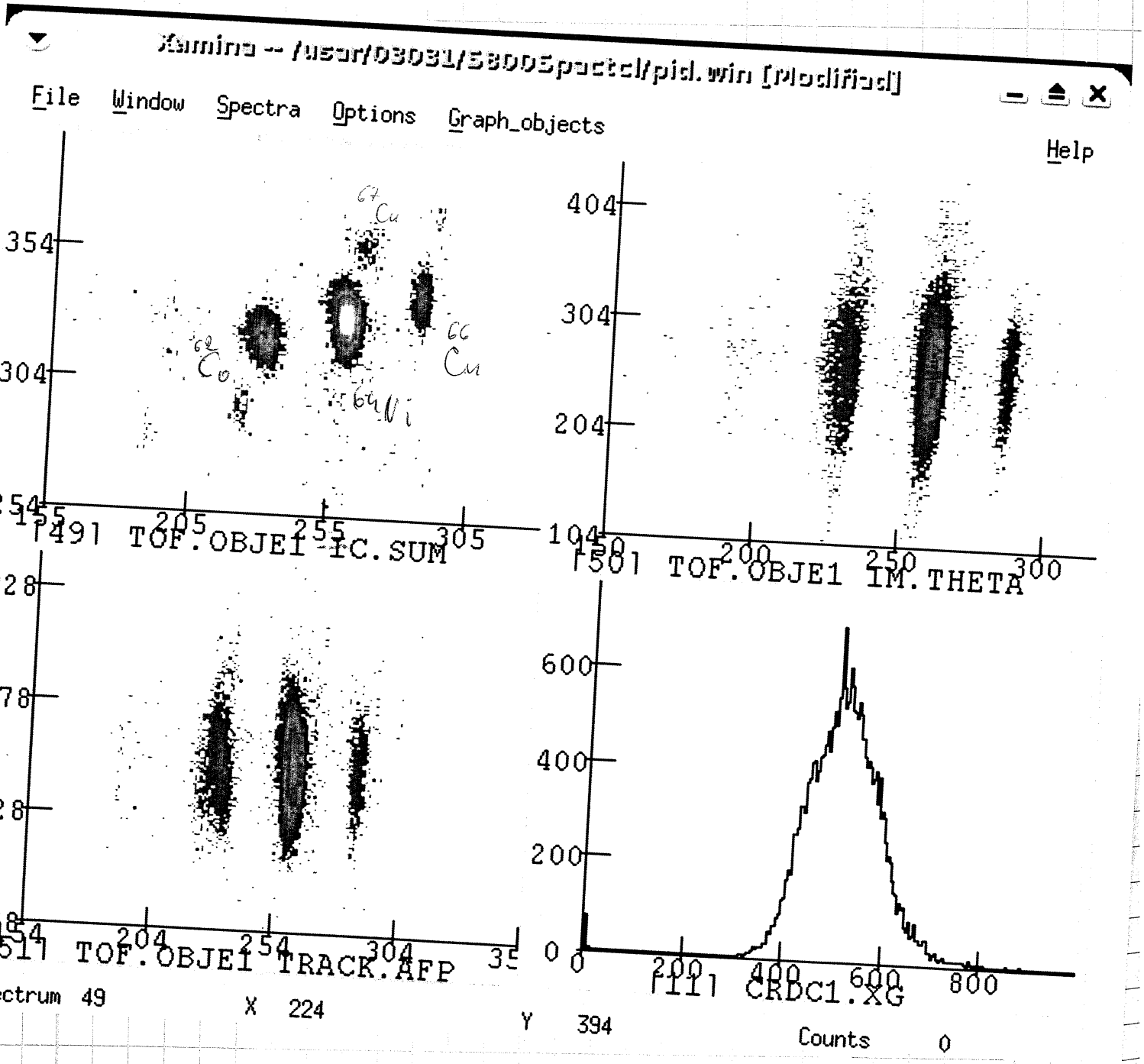
Br:	Fragments With rate ~ events /per sec:	Total Rate:	Notes:
2.5	^{64}Cu $^{63,62-60}Ni$ $^{59-62}Co$ $^{57-59}Fe$ $^{54-57}Mn$ $^{51-53}Cr$ $^{50-52}V$ $^{48-50}Ti$ $^{41-45}Ca$	1.2e^2	$^{61, 62,63}Ni^{+28}$
2.55		200 pps	
2.6096	$^{64}Ni^{+28}$ ^{63}Ni+27 ^{61,62,63}Co+27 $^{58, 59,60}$Fe+26 $^{53-54}Mn$ $^{53-55}Cr$ 48Ti 43,44Ca	4e^4	Charge state of $^{64}Ni^{+28}$
2.65		65	
2.7583	$^{60-63}Co$ 0.5pps $^{61,62}Fe$ $^{58-59}Mn$ $^{55-56}Cr$ ^{53}V	12	Dp/p less 2%

Run #6 $\Delta p/p \sim 0.5$ (A1900)

$\Delta p/p \sim 5\%$ (S800)

Br = 2.57

End run 3:40



```
A1900 "Print10May05_03h26.txt"   Tuesday 03:26:54 2005-05-10  A1900
***                    Run 6 - Unreacted Ni64 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   3k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09885 m    0.00107 % (3.61786 Tm)
Seg 2:  3.61790 Tm  1.16652 T  3.10148 m    3.10145 m   -0.00099 % (3.61794 Tm)
Seg 3:  3.33100 Tm  1.07629 T  3.09502 m    3.09489 m   -0.00418 % (3.33114 Tm)
Seg 4:  3.33100 Tm  1.07561 T  3.09683 m    3.09684 m    0.00013 % (3.33100 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.57881 Tm
Z108DS              0.47270 T  7.04675 m    7.04675 m   -0.00000 %
D140DS              0.00145 T  3.13614 m 2282.62069 m 72684.39243 %
D165DS              0.34969 T  9.46362 m    9.46492 m    0.01373 %
Z200DS              1.04060 T  3.14194 m    3.13800 m   -0.12530 %
Z205DS              1.04093 T  3.14204 m    3.13701 m   -0.16014 %
Z223DS              1.05261 T  3.09708 m    3.09600 m   -0.03473 %
Z228DS              1.03053 T  3.17034 m    3.16234 m   -0.25237 %
Z265DS              0.92109 T  2.80280 m    2.79974 m   -0.10920 %
Z269DS              0.92302 T  2.80280 m    2.79389 m   -0.31807 %
Q001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Q015TL: [4"]Be 235, Z016TL [0"] out
Q030BC Beam Stop: -126.22 mm
Q037L,R:   -5.70,   8.70 mm; Z037DC:  out
Q057MS: 1.5 pct, Z061MS:  out
Q059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Q082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Q101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
Q110 Cent,Gap:    0.01,  -0.04 mm; D110    0.02,  10.00 mm F110    0.01,   0.69
Q110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
```

Total obj. sci ~85000 cps

Run #7

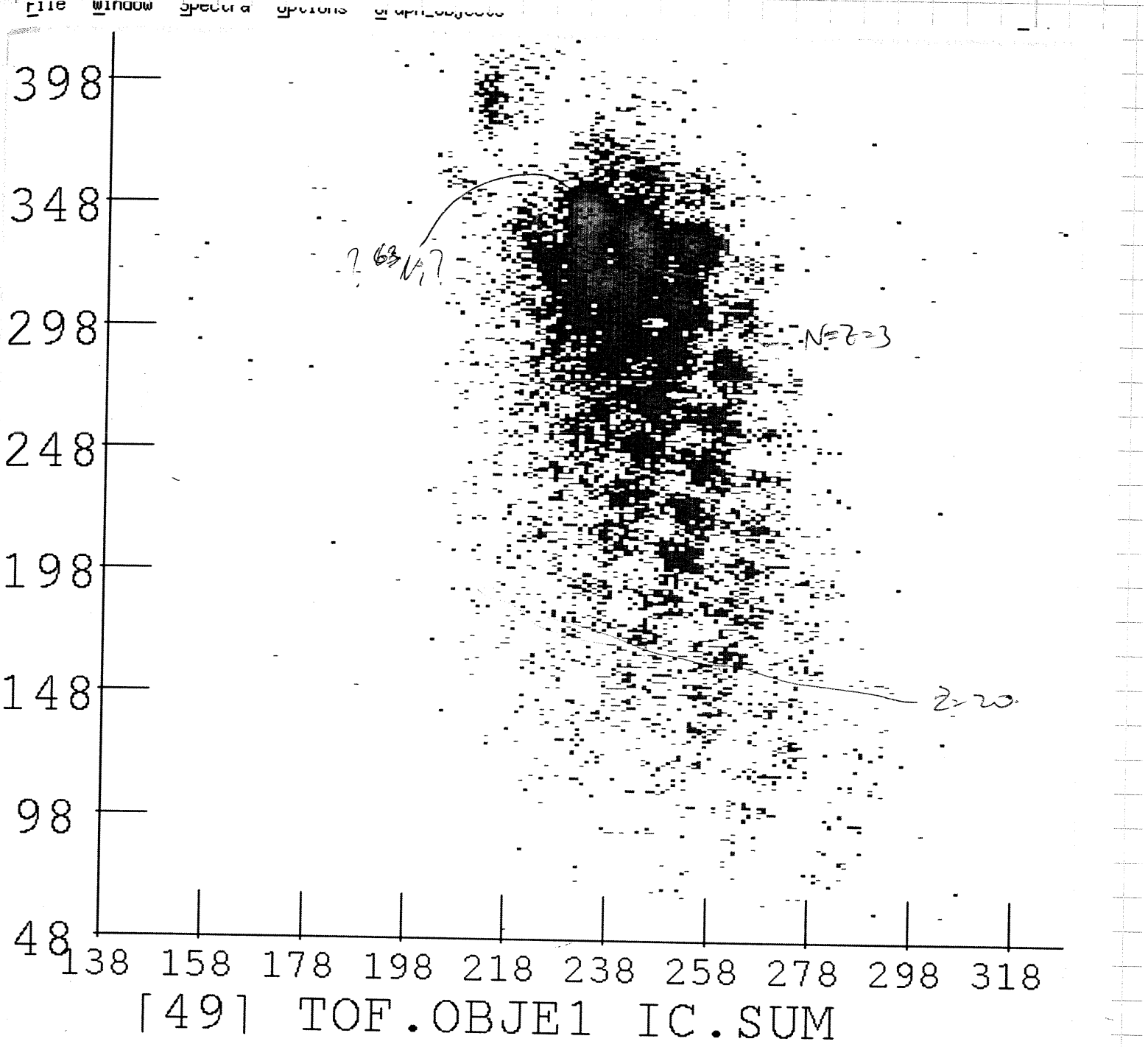
big tail of the beam is coming

dead time ~ 60%

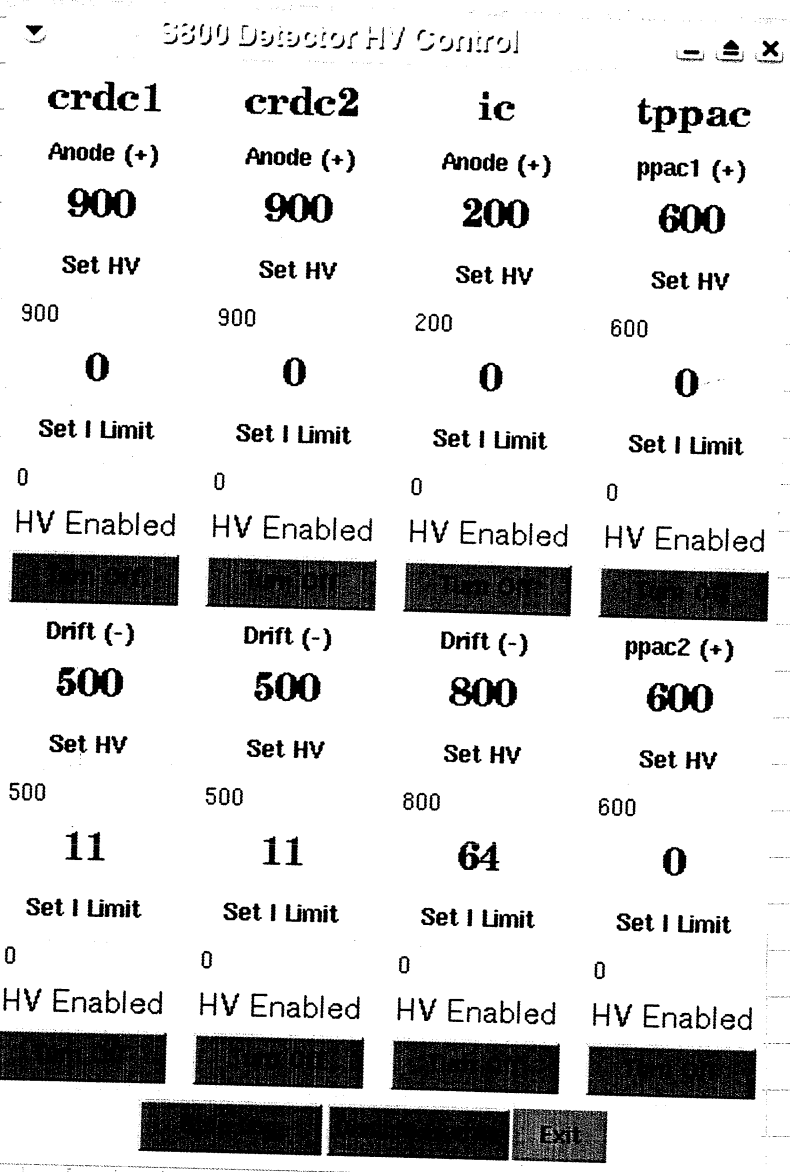
```
A1900 "Print10May05_04h16.txt"   Tuesday 04:16:36 2005-05-10  A1900
***                          64Ni run7 Br-2.684 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09885 m    0.00110 % (3.61786 Tm)
Seg 2:  3.61790 Tm  1.16652 T  3.10148 m    3.10144 m   -0.00129 % (3.61795 Tm)
Seg 3:  3.33100 Tm  1.07630 T  3.09502 m    3.09488 m   -0.00452 % (3.33115 Tm)
Seg 4:  3.33100 Tm  1.07562 T  3.09683 m    3.09683 m   -0.00001 % (3.33100 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.68391 Tm
Z108DS              0.47270 T  7.04675 m    7.04675 m   -0.00000 %
D140DS              0.00145 T  3.13614 m 2282.62069 m 72684.39243 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.04060 T  3.14194 m    3.13800 m   -0.12530 %
I205DS              1.04093 T  3.14204 m    3.13701 m   -0.16014 %
I223DS              1.05260 T  3.09708 m    3.09603 m   -0.03378 %
I228DS              1.03051 T  3.17034 m    3.16240 m   -0.25044 %
I265DS              0.95832 T  2.80280 m    2.80064 m   -0.07704 %
I269DS              0.95830 T  2.80280 m    2.80070 m   -0.07495 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -5.70,    8.70 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
```

New $B\rho = 2.4697$

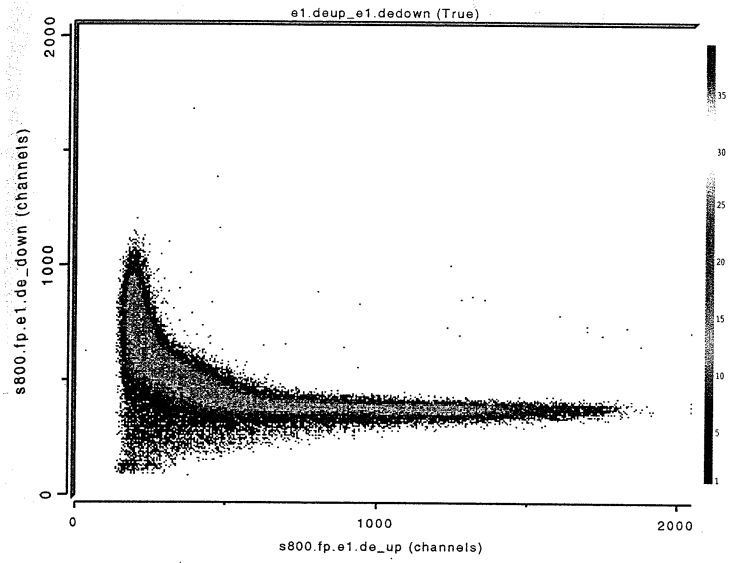
run #8

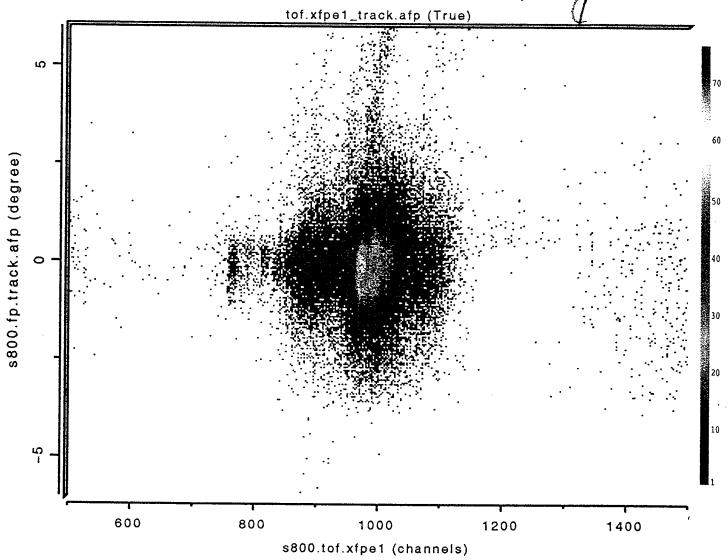


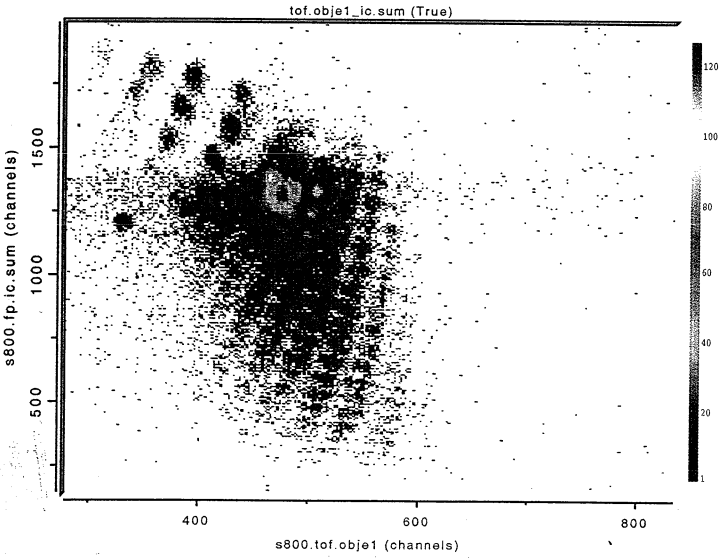
Spectrum 49 X 293 Y 48 Counts 0

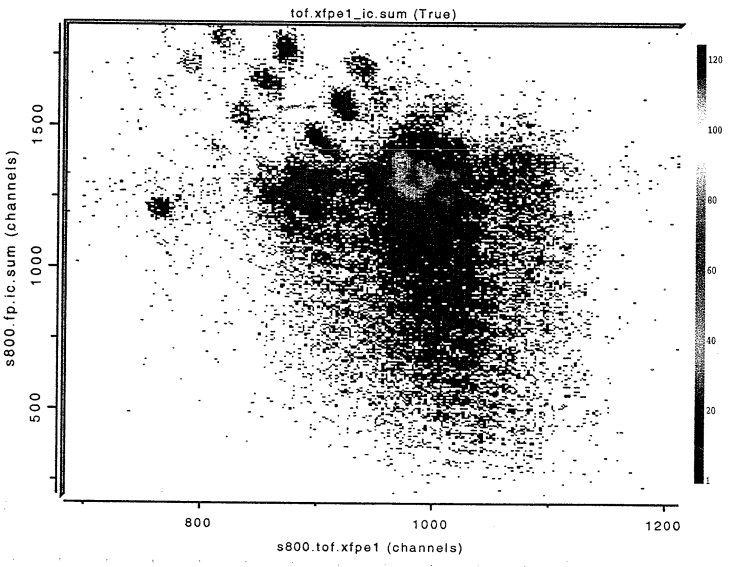

S800 Detector HV Control
crdc1
Anode (+)
900
Set HV
900
0
Set I Limit
0
HV Enabled
Drift (-)
500
Set HV
500
11
Set I Limit
0
HV Enabled
crdc2
Anode (+)
900
Set HV
900
0
Set I Limit
0
HV Enabled
Drift (-)
500
Set HV
500
11
Set I Limit
0
HV Enabled
ic
Anode (+)
200
Set HV
200
0
Set I Limit
0
HV Enabled
Drift (-)
800
Set HV
800
64
Set I Limit
0
HV Enabled
tppac
ppac1 (+)
600
Set HV
600
0
Set I Limit
0
HV Enabled
ppac2 (+)
600
Set HV
600
0
Set I Limit
0
HV Enabled
Exit

4^{20} without gate on Ni beam May 10

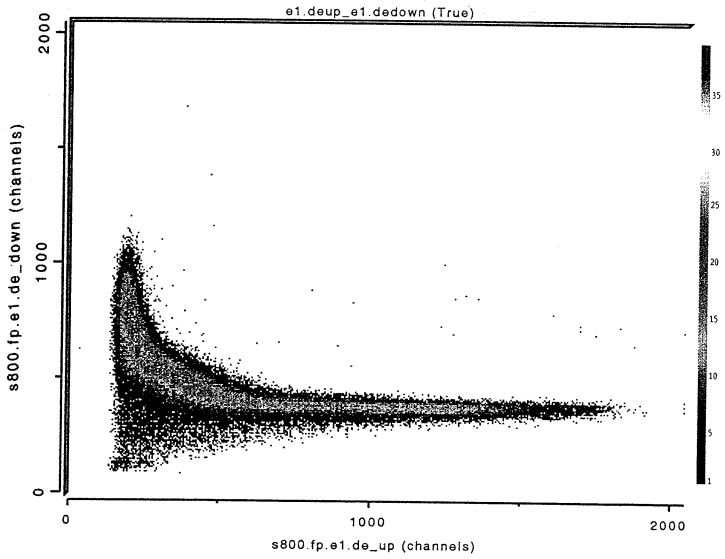


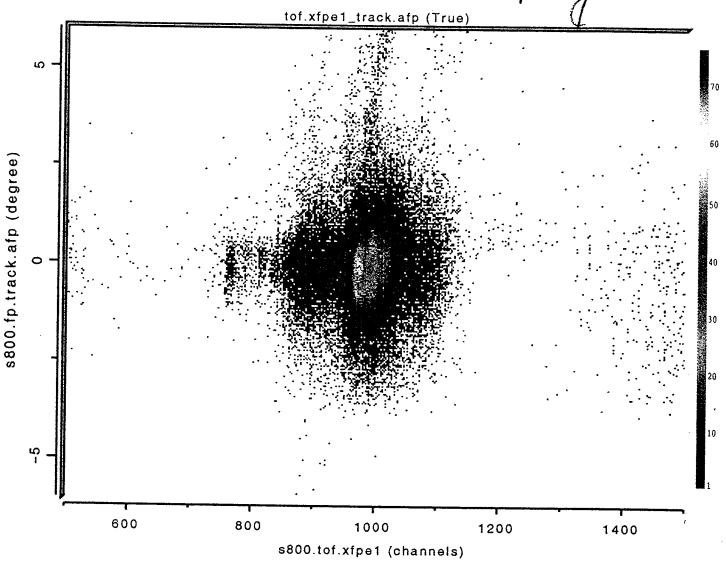


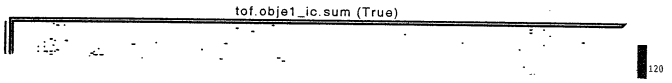


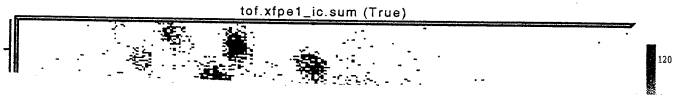


4^{20} Without gate on Ni beam May 10







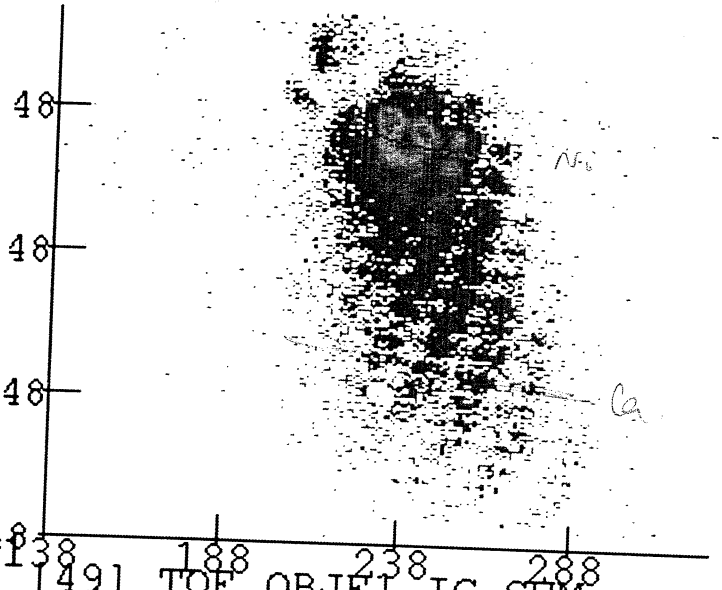


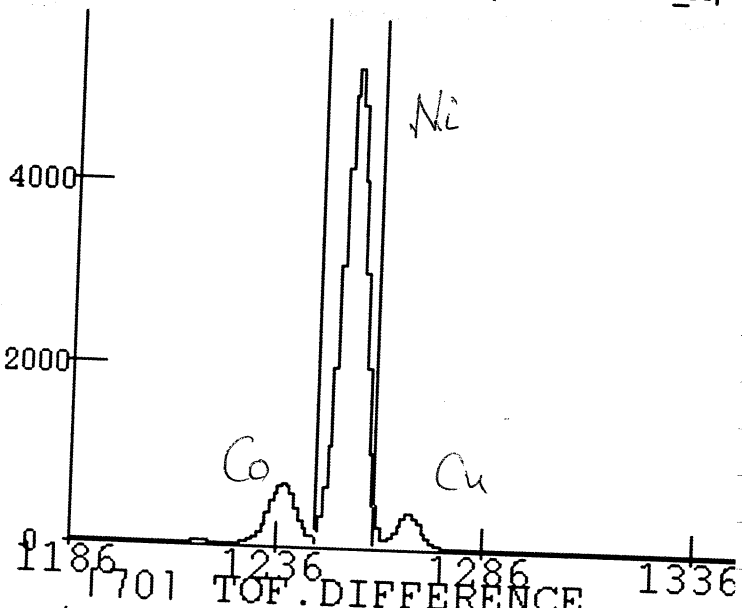
4^{20}

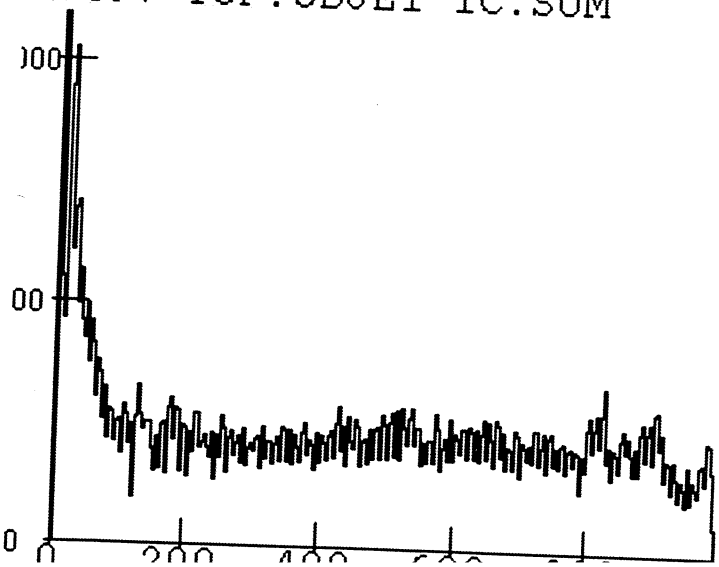
Xamine -- /user/03031/S800Spectcl/pid.win [Modified]

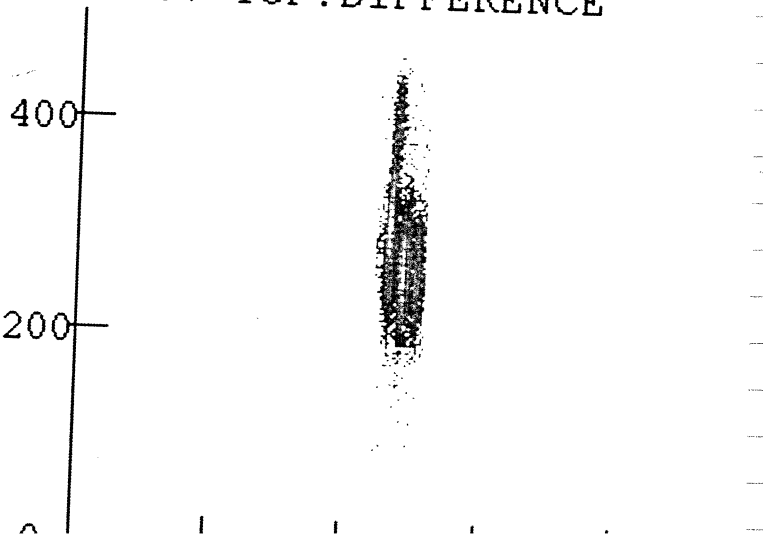
File Window Spectra Options Graph_objects Help

May 10









Run #9 mask CRD1

Run #10 mask CRD2

Run #11 readout crashed

Run #12

```
A1900 "Print10May05_04h58.txt"   Tuesday 04:58:42 2005-05-10  A1900
***          run11 Br=2.4627 the sam as run8 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09885 m    0.00093 % (3.61787 Tm)
Seg 2:  3.61790 Tm  1.16652 T  3.10148 m    3.10144 m   -0.00120 % (3.61794 Tm)
Seg 3:  3.33100 Tm  1.07630 T  3.09502 m    3.09486 m   -0.00496 % (3.33117 Tm)
Seg 4:  3.33100 Tm  1.07562 T  3.09683 m    3.09682 m   -0.00032 % (3.33101 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.46269 Tm
Z108DS              0.47270 T  7.04675 m    7.04675 m   -0.00000 %
D140DS              0.00135 T  3.13614 m 2451.70370 m 78075.82891 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.04058 T  3.14194 m    3.13806 m   -0.12338 %
I205DS              1.04094 T  3.14204 m    3.13698 m   -0.16110 %
I223DS              1.05260 T  3.09708 m    3.09603 m   -0.03378 %
I228DS              1.03054 T  3.17034 m    3.16231 m   -0.25334 %
I265DS              0.88324 T  2.80280 m    2.78825 m   -0.51923 %
I269DS              0.88099 T  2.80280 m    2.79537 m   -0.26516 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -5.70,   8.70 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74   98.98:    0.00   98.39
```

03031 Run Sheet

Run# 13	S800		
Date 10 /05/05	***Begin:*** 5:25		***End:***
Target: (Be) Ta	**Br=** 2.9627 **Tm**	dp/p= 1.5 %	Scaler ____ Master.Live/Master 0.919
^{64}Ni ☑ **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
^{68}Ni ☐ **Intensity**_____**pps**			
Who's on shift	Andy, Bill, Sergi, Betty, Mark		

```
 900 "Print10May05_05h35.txt"   Tuesday 05:35:12 2005-05-10  A1900
 *                                        Run13 ***
 :pt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
 eam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
 Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
 .500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09884 m    0.00079 % (3.61787 Tm)
Seg 2:  3.61790 Tm  1.16652 T  3.10148 m    3.10144 m   -0.00131 % (3.61795 Tm)
Seg 3:  3.33100 Tm  1.07630 T  3.09502 m    3.09487 m   -0.00469 % (3.33116 Tm)
Seg 4:  3.33100 Tm  1.07562 T  3.09683 m    3.09681 m    0.00000 % (3.33102 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.46269 Tm
Z108DS              0.47250 T  7.04675 m    7.04974 m    0.04233 %
D140DS              0.00145 T  3.13614 m 2282.62069 m 72684.39243 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.04060 T  3.14194 m    3.13800 m   -0.12530 %
I205DS              1.04095 T  3.14204 m    3.13695 m   -0.16205 %
I223DS              1.05260 T  3.09708 m    3.09603 m   -0.03378 %
I228DS              1.03054 T  3.17034 m    3.16231 m   -0.25334 %
I265DS              0.88321 T  2.80280 m    2.78834 m   -0.51585 %
I269DS              0.88099 T  2.80280 m    2.79537 m   -0.26516 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
```

03031 Run Sheet

Run# 14	Data Recording S800		
Date 10 /05/05	***Begin:*** 5:56		***End:*** 6:17
Target: (Be) Ta	**Br=**____ Tm 2.38	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.587
^{64}Ni ✓ **Intensity**_____**pps** ^{68}Ni **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
Who's on shift	Andy, Bill		

```
A1900 "Print10May05_05h53.txt"   Tuesday 05:53:41 2005-05-10  A1900
***                                        run14 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09885 m    0.00085 % (3.61787 Tm)
Seg 2:  3.61790 Tm  1.16652 T  3.10148 m    3.10146 m    0.00000 % (3.61792 Tm)
Seg 3:  3.33100 Tm  1.07629 T  3.09502 m    3.09488 m   -0.00440 % (3.33115 Tm)
Seg 4:  3.33100 Tm  1.07562 T  3.09683 m    3.09681 m   -0.00058 % (3.33102 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.38000 Tm
Z108DS              0.47270 T  7.04675 m    7.04675 m   -0.00000 %
D140DS              0.00135 T  3.13614 m 2451.70370 m 78075.82891 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.04060 T  3.14194 m    3.13800 m   -0.12530 %
I205DS              1.04094 T  3.14204 m    3.13698 m   -0.16110 %
I223DS              1.05260 T  3.09708 m    3.09603 m   -0.03378 %
I228DS              1.03054 T  3.17034 m    3.16231 m   -0.25334 %
I265DS              0.85364 T  2.80280 m    2.78806 m   -0.52588 %
I269DS              0.85150 T  2.80280 m    2.79507 m   -0.27588 %
```

03031 Run Sheet

Run# 15	S800		
Date 10/05/05	***Begin:*** 6:12		***End:*** 6:37
Target: (Be) Ta	**Br=** 2.38 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.618
^{64}Ni Intensity____pps ✓ ^{68}Ni Intensity____pps ☐	Comments: Do not forget to print Barney! code 1 and HV tripped at run start.		
Who's on shift	Andy, B.11		

```
A1900 "Print10May05_06h16.txt"   Tuesday 06:16:39 2005-05-10  A1900
***                                          run15 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09885 m    0.00081 % (3.61787 Tm)
Seg 2:  3.61790 Tm  1.16651 T  3.10148 m    3.10147 m   -0.00042 % (3.61792 Tm)
Seg 3:  3.33100 Tm  1.07630 T  3.09502 m    3.09487 m   -0.00473 % (3.33116 Tm)
Seg 4:  3.33100 Tm  1.07563 T  3.09683 m    3.09680 m   -0.00102 % (3.33103 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.38000 Tm
Z108DS              0.47250 T  7.04675 m    7.04974 m    0.04233 %
D140DS              0.00135 T  3.13614 m 2451.70370 m 78075.82891 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.04057 T  3.14194 m    3.13809 m   -0.12242 %
I205DS              1.04093 T  3.14204 m    3.13701 m   -0.16014 %
I223DS              1.05261 T  3.09708 m    3.09600 m   -0.03473 %
I228DS              1.03053 T  3.17034 m    3.16234 m   -0.25237 %
I265DS              0.85365 T  2.80280 m    2.78803 m   -0.52705 %
I269DS              0.85152 T  2.80280 m    2.79500 m   -0.27823 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -5.70,   8.70 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil PC 404, F110DC
```

03031 Run Sheet

Run# 16	S800	
Date 10/05/05	***Begin:*** 6:37	***End:*** 6:56
Target: (Be) Ta	**Br=** 2.38 **Tm**	dp/p= 1.5% Scaler ____ Master.Live/Master 0.61
^{64}Ni ✓ **Intensity**_____**pps** ^{68}Ni **Intensity**_____**pps**	Comments: Do not forget to print Barney! Beam rate is dropping off.	
Who's on shift	Andy, Bill	

```
A1900 "Print10May05_06h38.txt"   Tuesday 06:38:44 2005-05-10  A1900
***                                        run16 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09884 m    0.00074 % (3.61787 Tm)
Seg 2:  3.61790 Tm  1.16651 T  3.10148 m    3.10147 m   -0.00028 % (3.61791 Tm)
Seg 3:  3.33100 Tm  1.07630 T  3.09502 m    3.09487 m   -0.00488 % (3.33116 Tm)
Seg 4:  3.33100 Tm  1.07563 T  3.09683 m    3.09680 m    0.00000 % (3.33103 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.38000 Tm
Z108DS              0.47250 T  7.04675 m    7.04974 m    0.04233 %
D140DS              0.00145 T  3.13614 m 2282.62069 m 72684.39243 %
D165DS              0.34969 T  9.46362 m    9.46492 m    0.01373 %
I200DS              1.04059 T  3.14194 m    3.13803 m   -0.12434 %
I205DS              1.04093 T  3.14204 m    3.13701 m   -0.16014 %
I223DS              1.05257 T  3.09708 m    3.09612 m   -0.03093 %
I228DS              1.03054 T  3.17034 m    3.16231 m   -0.25334 %
I265DS              0.85364 T  2.80280 m    2.78806 m   -0.52588 %
I269DS              0.85151 T  2.80280 m    2.79503 m   -0.27705 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -5.70,   8.70 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
```

03031 Run Sheet

Run# 17	S800		
Date 10/05/05	***Begin:*** 7:08		***End:***
Target: (Be) Ta	**Br=** 2.30 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.887
^{64}Ni ☑ **Intensity**____**pps**	Comments: Do not forget to print Barney! D1 dipole on S800 analysis line died.		
^{68}Ni ☐ **Intensity**____**pps**	Bad		
Who's on shift	Andy, Bill		

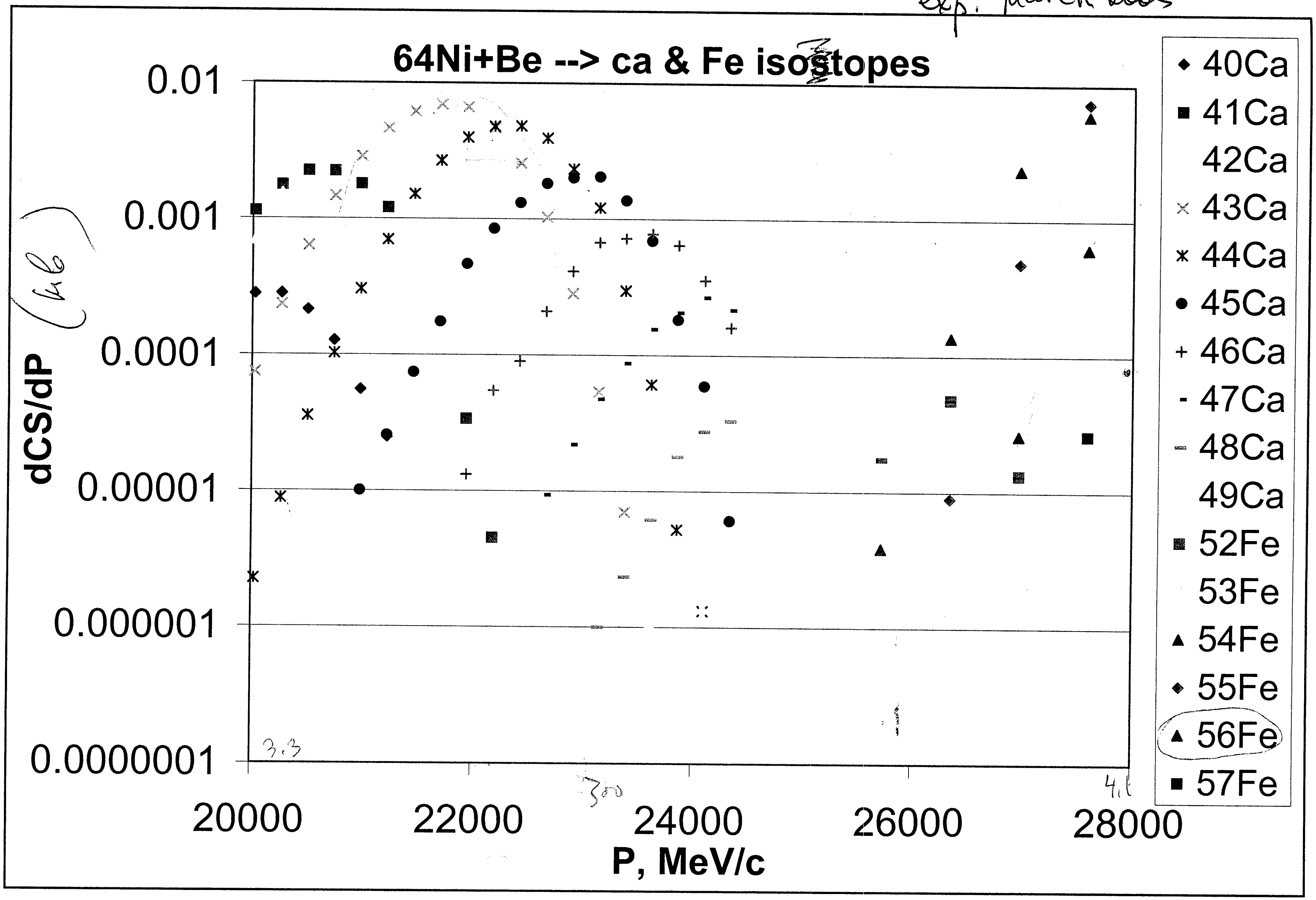
```
A1900 "Print10May05_07h11.txt"   Tuesday 07:11:16 2005-05-10  A1900
***                                    run17 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.61790 Tm  1.16750 T  3.09882 m    3.09886 m    0.00113 % (3.61786 Tm)
Seg 2:  3.61790 Tm  1.16651 T  3.10148 m    3.10147 m   -0.00025 % (3.61791 Tm)
Seg 3:  3.33100 Tm  1.07629 T  3.09502 m    3.09488 m   -0.00440 % (3.33115 Tm)
Seg 4:  3.33100 Tm  1.07563 T  3.09683 m    3.09680 m   -0.00106 % (3.33104 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.30000 Tm
Z108DS              0.47250 T  7.04675 m    7.04675 m   -0.00000 %
D140DS              0.00135 T  3.13614 m 2451.70370 m 78075.82891 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.04057 T  3.14194 m    3.13809 m   -0.12242 %
I205DS              1.04092 T  3.14204 m    3.13704 m   -0.15918 %
I223DS              1.05262 T  3.09708 m    3.09597 m   -0.03568 %
I228DS              1.03054 T  3.17034 m    3.16231 m   -0.25334 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -5.70,    8.70 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
```

03031 Run Sheet

Run# 18	S800		
Date 10 /05/05	***Begin:***		***End:***
Target: (Be) Ta	**Br=** 2.3 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master___
^{64}Ni ☑ **Intensity**_____**pps** ^{68}Ni ☐ **Intensity**_____**pps**	Comments: Do not forget to print Barney! nothing!		
Who's on shift			

```
A1900 "Print10May05_13h14.txt"   Tuesday 13:14:06 2005-05-10  A1900
***                        Ni-68 Pilot targets ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  10k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.49540 Tm  1.12797 T  3.09882 m    3.09884 m    0.00000 % (3.49538 Tm)
Seg 2:  3.49540 Tm  1.12701 T  3.10148 m    3.10149 m    0.00033 % (3.49539 Tm)
Seg 3:  3.53640 Tm  1.14274 T  3.09502 m    3.09466 m   -0.01155 % (3.53681 Tm)
Seg 4:  3.53640 Tm  1.14204 T  3.09683 m    3.09655 m  100.00000 % (3.53672 Tm)
Seg 5:  3.30980 Tm
Seg 6:  3.26541 Tm
Seg 7:  3.25889 Tm
Seg 8:  2.30000 Tm
Z108DS              0.47270 T  7.04675 m    7.48128 m    6.16632 %
D140DS              0.00145 T  3.13614 m 2282.62069 m 72684.39243 %
D165DS              0.34981 T  9.46362 m    9.46166 m   -0.02071 %
I200DS              1.03961 T  3.14194 m    3.14099 m   -0.03019 %
I205DS              1.04095 T  3.14204 m    3.13695 m   -0.16205 %
I223DS              1.05263 T  3.09708 m    3.09595 m   -0.03663 %
I228DS              1.03053 T  3.17034 m    3.16234 m   -0.25237 %
I265DS              0.82488 T  2.80280 m    2.78828 m   -0.51790 %
I269DS              0.82295 T  2.80280 m    2.79482 m   -0.28459 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [6"]RW Al 26
Z015TL: [5"]Be 376, Z016TL [4"]RW Al 34
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -6.00,   6.00 mm; Z037DC:  out
Z057MS:  out, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [2"]viewer
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC:  out, F110DC:  out
```

Ni
exp. march 2005



Run Summary

Run #	Beam	S800 Brho	A1900 Dp/p	scint scal	comments
1	Ni64				
2	Ni64				
3	Ni64				
4	Ni64				
5	Ni64				
6	Ni64	2.5788	1.50%		
7	Ni64	2.6839	1.50%		
8	Ni64	2.4627	1.50%		PID seen
9	Ni64	2.4627	1.50%		mask CRD
10	Ni64	2.4627	1.50%		mask CRD
11	Ni64	2.4627	1.50%		readout cra
12	Ni64	2.4627	1.50%		
13	Ni64	2.4627	1.50%		
14	Ni64	2.38	1.50%		
15	Ni64	2.38	1.50%		
16	Ni64	2.38	1.50%		
17	Ni64	2.3	1.50%		

for scalar

1. Go S800scaler directi

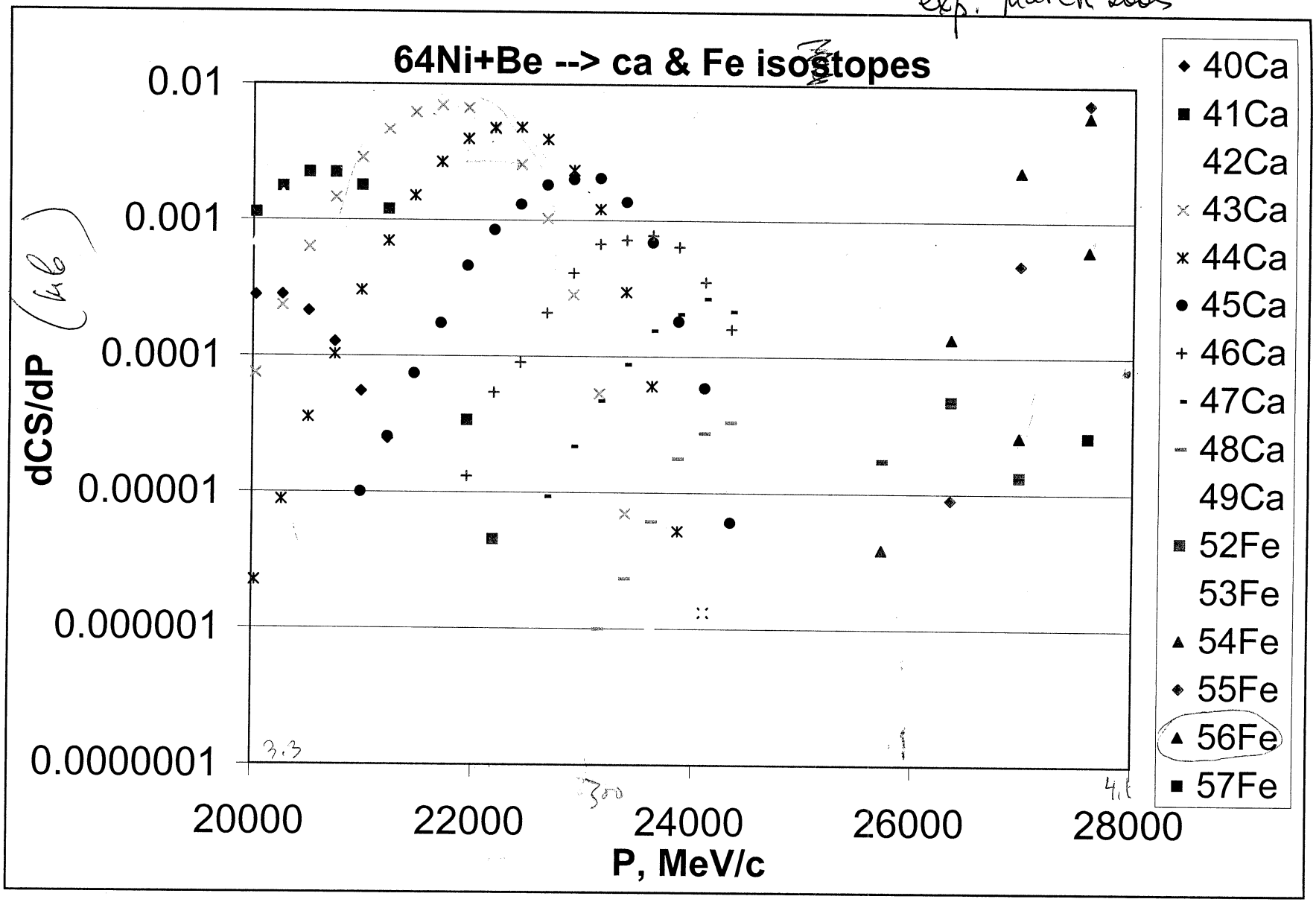
2. maketxt.cpp - mo

g++ maketxt.cpp

a.out

less

IVC
exp. march 2005



(46)

last exp. with primary beam ^{64}Ni

Run Summary

Run #	Beam	S800 Brho	A1900 Dp/p	scint scal	comments
1	Ni64				
2	Ni64				
3	Ni64				
4	Ni64				
5	Ni64				
6	Ni64	2.5788	1.50%		
7	Ni64	2.6839	1.50%		
8	Ni64	2.4627	1.50%		PID seen
9	Ni64	2.4627	1.50%		mask CRD
10	Ni64	2.4627	1.50%		mask CRD
11	Ni64	2.4627	1.50%		readout cra
12	Ni64	2.4627	1.50%		
13	Ni64	2.4627	1.50%		
14	Ni64	2.38	1.50%		
15	Ni64	2.38	1.50%		
16	Ni64	2.38	1.50%		
17	Ni64	2.3	1.50%		

for scaler

1. Go S800 scaler directory
2. make txt.cpp - mac

g++ make txt.cpp

a.out

less

54 ^{68}Ni - is coming

97.73 MeV/A → 96.62 MeV (after Sci)

3.5213 Tm after Scint.

95.4982 after object scint.

$B\rho = 3.4939$ →

→ 92.8532 MeV/A $B\rho = 2.8823$ Tm

$I = 120$ pps after 1K

$dp/p = 0.5\%$

FC 1.050 pA

$^{68}Ni^{+28}$ after target $B\rho = 2.8823$ Tm

$^{68}Ni^{+27}$ 2.9891 Tm

---

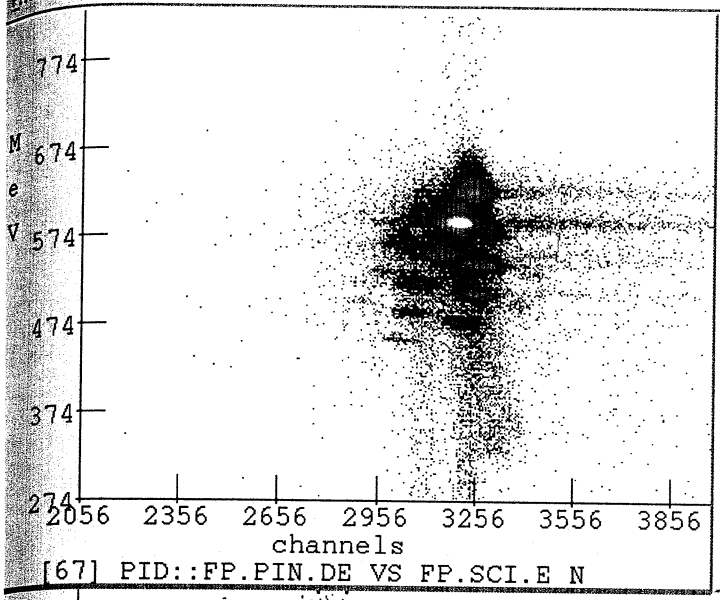
^{67}Ni 2.82647

2.7975 Th after Be(376 mg/cm^2)

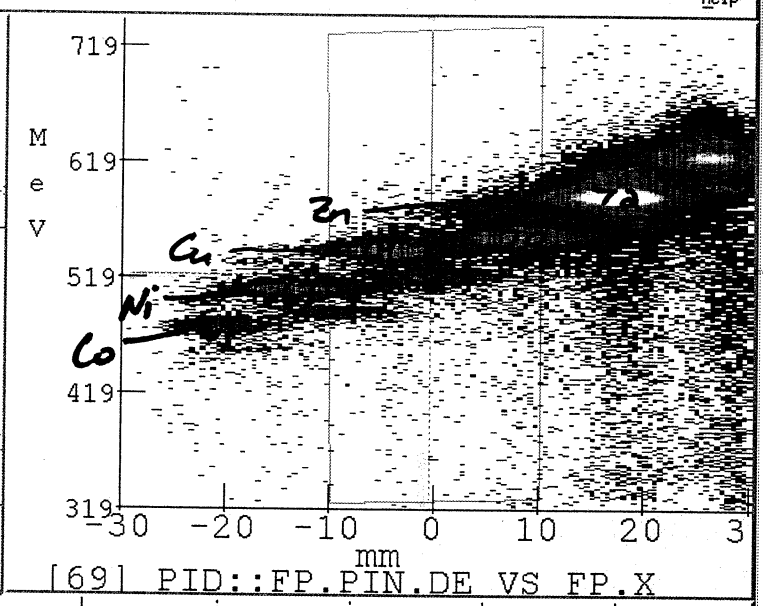
2.7975

$E_{i\,in}(^{68}Ni)$ =

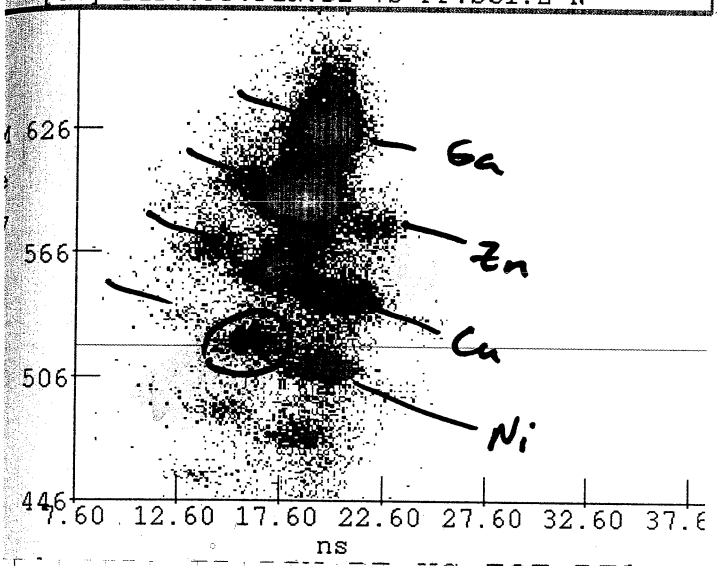
Window Spectra Options Graph_objects Help

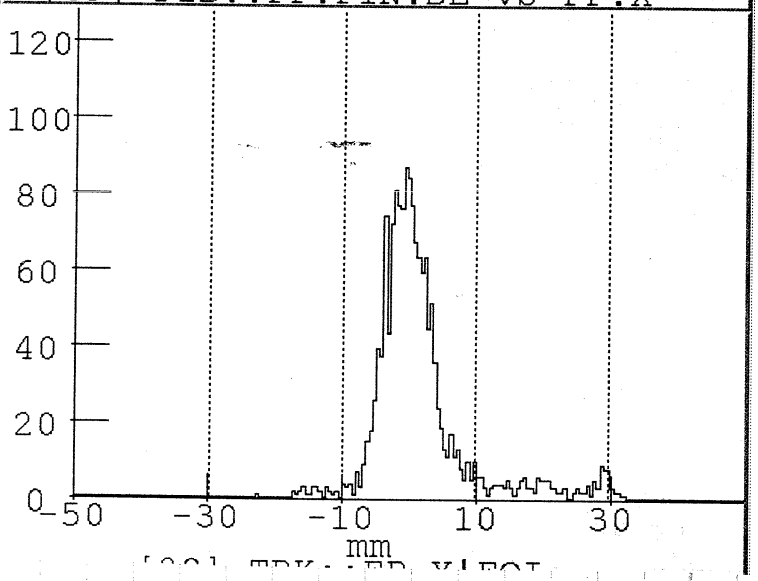


[67] PID::FP.PIN.DE VS FP.SCI.E N



[69] PID::FP.PIN.DE VS FP.X





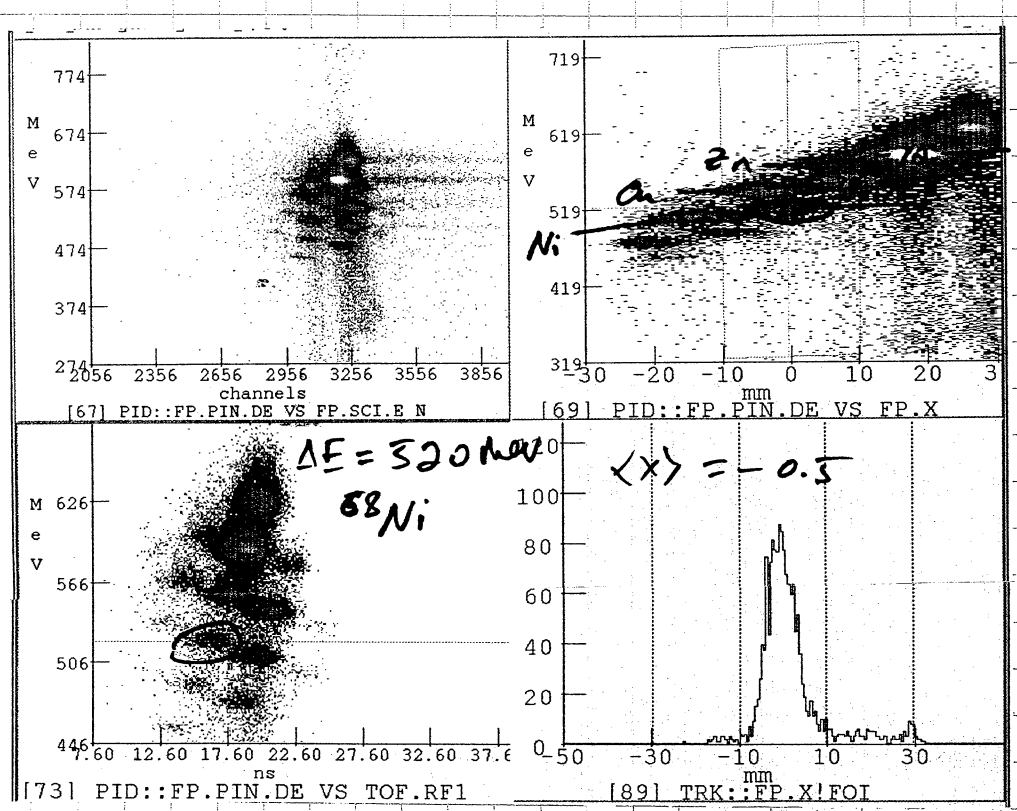
Runs795 Ni 68 Be 235, Al 235 wedge

Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: A1900 [0]
Beam: 76 Ge 12+ 11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att 1k> ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b: 675 A, 650 A K1200: 812 A, 62 A RF: 22.49300 MHz
A1900 Optics: G19V4M6.data

	Rigidity	Field	Radius	(live)	Difference	(Field*Radius)
Seg 0:	4.32100 Tm					
Seg 1:	3.83030 Tm	1.23607 T	3.09882 m	3.09876 m	-0.00184 %	(3.83037 Tm)
Seg 2:	3.83030 Tm	0.00000 T	3.10148 m	0.00000 m	100.00000 %	(3.83037 Tm)
Seg 3:	3.54250 Tm	1.14458 T	3.09502 m	3.09502 m	0.00016 %	(3.54249 Tm)
Seg 4:	3.54250 Tm	1.14434 T	3.09582 m	3.09566 m	-0.00522 %	(3.54268 Tm)
Z108DS		0.47270 T	7.04675 m	7.49418 m	6.34944 %	

Z001TL: out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R: -4.70, 9.30 mm; Z037DC: out
Z057MS: 1.5 pct, Z061MS: out
Z059DC: out, Z062SC: out, Z057TL: [5"]Al 240
Z082 XC,G,YG: 0.16, 203.50, 202.05 mm Z082Deg: out
Z101DC: in, Z102DC: out; Z103DC: in, Z105SC: in
B110 Cent,Gap: 0.00, 0.00 mm; D110 0.00, 0.00 mm F110 0.00, 0.00
B110DC: out, D110DC: out, D111DC: out, F110DC: out

rate ^{68}Ni $= \frac{30}{0.1175} \quad \frac{2.1588}{275_s \; 0.864} = 3413$ pps/pnA



16^15 final Br adj for S800
Br = 2.803 Tm after target 68.

run #18

E_{in} (68Ni) = 92.87 MeV / 3.4492

optic setting not

03031 Run Sheet

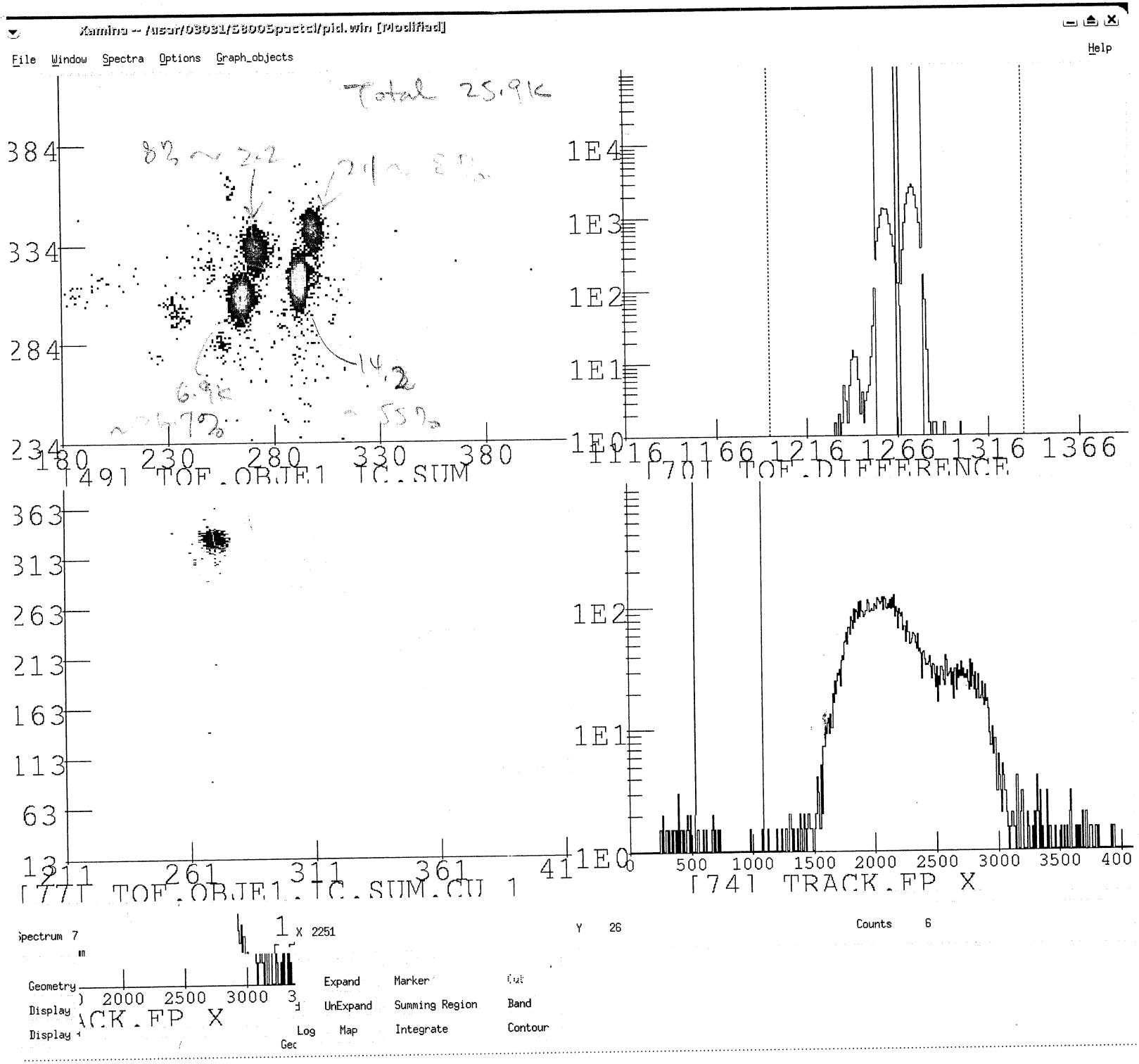
Run# 18	S800		
Date 10/05/05	***Begin:*** 16-15		***End:*** 16-19
Target: **Be** **Ta**	**Br=** 2.803 **Tm**	dp/p= ~~0.5~~ 0	Scaler Master.Live/Master 0.975
~~^{64}Ni Intensity ___ pps~~ ^{68}Ni Intensity 120 pps ✓	Comments: Do not forget to print Barney! run optic settings not optimized!! for 3 min		
Who's on shift			

FC 108epA

N.B. $\frac{Ni}{Cu} \approx 31\%$

transmission check 59%

$E(^{69}Cu)$ = 96.6 MeV/A @ 3.4492 Tm


Xamine -- /user/d0081/S800Spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
Help
Total 25.9k
82 ~ 2.2
21 ~ 8%
14.2
6.9k
~ 4.7%
~ 55%
384
334
284
234
180 230 280 330 380
[491 TOF.OBJE1 TC.SUM
1E4
1E3
1E2
1E1
1E0
1116 1166 1216 1266 1316 1366
[701 TOF.DIFFERENCE
363
313
263
213
163
113
63
13
211 261 311 361 41
[771 TOF.OBJE1.TC.SUM.GU 1
1E2
1E1
1E0
0 500 1000 1500 2000 2500 3000 3500 400
[741 TRACK.FP X
Spectrum 7
1 X 2251
Y 26
Counts 6
Geometry
Display
Display
2000 2500 3000
ACK.FP X
Expand
UnExpand
Marker
Summing Region
Band
Log
Map
Integrate
Contour

Final optic settings

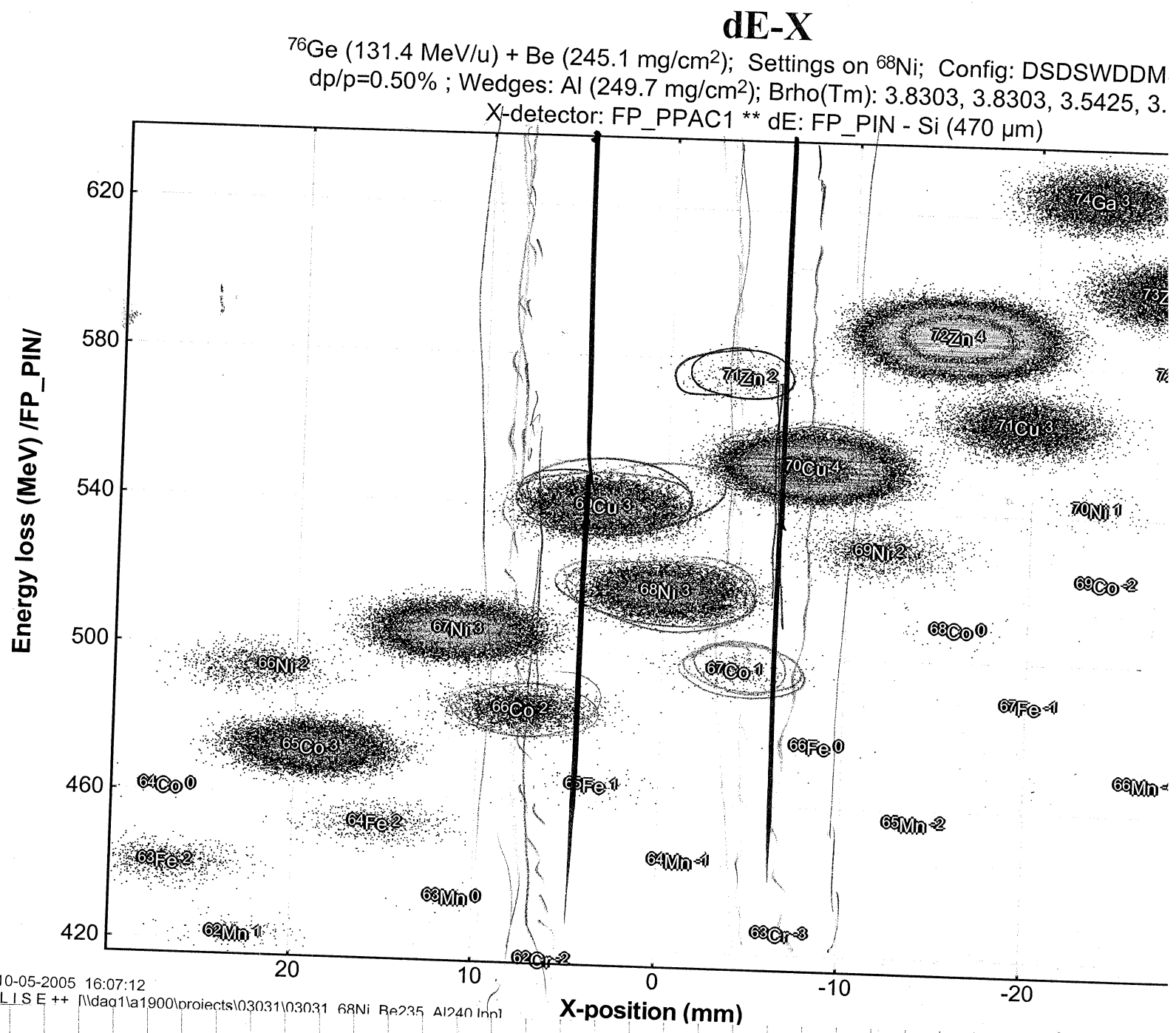
03031 Run Sheet

Run# 19	S800		
Date 10 /05/05	***Begin:*** 17:05		***End:*** 17:08
Target: **Be** **Ta**	**Br=**____ Tm ~~2.75~~ 2.803 ???	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni **Intensity**_____**pps** ^{68}Ni **Intensity**_____**pps**	Comments: Do not forget to print Barney! ^{68}Ni Transmission check after transfer Hall tweaked (see Barney printout) aft 100		
Who's on shift			

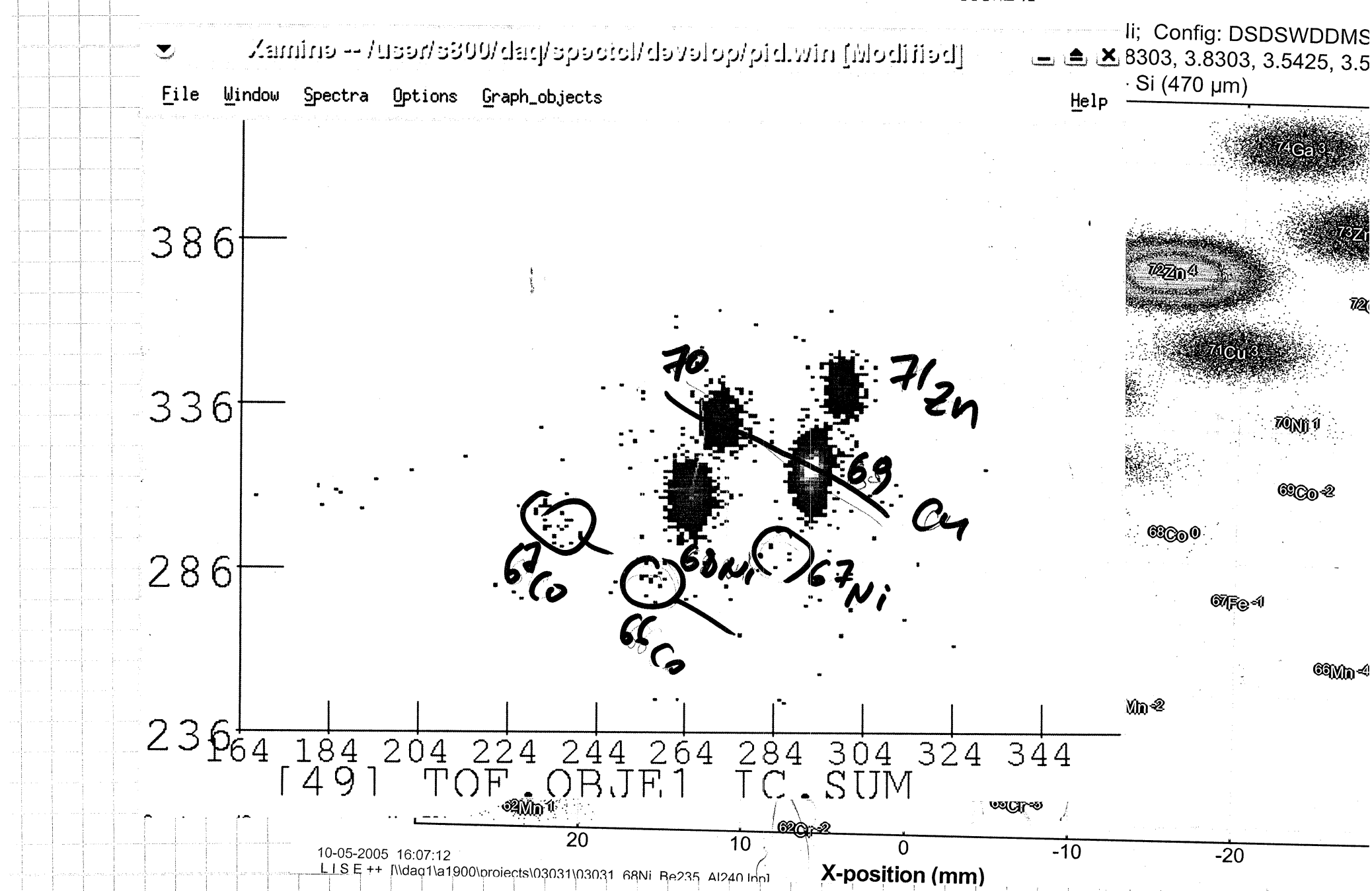
$\frac{Ni}{Cu}$ ~ 46% — Pu

```
A1900 "Print10May05_17h33.txt"   Tuesday 17:33:57 2005-05-10  A1900
***                      Run 19 - NMR readings ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23611 T  3.09882 m    3.09867 m   -0.00475 % (3.83048 Tm)
Seg 2:  3.83030 Tm  1.23505 T  3.10148 m    3.10134 m   -0.00438 % (3.83047 Tm)
Seg 3:  3.54250 Tm  1.14462 T  3.09502 m    3.09491 m   -0.00353 % (3.54263 Tm)
Seg 4:  3.54250 Tm  1.14434 T  3.09582 m    3.09568 m    0.00000 % (3.54266 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.80313 Tm
```

$\begin{pmatrix} -4.7 \\ 9.3 \end{pmatrix}$ $\delta p/p = 0.5\%$

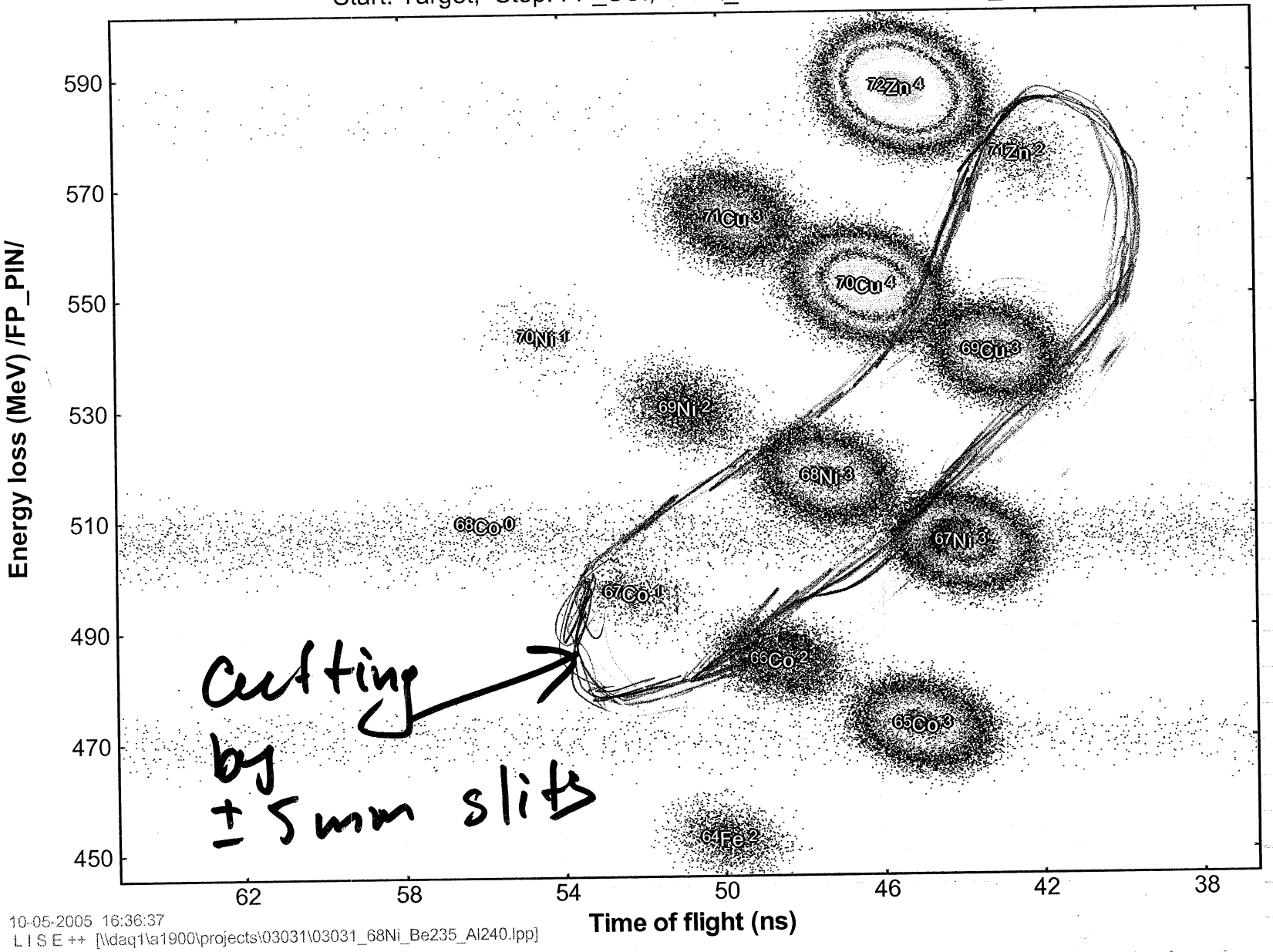

dE-X
76Ge (131.4 MeV/u) + Be (245.1 mg/cm2); Settings on 68Ni; Config: DSDSWDDM
dp/p=0.50% ; Wedges: Al (249.7 mg/cm2); Brho(Tm): 3.8303, 3.8303, 3.5425, 3.
X-detector: FP_PPAC1 ** dE: FP_PIN - Si (470 µm)
Energy loss (MeV) /FP_PIN/
X-position (mm)
620
580
540
500
460
420
20
10
0
-10
-20
74Ga 3
72Zn 4
71Zn 2
71Cu 3
70Cu 4
70Ni 1
69Ni 2
69Co -2
68Co 0
68Ni 3
67Ni 3
67Co 1
67Fe -1
66Ni 2
66Co 2
66Fe 0
65Co 3
65Fe 1
65Mn -2
64Co 0
64Fe 2
64Mn -1
63Fe 2
63Mn 0
63Cr -3
62Mn 1
62Cr -2
10-05-2005 16:07:12
LISE++ [\\dag1\a1900\projects\03031\03031_68Ni_Be235_Al240.lpp]

dE_X


Xamine -- /user/s800/daq/spectcl/develop/pid.win [Modified]
File Window Spectra Options Graph_objects Help
li; Config: DSDSWDDMS
8303, 3.8303, 3.5425, 3.5
Si (470 µm)
386
336
286
236
164 184 204 224 244 264 284 304 324 344
[49] TOF.OBJF1 TC.SUM
70
71Zn
69Cu
67Co
68Ni
67Ni
66Co
74Ga 3
73Zn
72Zn 4
71Cu 3
70Ni 1
69Co -2
68Co 0
67Fe -1
66Mn -4
Mn -2
62Mn 1
62Cr -2
20
10
0
-10
-20
X-position (mm)
10-05-2005 16:07:12
LISE++ [\\daq1\a1900\projects\03031\03031_68Ni_Be235_Al240.lpp]

dE-TOF

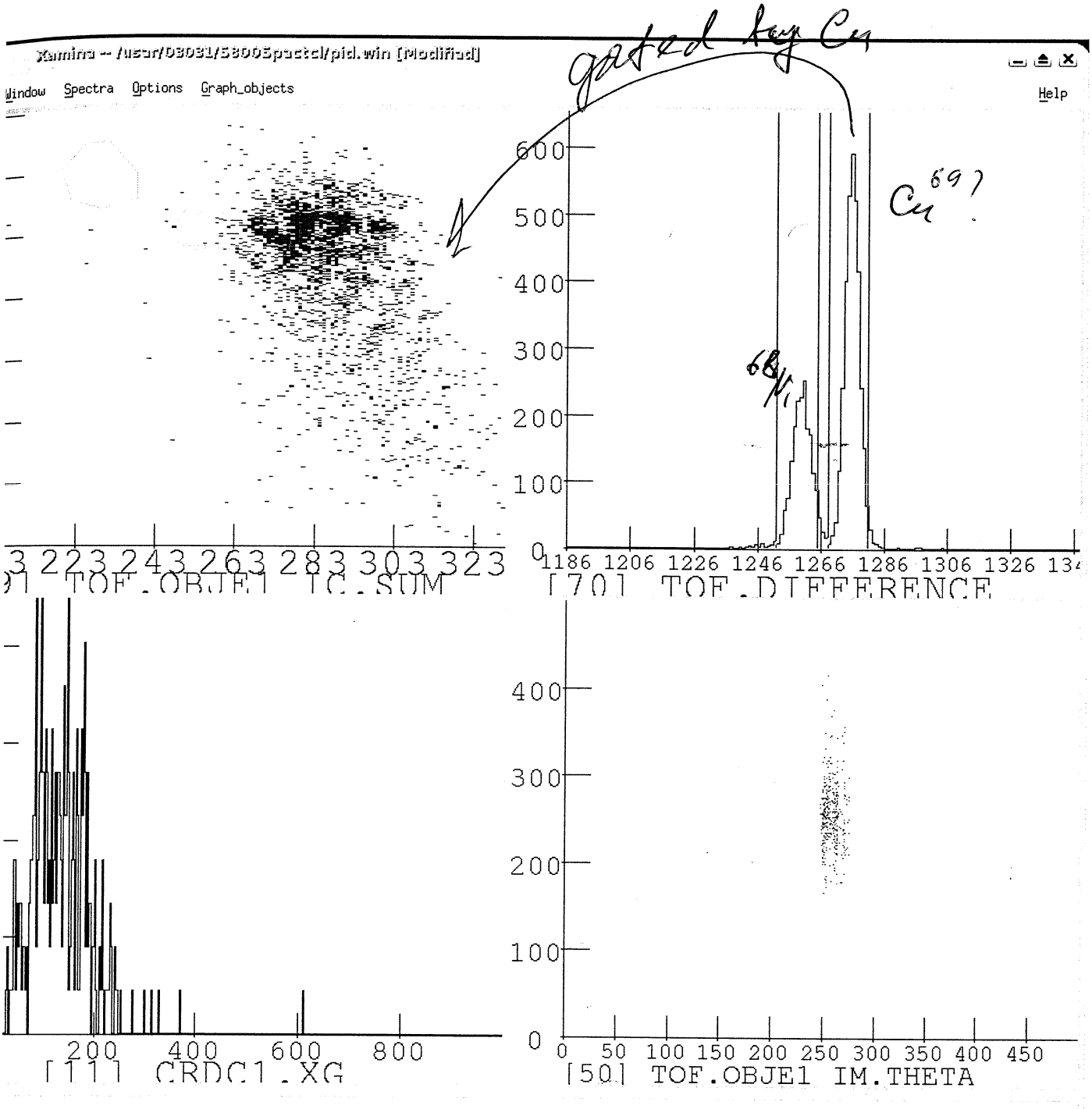
^{76}Ge (131.4 MeV/u) + Be (245.1 mg/cm^2); Settings on ^{68}Ni; Config: DSDSWDDMSMMM
dp/p=0.50% ; Wedges: Al (249.7 mg/cm^2); Brho(Tm): 3.8303, 3.8303, 3.5425, 3.5425
Start: Target; Stop: FP_SCI; ACQ_start: RF ** dE: FP_PIN - Si (470 μm)



03031 Run Sheet

Run# 20	S800		
Date 10/05/05	***Begin:*** 18:36		***End:*** 1850
Target: **Be** Ta	**Br=**___ **Tm** 2.6671	dp/p=	Scaler ____ Master.Live/Master 0.76
^{64}Ni **Intensity**_____**pps** ^{68}Ni **Intensity**_____**pps** ✓	Comments: Do not forget to print Barney! att 3.		
Who's on shift			

```
A1900 "Print10May05_18h48.txt"   Tuesday 18:48:37 2005-05-10  A1900
***                                        run20 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    3>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23611 T  3.09882 m    3.09866 m   -0.00502 % (3.83049 Tm)
Seg 2:  3.83030 Tm  1.23504 T  3.10148 m    3.10135 m   -0.00413 % (3.83046 Tm)
Seg 3:  3.54250 Tm  1.14461 T  3.09502 m    3.09495 m   -0.00230 % (3.54258 Tm)
Seg 4:  3.54250 Tm  1.14434 T  3.09582 m    3.09566 m    0.00000 % (3.54269 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.66708 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10744 T  3.14194 m    3.14169 m   -0.00808 %
I205DS              1.10751 T  3.14204 m    3.14149 m   -0.01759 %
```



TOF.DIFFERENCE = S800.tot.obj_xfp

03031 Run Sheet

Run# 21	S800		
Date 10/05/05	***Begin:*** 1853		***End:***
Target: **Be** **Ta**	**Br=**____ **Tm** 2.60	dp/p=	Scaler ____ Master.Live/Master 0.739
^{64}Ni ☐ **Intensity**_____**pps** ^{68}Ni ☑ **Intensity**_____**pps**	Comments: Do not forget to print Barney! This run for 2 hs		
Who's on shift			

```
A1900 "Print10May05_19h46.txt"   Tuesday 19:46:13 2005-05-10  A1900
***                                run 21, br=2.60 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    3>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:     675 A,     650 A K1200:     812 A,     62 A RF:  22.49300 MHz
        A1900 Optics: G19S3V13_30x20Focus60x30.data
        Rigidity        Field     Radius        (live)  Difference (Field*Radius)
Seg 0:   4.32100 Tm
Seg 1:   3.83030 Tm   1.23611 T   3.09882 m    3.09867 m   -0.00493 % (3.83049 Tm)
Seg 2:   3.83030 Tm   1.23505 T   3.10148 m    3.10133 m   -0.00497 % (3.83049 Tm)
Seg 3:   3.54250 Tm   1.14462 T   3.09502 m    3.09490 m   -0.00375 % (3.54263 Tm)
Seg 4:   3.54250 Tm   1.14434 T   3.09582 m    3.09568 m   -0.00454 % (3.54266 Tm)
Seg 5:   3.52130 Tm
Seg 6:   3.47923 Tm
Seg 7:   3.47923 Tm
Seg 8:   2.60000 Tm
Z108DS                0.50230 T   7.04675 m    7.05256 m    0.08242 %
D140DS                0.00145 T   2282.62069 m 2428.48276 m    6.39011 %
D165DS                0.37221 T   9.46362 m    9.46055 m   -0.03248 %
```

Att was changed from 3 to 1, but when we don't know.

03031 Run Sheet

Run# 22	2020	S800	1140 - 2047
Date 10/05/05	**Begin:** 1955		**End:**
Target: (Be) Ta	**Br=**___ Tm 2.53	dp/p=	Scaler ___ Master.Live/Master 86%
^{64}Ni Intensity_____pps	Comments: Do not forget to print Barney!		
^{68}Ni Intensity_____pps			
Who's on shift			

```
A1900 "Print10May05_19h51.txt"   Tuesday 19:51:50 2005-05-10  A1900
***                          run 22, br=2.53 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    3> ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23611 T  3.09882 m    3.09866 m   -0.00515 % (3.83050 Tm)
Seg 2:  3.83030 Tm  1.23505 T  3.10148 m    3.10134 m   -0.00439 % (3.83047 Tm)
Seg 3:  3.54250 Tm  1.14462 T  3.09502 m    3.09491 m   -0.00328 % (3.54262 Tm)
Seg 4:  3.54250 Tm  1.14434 T  3.09582 m    3.09566 m   -0.00525 % (3.54269 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.53000 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10743 T  3.14194 m    3.14171 m   -0.00718 %
I205DS              1.10750 T  3.14204 m    3.14152 m   -0.01668 %
I223DS              1.12379 T  3.09708 m    3.09598 m   -0.03559 %
```

not 1

Mum 23 is empty for 2.53 Tm

03031 Run Sheet

Run# 24	S800		
Date__/05/05	Begin: 21[25]		End:
Target: Be Ta	Br=___ Tm 2.6671	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps ^{68}Ni Intensity_____pps	Comments: Do not forget to print Barney! the same as for run #120 no scalers, Comp. crashed		
Who's on shift			

24

```
A1900 "Print10May05_21h49.txt"    Tuesday 21:49:01 2005-05-10  A1900
***                                run 23 Br=2.6671 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radiu
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23612 T  3.09882 m    3.09864 m   -0.00566 % (3.83052
Seg 2:  3.83030 Tm  1.23506 T  3.10148 m    3.10130 m   -0.00582 % (3.83052
Seg 3:  3.54250 Tm  1.14457 T  3.09502 m    3.09506 m    0.00137 % (3.54245
Seg 4:  3.54250 Tm  1.14432 T  3.09582 m    3.09572 m   -0.00343 % (3.54262
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.66710 Tm
Z108DS                0.50230 T  7.04675 m    7.05256 m    0.08242 %
```

After 22[00] ~ about 10 min [Z105DS] was not empty

About 22[20] : run 24 was frozen (there is no scalers for it). But it looks OK.

03031 Run Sheet

Run# 25	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=___ Tm** 2.9286	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity_____pps**	Comments: Do not forget to print Barney! a few mins		
^{68}**Ni** **Intensity_____pps**			
10's on ft			

list of files 3÷23

```
Tue May 10 18:06:01 EDT 2005
/user/03031/S800Scaler
<dterm4:S800Scaler >ls -ltr run*.scalers
```

DATE TIME	RUN	OBJ.Scint	Brho, Tm	/run*-4096.evt time	size
May 6 14:04	run1.scalers	0			
May 9 20:28	run3.scalers	62806		21:11	2990080
May 10 03:42	run6.scalers	85569	2.5788	03:42	108314624
May 10 04:21	run7.scalers	34348263	2,6839	04:21	427925504
May 10 04:42	run8.scalers	44796102	2.4627	04:42	529891328
May 10 04:48	run9.scalers	32608791	2.4627	04:48	13713408
May 10 04:54	run10.scalers	40722340	2.4627	04:54	15605760
May 10 05:00	run11.scalers	825344	2.4627	05:00	170409984
May 10 05:24	run12.scalers	101347623	2.4627	05:24	1254719488
May 10 05:46	run13.scalers	96821806	2.4627	05:46	1149566976
May 10 06:12	run14.scalers	95010500	2.38	06:12	1073266688
May 10 06:37	run15.scalers	88645012	2.38	06:37	1061724160
May 10 06:59	run16.scalers	56638639	2.38	06:59	778092544
May 10 07:17	run17.scalers	37989413	2.30	07:17	132292608
May 10 16:20	run18.scalers	7663	2.30	16:20	8716288
May 10 17:07	run19.scalers	47519	2.803	17:07	58073088
May 10 18:52	run20.scalers	67530693	2.66708	18:52	1033109504
May 10 19:46	run21.scalers	84937345	2.6	19:46	1302102016
May 10 20:47	run22.scalers	32542773	2.53	20:47	542097408
May 10 21:51	run23.scalers	3098383	2.6671	21:23	1599258624

03031 Run Sheet

Run# 25	S800		
Date__/05/05	*Begin:*		*End:*
Target: **Be** Ta	Br=____ Tm 2.9286	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps	Comments: Do not forget to print Barney! a few mins		
^{68}Ni Intensity_____pps			

03031 Run Sheet

Run# 23	S800		
Date__/05/05	*Begin:* 2045		*End:*
Target: **Be** Ta	Br=____ Tm 2.537	dp/p=	Scaler ____ Master.Live/Master 0.626
^{64}Ni Intensity_____pps	Comments: Do not forget to print Barney! the same as previous		
^{68}Ni Intensity_____pps			
Who's on shift			

```
Seg 4:  3.54250 Tm  1.14434 T  3.09582 m    3.09568 m   -0.00452 %  (3.54266 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.92859 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10731 T  3.14194 m    3.14205 m    0.00365 %
I205DS              1.10738 T  3.14204 m    3.14186 m   -0.00585 %
I223DS              1.12355 T  3.09708 m    3.09664 m   -0.01424 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
```

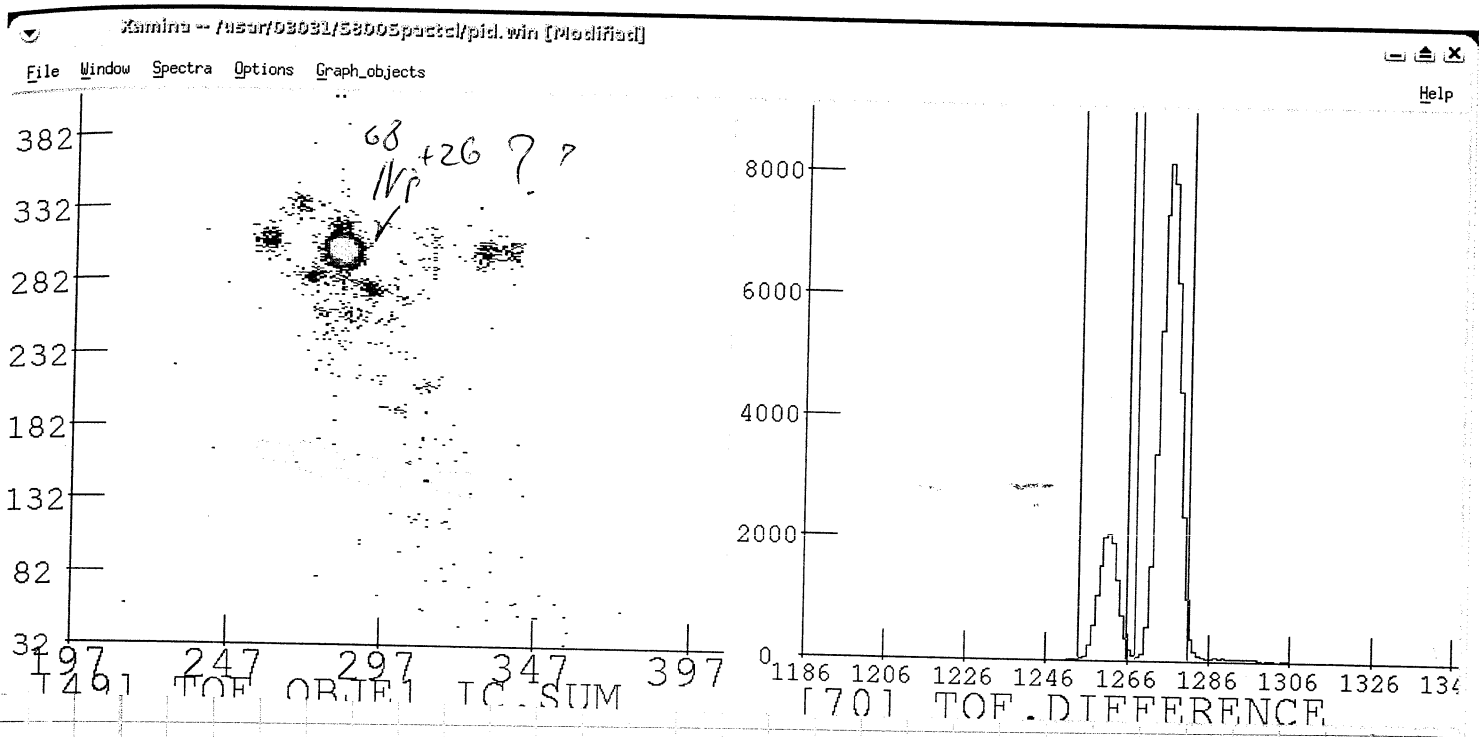
```
)
00 kV
00 MHz
ield*Radius)
  (3.83051 Tm)
  (3.83050 Tm)
  (3.54229 Tm)
```

03031 Run Sheet

Run# 26	0:06		S800
Date__/05/05	**Begin:** 00-06		***End:***
Target: **Be** **Ta**	**Br=**____ **Tm** 3.0093	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
^{68}**Ni** **Intensity**_____**pps**			
Who's on shift			

Bp close to $^{68}Ni^{+26}$

```
A1900 "Print11May05_00h12.txt" Wednesday 00:12:11 2005-05-11  A1900
***                              run26, Br=3.0093 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23612 T  3.09882 m    3.09864 m   -0.00566 % (3.83052 Tm)
Seg 2:  3.83030 Tm  1.23505 T  3.10148 m    3.10133 m   -0.00487 % (3.83049 Tm)
Seg 3:  3.54250 Tm  1.14453 T  3.09502 m    3.09514 m    0.00416 % (3.54235 Tm)
Seg 4:  3.54250 Tm  1.14433 T  3.09582 m    3.09569 m    0.00000 % (3.54265 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.00929 Tm
```


Xamina -- /user/030831/5800Spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
Help
382
332
282
232
182
132
82
32
197
247
297
347
397
8000
6000
4000
2000
0
1186 1206 1226 1246 1266 1286 1306 1326
[701 TOF.DIFFERENCE

03031 Run Sheet

Run# 28	S800		
Date 11 **/05/05**	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=**____ **Tm** 3.02	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
Who's on shift			

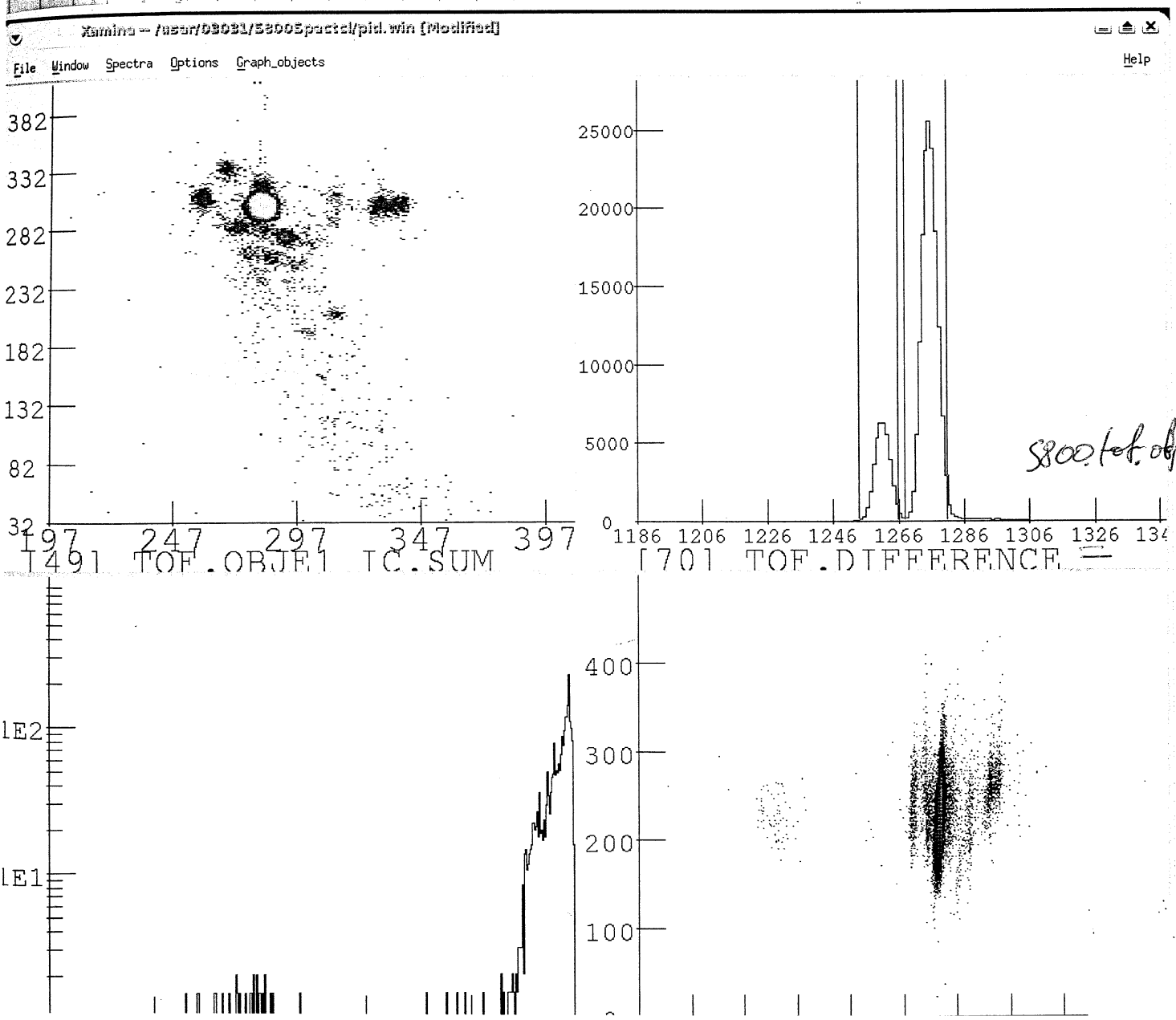
Title is Wrong!

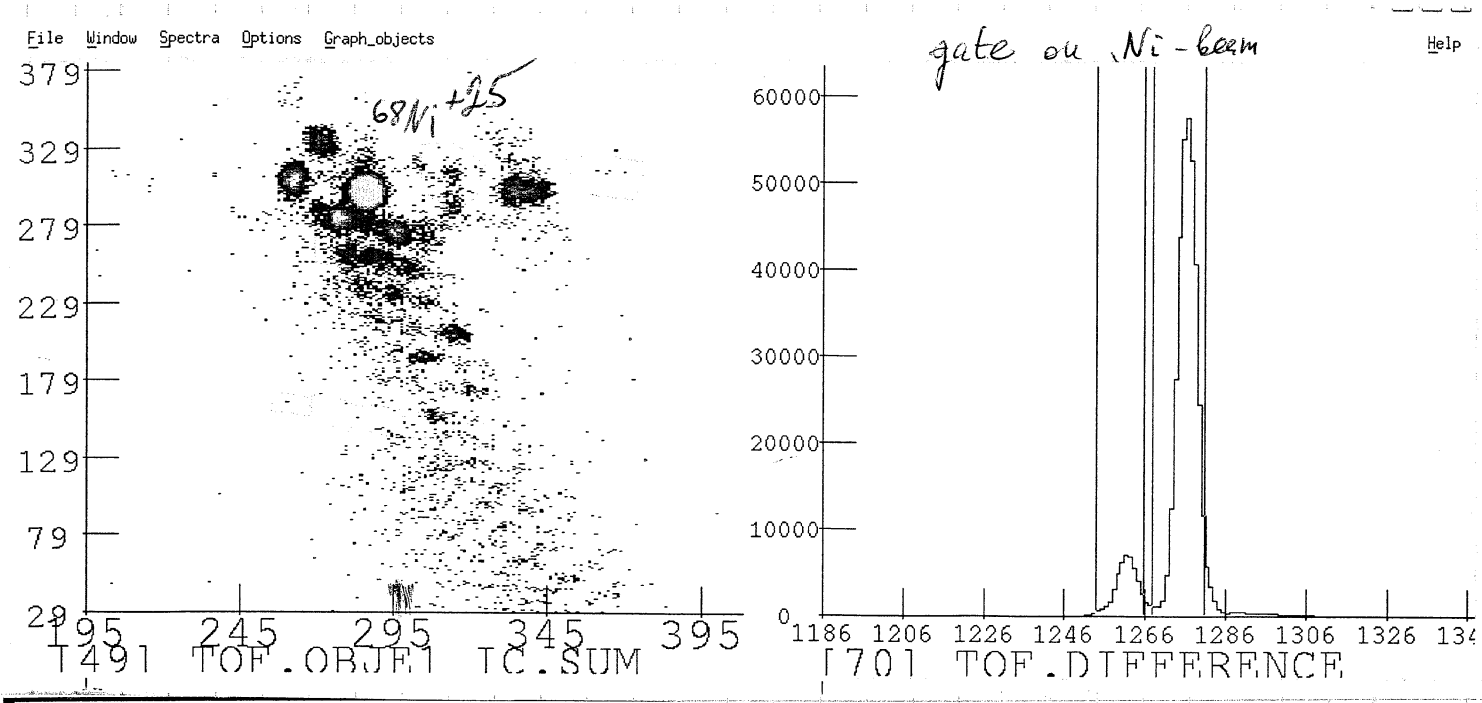
03031 Run Sheet

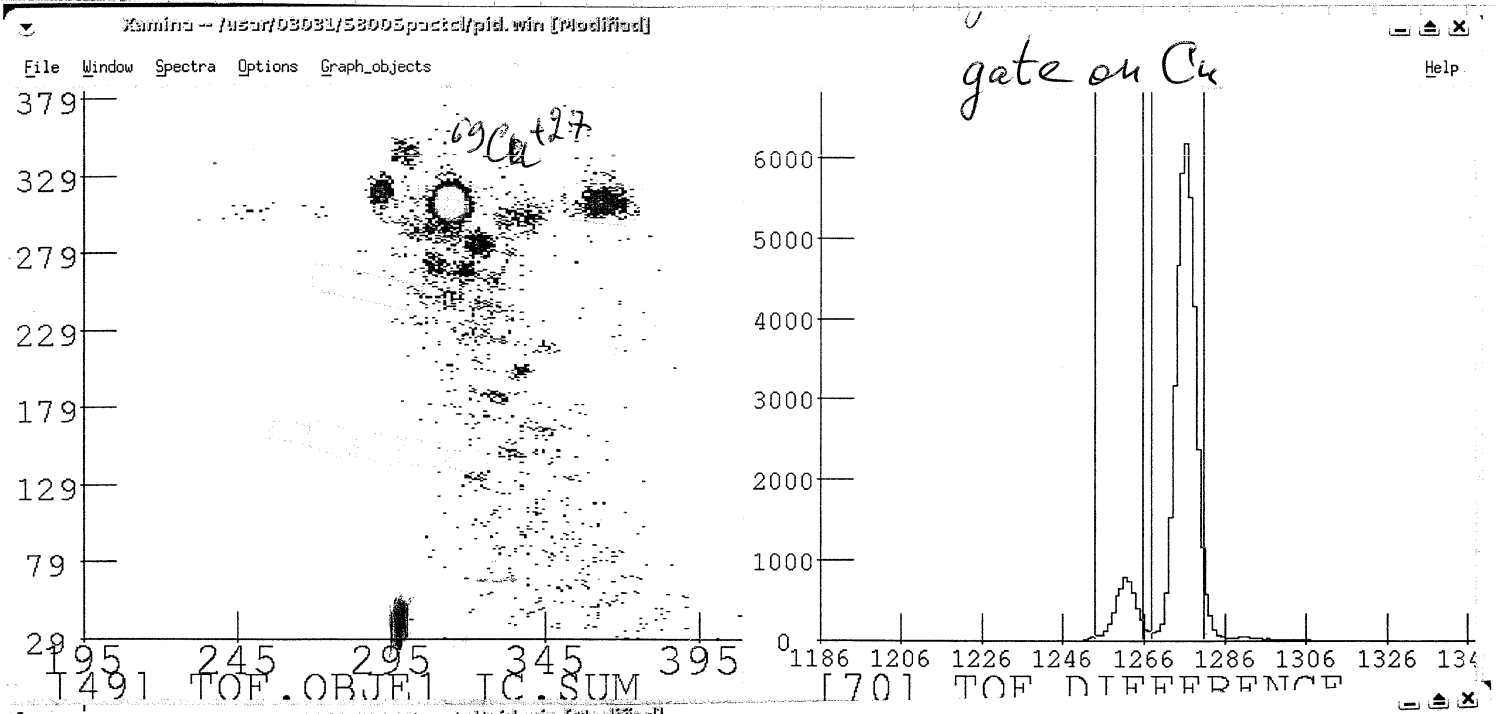
Run# 29	S800		
Date__**/05/05**	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=**____ **Tm** 3.027Tm	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
Who's on shift			

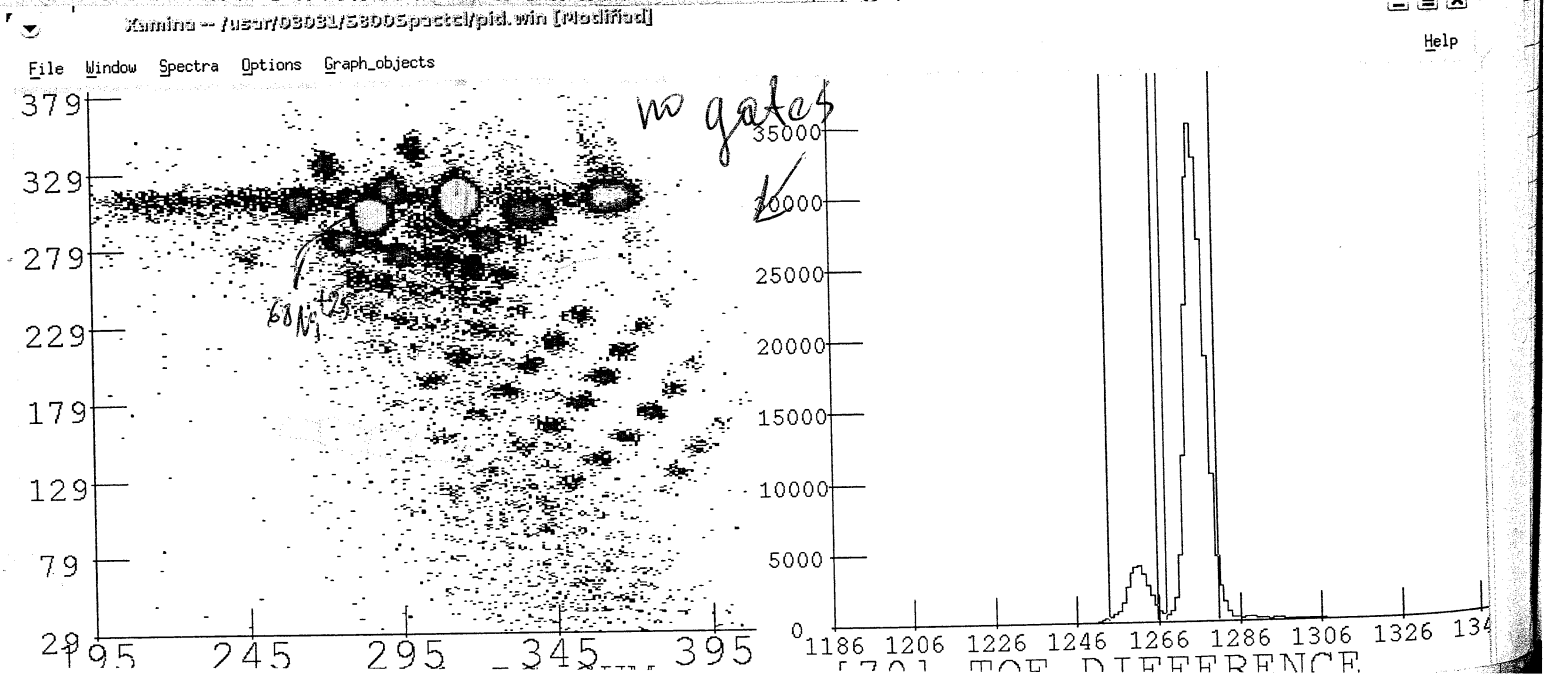
```
A1900 "Print11May05_01h02.txt" Wednesday 01:02:58 2005-05-11  A1900
***                                          run29 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
     A1900 Optics: G19S3V13_30x20Focus60x30.data
     Rigidity        Field     Radius       (live)  Difference (Field*Radius)

Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23612 T  3.09882 m    3.09866 m   -0.00530 % (3.83050 Tm)
Seg 2:  3.83030 Tm  1.23504 T  3.10148 m    3.10135 m   -0.00425 % (3.83046 Tm)
Seg 3:  3.54250 Tm  1.14455 T  3.09502 m    3.09510 m    0.00269 % (3.54240 Tm)
Seg 4:  3.54250 Tm  1.14433 T  3.09582 m    3.09569 m   -0.00447 % (3.54266 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS                0.50230 T  7.04675 m    7.05256 m    0.08242 %
```




File Window Spectra Options Graph_objects
68Ni +25
379
329
279
229
179
129
79
29
195 245 295 345 395
T491 TOF.OBJET TC.SUM
gate on Ni-beam
Help
60000
50000
40000
30000
20000
10000
0
1186 1206 1226 1246 1266 1286 1306 1326
T701 TOF.DIFFERENCE


Xamina -- /usar/08081/58005spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
69Cu +27
379
329
279
229
179
129
79
29
195 245 295 345 395
T491 TOF.OBJET TC.SUM
gate on Cu
Help
6000
5000
4000
3000
2000
1000
0
1186 1206 1226 1246 1266 1286 1306 1326
T701 TOF.DIFFERENCE


Xamina -- /usar/08081/58005spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
no gates
68Ni +25
379
329
279
229
179
129
79
29
195 245 295 345 395
Help
35000
30000
25000
20000
15000
10000
5000
0
1186 1206 1226 1246 1266 1286 1306 1326
T701 TOF.DIFFERENCE

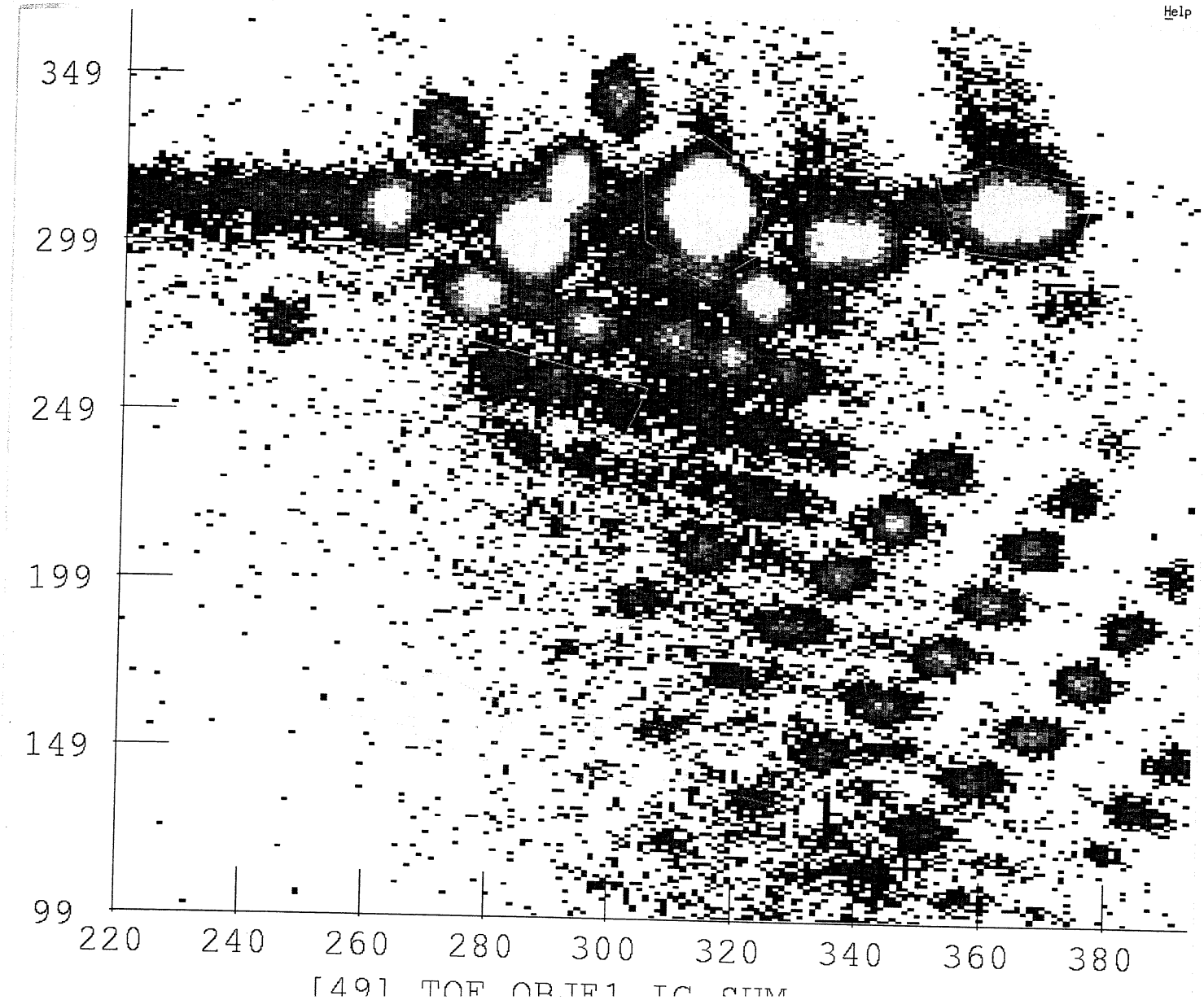
03031 Run Sheet

Run# 30	S800		
Date__/__/05/05	***Begin:*** 5 31		***End:*** 7-13
Target: **Be** **Ta**	**Br=**____ **Tm** 3.01	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney!		

The core at Michigan

Xamina -- /user/03031/S800Spectcl/pid.win [Modified]

File Window Spectra Options Graph_objects Help



03031 Run Sheet

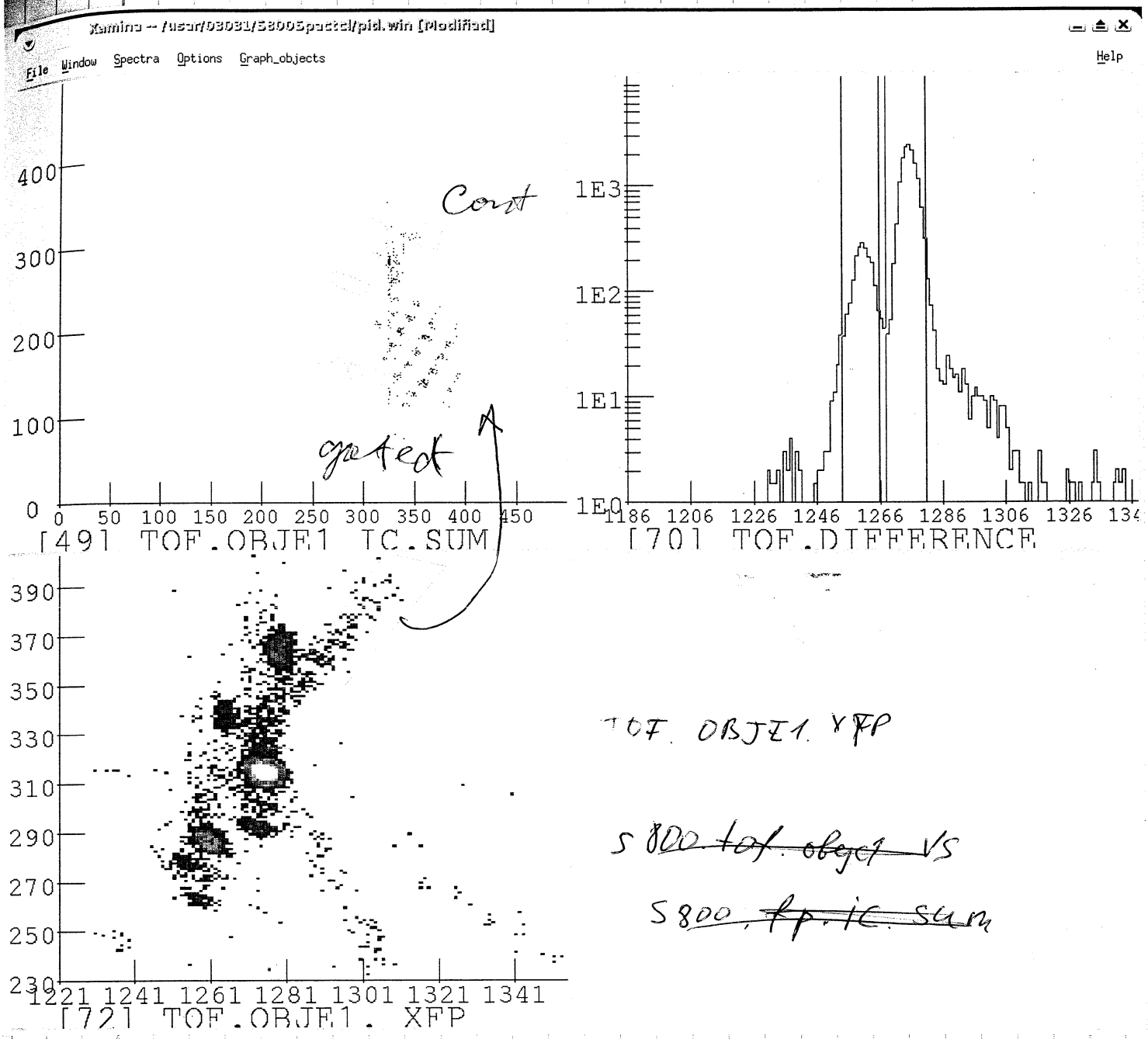
Run# 30	S800		
Date__/__/05/05	***Begin:*** 531		***End:*** 7-13
Target: **Be** **Ta**	**Br=**____ **Tm** 3.02	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** ☐ **Intensity**_____**pps** ^{68}**Ni** ☐ **Intensity**_____**pps**	Comments: Do not forget to print Barney! the same as previous		
Who's on shift			

```
A1900 "Print11May05_05h41.txt" Wednesday 05:41:13 2005-05-11  A1900
***                                                  run30 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23612 T  3.09882 m    3.09864 m   -0.00586 % (3.83052 Tm)
Seg 2:  3.83030 Tm  1.23503 T  3.10148 m    3.10138 m   -0.00320 % (3.83042 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09500 m   -0.00068 % (3.54252 Tm)
Seg 4:  3.54250 Tm  1.14435 T  3.09582 m    3.09563 m   -0.00616 % (3.54272 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
```

03031 Run Sheet

Run# 31	S800		
Date 11/05/05	***Begin:*** 7-15		***End:*** 9-00
Target: **Be** **Ta**	**Br=**____ **Tm** 3.02	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
Who's on shift			

```
A1900 "Print11May05_07h16.txt" Wednesday 07:16:18 2005-05-11  A1900
***                                                      run31 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23612 T  3.09882 m    3.09864 m   -0.00596 % (3.83053 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10147 m   -0.00022 % (3.83031 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00147 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14436 T  3.09582 m    3.09562 m    0.00000 % (3.54273 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
```



TOF. OBJE1. XFP

S 800 ~~tof. obj1~~ VS

S 800 ~~tp. ic. sum~~

S 800. tof. obj_xfp VS S 800. tof. obje 1

[-2000, 2000] 100

03031 Run Sheet

Run# 32	S800		
Date //05/05	***Begin:*** 08-		***End:***
Target: (**Be**) **Ta**	**Br=**___ **Tm** 3.0807	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps** ☐	Comments: Do not forget to print Barney!		
(^{68}**Ni**) ~~**Intensity**~~_____**pps** ☐			
Who's on shift	L. Bill, S.L. L.A		

```
A1900 "Print11May05_08h03.txt" Wednesday 08:03:08 2005-05-11  A1900
***                              run 32 br =3.08 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09863 m   -0.00616 % (3.83054 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10148 m   -0.00002 % (3.83030 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00122 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14436 T  3.09582 m    3.09561 m   -0.00677 % (3.54274 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z100D2                0.50230 T  7.04675 m    7.05256 m    0.08242 %
```

03031 Run Sheet

Run# 33	S800		
Date__/05/05	***Begin:*** 8:56 A		***End:***
Target: (Be) Ta	**Br=** 3.08 **Tm**	dp/p= Full	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps ☐ (^{68}Ni) Intensity_____pps ☐	Comments: Do not forget to print Barney!		
Who's on shift	M. Mocko, Bill Lynch, A. Rogers		

```
A1900 "Print11May05_08h57.txt" Wednesday 08:57:33 2005-05-11  A1900
***                                    run 33 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09863 m   -0.00611 % (3.83053 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10147 m   -0.00027 % (3.83031 Tm)
Seg 3:  3.54250 Tm  1.14461 T  3.09502 m    3.09495 m   -0.00206 % (3.54257 Tm)
Seg 4:  3.54250 Tm  1.14437 T  3.09582 m    3.09560 m   -0.00721 % (3.54276 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10739 T  3.14204 m    3.14183 m   -0.00675 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.09908 T  2.80280 m    2.80298 m    0.00651 %
I269DS              1.09753 T  2.80280 m    2.80694 m    0.14775 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
```

03031 Run Sheet

Run# 34	S800		
Date__/05/05	***Begin:*** 10:00A		***End:***
Target: (Be) Ta	**Br=____ Tm** 3.08	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni **Intensity_____pps**	Comments: Do not forget to print Barney!		
(^{68}Ni) **Intensity_____pps**			
Who's on shift	MM. AR.		

```
A1900 "Print11May05_09h59.txt" Wednesday 09:59:32 2005-05-11  A1900
***                                        run34 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09863 m   -0.00620 % (3.83054 Tm
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10148 m    0.00010 % (3.83030 Tm
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00130 % (3.54255 Tm
Seg 4:  3.54250 Tm  1.14436 T  3.09582 m    3.09561 m   -0.00691 % (3.54274 Tm
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10744 T  3.14204 m    3.14169 m   -0.01127 %
I223DS              1.12354 T  3.09708 m    3.09667 m   -0.01335 %
I228DS              1.09806 T  3.17034 m    3.16852 m   -0.05730 %
I265DS              1.09907 T  2.80280 m    2.80301 m    0.00742 %
I269DS              1.09748 T  2.80280 m    2.80707 m    0.15231 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:   -4.70,   9.30 mm; Z037DC:  out
```

Run# 35	S800		A1900	
Target: Views Be Ta	DS= ____ Tm 3.08	dp/p= full		
^{64}Ni Intensity_____pps ^{68}Ni Intensity_____pps	Comments:			

```
A1900 "Print11May05_11h08.txt" Wednesday 11:08:52 2005-05-11  A1900
***                                    run35 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09861 m   -0.00686 % (3.83056 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10148 m    0.00001 % (3.83030 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00148 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09557 m   -0.00832 % (3.54279 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
I205DS              1.10745 T  3.14204 m    3.14166 m   -0.01217 %
I223DS              1.12353 T  3.09708 m    3.09669 m   -0.01246 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.09908 T  2.80280 m    2.80298 m    0.00651 %
I269DS              1.09913 T  2.80280 m    2.80285 m    0.00196 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.30 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
```

03031 Run Sheet

Run# 36	S800		
Date 11 /05/05	***Begin:*** 12:14		***End:***
Target: ~~Be~~ Ta	**Br=** 3.08 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.94
^{64}Ni Intensity____pps ☐ ^{68}Ni Intensity____pps ✓	Comments: Do not forget to print Barney! A1900 slits were opened		
Who's on shift	Andy, MM, Betty		

```
A1900 "Print11May05_12h14.txt" Wednesday 12:14:25 2005-05-11  A1900
***                                  Run 36 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09862 m   -0.00655 % (3.83055 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10146 m   -0.00054 % (3.83032 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09498 m   -0.00103 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14437 T  3.09582 m    3.09560 m   -0.00722 % (3.54276 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
I205DS              1.10741 T  3.14204 m    3.14177 m   -0.00856 %
I223DS              1.12353 T  3.09708 m    3.09669 m   -0.01246 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              1.09910 T  2.80280 m    2.80293 m    0.00469 %
I269DS              1.09911 T  2.80280 m    2.80291 m    0.00378 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.30,  24.00 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, i188: [0"] out, I189: , I190: [0"] out
```

$\Delta p/p = 1.5\%$

03031 Run Sheet Charge State Distribution

Run# 37	S800		
Date 11 /05/05	***Begin:*** 1:15		***End:*** 1:35
Target: **Be** **Ta**	**Br=** 2.8578 **Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni **Intensity**_____**pps** ^{68}Ni **Intensity**_____**pps**	Comments: Do not forget to print Barney! 28^+ & 27^+ we also see charge state distributi for Cu (29^+ & 28^+?)?		
Who's on shift			

A1900: 0.2 %

Beam Intensity = 200 enA

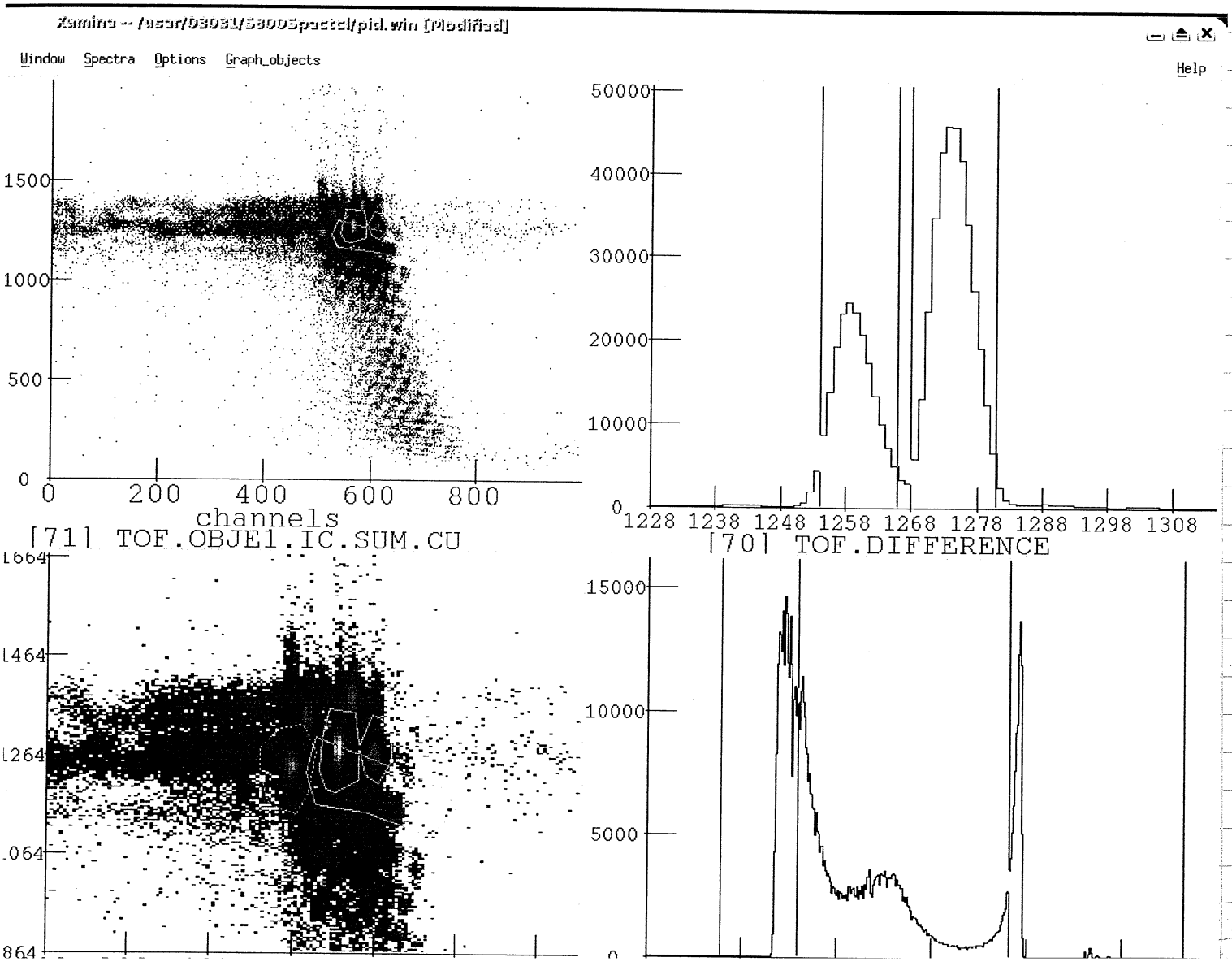
```
A1900 "Print11May05_13h39.txt" Wednesday 13:39:13 2005-05-11  A1900
***                Run 37 - Q-states measured ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   30>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09862 m   -0.00659 % (3.83055 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10148 m    0.00006 % (3.83030 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09498 m    0.00000 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14437 T  3.09582 m    3.09558 m   -0.00774 % (3.54277 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.85780 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09806 T  3.17034 m    3.16852 m   -0.05730 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              1.02316 T  2.80280 m    2.79311 m   -0.34567 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:   -1.13,   5.30 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
```

```
A1900 "Print11May05_14h36.txt" Wednesday 14:36:35 2005-05-11  A1900
***                                    Run 40 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09860 m   -0.00700 % (3.83057 Tm)
Seg 2:  3.83030 Tm  1.23498 T  3.10148 m    3.10150 m    0.00071 % (3.83027 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09495 m   -0.00200 % (3.54257 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09556 m   -0.00848 % (3.54280 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.85780 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00000 T  2282.62069 m    0.00000 m  100.00000 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              0.00000 T  3.14194 m    0.00000 m  100.00000 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              0.00000 T  3.09708 m    0.00000 m  100.00000 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
```

run 39 0.5% for S800

03031 Run Sheet

Run# 38-40, 42-49			S800
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=___ Tm** 2.8578	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity_____pps** ☐	Comments: Do not forget to print Barney!		
^{68}**Ni** **Intensity_____pps** ✓			
Who's on here we are			



```
A1900 "Print11May05_15h20.txt" Wednesday 15:20:15 2005-05-11  A1900
***                                    run 41 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09861 m   -0.00676 % (3.83056 Tm
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10149 m    0.00040 % (3.83028 Tm
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m    0.00000 % (3.54256 Tm
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09557 m   -0.00833 % (3.54280 Tm
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.85780 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
I205DS              1.10739 T  3.14204 m    3.14183 m   -0.00675 %
I223DS              1.12355 T  3.09708 m    3.09664 m   -0.01424 %
I228DS              1.09805 T  3.17034 m    3.16855 m   -0.05639 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              1.02315 T  2.80280 m    2.79314 m   -0.34470 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
```

16[15] Beam problem start run #43 at the same setting

17[15] #46

Run Summary

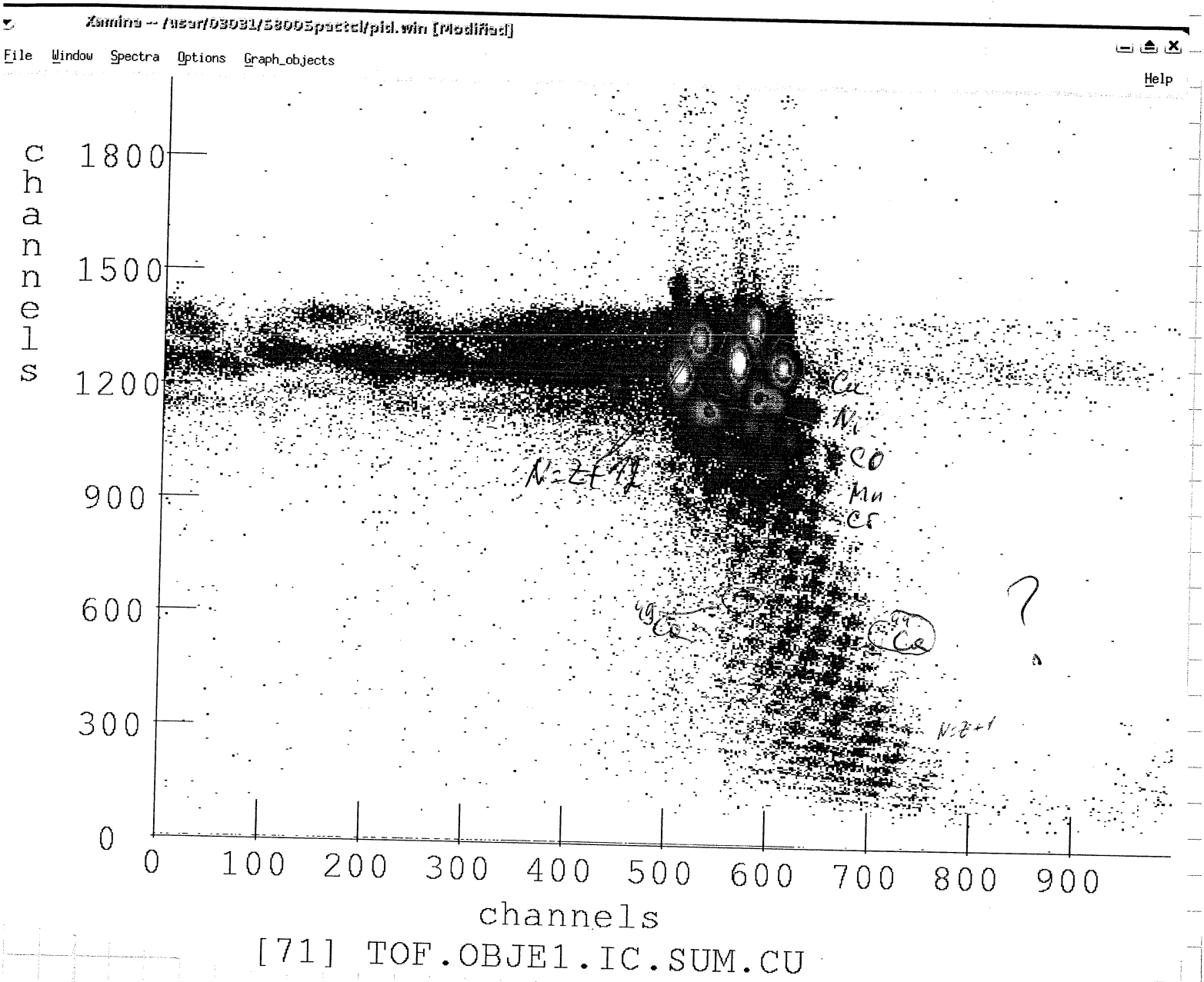
Run #	Beam	S800 Brho	A1900 Dp/p	obj scinl	comments
1	Ni64				
2	Ni64				
3	Ni64				
4	Ni64				
5	Ni64				
6	Ni64	2.5788	0.50%		
7	Ni64	2.6839	0.50%		
8	Ni64	2.4627	0.50%		PID seen
9	Ni64	2.4627	0.50%		mask CRD(
10	Ni64	2.4627	0.50%	40722340	mask CRD(
11	Ni64	2.4627	0.50%	825344	readout cra
12	Ni64	2.4627	0.50%	1.01E+08	
13	Ni64	2.4627	0.50%	96821806	
14	Ni64	2.38	0.50%	95010500	
15	Ni64	2.38	0.50%	88645012	
16	Ni64	2.38	0.50%	56638639	
17	Ni64	2.3	0.50%	37989413	
18	Ni68	2.803		7663	
19	Ni68	2.803		47519	
20	Ni68	2.6671		67530693	
21	Ni68	2.6		84937345	
22	Ni68	2.53		32542773	
23	Ni68	2.53		3098383	
24	Ni68	2.6671			
25	Ni68	2.9286		45684220	
26	Ni68	3.0093		1.37E+08	
27	Ni68	bad		4601342	
28	Ni68	3.02		7662165	
29	Ni68	3.02		1.19E+09	
30	Ni68	3.02		2.68E+08	
31	Ni68	3.02		1.03E+08	
32	Ni68	3.0807		52458752	
33	Ni68	3.0807		4.12E+08	
34	Ni68	3.0807		1.26E+08	
35	Ni68	3.0807		3.48E+08	
36	Ni68	3.0807		6.13E+08	
37	Ni68	2.8578	1.50%	1681519	charge stat
38	Ni68	2.8578		14750357	
39	Ni68	2.8578	0.50%	1.73E+08	data
40	Ni68	2.8578		2.94E+08	
41	Ni68	2.8578			
42	Ni68	2.8578			

03031 Run Sheet

Run# 44, 45, 46	S800		
Date __/05/05	***Begin:*** 1715		***End:*** 1755
Target: **Be** **Ta**	**Br=**____ **Tm** 2.8578	dp/p=	Scaler ____ Master.Live/Master 68%
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney! the same as previous		
Who's on shift	Andy, Bill, Sergey, N.M., Betty		

#45 start 1755

#46


Xamine -- /user/03031/5800Spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
Help
channels
1800
1500
1200
900
600
300
0
0 100 200 300 400 500 600 700 800 900
channels
[71] TOF.OBJE1.IC.SUM.CU
Cu
Ni
Co
Mn
Cr
N=Z+1
N=Z+1
?

```
***                                  run46 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09860 m   -0.00711 % (3.83057 Tm)
Seg 2:  3.83030 Tm  1.23498 T  3.10148 m    3.10150 m    0.00000 % (3.83028 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00160 % (3.54256 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09556 m   -0.00837 % (3.54280 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.85780 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10738 T  3.14204 m    3.14186 m   -0.00585 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09806 T  3.17034 m    3.16852 m   -0.05730 %
I265DS              1.02584 T  2.80280 m    2.78581 m   -0.60602 %
I269DS              1.02310 T  2.80280 m    2.79328 m   -0.33983 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:   -4.70,   9.52 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

18:30 We have problem with NMRs for S800 dipoles always

#46 is the last for

2.85780 Tm

We going to 2.9657 Tm

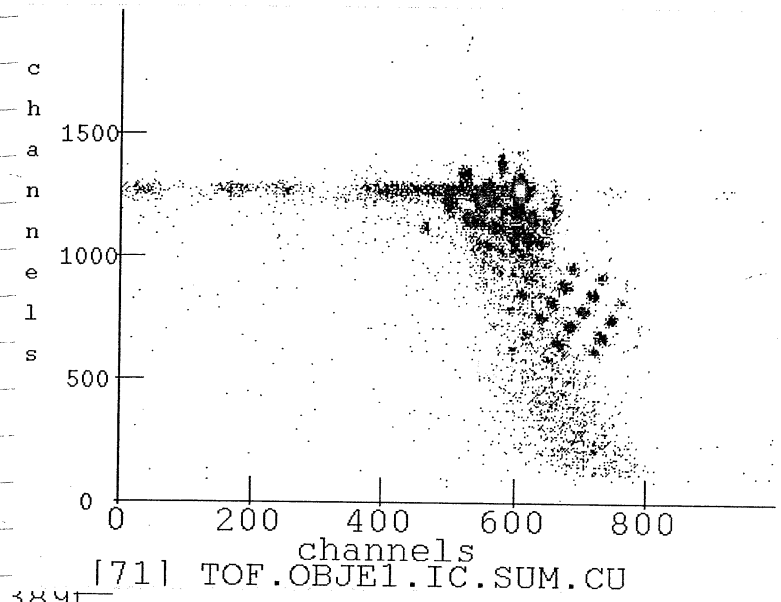
03031 Run Sheet

Run# 47	S800		
Date 11/05/05	**Begin:** 20-05		**End:**
Target: Be Ta	**Br=** 2.9657 Tm	dp/p=	Scaler ~~4000~~ up to 86% Master.Live/Master___
^{64}Ni Intensity_____pps	Comments: Do not forget to print Barney! 1255 CB set to 6 1255 CT set to 6.85		
^{68}Ni Intensity_____pps			
Who's on shift			

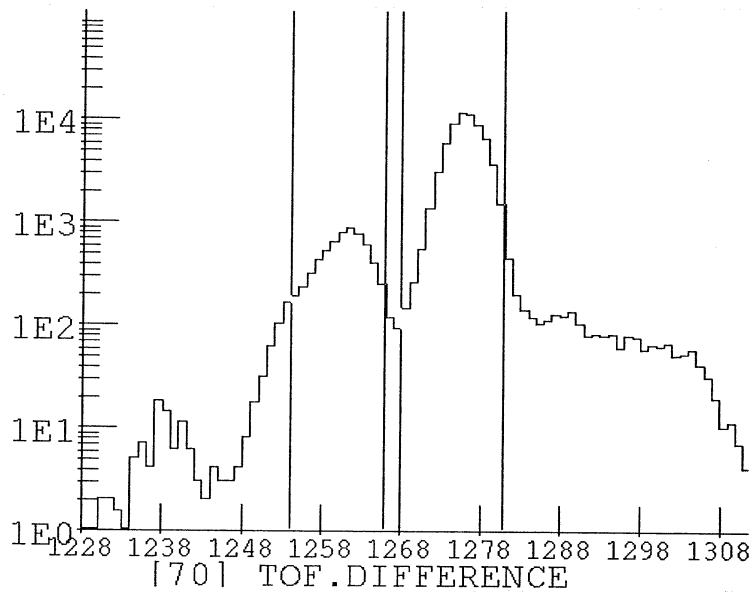
```
A1900 "Print11May05_20h09.txt" Wednesday 20:09:48 2005-05-11  A1900
***                                        run 47 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09860 m   -0.00705 % (3.83057 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10149 m    0.00028 % (3.83029 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00099 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09556 m   -0.00850 % (3.54280 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.96570 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10746 T  3.14204 m    3.14163 m   -0.01307 %
I223DS              1.12355 T  3.09708 m    3.09664 m   -0.01424 %
I228DS              1.09801 T  3.17034 m    3.16867 m   -0.05275 %
I265DS              1.05819 T  2.80280 m    2.80262 m   -0.00657 %
I269DS              1.05782 T  2.80280 m    2.80360 m    0.02840 %
```

Xamina -- /user/03031/S800Spectcl/pid.win [Modified]

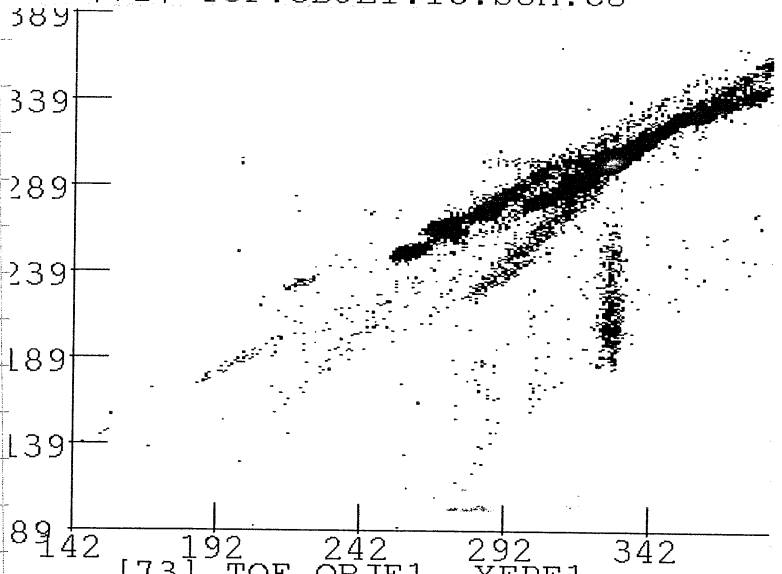
File Window Spectra Options Graph_objects Hel



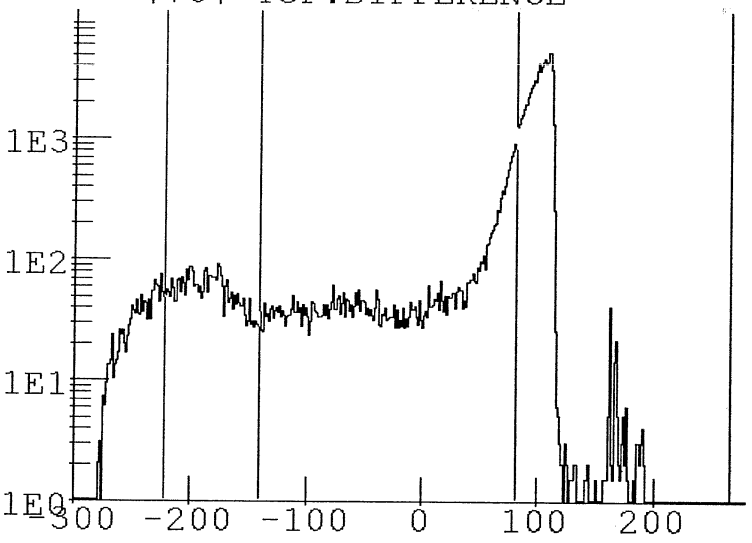
[71] TOF.OBJE1.IC.SUM.CU



[70] TOF.DIFFERENCE



[73] TOF.OBJE1. XFPE1



[74] TRACK.FP X

03031 Run Sheet

Run# 48, 49, 50, 51.			S800
Date__/05/05	**Begin:**		***End:***
Target: **Be** **Ta**	**Br=___ Tm** 2.9657	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni **Intensity_____pps** ^{68}Ni **Intensity_____pps**	Comments: Do not forget to print Barney! the same like in Run #47		
Who's on shift			

#49 at 21:30

#50 at 23:40 #51 - very short

```
A1900 "Print11May05_23h45.txt" Wednesday 23:45:45 2005-05-11  A1900
***                                                    run 50 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09861 m   -0.00680 % (3.83056 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10147 m   -0.00028 % (3.83031 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09498 m   -0.00109 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09556 m   -0.00844 % (3.54280 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.96570 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
I205DS              1.10738 T  3.14204 m    3.14186 m   -0.00585 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              1.05819 T  2.80280 m    2.80262 m   -0.00657 %
```

24 ss @charge states distribution

03031 Run Sheet

Run# 52	S800		
Date 2 /05/05	***Begin:*** 00-50		***End:***
Target: (Be) Ta	**Br=**____ Tm 2.9657	dp/p=	Scaler ____ Master.Live/Master 76%
^{64}Ni Intensity____pps ☐	Comments: Do not forget to print Barney! $\frac{\Delta p}{p} = 0.2\%$ charge state dist. +22, +26		
(^{68}Ni) Intensity____pps ☐			
Who's on shift			

I255CB 3.1864

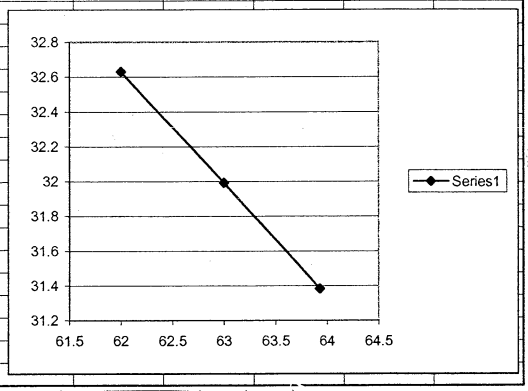
I255CT 6.8445

Image 1 in ~1.29 / 5.33 mm

```
A1900 "Print12May05_00h53.txt"  Thursday 00:53:54 2005-05-12  A1900
***                      Run 52 Calibration ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09862 m    0.00000 % (3.83055 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10147 m   -0.00045 % (3.83032 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00158 % (3.54256 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09557 m   -0.00829 % (3.54279 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.96570 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10736 T  3.14194 m    3.14191 m   -0.00086 %
I205DS              1.10740 T  3.14204 m    3.14180 m   -0.00766 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09805 T  3.17034 m    3.16855 m   -0.05639 %
I265DS              1.05819 T  2.80280 m    2.80262 m   -0.00657 %
I269DS              1.05777 T  2.80280 m    2.80373 m    0.03313 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.29,   5.33 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_

MagName  Ref[kG]  BSet[kG]    Ratio     (live)     Set[A]   Read[A] DEVI
Z001DV     0.000    -0.115 -2666.230 -2671.665   -50.1019  -53.706      Z001DV
Z002DH     0.000    -2.064 -47772.40 -47772.40    -5.0316   -5.003      Z002DH
Z003DV     0.000     0.250  5794.751  5794.751     0.6065    0.673      Z003DV
Z004QA     1.685     7.282  1.000000  1.000000     5.0891    5.091      Z004QA
Z005QB    -0.414    -1.789  1.000000  1.000000    -1.2482   -1.208      Z005QB
Z008DS     2.492    10.510  0.976118  0.976118    35.5721   35.769      Z008DS
Z011QA    -2.322   -10.035  1.000000  1.000000    -7.0251   -6.982      Z011QA
Z012QB     3.409    14.729  1.000000  0.999847    10.5865   10.535      Z012QB
 ----------------------- Segment 1 ----------------------------------------
Z017TA     3.539    14.492  1.057000  1.057000    38.0747   38.272      Z017TA
Z019TB    -3.322   -12.950  1.010000  1.010000   -34.1073  -34.239      Z019TB
Z021TC     2.407     9.639  1.043000  1.043000    20.1893   20.327      Z021TC
Z026DS     3.226    12.333  0.998157  0.998157    76.5254   76.467      Z026DS
Z031TA     2.926    11.319  1.000000  1.000000    23.6819   23.806      Z031TA
Z033TB    -3.613   -13.980  1.000000  1.000000   -40.5249  -40.648      Z033TB
Z035TC     3.183    12.348  1.000000  1.000000    25.8513   26.003      Z035TC
 ----------------------- Segment 2 ----------------------------------------
Z039TA     3.183    12.348  1.000000  1.000000    25.8459   25.942      Z039TA
```

68	**Energy**						
Ni	**92.87**			**d=**	**0.014** Tm		
28	**AMeV**				0		
63.49							
				Charge states Ta tgt		**Charge States Be tgt**	
target		**Be**					
thick,mg/cm2		**376**		From	To	From	To
		4					
Energy after target		62.31					
		Be					
Q	Q	Brho					
28	28			3.0201	3.0481	2.7918	2.8198
27	27			3.1325	3.1605	2.8957	2.9237
26	26			3.2535	3.2815	3.0076	3.0356
25	25	3.1425		3.3842	3.4122		
24	24	3.2734					
28 & 27							
27 & 26							
26 & 25							
25 & 24							
					dE		
	Ta						
	harge state						
	74.49			64	31.41835	61.45165	
	23.38		61.487	63.928	31.383		
	2.07567		60.877	63	31.993		
	0.05557		60.2396	62	32.6304		
	0.00342						



03031 Run Sheet

Run# 53, 54, 55	S800		
Date__/05/05	***Begin:***		***End:***
~~**Target:**~~ **Be** **Ta**	**Br=____ Tm** 2.7117	dp/p= 0.2%	Scaler ____ Master.Live/Master 0.765
^{64}**Ni** **Intensity_____pps**	Comments: Do not forget to print Barney! dp/p ~ 0.2% magnets are not matched I255CB was not changed = 3.186 I255CT at 5.7979		
^{68}**Ni** **Intensity_____pps**			
Who's on shift			

K8PRB1-C	N062L-C	N062R-C	N053F-C	Z001F-C
	5.7500E-009	750.00E-012	3.1128E-009	-8.0933E-009
1.000	100.0E-09	100.0E-09	300.0E-09	300.0E-09
<< >>	<< >>	<< >>	<< >>	<< >>

Pages: 13. K1200

D140DS	I257SX	I255CB	I255CT
R 0.0858	R 23.99E-003	R 3.1864	R 5.7979
S 136.0E-006	S 438.9E-006	S 3.100	S 5.800
ON A	ON Amps	-LIM	
D165DS	I173DH	I174DV	I175DV
I205DS	I184QA	I186QB	D140DS
I191TA	I193TB	I195TC	I200DS
I209TA	I210TB	I211TC	I205DS
I216TA	I217TB	I218TC	I223DS
I200DS	I205DS	I223DS	I228DS
I232TA	I234TB	I236TC	I193TB
I241TA	I243TB	I245TC	I195TC
	I225DV	I247DH	I249DV
I256QA	I258QB	I265DS	I269DS
D140DS	I257SX	I255CB	I255CT
I181XG-R	I181XC-R	I181YG-R	I181YC-R

1 2 3 4

Single / Gang / Row Mode

Store (empty) Recall... | Store (empty) Recall... | Store (empty) Recall... | Store (empty) Recall... | Auto (empty) Recall...

VERSION 1.03

Pages: 22. S800 BLine+Spectrograph

```
A1900 "Print12May05_01h47.txt"  Thursday 01:47:48 2005-05-12  A1900
***                          run 53, br=2.7117 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09862 m   -0.00647 % (3.83055 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10145 m   -0.00086 % (3.83033 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00115 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09555 m   -0.00870 % (3.54281 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.71166 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10736 T  3.14194 m    3.14191 m   -0.00086 %
I205DS              1.10743 T  3.14204 m    3.14171 m   -0.01036 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09805 T  3.17034 m    3.16855 m   -0.05639 %
I265DS              0.97310 T  2.80280 m    2.78662 m   -0.57736 %
I269DS              0.96485 T  2.80280 m    2.81044 m    0.27275 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.29,   5.33 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

The S800 magnets (dipole) are not well matched ~0.27%

go #54, 55

05031 Run Sheet

Run# 56, 57, 58, 59, 60, 61 S800			
Date 12/05/05	**Begin:** 2-35		**End:**
Target: **Be** **Ta**	**Br=____** **Tm** 2.7117	dp/p=	Scaler 6390 Master.Live/Master___
^{64}**Ni** **Intensity_____pps** ^{68}**Ni** **Intensity_____pps**	Comments: Do not forget to print Barney! We opened Image 1 slits		
Who's on shift			

#59 at 4 01 a.m.

#60 at 4 35 am

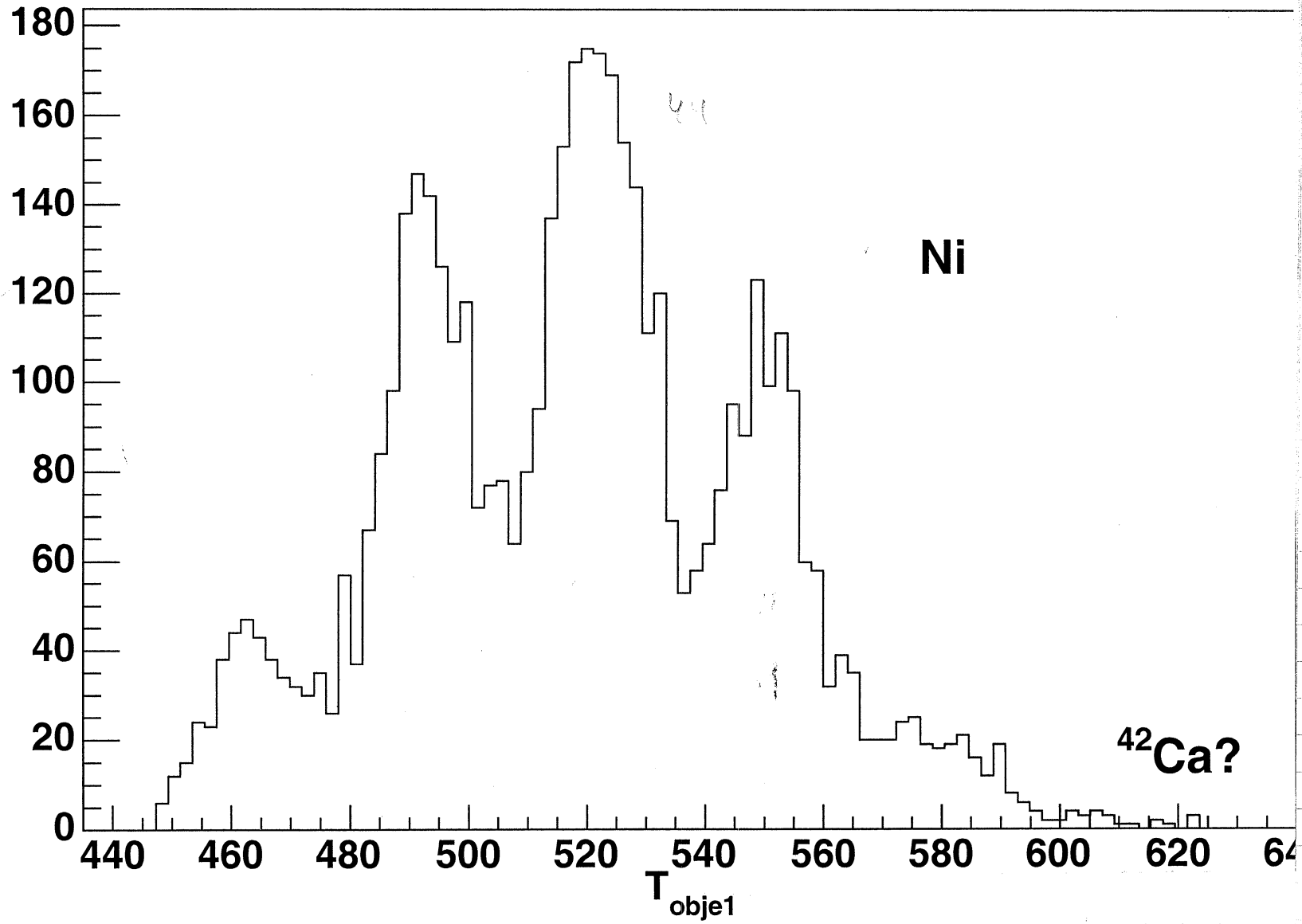
61 at 5 10 am

61 — 5 15 stop

```
A1900 "Print12May05_02h44.txt"  Thursday 02:44:12 2005-05-12  A1900
***                run56 opened image  i slits ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09861 m   -0.00689 % (3.83056 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10145 m   -0.00103 % (3.83034 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00153 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09556 m   -0.00860 % (3.54280 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.71166 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
I205DS              1.10738 T  3.14204 m    3.14186 m   -0.00585 %
I223DS              1.12360 T  3.09708 m    3.09650 m   -0.01869 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              0.96777 T  2.80280 m    2.80196 m   -0.02979 %
I269DS              0.96484 T  2.80280 m    2.81047 m    0.27379 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.55 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

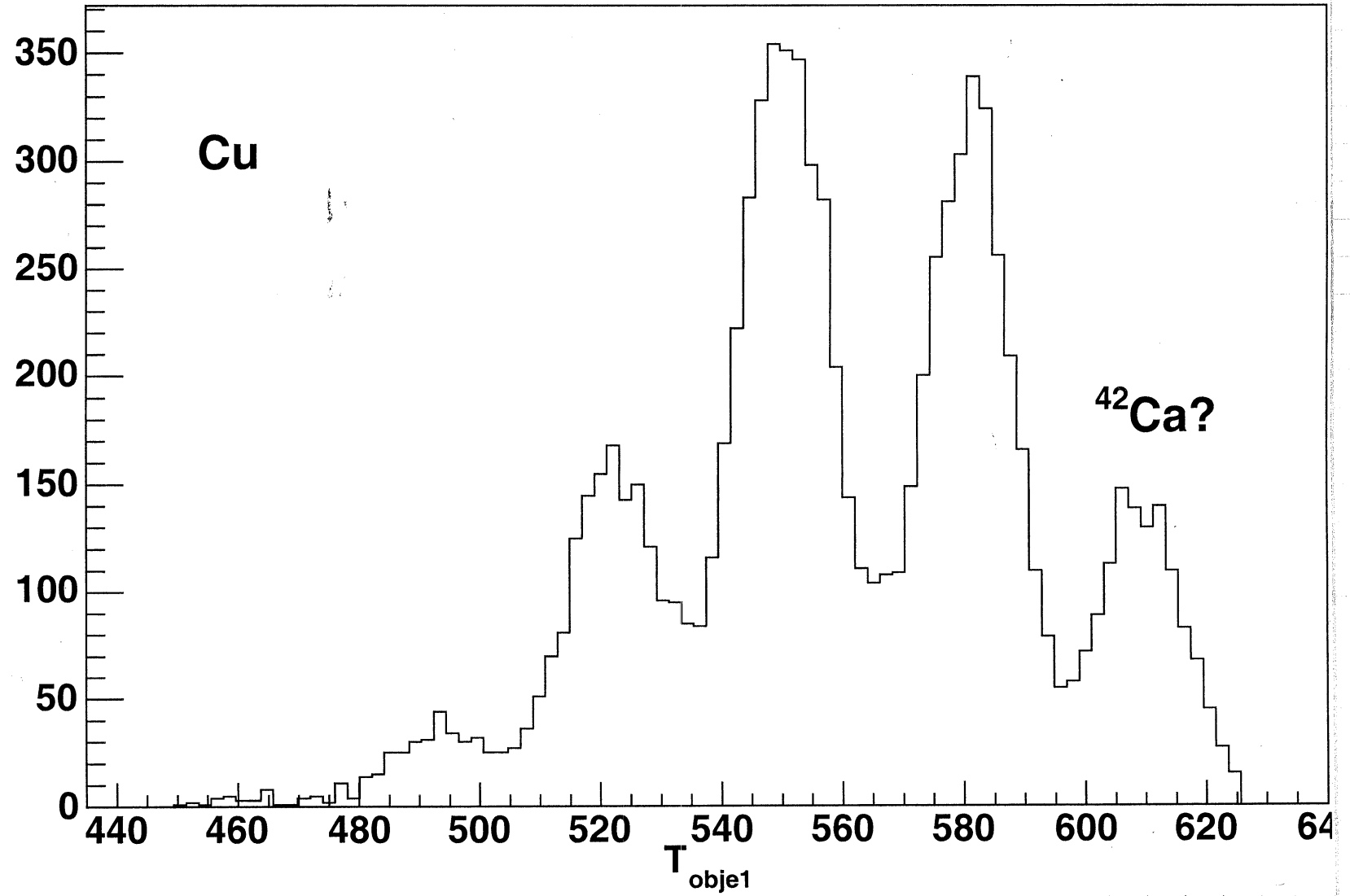
Calcium Distribution from Nickel

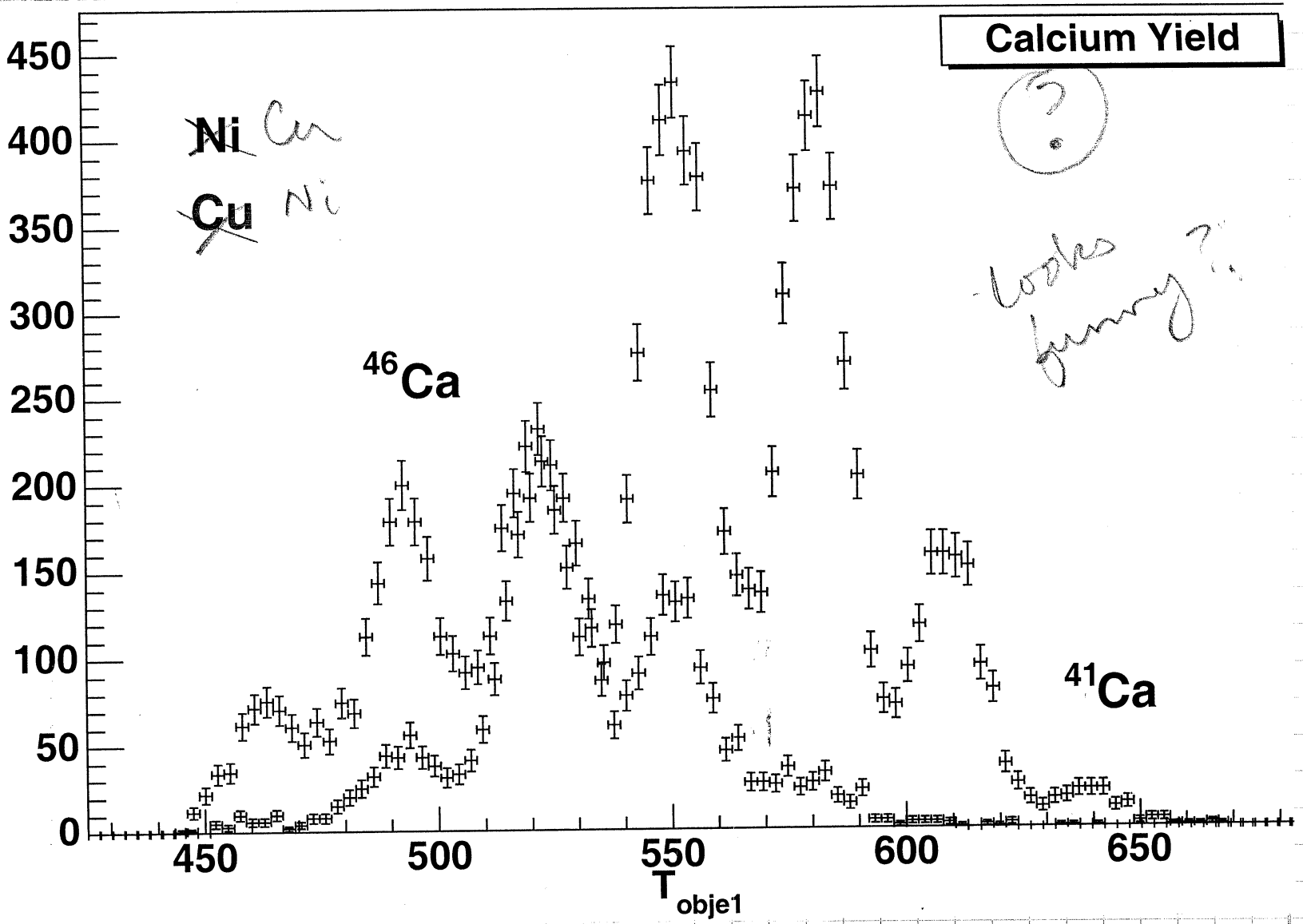
Runs 22-23



Ca Distribution from Copper

Runs 22-23




Calcium Yield
Ni Cu
Cu Ni
?
- looks funny?
46Ca
41Ca
450
400
350
300
250
200
150
100
50
0
450
500
550
600
650
Tobje1

03031 Run Sheet

Run# 62	S800		
Date 12 **/05/05**	***Begin:*** 5-15		***End:***
Target: **Be** **Ta**	**Br=**____ 2.75 **Tm**	dp/p=	Scaler ____ Master.Live/Master 70
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney! We close Image 1 slits at −1.3 Z037L aft 10 5.4 Z037R		
Who's on shift			

```
A1900 "Print12May05_05h19.txt"  Thursday 05:19:39 2005-05-12  A1900
***                          Run 62, Br=2.75 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09860 m   -0.00707 % (3.83057 Tm
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00114 % (3.83034 Tm
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00164 % (3.54256 Tm
Seg 4:  3.54250 Tm  1.14439 T  3.09582 m    3.09554 m   -0.00906 % (3.54282 Tm
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.75000 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10741 T  3.14204 m    3.14177 m   -0.00856 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
```

```
A1900 "Print12May05_05h23.txt"  Thursday 05:23:45 2005-05-12  A1900
                                        run  62 ***
***                                  "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Expt: 03031
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09862 m   -0.00643 % (3.83055 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10145 m   -0.00097 % (3.83034 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00140 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09556 m   -0.00867 % (3.54281 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.75000 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10741 T  3.14204 m    3.14177 m   -0.00856 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.33,   5.43 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.06, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

03031 Run Sheet

Run# 63	S800		
Date__/05/05	*Begin:*		*End:*
Target: **Be** Ta	Br=___ 2.74 Tm	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps ^{68}Ni Intensity______pps	Comments: Do not forget to print Barney! Short run		
Who's on shift			

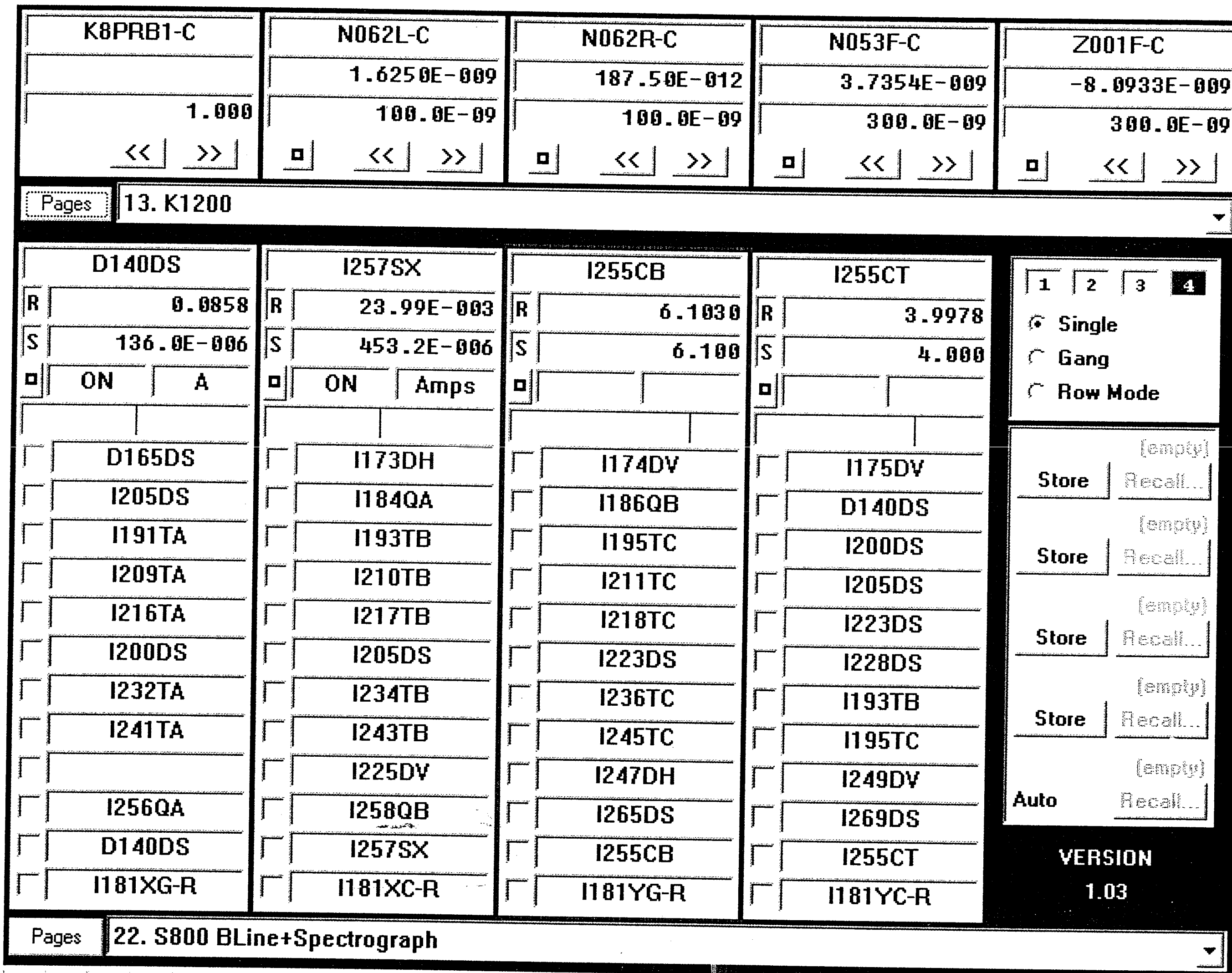
```
1900 "P]      ..._....... Thursday 06:27:43 2005-05-12  A1900
**                            RUn 63, Br=2.7448 ***
xpt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
eam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity         Field       Radius         (live)  Difference (Field*Radius)
eg 0:  4.32100 Tm
eg 1:  3.83030 Tm  1.23614 T  3.09882 m    3.09861 m   -0.00679 % (3.83056 Tm)
eg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00123 % (3.83035 Tm)
eg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00130 % (3.54255 Tm)
eg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09557 m   -0.00820 % (3.54279 Tm)
eg 5:  3.52130 Tm
eg 6:  3.47923 Tm
eg 7:  3.47923 Tm
eg 8:  2.74483 Tm
108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
205DS              1.10742 T  3.14204 m    3.14174 m   -0.00946 %
223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
015TL: [4"]Be 235, Z016TL [0"] out
030BC Beam Stop: -126.22 mm
037L,R:   -1.33,   5.43 mm; Z037DC:  out
057MS: 1.5 pct, Z061MS:  out
059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
110 Cent,Gap:   -0.01,  -0.04 mm; D110    0.02,  10.00 mm F110   -0.01,   0.69
110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
lits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
214DC Detector: _PPAC_
```

03031 Run Sheet

Run# 64, 65, 66			S800
Date 12/05/05	***Begin:*** 6-30		***End:***
Target: **Be** **Ta**	**Br=** 2.8 **Tm**	dp/p=	Scaler ____ Master.Live/Master 45%
^{64}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney!		
^{68}**Ni** **Intensity**_____**pps**	T 25SCT 4.000 I 25SCB 6.1 att 3		
Who's on			

```
A1900 "Print12May05_06h35.txt"  Thursday 06:35:24 2005-05-12  A1900
***                              Run 64, Br=2.8 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    3>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23613 T  3.09882 m    3.09862 m   -0.00634 % (3.83054 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10145 m   -0.00094 % (3.83034 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09496 m   -0.00175 % (3.54256 Tm)
Seg 4:  3.54250 Tm  1.14438 T  3.09582 m    3.09557 m   -0.00833 % (3.54280 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.80000 Tm
Z108DS              0.50230 T  7.04675 m    7.05256 m    0.08242 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10739 T  3.14204 m    3.14183 m   -0.00675 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              0.99458 T  2.80280 m    2.81526 m    0.44451 %
I269DS              0.99358 T  2.80280 m    2.81809 m    0.54560 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.33,   5.43 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
```

We cannot adj cut knock-up planes,
due to they come in center at 2.8 Tm.



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3.7354E-009
300.0E-09
Z001F-C
-8.0933E-009
300.0E-09
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13. K1200
D140DS
R 0.0858
S 136.0E-006
ON A
I257SX
R 23.99E-003
S 453.2E-006
ON Amps
I255CB
R 6.1030
S 6.100
I255CT
R 3.9978
S 4.000
1 2 3 4
Single
Gang
Row Mode
D165DS
I205DS
I191TA
I209TA
I216TA
I200DS
I232TA
I241TA
I256QA
D140DS
I181XG-R
I173DH
I184QA
I193TB
I210TB
I217TB
I205DS
I234TB
I243TB
I225DV
I258QB
I257SX
I181XC-R
I174DV
I186QB
I195TC
I211TC
I218TC
I223DS
I236TC
I245TC
I247DH
I265DS
I255CB
I181YG-R
I175DV
D140DS
I200DS
I205DS
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I228DS
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I195TC
I249DV
I269DS
I255CT
I181YC-R
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Recall...
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1.03
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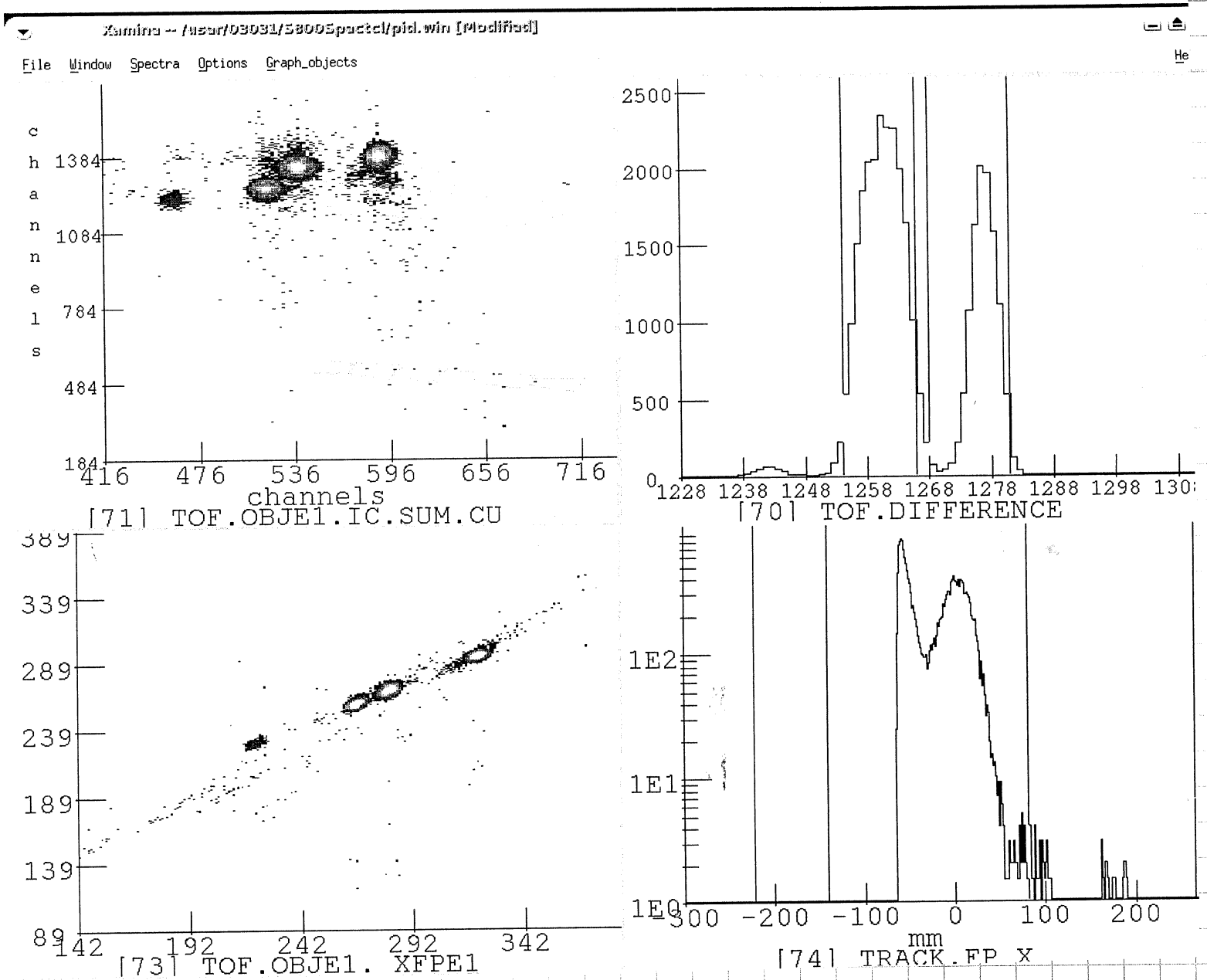
22. S800 BLine+Spectrograph

Run 65 at 06:50
66 at 7:07
67 7-25
68 7-42
69 at 8-00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File Window Spectra Options Graph_objects
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1084
784
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184
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89
142 192 242 292 342
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1E1
1E0
300 -200 -100 0 100 200
mm
[74] TRACK.FP X

Betty Tsang

From: Raman Anantaraman [anantaraman@nscl.msu.edu]
Sent: Thursday, May 12, 2005 8:55 AM
To: tsang@nscl.msu.edu
Subject: Change in scope of experiment 03031

Dear Betty,

Thomas Glasmacher, acting for Konrad, has approved the change in the scope of your experiment 03031 that you requested.

Raman

Betty Tsang

From: Betty Tsang [tsang@nscl.msu.edu]
Sent: Wednesday, May 11, 2005 3:19 PM
To: Anantaraman
Cc: Lukyanov@nscl.msu.edu
Subject: 03031

May 11, 2005

Dear Konrad

I am writing to request changes of experimental running condition in experiment 03031, "Rare Isotope Prodcution". The experiment started Monday, May 9.

In the original proposal, we planned to do fragmentation of Ni68 on two targets, Be and Ta. However, with Ni beam at E/A~100 MeV, we found that different charge states from the beam and from the fragments cause problems with particle identifications. This problem becomes more severe with the heavier Ta target. Our past experience also suggests that neutron rich beams are more effective to produce neutron rich isotopes. Thus we propose to shorten our run time with Ta target. We would like to use the time originally planned for the Ta target to collect data on fragmentation of other rare isotopes. According to the A1900 group, secondary beams of Zn72 and Cu71 can be produced at the same setting rather easily with the current primary beam. As proposal 03031 is one of the pioneer experiments designed to examine fragmentation of unstable beams, I believe this change will yield more significant and interesting physics results. I hope you concur with our assessment and approve the change.

Best Regards,

Betty Tsang
(spokesperson for experiment 03031)

Run Summary				Exp:	3031				May-05	
		S800	A1900		Raw.Clock					
Run #	Beam	Brho	Dp/p	obj scinl	C_FREE	sci/c_free	file size	date	comments	size/sci
1	Ni64									
2	Ni64									
3	Ni64									
4	Ni64									
5	Ni64								DATE	
6	Ni64	2.5788	0.50%	85569	1E+07	0.01	108314624	3:42	10-May	1265.82
7	Ni64	2.6839	0.50%	34348263	4227951	8.12	427925504	4:21		12.46
8	Ni64	2.4627	0.50%	44796102	5844449	7.66	529891328	4:42	PID seen	11.83
9	Ni64	2.4627	0.50%	32608791	2789080	11.69	13713408	4:48	mask CRDC1	0.42
10	Ni64	2.4627	0.50%	40722340	2881710	14.13	15605760	4:54	mask CRDC2	0.38
11	Ni64	2.4627	0.50%	825344	115754	7.13	170409984	5:00	readout crash	206.47
12	Ni64	2.4627	0.50%	1.01E+08	1.4E+07	7.12	1254719488	5:24		12.38
13	Ni64	2.4627	0.50%	96821806	1.2E+07	7.76	1149566976	5:46		11.87
14	Ni64	2.38	0.50%	95010500	1.3E+07	7.18	1073266688	6:12		11.30
15	Ni64	2.38	0.50%	88645012	1.5E+07	5.95	1061724160	6:37		11.98
16	Ni64	2.38	0.50%	56638639	1.3E+07	4.29	778092544	6:59		13.74
17	Ni64	2.3	0.50%	37989413	5603627	6.78	132292608	7:17		3.48
18	Ni68	2.803		7663	1787311	0.00	8716288	16:20		1137.45
19	Ni68	2.803		47519	1723482	0.03	58073088	17:07		1222.10
20	Ni68	2.6671		67530693	1.9E+07	3.49	1033109504	18:52		15.30
21	Ni68	2.6		84937345	2.9E+07	2.90	1302102016	19:46		15.33
22	Ni68	2.53		32542773	1.5E+07	2.15	542097408	20:47		16.66
23	Ni68	2.53		3098383	1247438	2.48	1599258624	21:23		516.16
24	Ni68	2.6671				#DIV/0!	1140424704	22:18		#DIV/0!
25	Ni68	2.9286		45684220	4256197	10.73	472506368	0:02	11-May	10.34
26	Ni68	3.0093		1.37E+08	1.4E+07	10.11	920248320	0:29		6.74
27	Ni68	bad		4601342	6718887	0.68	19496960	0:44		4.24
28	Ni68	3.02		7662165	2819862	2.72	33005568	0:51		4.31
29	Ni68	3.02		1.19E+09	1.7E+08	7.10	2097152000	2:48		1.76
30	Ni68	3.02		2.68E+08	6.1E+07	4.42	1124352000	7:14		4.20
31	Ni68	3.02		1.03E+08	2.4E+07	4.23	431685632	7:56		4.20
32	Ni68	3.0807		52458752	7698247	6.81	17473536	8:15		0.33
33	Ni68	3.0807		4.12E+08	3.7E+07	11.24	133955584	9:58		0.33
34	Ni68	3.0807		1.26E+08	1.4E+07	9.35	41762816	10:21		0.33
35	Ni68	3.0807		3.48E+08	3.6E+07	9.57	111820800	12:08		0.32
36	Ni68	3.0807		6.13E+08	1.8E+07	34.72	342753280	12:44		0.56
[redacted]	Ni68	2.8578	[redacted]	1681519	1.2E+07	0.14	1191854080	13:38	[redacted]	708.80
38	Ni68	2.8578		14750357	4921928	3.00	220749824	13:58		14.97
39	Ni68	2.8578	0.50%	1.73E+08	1.8E+07	9.83	1768636416	14:34	data	10.24
40	Ni68	2.8578	0.50%	2.94E+08	2.7E+07	10.76	2097152000	15:07		7.13
41	Ni68	2.8578	0.50%	2.59E+08	2.5E+07	10.40	2097152000	15:53		8.11
42	Ni68	2.8578	0.50%	80140343	8462142	9.47	822878208	16:16		10.27
43	Ni68	2.8578	0.50%	3.37E+08	3.6E+07	9.46	2097152000	16:52		6.22
44	Ni68	2.8578	0.50%	2.38E+08	2.3E+07	10.54	2097152000	17:52		8.80
45	Ni68	2.8578	0.50%	2.1E+08	1.9E+07	11.05	2013888512	18:27		9.60
46	Ni68	2.8578	0.50%	2.14E+08	2.1E+07	10.40	2097152000	19:01		9.79
47	Ni68	2.9657	0.50%	4.04E+08	4.1E+07	9.83	1092501504	21:20		2.70
48	Ni68	2.9657	0.50%	4.3E+08	4.2E+07	10.34	1139695616	22:30		2.65
49	Ni68	2.9657	0.50%	4.27E+08	4.4E+07	9.78	1123442688	23:43		2.63
50	Ni68	2.9657	0.50%	2.53E+08	3.7E+07	6.91	670572544	0:44	12-May	2.65
51	Ni68	2.9657	0.50%	1310550	203727	6.43	3293184	0:45		2.51
[redacted]	Ni68	2.9657	[redacted]	39311177	1.2E+07	3.20	690118656	1:11	[redacted]	17.56
53	Ni68	2.717		31510787	1.1E+07	2.91	588054528	1:58		18.66
54	Ni68	2.717		28750353	1E+07	2.87	538378240	2:15		18.73
55	Ni68	2.717		36059704	1.4E+07	2.64	573186048	2:37		15.90
56	Ni68	2.717		75088626	1.3E+07	5.69	1006321664	3:04	l2slits are ope	13.40
57	Ni68	2.717		69938153	1.8E+07	3.82	1088372736	3:35		15.56
58	Ni68	2.717		91057424	1.9E+07	4.72	1309736960	4:07		14.38
59	Ni68	2.717		90426708	1.7E+07	5.44	1249869824	4:35		13.82
60	Ni68	2.717		1.1E+08	2.1E+07	5.19	1549049856	5:10		14.04
61	Ni68	2.717		6877156	1345003	5.11	97730560	5:13		14.21
62	Ni68	2.74		9309137	2.5E+07	0.37	1937252352	6:02		208.10
63	Ni68	2.8		511443	1324616	0.39	103817216	6:29		202.99
64	Ni68	2.8		8162121	1E+07	0.80	1092059136	6:51		133.80
65	Ni68	2.8		7439309	9649715	0.77	1025507328	7:08		137.85
66	Ni68	2.8		7689740	1E+07	0.74	1083596800	7:25		140.91
67	Ni68	2.8		7448882	1E+07	0.72	1054343168	7:43		141.54
68	Ni68	2.8		8938212	1.2E+07	0.73	1257127936	8:03		140.65
69	Ni68	2.8		5653637	8089108	0.70	816128000	8:17		144.35
70	Ni68	2.8								

GC Source reloading

12 May 05

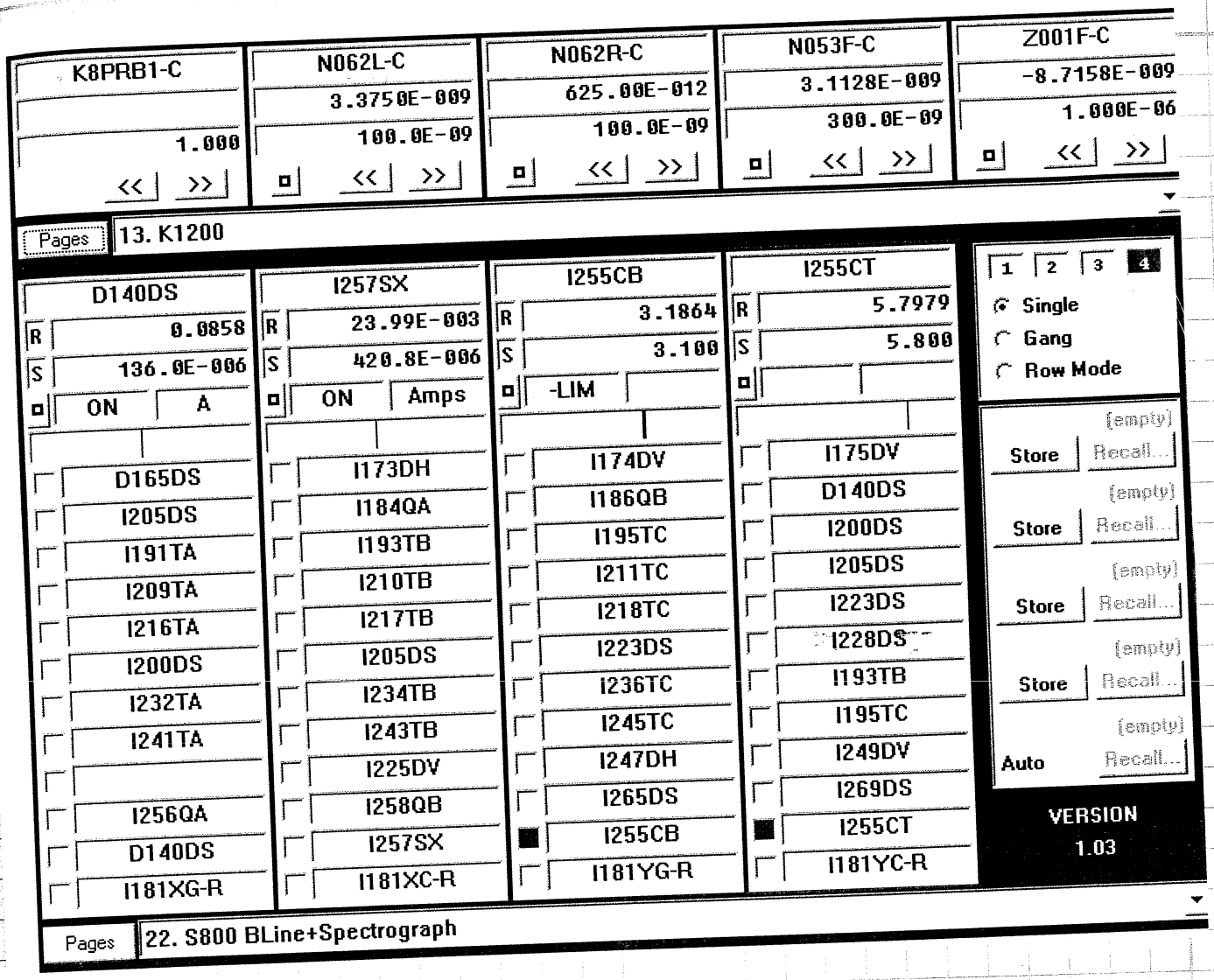
21:00

Beam is coming again

03031 Run Sheet

Run# 70	S800		
Date__/05/05	*Begin:* 21:09		*End:*
Target: **Be** Ta	Br=____ Tm 2.60	dp/p= 0.5%	Scaler ____ Master.Live/Master 69%
^{64}Ni Intensity_____pps	Comments: Do not forget to print Barney! I mag I Bav 2030bC 4.7 A 2037R 9.5 A ⇒ $\frac{\Delta p}{p}^{A1900}$ = 0.5%		
^{68}Ni Intensity_____pps			
Who's on shift			

```
A1900 "Print12May05_21h19.txt"  Thursday 21:19:28 2005-05-12  A1900
***                                          run 70 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    3>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,    62 A RF:  22.49300 MHz
        A1900 Optics: G19S3V13_30x20Focus60x30.data
        Rigidity         Field      Radius       (live)   Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00877 % (3.83064 Tm)
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10141 m   -0.00217 % (3.83038 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00080 % (3.54253 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09549 m   -0.01065 % (3.54288 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.60000 Tm
```



Z108DS	0.50250 T	7.04675 m	7.04975 m	0.04259 %
D140DS	0.00145 T	2282.62069 m	2428.48276 m	6.39011 %
D165DS	0.37209 T	9.46362 m	9.46361 m	-0.00013 %
I200DS	1.10735 T	3.14194 m	3.14194 m	0.00004 %
I205DS	1.10727 T	3.14204 m	3.14217 m	0.00408 %
I223DS	1.12358 T	3.09708 m	3.09656 m	-0.01691 %
I228DS	1.09806 T	3.17034 m	3.16852 m	-0.05730 %
I265DS	0.92753 T	2.80280 m	2.80314 m	0.01227 %
I269DS	0.92752 T	2.80280 m	2.80317 m	0.01335 %

Z001TL: out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R: -4.70, 9.53 mm; Z037DC: out
Z057MS: 1.5 pct, Z061MS: out
Z059DC: out, Z062SC: out, Z057TL: [5"]Al 240
Z082 XC,G,YG: 0.16, 203.50, 202.05 mm Z082Deg: out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap: 0.01, -0.04 mm; D110 -0.00, 10.00 mm F110 0.01, 0.69
B110DC: out, D110DC: out, D111DC: 5 mil BC-404, F110DC: out
Slits: I181 XC,G,YC,G: 0.79, 98.98; -0.00, 98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_

03031 Run Sheet

Run# 71	S800		
Date__/05/05	***Begin:*** ~22^{00}		***End:*** 2232
Target: **Be** ~~Ta~~	**Br=**____ **Tm** 2.53Tm	dp/p=	Scaler ____ Master.Live/Master 43%
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney! -3.7 2037L 8.53 2037R		
Who's on shift	Betty, Sergei, Ludmila, Carla		

```
A1900 "Print12May05_21h49.txt"  Thursday 21:49:23 2005-05-12  A1900
***                          run 71, br=2.53 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09856 m   -0.00837 % (3.83062 Tm)
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10142 m   -0.00194 % (3.83037 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00164 % (3.54256 Tm)
Seg 4:  3.54250 Tm  1.14440 T  3.09582 m    3.09550 m   -0.01060 % (3.54288 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  [illegible] Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m  6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10734 T  3.14194 m    3.14197 m    0.00095 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              0.90685 T  2.80280 m    2.78988 m   -0.46107 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -3.70,    8.53 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
```

← less than 0.5%

03031 Run Sheet

Run# 72	S800		
Date 12/05/05	***Begin:***		***End:***
Target: **Be** Ta	**Br=**____ Tm 3.0807	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity____pps ^{68}Ni Intensity____pps	Comments: Do not forget to print Barney! A1900 dp/p = 0.5 %		
Who's on shift	≈ 20 min		

```
A1900 "Print12May05_23h04.txt"  Thursday 23:04:46 2005-05-12  A1900
***                          run72 br=3.0807 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09856 m   -0.00846 % (3.83062 Tm
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10143 m   -0.00163 % (3.83036 Tm
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09498 m   -0.00105 % (3.54254 Tm
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09549 m   -0.01086 % (3.54288 Tm
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10731 T  3.14204 m    3.14205 m    0.00047 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              1.09699 T  2.80280 m    2.80832 m    0.19698 %
I269DS              1.09733 T  2.80280 m    2.80745 m    0.16593 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,    9.53 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,    0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
```

0.5 %

K8PRB1-C	N062L-C	N062R-C	N053F-C	Z001F-C
1.000	13.500E-009	1.7500E-009	2.4902E-009	-9.3384E-009
<< >>	100.0E-09 << >>	100.0E-09 << >>	300.0E-09 << >>	1.000E-06 << >>

Pages | 13. K1200

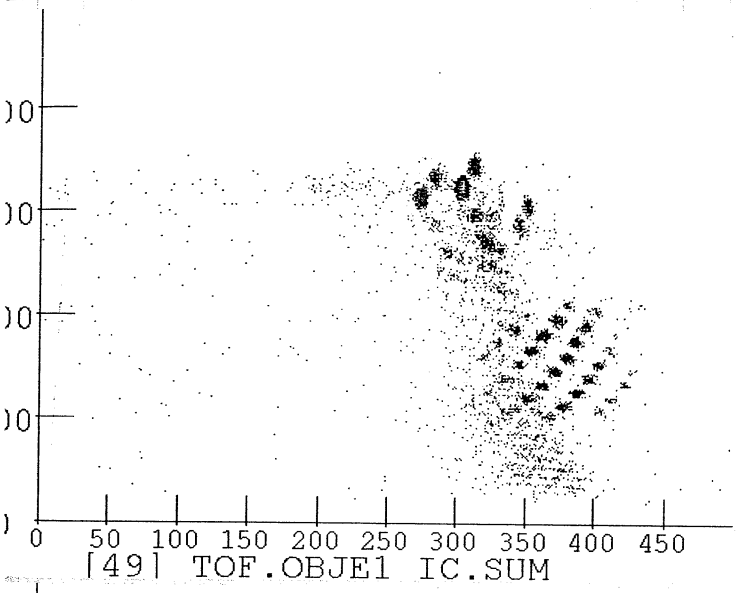
D140DS	I257SX	I255CB	I255CT
0.0858	R 23.99E-003	R 3.1864	R 5.7979
136.0E-006	S 498.6E-006	S 3.100	S 5.800
ON A	ON Amps	-LIM	
D165DS	I173DH	I174DV	I175DV
I205DS	I184QA	I186QB	D140DS
I191TA	I193TB	I195TC	I200DS
I209TA	I210TB	I211TC	I205DS

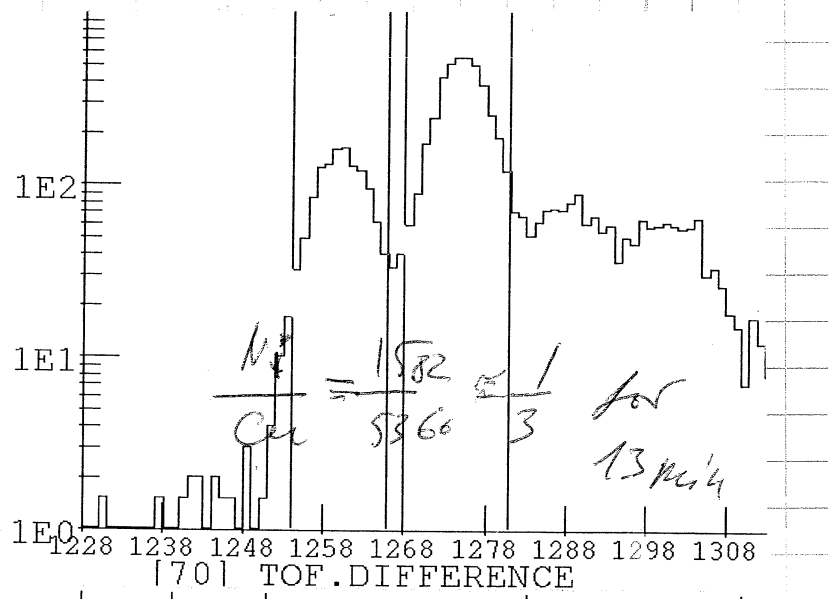
1 2 3 4

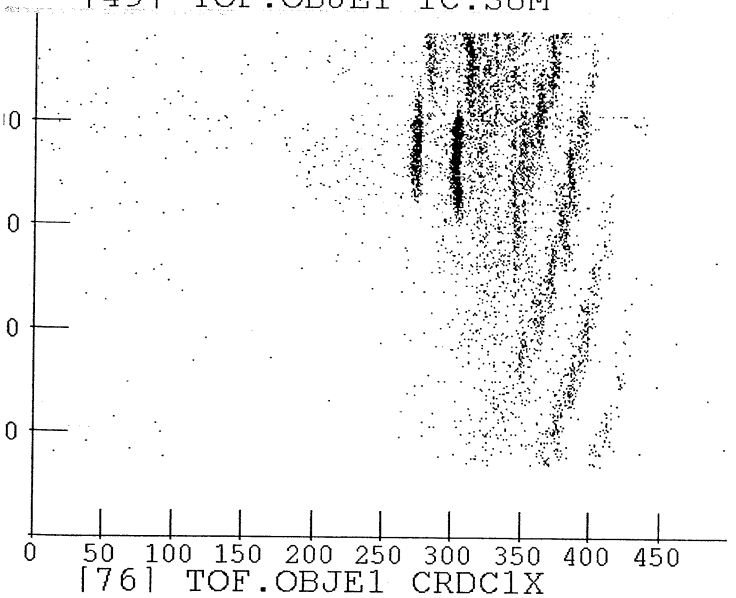
Single
Gang
Row Mode

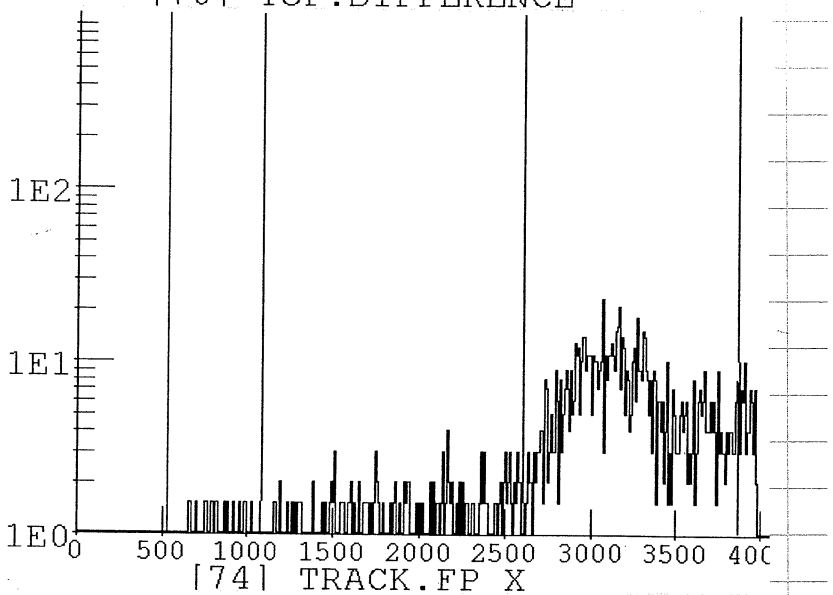
Store (empty) Recall...

Store (empty) Recall...





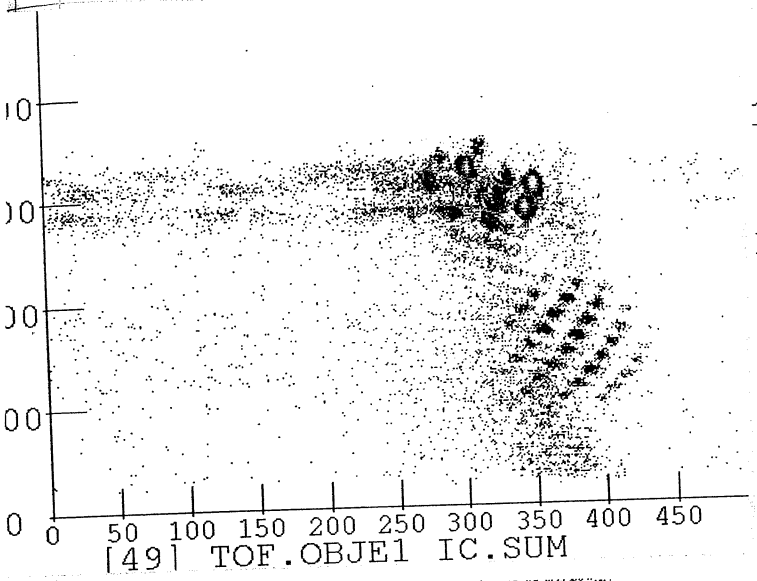


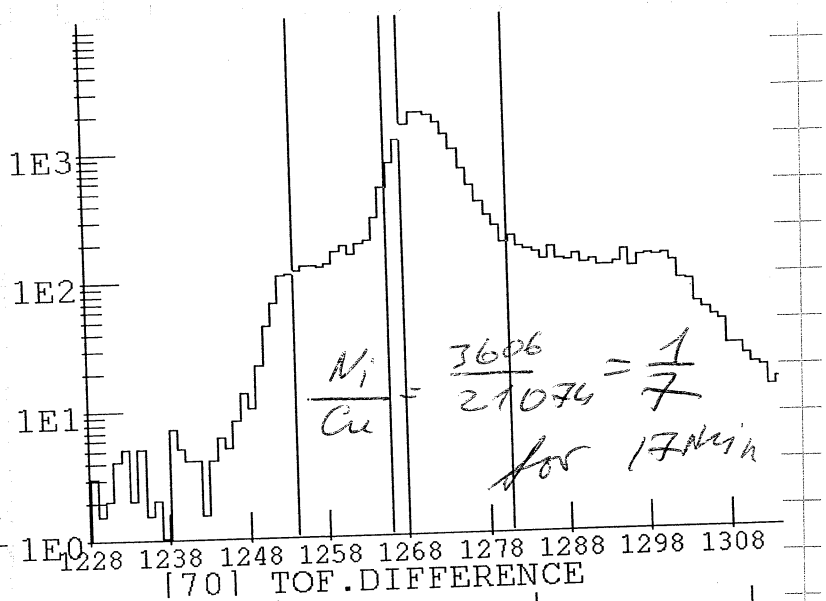


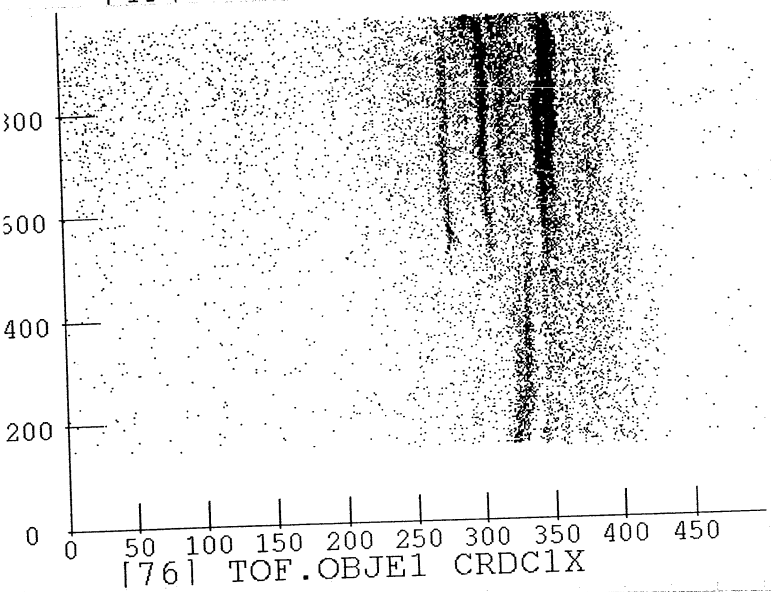
```
A1900 "Print12May05_23h29.txt"  Thursday 23:29:41 2005-05-12  A1900
***                          run 73, br=3.0807 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09856 m   -0.00838 % (3.83062 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10143 m   -0.00177 % (3.83037 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00117 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14440 T  3.09582 m    3.09550 m   -0.01057 % (3.54287 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              1.09697 T  2.80280 m    2.80837 m    0.19881 %
I269DS              1.09730 T  2.80280 m    2.80753 m    0.16867 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC
```

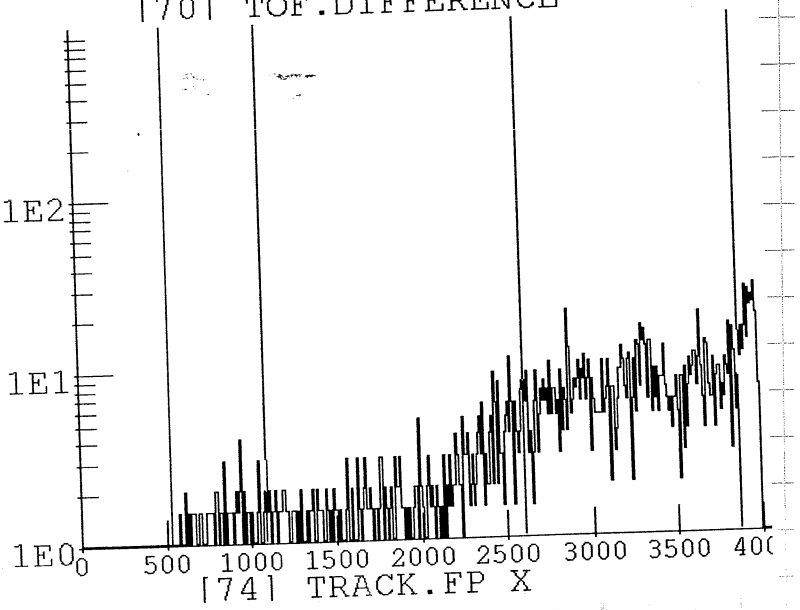
03031 Run Sheet

Run 73	S800		
Date __/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=**___ **Tm** 3.0807	dp/p= dp/p = 1.5% for A1900	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney! 1.330·10^9 counts on obj. scint.		
Who's on shift	Betty, Sergey		


0
50 100 150 200 250 300 350 400 450
[49] TOF.OBJE1 IC.SUM


1E3
1E2
1E1
1E0
1228 1238 1248 1258 1268 1278 1288 1298 1308
[70] TOF.DIFFERENCE
Ni/Cu = 3606/21076 = 1/7
for 17MeV/n


0
200
400
500
300
0 50 100 150 200 250 300 350 400 450
[76] TOF.OBJE1 CRDC1X


1E2
1E1
1E0
0 500 1000 1500 2000 2500 3000 3500
[74] TRACK.FP X

03031 Run Sheet

Run# 74	S800		
Date 13/05/05	***Begin:*** 12:39		***End:*** 1:43
Target: (Be) Ta	**Br=** 3.0807 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.947
^{64}Ni Intensity____pps ☐ ^{68}Ni Intensity____pps ✓	Comments: Do not forget to print Barney! $1.246 \cdot 10^9$ object scintillator total		
Who's on shift	Andy, Mark, Josh		

```
A1900 "Print13May05_00h41.txt"     Friday 00:41:13 2005-05-13  A1900
***                                                  run74 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09857 m   -0.00811 % (3.83061 Tm)
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10141 m   -0.00220 % (3.83038 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00123 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09548 m   -0.01115 % (3.54289 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.09699 T  2.80280 m    2.80832 m    0.19698 %
I269DS              1.09730 T  2.80280 m    2.80753 m    0.16867 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

03031 Run Sheet

Run# 75	S800		
Date 13/05/05	***Begin:*** 1:49		***End:*** 3:00
Target: (**Be**) **Ta**	**Br=** 3.0807 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.945
^{64}**Ni** Intensity____pps ☐ ^{68}**Ni** Intensity____pps ☑	Comments: Do not forget to print Barney! At the end of the run the source output dropped. Dallas Cole is testing from home (3:05).		
Who's on shift	Andy, Mark, Josh, Jacob		

```
900 "Print13May05_01h54.txt"     Friday 01:54:58 2005-05-13  A1900
*                                          run75 ***
pt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
am: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
:t    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
)0 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
     A1900 Optics: G19S3V13_30x20Focus60x30.data
     Rigidity       Field     Radius       (live)  Difference (Field*Radius)
g 0:  4.32100 Tm
g 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00865 % (3.83063 Tm)
g 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10141 m   -0.00225 % (3.83039 Tm)
g 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09496 m   -0.00184 % (3.54257 Tm)
g 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09549 m   -0.01093 % (3.54289 Tm)
g 5:  3.52130 Tm
g 6:  3.47923 Tm
g 7:  3.47923 Tm
g 8:  3.08070 Tm
)8DS               0.50250 T  7.04675 m    7.04975 m    0.04259 %
10DS               0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
55DS               0.37209 T  9.46362 m    9.46361 m   -0.00013 %
)0DS               1.10734 T  3.14194 m    3.14197 m    0.00095 %
)5DS               0.00000 T  3.14204 m    0.00000 m  100.00000 %
23DS               1.12357 T  3.09708 m    3.09658 m   -0.01602 %
28DS               1.09804 T  3.17034 m    3.16858 m   -0.05548 %
55DS               1.09696 T  2.80280 m    2.80840 m    0.19972 %
59DS               1.09732 T  2.80280 m    2.80748 m    0.16685 %
)1TL:  out, Z013TL: [0"] out; Z014TL [0"] out
.5TL: [4"]Be 235, Z016TL [0"] out
30BC Beam Stop: -126.09 mm
37L,R:  -19.70,  24.03 mm; Z037DC:  out
57MS: 1.5 pct, Z061MS:  out
59DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
32 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
)1DC: out, Z102DC: out; Z103DC: out, Z105SC: out
.0 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,   0.69
.0DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
.ts: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
```

Run# 76	S800		
Date 13/05/05	Begin: 5:04		End:
Target: Be Ta	Br= 3.02 Tm	dp/p= 1.5%	Scaler ____ Master.Live/Master___
^{64}Ni Intensity____pps ^{68}Ni Intensity____pps	Comments: Do not forget to print Barney! - Prior to run source was retuned. - Run title was accidently created with Bρ = 3.0807. - 6.5·10^8 counts Obj. Scint.		
Who's on shift	Andy, Mark, Josh, Jacob		

```
A1900 "Print13May05_05h05.txt"    Friday 05:05:11 2005-05-13  A1900
***                          run 76-br = 3.02 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00873 % (3.83063 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00134 % (3.83035 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00114 % (3.54254 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09547 m   -0.01146 % (3.54291 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10735 T  3.14204 m    3.14194 m   -0.00314 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              1.07730 T  2.80280 m    2.80330 m    0.01794 %
I269DS              1.07740 T  2.80280 m    2.80304 m    0.00865 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,    0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.06,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

03031 Run Sheet

Run# 77	S800		
Date 13 /05/05	***Begin:*** 5:30		***End:*** 5:55
Target: (Be) Ta	**Br=** 3.02 Tm	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.476
^{64}Ni Intensity_____pps ☐	Comments: Do not forget to print Barney!		
^{68}Ni Intensity_____pps ✓	~~1.5 10^6~~ 6.22·10^8 obj. scint.		
Who's on	Andy, Mark		

```
A1900 "Print13May05_05h31.txt"    Friday 05:31:31 2005-05-13  A1900
***                                                  run77 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00872 % (3.83063 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00140 % (3.83035 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00071 % (3.54253 Tm)
Seg 4:  3.54250 Tm  1.14442 T  3.09582 m    3.09546 m   -0.01160 % (3.54291 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10731 T  3.14204 m    3.14205 m    0.00047 %
I223DS              1.12359 T  3.09708 m    3.09653 m   -0.01780 %
I228DS              1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS              1.07730 T  2.80280 m    2.80330 m    0.01794 %
I269DS              1.07743 T  2.80280 m    2.80296 m    0.00587 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,    0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector:  PPAC
```

03031 Run Sheet

Run# 78	S800		
Date 11/05/05	***Begin:*** 5:56		***End:*** 6:21
Target: (Be) Ta	**Br=** 3.02 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.583
^{64}Ni ☐ Intensity____pps ^{68}Ni ☑ Intensity____pps	Comments: Do not forget to print Barney! 5.5·10^8		
Who's on shift	Andy, Mark		

```
A1900 "Print13May05_05h57.txt"    Friday 05:57:06 2005-05-13  A1900
***                                                  run78 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00862 % (3.83063 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10143 m   -0.00172 % (3.83037 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00151 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09547 m   -0.01136 % (3.54290 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10729 T  3.14204 m    3.14211 m    0.00228 %
I223DS              1.12360 T  3.09708 m    3.09650 m   -0.01869 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              1.07731 T  2.80280 m    2.80328 m    0.01701 %
I269DS              1.07745 T  2.80280 m    2.80291 m    0.00401 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"]
```

03031 Run Sheet

Run# 79	S800	
Date 13/05/05	Begin: 6:22	End: 6:25
Target: (Be) Ta	Br= 3.02 Tm	dp/p= 1.5%
^{64}Ni Intensity_____pps ☐	Comments: Do not forget to print Barney! • Ended run to change momentum slits to 0.5%	Scaler ____ Master.Live/Master 0.558
^{68}Ni Intensity_____pps ☑		
Who's on	Andy, Mark	

```
A1900 "Print13May05_06h22.txt"    Friday 06:22:59 2005-05-13  A1900
***                                                    run79 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00860 % (3.83063 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00142 % (3.83035 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00093 % (3.54253 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09547 m   -0.01140 % (3.54290 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10727 T  3.14204 m    3.14217 m    0.00408 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.07729 T  2.80280 m    2.80333 m    0.01887 %
I269DS              1.07746 T  2.80280 m    2.80289 m    0.00308 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

03031 Run Sheet

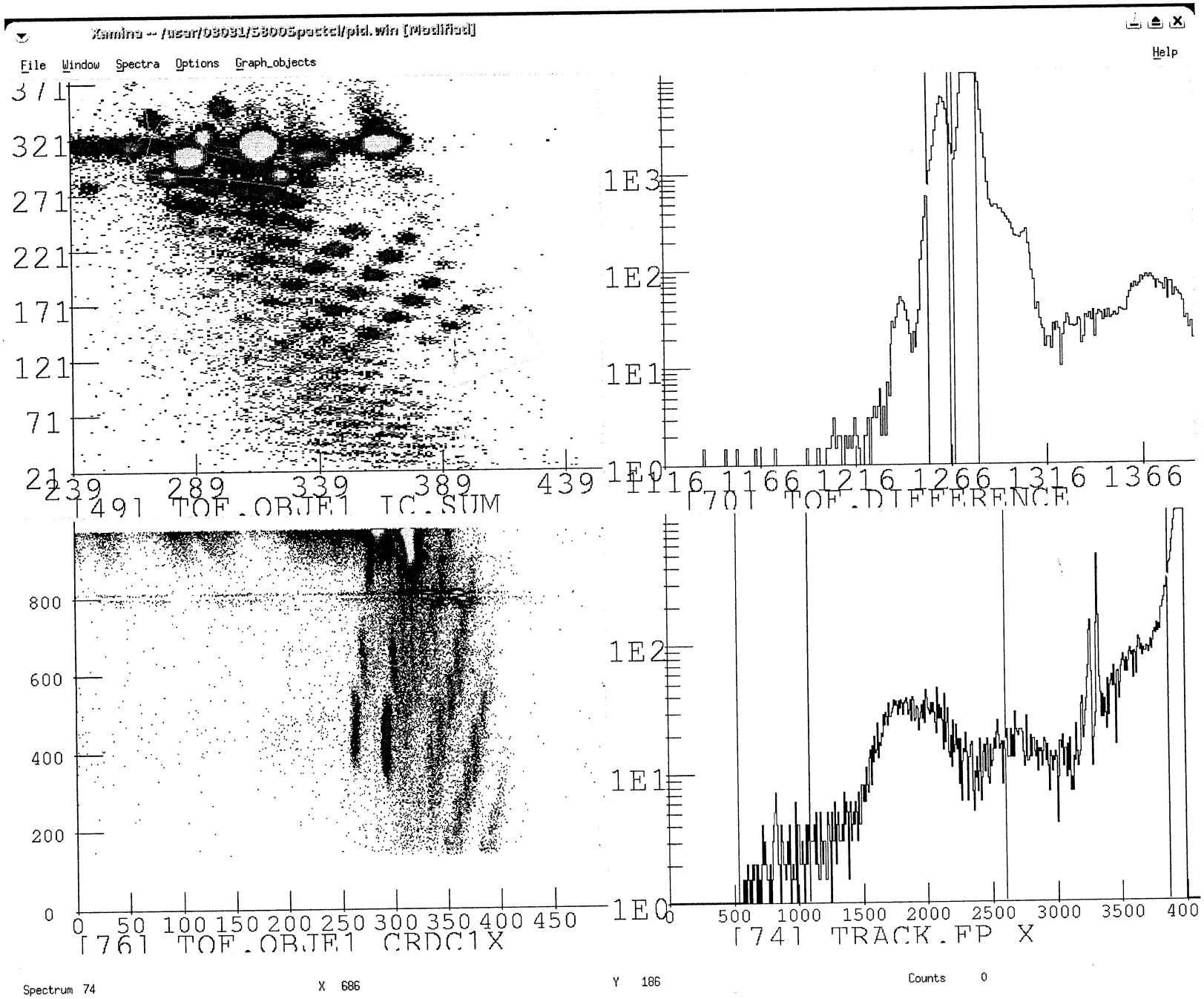
Run# 79	S800		
Date 13/05/05	***Begin:*** 6:22		***End:*** 6:25
Target: (Be) Ta	**Br=** 3.02 **Tm**	dp/p= 1.5%	Scaler ____ Master.Live/Master 0.559
^{64}Ni Intensity____pps ☐	Comments: Do not forget to print Barney! • Ended run to change momentum slits to 0.5%		
^{68}Ni Intensity____pps ☑			
Who's on	Andy, Mark		

```
A1900 "Print13May05_06h22.txt"    Friday 06:22:59 2005-05-13  A1900
***                                                run79 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00860 % (3.83063 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00142 % (3.83035 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00093 % (3.54253 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09547 m   -0.01140 % (3.54290 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10727 T  3.14204 m    3.14217 m    0.00408 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.07729 T  2.80280 m    2.80333 m    0.01887 %
I269DS              1.07746 T  2.80280 m    2.80289 m    0.00308 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,    0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

03031 Run Sheet

Run# 80	S800		
Date 13 /05/05	***Begin:*** 6:27		***End:***
Target: ~~Be~~ Ta	**Br=** 3.02 **Tm**	dp/p= 0.5%	Scaler ____ Master.Live/Master 3.76
^{64}Ni ☐ Intensity____pps	Comments: Do not forget to print Barney! • Slits at 0.5%		
^{68}Ni ☑ Intensity____pps	2.4-10^8 counts at Obj. Scint.		
Who's on shift	Andy, Mark		

```
A1900 "Print13May05_06h28.txt"     Friday 06:28:59 2005-05-13  A1900
***                                                    run80 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09856 m   -0.00839 % (3.83062 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m   -0.00131 % (3.83035 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00144 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14442 T  3.09582 m    3.09546 m   -0.01161 % (3.54291 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS              1.10730 T  3.14204 m    3.14208 m    0.00137 %
I223DS              1.12360 T  3.09708 m    3.09650 m   -0.01869 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              1.07731 T  2.80280 m    2.80328 m    0.01701 %
I269DS              1.07747 T  2.80280 m    2.80286 m    0.00216 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,    9.56 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 201.94 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: PPAC
```


Xamine -- /user/03051/53005spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
Help
371
321
271
221
171
121
71
21
239 289 339 389 439
[491 TOF.OBJF1 TC.SUM
1E3
1E2
1E1
1E0
1116 1166 1216 1266 1316 1366
[701 TOF.DIFFERENCE
800
600
400
200
0
0 50 100 150 200 250 300 350 400 450
[761 TOF.OBJF1 CRDC1X
1E2
1E1
1E0
0 500 1000 1500 2000 2500 3000 3500 400
[741 TRACK.FP X
Spectrum 74
X 686
Y 186
Counts 0
Geometry
Zoom
Update All
Expand
Marker
Cut
Display
Update Selected
UnExpand
Summing Region
Band
Display +
Info + -
Log
Map
Integrate
Contour

03031 Run Sheet

Run# 81	**S800**		
Date 13 /05/05	***Begin:*** 7:28		***End:*** 8:80
Target: (Be) Ta	**Br=** 3.02 **Tm**	dp/p= 0.5%	Scaler ____ Master.Live/Master 0.89
^{64}Ni Intensity____pps ☐ ^{68}Ni Intensity____pps ☑	Comments: Do not forget to print Barney!		
Who's on shift	Andy, Mark		

```
A1900 "Print13May05_07h29.txt"     Friday 07:29:03 2005-05-13  A1900
***                                                      run81 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00866 % (3.83063 Tm)
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10144 m    0.00000 % (3.83035 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00089 % (3.54253 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09547 m   -0.01130 % (3.54290 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50250 T  7.04675 m    7.04975 m    0.04259 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10736 T  3.14194 m    3.14191 m   -0.00086 %
I205DS              1.10731 T  3.14204 m    3.14205 m    0.00047 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09809 T  3.17034 m    3.16844 m   -0.06003 %
I265DS              1.07730 T  2.80280 m    2.80330 m    0.01794 %
I269DS              1.07746 T  2.80280 m    2.80289 m    0.00308 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.56 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.06, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189 [illegible]
```

03031 Run Sheet

Run# 82	S800		
Date__/05/05	***Begin:*** 840		***End:***
Target: **Be** **Ta**	**Br=** 3.02 **Tm**	dp/p= 0.5%	Scaler ____ Master.Live/Master 0.89
^{64}Ni ☐ **Intensity_____pps**	Comments: Do not forget to print Barney!		
^{68}Ni ☑ **Intensity_____pps**			

```
A1900 "Print13May05_08h40.txt"    Friday 08:40:02 2005-05-13  A1900
***                          run82 , 3.0200 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 50.0; 15.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radiu
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09856 m   -0.00826 % (3.83062
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10143 m   -0.00158 % (3.83036
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00129 % (3.54255
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09548 m    0.00000 % (3.54290
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.02000 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10733 T  3.14194 m    3.14200 m    0.00185 %
I205DS              1.10734 T  3.14204 m    3.14197 m   -0.00224 %
I223DS              1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              1.07730 T  2.80280 m    2.80330 m    0.01794 %
I269DS              1.07745 T  2.80280 m    2.80291 m    0.00401 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:   -4.70,   9.56 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110    0.02,  10.00 mm F110   -0.01,    0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

9[55]

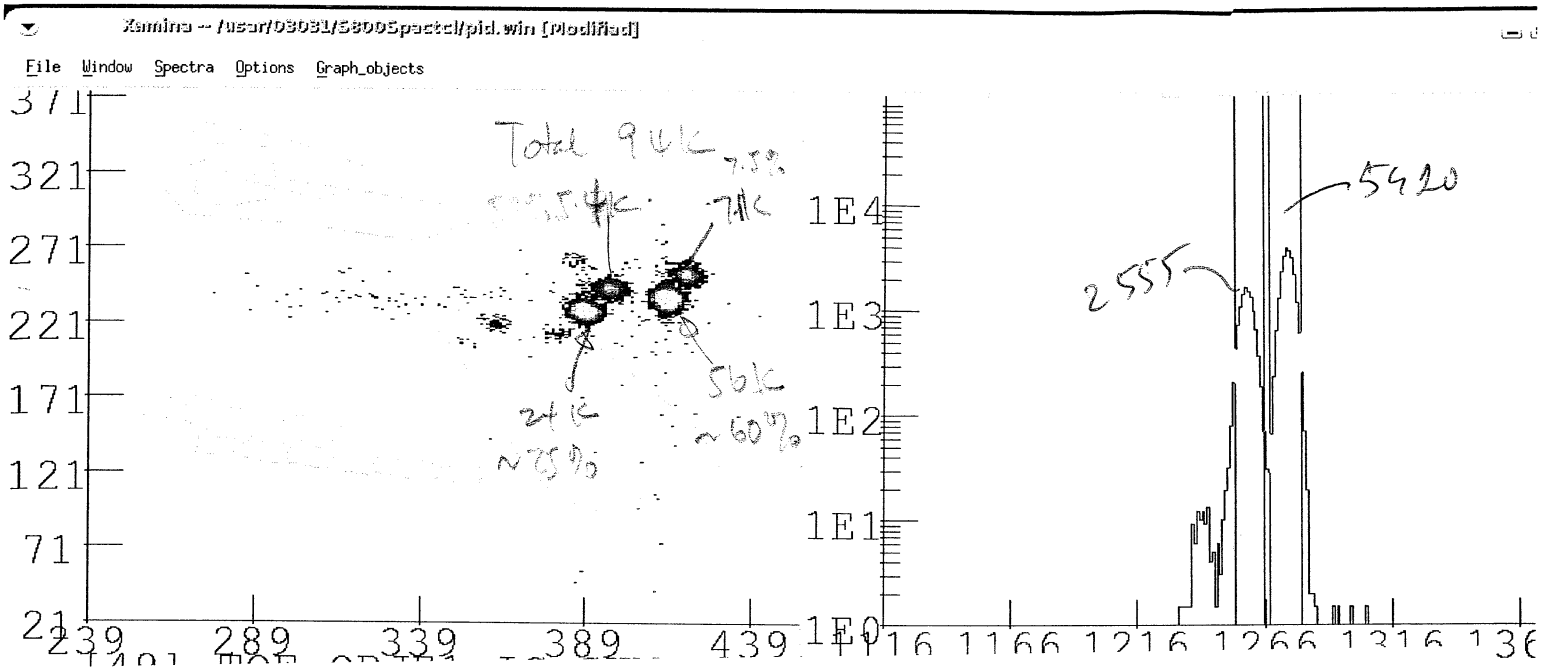
Be ~~target~~ Credo at S-800 tube
was removed

-4.7 , 9.56 — 0.5% for A1900 +

-19.7 24.03 1.5% for A1900

-1.29 5.33 mm 0.2% — " — " —

Run# 83	S800		A1900	
Target: Views Be Ta	**DS=** ____ Tm 3.4792	dp/p=		
^{64}Ni Intensity_____pps ^{68}Ni Intensity______pps	Comments: -4.7/9.56 ~ Δp/p - 0.5% I255CB = 3.2 I255CT= 6.8			
date	**Start:**		**Stop:**	




```
A1900 "Print13May05_10h11.txt"     Friday 10:11:52 2005-05-13  A1900
***                          run 83, no Be target ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09858 m   -0.00790 % (3.83060 T
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10142 m    0.00000 % (3.83038 T
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09498 m   -0.00127 % (3.54254 T
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09547 m   -0.01131 % (3.54290 T
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.47920 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37221 T  9.46362 m    9.46055 m   -0.03248 %
I200DS              1.10738 T  3.14194 m    3.14186 m   -0.00267 %
I205DS              1.10732 T  3.14204 m    3.14203 m   -0.00043 %
I223DS              1.12354 T  3.09708 m    3.09667 m   -0.01335 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.23883 T  2.80280 m    2.80846 m    0.20181 %
I269DS              1.24008 T  2.80280 m    2.80563 m    0.10081 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,    9.56 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,    0.0
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector:  PPAC
```

Run# 84	S800		A1900	
Target: Views Be Ta 40	DS= ____ Tm	dp/p= 0.2%		
^{64}Ni Intensity____pps ^{68}Ni Intensity____pps	Comments: -1.3 5.3			

A1900 "Print13May05_10h18.txt" Friday 10:18:50 2005-05-13 A1900 run 84 ***
***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+ 11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att 1k> ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b: 675 A, 650 A K1200: 812 A, 62 A RF: 22.49300 MHz
A1900 Optics: G19S3V13_30x20Focus60x30.data

	Rigidity	Field	Radius	(live)	Difference (Field*Radius
Seg 0:	4.32100 Tm				
Seg 1:	3.83030 Tm	1.23615 T	3.09882 m	3.09857 m	-0.00792 % (3.83060 T
Seg 2:	3.83030 Tm	1.23502 T	3.10148 m	3.10142 m	-0.00199 % (3.83038 T
Seg 3:	3.54250 Tm	1.14460 T	3.09502 m	3.09497 m	-0.00155 % (3.54255 T
Seg 4:	3.54250 Tm	1.14441 T	3.09582 m	3.09548 m	-0.01120 % (3.54290 T
Seg 5:	3.52130 Tm				
Seg 6:	3.47923 Tm				
Seg 7:	3.47923 Tm				
Seg 8:	3.47920 Tm				
Z108DS		0.00000 T	7.04675 m	0.00000 m	100.00000 %
D140DS		0.00145 T	2282.62069 m	2428.48276 m	6.39011 %
D165DS		0.37209 T	9.46362 m	9.46361 m	-0.00013 %
I200DS		1.10738 T	3.14194 m	3.14186 m	-0.00267 %
I205DS		1.10732 T	3.14204 m	3.14203 m	-0.00043 %
I223DS		1.12357 T	3.09708 m	3.09658 m	-0.01602 %
I228DS		1.09802 T	3.17034 m	3.16864 m	-0.05366 %
I265DS		1.23883 T	2.80280 m	2.80846 m	0.20181 %
I269DS		1.24010 T	2.80280 m	2.80558 m	0.09919 %

Z001TL: out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R: -1.27, 5.33 mm; Z037DC: out
Z057MS: 1.5 pct, Z061MS: out
Z059DC: out, Z062SC: out, Z057TL: [5"]Al 240
Z082 XC,G,YG: 0.06, 203.50, 202.05 mm Z082Deg: out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap: 0.01, -0.04 mm; D110 -0.00, 10.00 mm F110 -0.01, 0.
B110DC: out, D110DC: out, D111DC: 5 mil BC-404, F110DC: out
[illegible] I181 XC,G,YC,G: 0.71, 98.93; -0.00, 98.39
[illegible] out, I189: , I190: [0"] out

03031 Run Sheet

Run# 85	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta** no	**Br=____ Tm** 3.47992	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** ☐ **Intensity_____pps** ^{68}**Ni** ☐ **Intensity_____pps**	Comments: Do not forget to print Barney! dp/p ~ 0.2% −1.3 / 5.5 mm		

```
A1900 "Print13May05_10h20.txt"     Friday 10:20:49 2005-05-13  A1900
***                          Run 85 I1=-1.1/5.5 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   1k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity        Field     Radius          (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09857 m   -0.00794 % (3.83060 Tm)
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10142 m   -0.00200 % (3.83038 Tm)
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00089 % (3.54253 Tm)
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09548 m   -0.01119 % (3.54290 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.47920 Tm
Z108DS                0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS                0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS                0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS                1.10738 T  3.14194 m    3.14186 m   -0.00267 %
I205DS                1.10732 T  3.14204 m    3.14203 m   -0.00043 %
I223DS                1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS                1.09802 T  3.17034 m    3.16864 m   -0.05366 %
I265DS                1.23883 T  2.80280 m    2.80846 m    0.20181 %
I269DS                1.24006 T  2.80280 m    2.80567 m    0.10242 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.27,   5.46 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,    0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

03031 Run Sheet

Run# 86	S800		
Date__/05/05	Begin:		End:
Target: Be Ta no	Br=___ Tm	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity____pps ☐	Comments: Do not forget to print Barney!		
^{68}Ni Intensity____pps ☐	-3.7 Z037L 8.6 Z037R		
Who's on			

E-9922

3164 M

6616 C

```
A1900 "Print13May05_10h24.txt"    Friday 10:24:19 2005-05-13  A1900
***                        Run 86 I1 -3.7/8.53 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   1k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09856 m    0.00000 % (3.83062 Tm)
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10142 m   -0.00203 % (3.83038 Tm)
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00155 % (3.54255 Tm)
Seg 4:  3.54250 Tm  1.14442 T  3.09582 m    3.09547 m   -0.01154 % (3.54291 Tm)
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.47920 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10739 T  3.14194 m    3.14183 m   -0.00357 %
I205DS              1.10727 T  3.14204 m    3.14217 m    0.00408 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS              1.23883 T  2.80280 m    2.80846 m    0.20181 %
I269DS              1.24007 T  2.80280 m    2.80565 m    0.10162 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -3.70,   8.56 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110    0.02,  10.00 mm F110   -0.01,    0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.03,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189:  , I190: [0"] out
```

03031 Run Sheet

Run# 87	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta** No	**Br=____** **Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni ☐ **Intensity_____pps** ^{68}Ni ☐ **Intensity_____pps**	Comments: Do not forget to print Barney! $\Delta p/p = 1.5\%$		
Who's on			

```
A1900 "Print13May05_10h28.txt"    Friday 10:28:11 2005-05-13  A1900
***                          Run 87 I1=-19.7/24 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   1k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09857 m   -0.00804 % (3.83061 Tm
Seg 2:  3.83030 Tm  1.23502 T  3.10148 m    3.10141 m   -0.00222 % (3.83039 Tm
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09498 m   -0.00106 % (3.54254 Tm
Seg 4:  3.54250 Tm  1.14441 T  3.09582 m    3.09548 m   -0.01104 % (3.54289 Tm
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  3.47920 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10740 T  3.14194 m    3.14180 m   -0.00447 %
I205DS              1.10733 T  3.14204 m    3.14200 m   -0.00133 %
I223DS              1.12356 T  3.09708 m    3.09661 m   -0.01513 %
I228DS              1.09803 T  3.17034 m    3.16861 m   -0.05457 %
I265DS              1.23882 T  2.80280 m    2.80848 m    0.20262 %
I269DS              1.24008 T  2.80280 m    2.80563 m    0.10081 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.06, 203.50, 201.94 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,    0.0
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
```

We put Be target
Bad run

03031 Run Sheet

Run# 88	S800		
Date__/05/05	*Begin:*		*End:*
Target: Be Ta 376	Br=____ Tm 2.803	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps ☐	Comments: Do not forget to print Barney!		

```
A1900 "Print13May05_13h30.txt"     Friday 13:30:56 2005-05-13  A1900
***   run88, beam in; check beam composition ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
        A1900 Optics: G19S3V13_30x20Focus60x30.data
        Rigidity        Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm   1.23616 T  3.09882 m    3.09855 m     0.00000 % (3.83063 Tm
Seg 2:  3.83030 Tm   1.23501 T  3.10148 m    3.10143 m    -0.00164 % (3.83036 Tm
Seg 3:  3.54250 Tm   1.14459 T  3.09502 m    3.09498 m    -0.00101 % (3.54254 Tm
Seg 4:  3.54250 Tm   1.14442 T  3.09582 m    3.09546 m    -0.01167 % (3.54291 Tm
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.80300 Tm
Z108DS                0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS                0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS                0.37209 T  9.46362 m    9.46361 m    -0.00013 %
I200DS                1.10735 T  3.14194 m    3.14194 m     0.00004 %
I205DS                1.10730 T  3.14204 m    3.14208 m     0.00137 %
I223DS                0.00000 T  3.09708 m    0.00000 m  100.00000 %
I228DS                1.09803 T  3.17034 m    3.16861 m    -0.05457 %
I265DS                1.00519 T  2.80280 m    2.78853 m    -0.50922 %
I269DS                1.00301 T  2.80280 m    2.79459 m    -0.29298 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.06, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_      (invalid position)
```

03031 Run Sheet

Run# 89	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=____** **Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity_____pps** ^{68}**Ni** **Intensity_____pps**	Comments: Do not forget to print Barney! $\Delta p/p = 0.5\%$		

```
A1900 "Print13May05_13h34.txt"    Friday 13:34:19 2005-05-13  A1900
***                          Run 89; -4.7/9.5 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09855 m   -0.00857 % (3.83063 T
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10143 m   -0.00160 % (3.83036 T
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09498 m   -0.00105 % (3.54254 T
Seg 4:  3.54250 Tm  1.14442 T  3.09582 m    3.09546 m   -0.01163 % (3.54291 T
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.80300 Tm
Z108DS                0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS                0.00135 T  2282.62069 m 2608.37037 m   14.27086 %
D165DS                0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS                1.10735 T  3.14194 m    3.14194 m    0.00004 %
I205DS                1.10730 T  3.14204 m    3.14208 m    0.00137 %
I223DS                1.12358 T  3.09708 m    3.09656 m   -0.01691 %
I228DS                1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS                1.00518 T  2.80280 m    2.78856 m   -0.50823 %
I269DS                1.00300 T  2.80280 m    2.79462 m   -0.29199 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,    9.56 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,    0
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, i214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Run# 90	S800		
Date__/05/05	*Begin:*		*End:*
Target: (Be) Ta	Br=___ Tm	dp/p=	Scaler ___ Master.Live/Master___
^{64}Ni ☐ Intensity_____pps ^{68}Ni ☐ Intensity_____pps	Comments: Do not forget to print Barney! -1.1 /5.3 dp/p ≤ 0.2% 23856 96 Ni		

```
A1900 "Print13May05_13h38.txt"    Friday 13:38:50 2005-05-13  A1900
***                        Run 90 I1: -1.13/5.3 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radiu
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23616 T  3.09882 m    3.09856 m   -0.00847 % (3.83062
Seg 2:  3.83030 Tm  1.23501 T  3.10148 m    3.10142 m   -0.00178 % (3.83037
Seg 3:  3.54250 Tm  1.14459 T  3.09502 m    3.09499 m   -0.00081 % (3.54253
Seg 4:  3.54250 Tm  1.14442 T  3.09582 m    3.09547 m    0.00000 % (3.54291
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.80300 Tm
Z108DS                0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS                0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS                0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS                1.10737 T  3.14194 m    3.14188 m   -0.00176 %
I205DS                1.10732 T  3.14204 m    3.14203 m   -0.00043 %
I223DS                1.12359 T  3.09708 m    3.09653 m   -0.01780 %
I228DS                1.09804 T  3.17034 m    3.16858 m   -0.05548 %
I265DS                1.00517 T  2.80280 m    2.78858 m   -0.50724 %
I269DS                1.00301 T  2.80280 m    2.79459 m   -0.29298 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.27,   5.33 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110   -0.01,   0
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189:
```

03031 Run Sheet

Run# 91	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=____** **Tm** 2.8030	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity_____pps** ☐ ^{68}**Ni** **Intensity_____pps** ☐	Comments: Do not forget to print Barney! dp/p = −3.7 Z037L 8.6 Z037R		
Who's on shift			

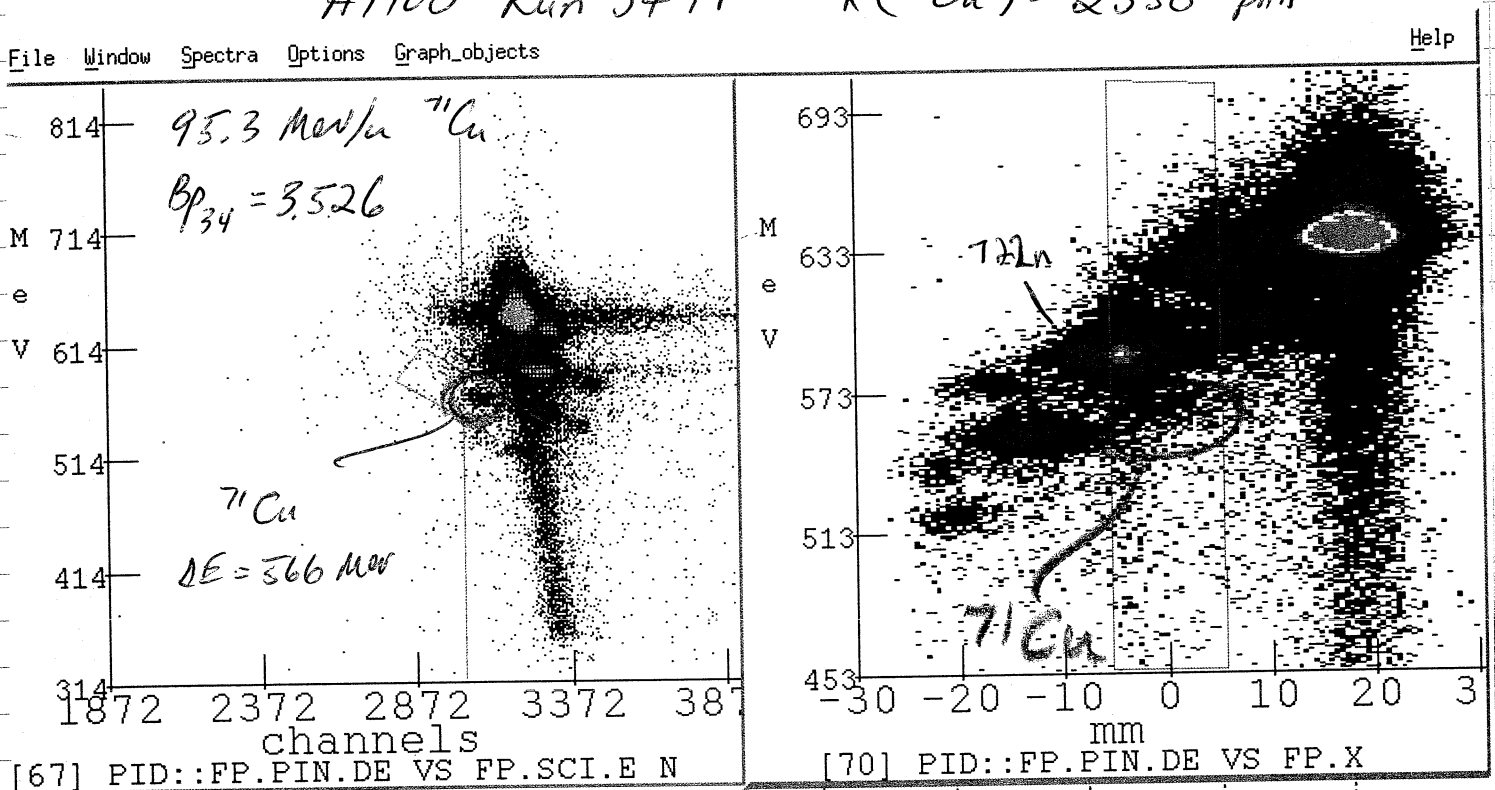
03031 Run Sheet

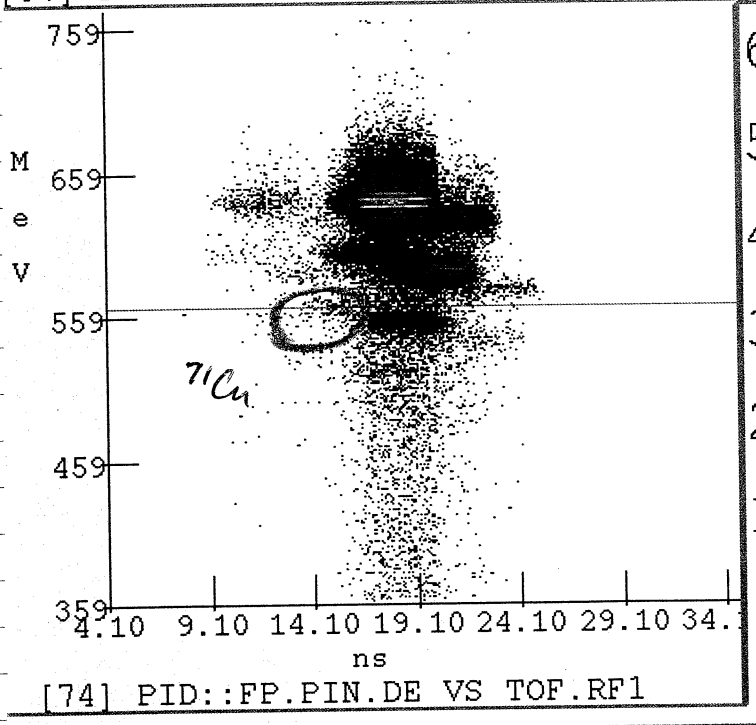
Run# 91,93	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=___ Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni ☐ **Intensity_____pps** ^{68}Ni ☐ **Intensity_____pps**	Comments: Do not forget to print Barney! -19.7 Z037L 24.0 Z037R		

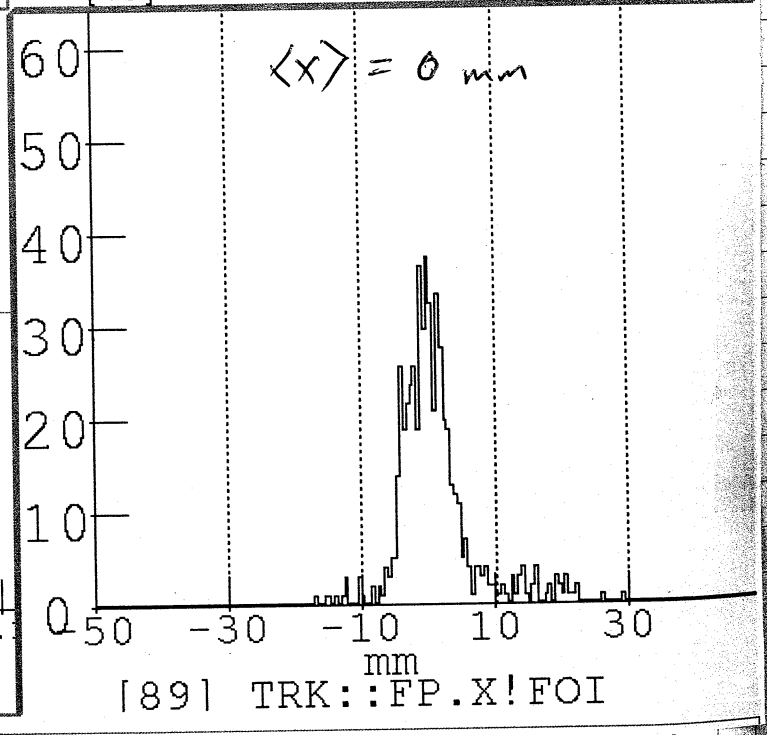
```
A1900 "Print13May05_13h49.txt"    Friday 13:49:33 2005-05-13  A1900
***                      Run 92, i1: -19.7/24 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23615 T  3.09882 m    3.09856 m   -0.00829 % (3.83062 T
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10145 m   -0.00096 % (3.83034 T
Seg 3:  3.54250 Tm  1.14460 T  3.09502 m    3.09497 m   -0.00153 % (3.54255 T
Seg 4:  3.54250 Tm  1.14442 T  3.09582 m    3.09546 m   -0.01182 % (3.54292 T
Seg 5:  3.52130 Tm
Seg 6:  3.47923 Tm
Seg 7:  3.47923 Tm
Seg 8:  2.80300 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2428.48276 m    6.39011 %
D165DS              0.37209 T  9.46362 m    9.46361 m   -0.00013 %
I200DS              1.10737 T  3.14194 m    3.14188 m   -0.00176 %
I205DS              1.10732 T  3.14204 m    3.14203 m   -0.00043 %
I223DS              1.12357 T  3.09708 m    3.09658 m   -0.01602 %
I228DS              1.09805 T  3.17034 m    3.16855 m   -0.05639 %
I265DS              1.00518 T  2.80280 m    2.78856 m   -0.50823 %
I269DS              1.00301 T  2.80280 m    2.79459 m   -0.29298 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -0.00,  10.00 mm F110    0.01,    0.
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
```

FC=350n Tune ~~^{72}Zn~~ ^{71}Cu beam 3/5/2105

A1900 Run 3794 $R(^{71}Cu) = 2358 \frac{pps}{pnA}$







03031 Run Sheet

Run# 95	S800		
Date 12/05/05	***Begin:*** 3:25		***End:***
Target: **Be** **Ta**	**Br=**____ **Tm** 1.7~~9~~281	dp/p= 2.781	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity**_____**pps** ^{68}**Ni** **Intensity**_____**pps**	Comments: Do not forget to print Barney! S800 was not centered		
Who's on shift			

03031 Run Sheet

Run# 96	S800		
Date__/05/05	*Begin:*		*End:*
Target: Be Ta	Br=____ Tm 2.728	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps ^{68}Ni Intensity_____pps	Comments: Do not forget to print Barney! $\Delta p/p = 2.5\%$ Title in Run is not correct		
Who's on shift			

```
A1900 "Print13May05_15h56.txt"    Friday 15:56:06 2005-05-13  A1900
***                          Run 96 Zn72 beam ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23609 T  3.09882 m    3.09873 m   -0.00274 % (3.83041 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10147 m   -0.00040 % (3.83032 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00352 % (3.52612 Tm)
Seg 4:  3.52600 Tm  1.13894 T  3.09582 m    3.09587 m    0.00163 % (3.52594 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.72805 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00135 T  2282.62069 m 2595.18519 m   13.69323 %
D165DS              0.37028 T  9.46362 m    9.46170 m   -0.02033 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10286 T  3.14204 m    3.14037 m   -0.05331 %
I223DS              1.11648 T  3.09708 m    3.09466 m   -0.07818 %
I228DS              1.09109 T  3.17034 m    3.16667 m   -0.11569 %
I265DS              0.97890 T  2.80280 m    2.78685 m   -0.56892 %
I269DS              0.97620 T  2.80280 m    2.79456 m   -0.29391 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,    9.33 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.06, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
```

03031 Run Sheet

Run# 97	S800		
Date__/05/05	*Begin:*		*End:*
Target: Be Ta	Br=____ Tm 2.728	dp/p=	Scaler ____ Master.Live/Master___
^{64}Ni Intensity_____pps ^{68}Ni	Comments: Do not forget to print Barney! dp/p = 1%		

```
A1900 "Print13May05_16h04.txt"    Friday 16:04:44 2005-05-13  A1900
***                Run 97 - Cu71+Zn72 1.0pct ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m   -0.00226 % (3.83039 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10147 m   -0.00045 % (3.83032 Tm)
Seg 3:  3.52600 Tm  1.13930 T  3.09502 m    3.09489 m   -0.00396 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13894 T  3.09582 m    3.09587 m    0.00158 % (3.52594 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.72805 Tm
Z108DS              0.50060 T  7.04675 m    7.04355 m   -0.04544 %
D140DS              0.00135 T  2282.62069 m 2595.18519 m   13.69323 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10282 T  3.14204 m    3.14048 m   -0.04968 %
I223DS              1.11644 T  3.09708 m    3.09477 m   -0.07460 %
I228DS              1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS              0.97892 T  2.80280 m    2.78680 m   -0.57095 %
I269DS              0.97594 T  2.80280 m    2.79531 m   -0.26735 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -12.20,  16.63 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 201.94 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.81,  99.03;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
```

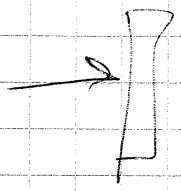
1%

03031 Run Sheet

Run# 98	S800	
Date__/05/05	***Begin:***	***End:***
Target: **Be** **Ta**	**Br=**2.728 **Tm** dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity_____pps** ^{68}**Ni** **Intensity_____pps**	Comments: Do not forget to print Barney! 1.5% not good one slit is not wide	

```
A1900 "Print13May05_16h11.txt"    Friday 16:11:03 2005-05-13  A1900
***                 Run 98 - Cu71+Zn72 1.5pct ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   1k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00271 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23500 T  3.10148 m    3.10147 m   -0.00042 % (3.83032 Tm)
Seg 3:  3.52600 Tm  1.13930 T  3.09502 m    3.09489 m   -0.00407 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13893 T  3.09582 m    3.09589 m    0.00198 % (3.52593 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.72805 Tm
Z108DS              0.50060 T  7.04675 m    7.04355 m   -0.04544 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10283 T  3.14194 m    3.14045 m   -0.04741 %
I205DS              1.10281 T  3.14204 m    3.14051 m   -0.04877 %
I223DS              1.11647 T  3.09708 m    3.09469 m   -0.07729 %
I228DS              1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS              0.97891 T  2.80280 m    2.78683 m   -0.56993 %
I269DS              0.97620 T  2.80280 m    2.79456 m   -0.29391 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -12.20,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 201.94 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
```

^{72}Zn after Be (376 mg/cm²) = 2.7 > 85



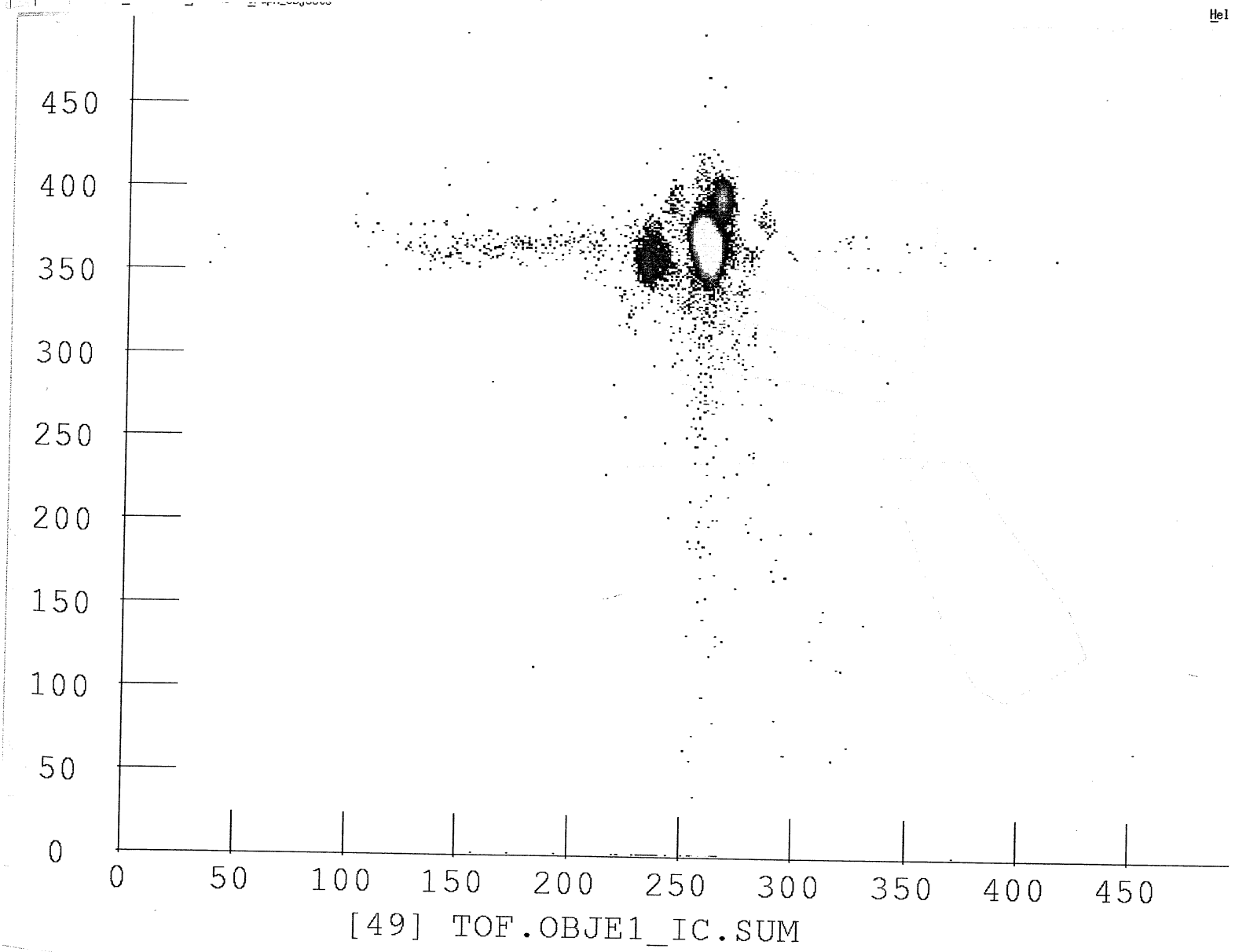
it means

$E_{in}(^{72}Zn) = 94.1$ MeV

^{72}Zn ±30

	2.7390	> 2.79
+29	2.8335	> 2.87
+28	2.9347	

$(A/q) = 2 B\rho = 2.5547$ Tm



03031 Run Sheet

Run# 99, 100	**S800**		
Date__/05/05	***Begin:***		***End:***
Target: **Be** **Ta**	**Br=**2.728 **Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{64}**Ni** **Intensity_____pps**	Comments: Do not forget to print Barney! 72 Zn		
^{68}**Ni** **Intensity_____pps**	Beamdrop; change attenuation to increase beam intensity		

```
A1900 "Print13May05_18h03.txt"    Friday 18:03:25 2005-05-13  A1900
***                          Run 99, i1=-19.7/24 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  10k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23609 T  3.09882 m    3.09873 m   -0.00300 % (3.83042 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10148 m    0.00001 % (3.83030 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09490 m   -0.00374 % (3.52613 Tm)
Seg 4:  3.52600 Tm  1.13893 T  3.09582 m    3.09587 m    0.00164 % (3.52594 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.72805 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00135 T  2282.62069 m 2595.18519 m   13.69323 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11648 T  3.09708 m    3.09466 m   -0.07818 %
I228DS              1.09107 T  3.17034 m    3.16673 m   -0.11386 %
I265DS              0.97891 T  2.80280 m    2.78683 m   -0.56993 %
I269DS              0.97619 T  2.80280 m    2.79459 m   -0.29289 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.76,  98.93;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Run# 101	S800		
Date 13 /05/05	***Begin:*** 19:30		***End:*** 8:20:15
Target: ~~Be~~ Ta	**Br=** 2.00 **Tm**	dp/p= 0.5%	Scaler ____ Master.Live/Master___
^{64}Ni Intensity____pps 72Zn ~~^{68}Ni~~ Intensity 81K pps	Comments: Do not forget to print Barney! Injection ~50%		
Who's on shift	W. Lynch M. Tsang S. Lukyanov M. Mocko		

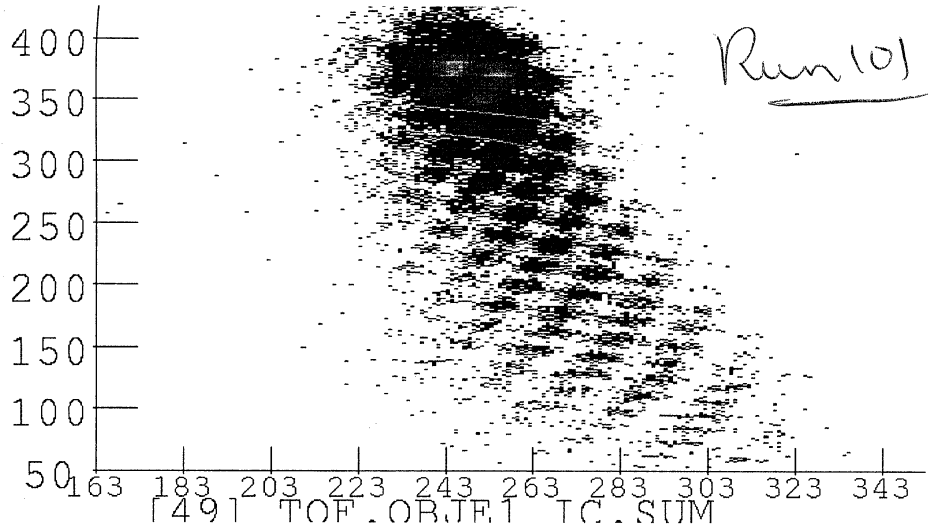
```
A1900 "Print13May05_19h30.txt"    Friday 19:30:30 2005-05-13  A1900
***                                          run101 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00271 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23498 T  3.10148 m    3.10151 m    0.00000 % (3.83027 Tm)
Seg 3:  3.52600 Tm  1.13930 T  3.09502 m    3.09489 m   -0.00402 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13893 T  3.09582 m    3.09588 m    0.00166 % (3.52594 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.60000 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10276 T  3.14204 m    3.14065 m   -0.04424 %
I223DS              1.11650 T  3.09708 m    3.09460 m   -0.07997 %
I228DS              1.09117 T  3.17034 m    3.16644 m   -0.12301 %
I265DS              0.92835 T  2.80280 m    2.80067 m   -0.07607 %
I269DS              0.92787 T  2.80280 m    2.80212 m   -0.02438 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint  I188: [0"] out  I189:   I190: [0"] out
```

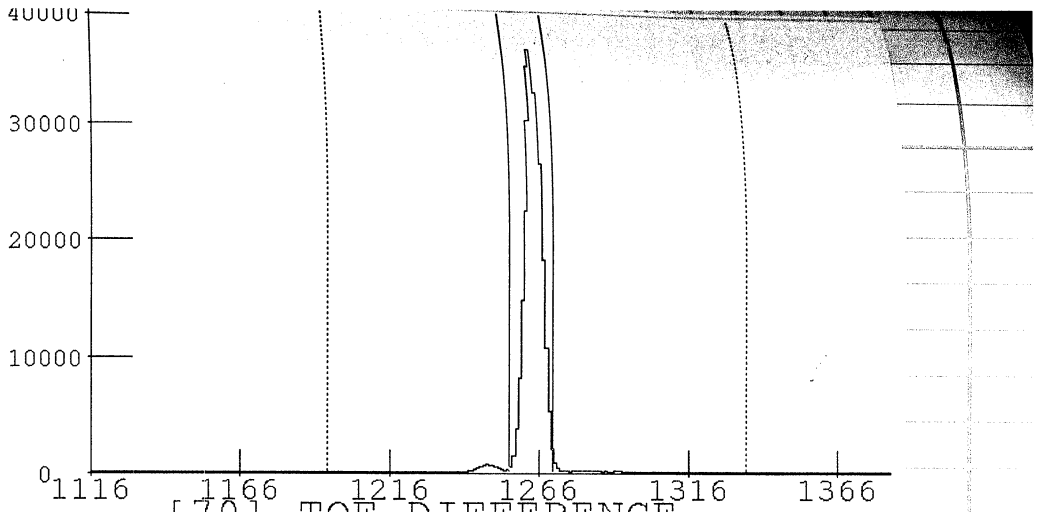
03031 Run Sheet

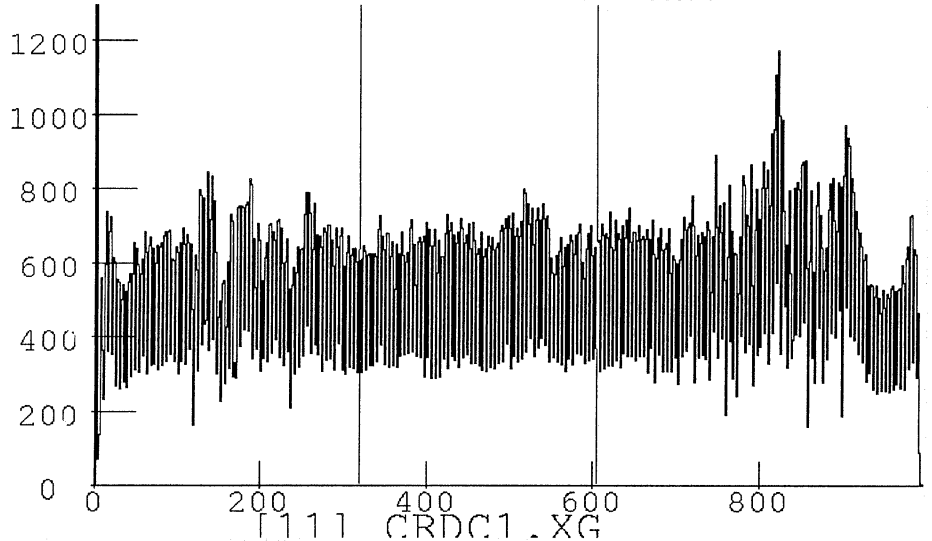
~23 07 20 40 | 1 35 | 2 36

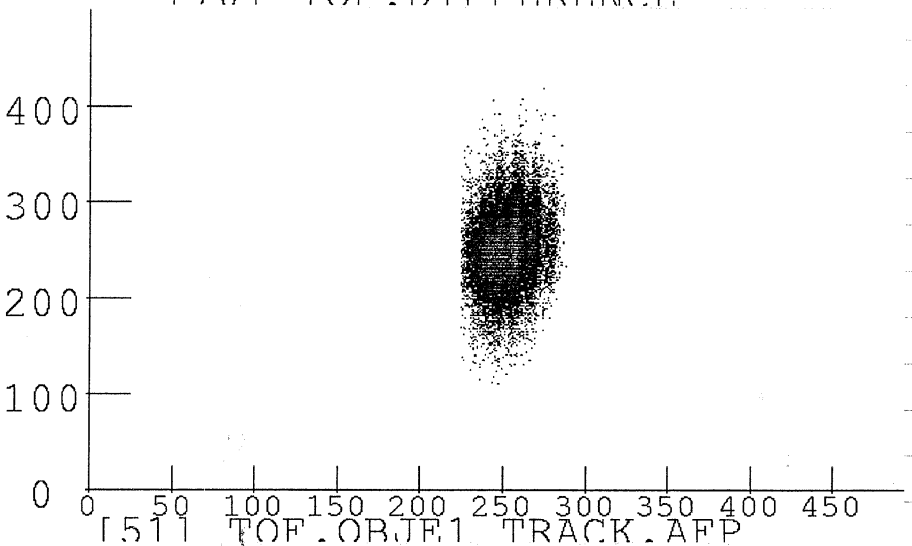
Run# 102, 103, 104, 105, 106, 107			S800 107 108
Date 13/05/05	**Begin:**		**End:**
Target: (Be) Ta	**Br=** 3.0807 **Tm**	dp/p= 0.5%	Scaler ____ Master.Live/Master___ 98%
^{64}Ni Intensity_____pps 72 hr ^{68}Ni Intensity_____pps	Comments: Do not forget to print Barney! Run 103: ~~Rate~~ Scint. rate may be too high (>500K) for cross-section normalization. Obj. scint. efficiency drop.		

```
A1900 "Print13May05_20h25.txt"    Friday 20:25:58 2005-05-13  A1900
***                                                  run102 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00265 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10149 m    0.00037 % (3.83029 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00335 % (3.52612 Tm)
Seg 4:  3.52600 Tm  1.13894 T  3.09582 m    3.09586 m    0.00116 % (3.52596 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  3.08070 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10286 T  3.14194 m    3.14037 m   -0.05012 %
I205DS              1.10274 T  3.14204 m    3.14071 m   -0.04243 %
I223DS              1.11646 T  3.09708 m    3.09471 m   -0.07639 %
I228DS              1.09110 T  3.17034 m    3.16664 m   -0.11661 %
I265DS              1.09911 T  2.80280 m    2.80290 m    0.00372 %
I269DS              1.09911 T  2.80280 m    2.80290 m    0.00372 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```


Run 101
400
350
300
250
200
150
100
50
163 183 203 223 243 263 283 303 323 343
[49] TOF.OBJE1_TC.SUM


40000
30000
20000
10000
0
1116 1166 1216 1266 1316 1366
[70] TOF.DIFFERENCE


1200
1000
800
600
400
200
0
0 200 400 600 800
[111] CRDC1.XG


400
300
200
100
0
0 50 100 150 200 250 300 350 400 450
[51] TOF.OBJE1_TRACK.AFP

Ratios of obj scint / KTP. scint.

Att.	obj. scint	KTP. scint	ratio
1	337 K	508 K	66%
3	106 K	160 K	66%
10	48 K	72.2 K	66.8%
30	15	22.2	67.6%
100	3.61	5.23	69%
300	1134	1593	71%
1K	359	438	78%
3K	245	269	91%
10K	110	72	1.43
30K	86	36	2.2

When does the efficiency of the obj. scint have problem?

start time: 3:20 | 4:17 | 5:20 | 6:07 | 6:45
109 | 110 | 111 | 112 | 113
~280 | ~320 | ~200

03031 Run Sheet

Run# 109 – 116		S800	
Date__/05/05	***Begin:*** 3:20		***End:***
Target: **Be**	**Br=** 3.02 **Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{72}Zn	Comments: Obj. Scint ≥ 300 k		
Who's on shift	M.F, L.A.		

6:02 HV of PPAC 1 (voice msg) tripped During run ~~113~~ 111 (~2' before the end of it)
+112

6:40 the same situation

Run 114 = opened slits to 1% at I1

7:35 Run 115 PPAC 1 tripped again
- Turned HV down to 500

03031 Run Sheet

Run# 116 ~~113~~		S800	Set PPAC 2 to 590 V
Date__/05/05	***Begin:*** 08-20		***End:***
Target: **Be**	**Br=** ___ **Tm** 3.02	dp/p=	Scaler ____ Master.Live/Master___
^{72}Zn	Comments: PPAC 2 has a problem set PPAC 2 to 590 V before run 116 and continue running		
Who's on			

```
A1900 "Print14May05_08h29.txt"  Saturday 08:29:41 2005-05-14  A1900
***                                  run 116 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23609 T  3.09882 m    3.09873 m    0.00000 % (3.83041 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10153 m    0.00157 % (3.83024 Tm)
Seg 3:  3.52600 Tm  1.13930 T  3.09502 m    3.09489 m   -0.00393 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13896 T  3.09582 m    3.09581 m   -0.00053 % (3.52602 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  3.02000 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10286 T  3.14194 m    3.14037 m   -0.05012 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11646 T  3.09708 m    3.09471 m   -0.07639 %
I228DS              1.09107 T  3.17034 m    3.16673 m   -0.11386 %
I265DS              1.07936 T  2.80280 m    2.79795 m   -0.17295 %
I269DS              1.07847 T  2.80280 m    2.80026 m   -0.09057 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235  Z016TL [0"] out
```

03031 Run Sheet

Run# 117, 118	3.02 S800		Since 9:15 CRDC
Date 5/05/05	**Begin:** 8:45		**End:** ~~8~~ 10:30
Target: **Be**	**Br=** ~~3.08~~ **Tm**	dp/p= 1%	Scaler E1 ~ 30/s E2 ~ 800/s Master.Live/Master .83
^{72}Zn	Comments: There was a warning on the P_{10} and isobutane, but it appears to be a false alarm		
Who's on shift	MF, W, C, S.L., C.A.		

HV for tppac ~~was turned~~ voltage was off when we switched to

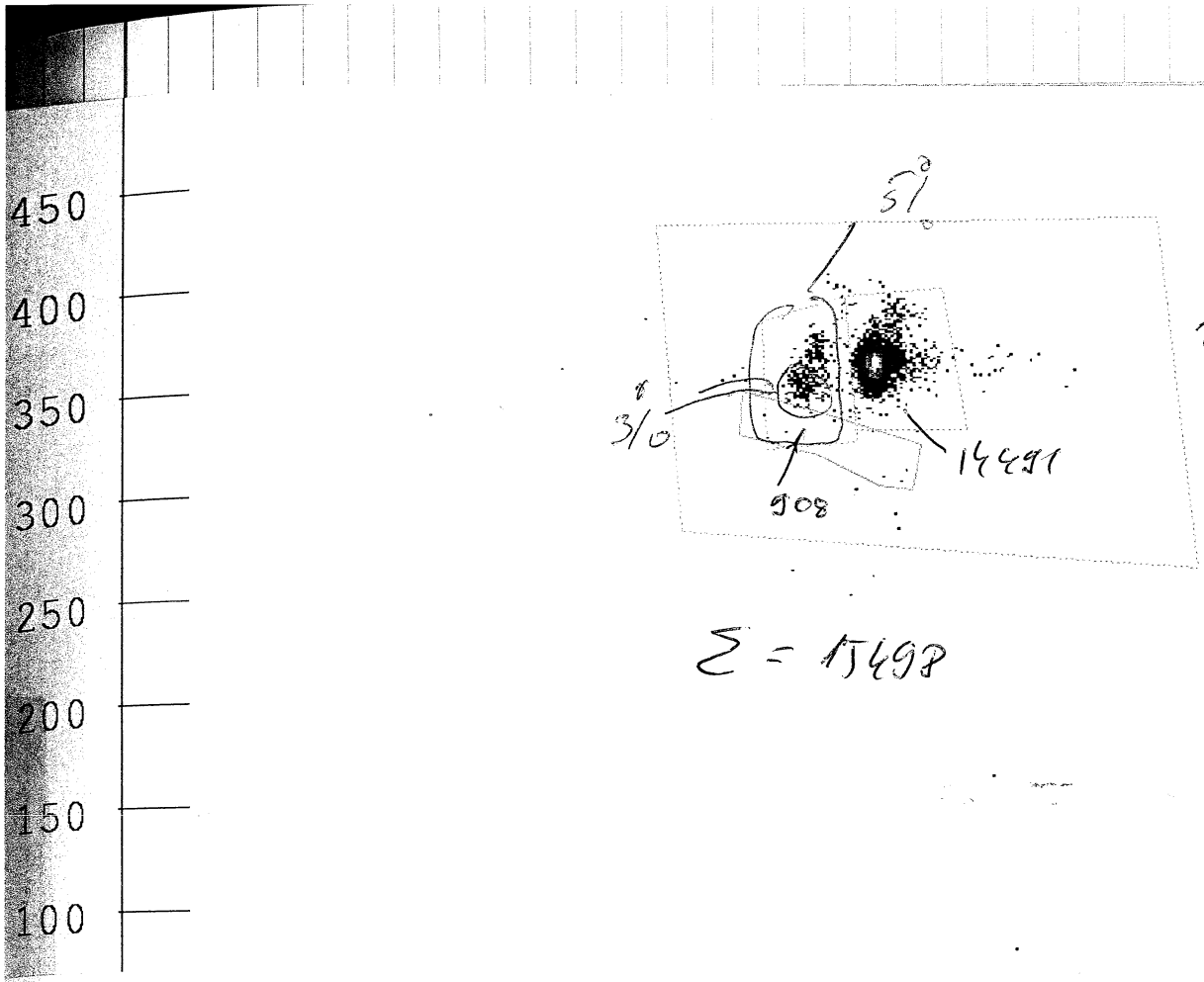
```
A1900 "Print14May05_08h52.txt"  Saturday 08:52:59 2005-05-14  A1900
***                                          run 117 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00254 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00200 % (3.83022 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00358 % (3.52613 Tm)
Seg 4:  3.52600 Tm  1.13896 T  3.09582 m    3.09581 m   -0.00058 % (3.52602 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  3.02000 Tm
Z108DS                0.00000 T  7.04675 m    0.00000 m  100.00000 %
)140DS                0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
)165DS                0.37016 T  9.46362 m    9.46477 m    0.01219 %
:200DS                1.10286 T  3.14194 m    3.14037 m   -0.05012 %
:205DS                0.00000 T  3.14204 m    0.00000 m  100.00000 %
:223DS                1.11648 T  3.09708 m    3.09466 m   -0.07818 %
:228DS                1.09109 T  3.17034 m    3.16667 m   -0.11569 %
:265DS                1.07936 T  2.80280 m    2.79795 m   -0.17295 %
269DS                 1.07846 T  2.80280 m    2.80029 m   -0.08964 %
001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
015TL: [4"]Be 235, Z016TL [0"] out
030BC Beam Stop: -126.22 mm
037L,R:  -12.20,  16.63 mm; Z037DC:  out
057MS: 1.5 pct, Z061MS:  out
059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
082 XC,G,YG:    0.06, 203.50, 201.94 mm Z082Deg:  out
101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
110 Cent,Gap:   -0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
lits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
214DC Detector:  PPAC
```

03031 Run Sheet

Date__/05/05	***Begin:***		***End:***
Target: **Be**	**Br**___ 2.282	dp/p= 1%	Scaler ___ 40% Master.Live/Master___
^{72}Zn ☐	Comments:		
Who's on shift			

Run # 88/1	**start**	**stop**	**Comments**
119 1%	10:47	≈11:00	Ce composition
120 0.5	1105	11:22	
121 1.5%	11-22		

DC Detector: TAC



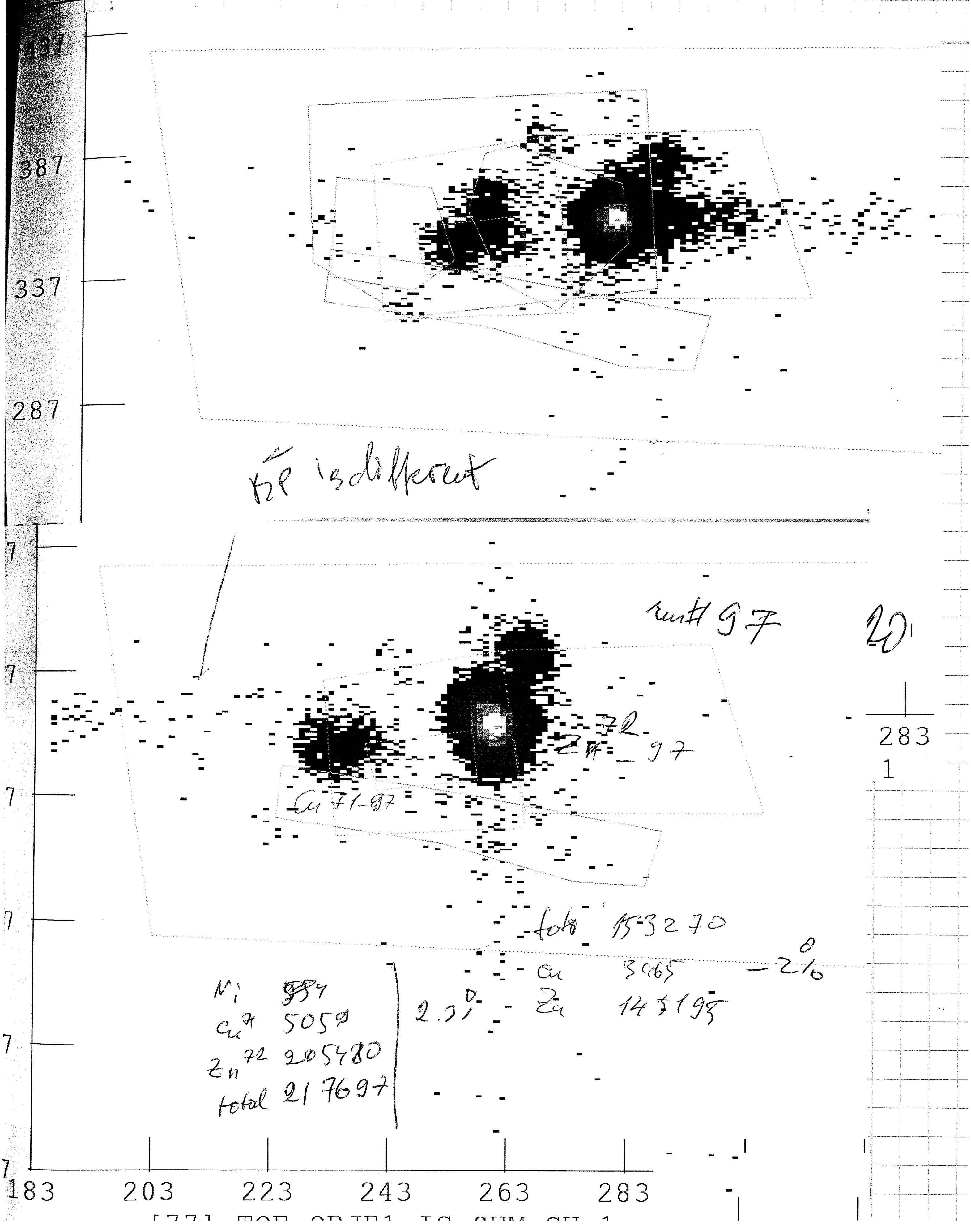
A1900 "Print14May05_10h47.txt" Saturday 10:47:26 2005-05-14 A1900
*** Run 119 Beam composition DP/p=1% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+ 11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att 1k> ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b: 675 A, 650 A K1200: 812 A, 62 A RF: 22.49300 MHz
A1900 Optics: G19S3V13_30x20Focus60x30.data

	Rigidity	Field	Radius	(live)	Difference (Field*Radius)
Seg 0:	4.32100 Tm				
Seg 1:	3.83030 Tm	1.23608 T	3.09882 m	3.09874 m	-0.00254 % (3.83040 Tm)
Seg 2:	3.83030 Tm	1.23496 T	3.10148 m	3.10155 m	0.00211 % (3.83022 Tm)
Seg 3:	3.52600 Tm	1.13930 T	3.09502 m	3.09490 m	-0.00391 % (3.52614 Tm)
Seg 4:	3.52600 Tm	1.13897 T	3.09582 m	3.09578 m	-0.00142 % (3.52605 Tm)
Seg 5:	3.50350 Tm				
Seg 6:	3.46338 Tm				
Seg 7:	3.45512 Tm				
Seg 8:	2.78892 Tm				
Z108DS		0.50040 T	7.04675 m	7.04636 m	-0.00549 %
D140DS		0.00135 T	2282.62069 m	2595.18519 m	13.69323 %
D165DS		0.37016 T	9.46362 m	9.46477 m	0.01219 %
I200DS		1.10285 T	3.14194 m	3.14039 m	-0.04922 %
I205DS		0.00000 T	3.14204 m	0.00000 m	100.00000 %
I223DS		1.11646 T	3.09708 m	3.09471 m	-0.07639 %
I228DS		1.09114 T	3.17034 m	3.16653 m	-0.12027 %
I265DS		0.00000 T	2.80280 m	0.00000 m	100.00000 %
I269DS		0.00000 T	2.80280 m	0.00000 m	100.00000 %

Z001TL: out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R: -12.20, 16.63 mm; Z037DC: out
Z057MS: 1.5 pct, Z061MS: out
Z059DC: out, Z062SC: out, Z057TL: [5"]Al 240

0
1/0

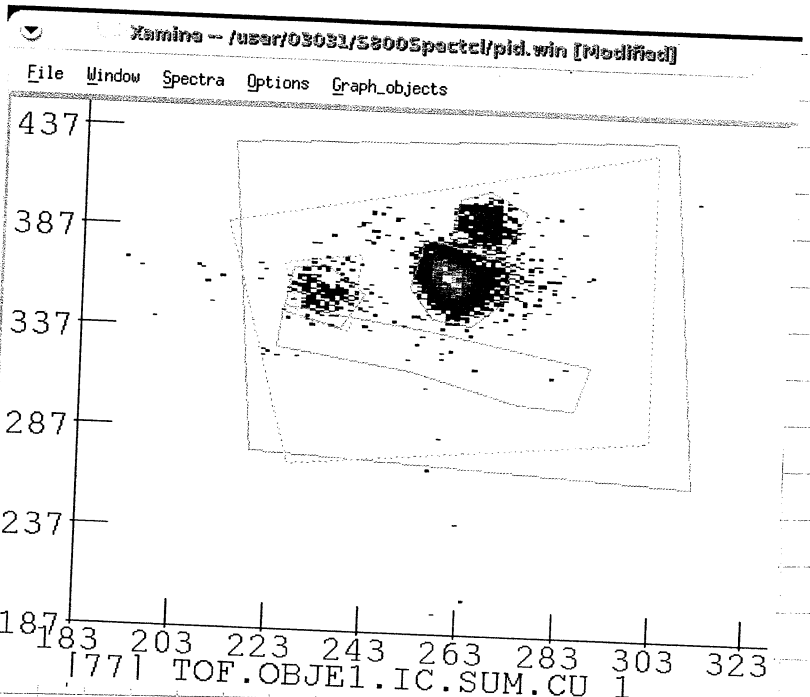
```
A1900 "Print14May05_11h17.txt"  Saturday 11:17:06 2005-05-14  A1900
***            run 120 0.5% beam composition ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   1k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m   -0.00240 % (3.83039 Tm)
Seg 2:  3.83030 Tm  1.23498 T  3.10148 m    3.10152 m    0.00125 % (3.83025 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09490 m   -0.00369 % (3.52613 Tm)
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00129 % (3.52605 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.78892 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11650 T  3.09708 m    3.09460 m   -0.07997 %
I228DS              1.09110 T  3.17034 m    3.16664 m   -0.11661 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.99840 T  2.80280 m    2.79339 m   -0.33584 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```


437
387
337
287
run 97
20
283
1
Zn 72 - 97
Cu 71 - 97
total 153270
Cu 3465
Zn 145195
-2%
2.3%
Cu71 5059
Zn72 205480
total 217697
183
203
223
243
263
283

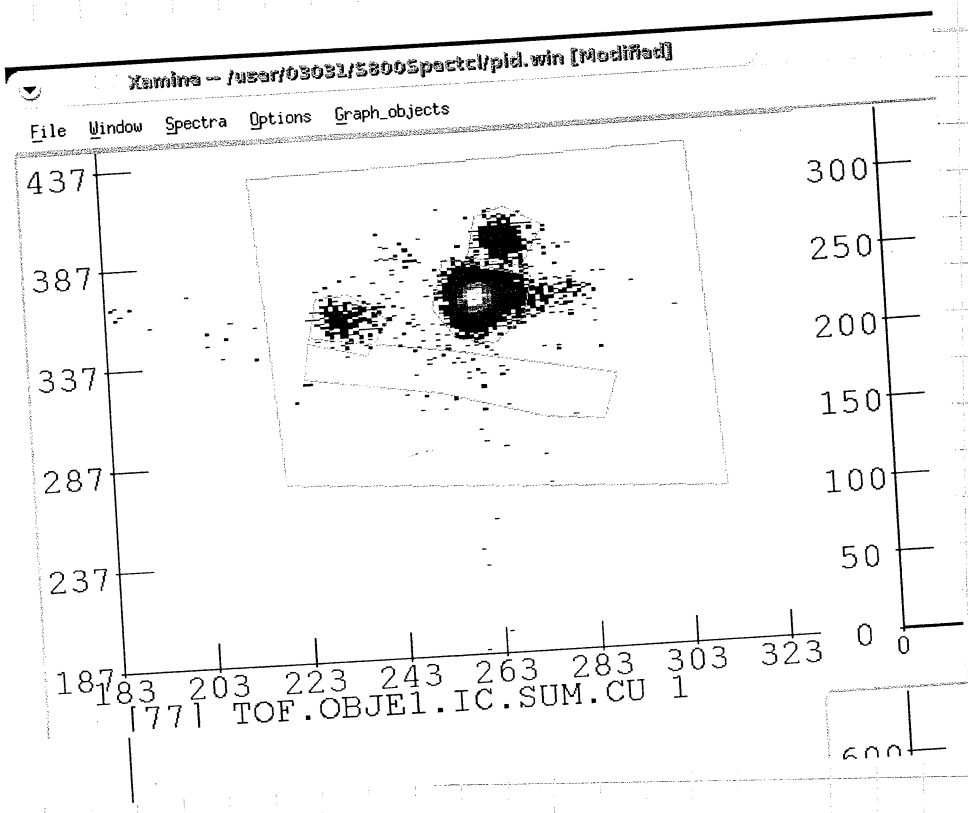
Run #	Δp/p	start ^{72}Cu	stop ^{71}Cu	^{74}Cu	Comments
96	0.5	9 4%	1.9%		
97	1.0	9.4	2.2%		2.781
98	1.5	9 4%	2.3%		2.781
119	1.0		4.6%		2.7282
120	0.5	29 6%	3.5	2.75%	
121	1,5				2.7282
122	1.5				2.781
123	0.5	87%	3.7%	5.4%	2.781
124	0.5	85%	2.6%	8.6	2.781
125	1.0	83	2.8	9.9	2.7280
					2.7280
127	—	88	2.7%	5.9%	2,728

```
A1900 "Print14May05_11h47.txt"  Saturday 11:47:57 2005-05-14  A1900
***                             Run 122 1.5% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   3k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m   -0.00237 % (3.83039 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00000 % (3.83022 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00350 % (3.52612 Tm)
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00155 % (3.52605 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.78100 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00000 T  2282.62069 m    0.00000 m  100.00000 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              1.11650 T  3.09708 m    3.09460 m   -0.07997 %
I228DS              1.09108 T  3.17034 m    3.16670 m   -0.11478 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:  -19.70,  24.03 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
```

```
A1900 "Print14May05_11h49.txt"  Saturday 11:49:05 2005-05-14  A1900
***                                Run 124 0.5% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   3k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00243 % (3.83039 T
Seg 2:  3.83030 Tm  1.23496 T  3.10148 m    3.10155 m    0.00235 % (3.83021 T
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m    0.00000 % (3.52612 T
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00138 % (3.52605 T
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.78100 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00000 T  2282.62069 m    0.00000 m  100.00000 %
D165DS              0.37028 T  9.46362 m    9.46170 m   -0.02033 %
I200DS              1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS              0.00000 T  3.14204 m    0.00000 m  100.00000 %
I223DS              1.11649 T  3.09708 m    3.09463 m   -0.07908 %
I228DS              1.09108 T  3.17034 m    3.16670 m   -0.11478 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I21
Ext
```



```
A1900 "Print14May05_12h04.txt"  Saturday 12:04:31 2005-05-14  A1900
***                                Run 125 1% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   3k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00271 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23496 T  3.10148 m    3.10156 m    0.00247 % (3.83021 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09490 m   -0.00387 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00151 % (3.52605 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.72800 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10286 T  3.14194 m    3.14037 m   -0.05012 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11648 T  3.09708 m    3.09466 m   -0.07818 %
I228DS              1.09111 T  3.17034 m    3.16661 m   -0.11752 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:  -12.20,  16.63 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 201.94 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110    0.01,    0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.71,  98.93;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```


Xamine -- /user/030031/S800Spectcl/pid.win [Modified]
File Window Spectra Options Graph_objects
437
387
337
287
237
187
183 203 223 243 263 283 303 323
[771] TOF.OBJE1.IC.SUM.CU 1
300
250
200
150
100
50
0
0

```
A1900 "Print14May05_12h34.txt"  Saturday 12:34:43 2005-05-14  A1900
**              Run 127 beam composition 0.5% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
CAtt  30k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
C500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Deg 0:  4.32100 Tm
Deg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00246 % (3.83039 Tm)
Deg 2:  3.83030 Tm  1.23496 T  3.10148 m    3.10156 m    0.00262 % (3.83020 Tm)
Deg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09492 m   -0.00324 % (3.52611 Tm)
Deg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09577 m   -0.00162 % (3.52606 Tm)
Deg 5:  3.50350 Tm
Deg 6:  3.46338 Tm
Deg 7:  3.45512 Tm
Deg 8:  2.72800 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m   5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
[200DS              1.10285 T  3.14194 m    3.14039 m   -0.04922 %
[205DS              1.10274 T  3.14204 m    3.14071 m   -0.04243 %
[223DS              1.11647 T  3.09708 m    3.09469 m   -0.07729 %
[228DS              1.09114 T  3.17034 m    3.16653 m   -0.12027 %
[265DS              0.97976 T  2.80280 m    2.78436 m   -0.65808 %
[269DS              0.97673 T  2.80280 m    2.79299 m   -0.34990 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Run# 128	S800		
Date__/05/05	***Begin:*** 12:49		***End:*** 12:55
Target: **Be**	**Br=___** Tm 2.775	dp/p= 0.5%	Scaler ___ 66.5% Master.Live/Master___
^{72}Zn	Comments: +30, +29 charge distribution		
Who's on			

```
A1900 "Print14May05_12h51.txt"  Saturday 12:51:01 2005-05-14  A1900
***                          run128, br=2,775 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   1k>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00265 % (3.83040 Tm
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00191 % (3.83023 Tm
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09492 m   -0.00317 % (3.52611 Tm
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00137 % (3.52605 Tm
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.77500 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11650 T  3.09708 m    3.09460 m   -0.07997 %
I228DS              1.09108 T  3.17034 m    3.16670 m   -0.11478 %
I265DS              0.99429 T  2.80280 m    2.79094 m   -0.42328 %
I269DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110   -0.01,   0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

Run# 179	S800		A1900	
Target: Views Be Ta	DS= 2.775 Tm	dp/p= 0.2%		
^{64}Ni Intensity____pps ^{68}Ni Intensity____pps	Comments: charge States +30, +29			

#1 129

A1900 "Print14May05_12h56.txt" Saturday 12:56:40 2005-05-14 A1900
*** 2.775, dp/p=0.2% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+ 11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att 300> ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b: 675 A, 650 A K1200: 812 A, 62 A RF: 22.49300 MHz
A1900 Optics: G19S3V13_30x20Focus60x30.data

	Rigidity	Field	Radius	(live)	Difference (Field*Radius)
Seg 0:	4.32100 Tm				
Seg 1:	3.83030 Tm	1.23608 T	3.09882 m	3.09874 m	-0.00244 % (3.83039 Tm)
Seg 2:	3.83030 Tm	1.23496 T	3.10148 m	3.10155 m	0.00232 % (3.83021 Tm)
Seg 3:	3.52600 Tm	1.13929 T	3.09502 m	3.09491 m	-0.00339 % (3.52612 Tm)
Seg 4:	3.52600 Tm	1.13897 T	3.09582 m	3.09579 m	-0.00106 % (3.52604 Tm)
Seg 5:	3.50350 Tm				
Seg 6:	3.46338 Tm				
Seg 7:	3.45512 Tm				
Seg 8:	2.77500 Tm				
Z108DS		0.00000 T	7.04675 m	0.00000 m	100.00000 %
D140DS		0.00145 T	2282.62069 m	2416.20690 m	5.85232 %
D165DS		0.37028 T	9.46362 m	9.46170 m	-0.02033 %
I200DS		1.10285 T	3.14194 m	3.14039 m	-0.04922 %
I205DS		1.10272 T	3.14204 m	3.14076 m	-0.04062 %
I223DS		1.11647 T	3.09708 m	3.09469 m	-0.07729 %
I228DS		1.09106 T	3.17034 m	3.16676 m	-0.11294 %
I265DS		0.99432 T	2.80280 m	2.79085 m	-0.42629 %
I269DS		0.99218 T	2.80280 m	2.79687 m	-0.21152 %

Z001TL: out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R: -1.26, 5.33 mm; Z037DC: out
Z057MS: 1.5 pct, Z061MS: out
Z059DC: out, Z062SC: out, Z057TL: [5"]Al 240
Z082 XC,G,YG: 0.16, 203.50, 202.05 mm Z082Deg: out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap: 0.01, -0.04 mm; D110 -3.01, 10.00 mm F110 -0.01, 0.69
B110DC: out, D110DC: out, D111DC: 5 mil BC-404, F110DC: out
Slits: I181 XC,G,YC,G: 0.79, 98.98; 0.05, 98.39

03031 Run Sheet

Run# 130	S800		
Date__/05/05	***Begin:***		***End:***
Target: **Be**	**Br=____** **Tm** 2.875	dp/p= 0.2%	Scaler ____ Master.Live/Master___
^{72}Zn	Comments: Charge state distrib. 10 min		
Who's on shift			

```
A1900 "Print14May05_13h09.txt"  Saturday 13:09:29 2005-05-14  A1900
***                          run 130, br=2.875 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att   10>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m   -0.00241 % (3.83039 Tm)
Seg 2:  3.83030 Tm  1.23496 T  3.10148 m    3.10155 m    0.00239 % (3.83021 Tm)
Seg 3:  3.52600 Tm  1.13930 T  3.09502 m    3.09490 m    0.00000 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00127 % (3.52604 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.87500 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10291 T  3.14194 m    3.14022 m   -0.05466 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11648 T  3.09708 m    3.09466 m   -0.07818 %
I228DS              1.09108 T  3.17034 m    3.16670 m   -0.11478 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              1.02675 T  2.80280 m    2.80010 m   -0.09643 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -1.26,   5.33 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110    0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector:  PPAC
Extra Drive: Z059TL VAL
```

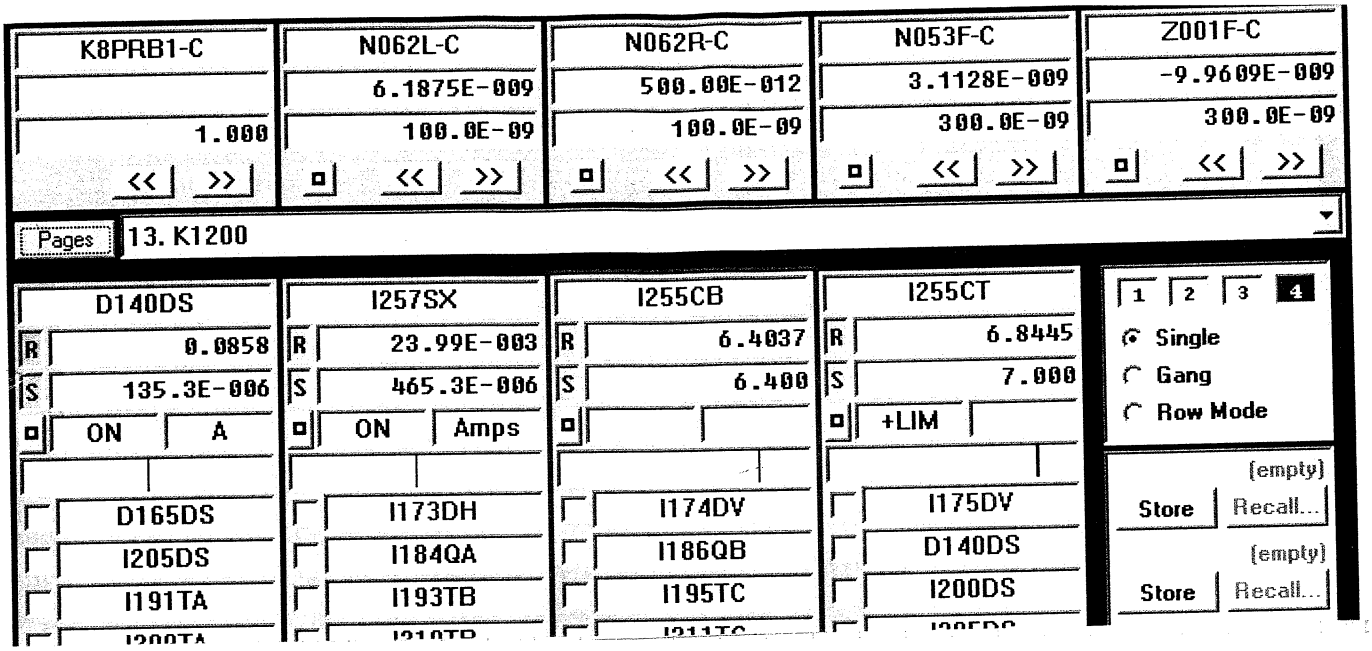
03031 Run Sheet

Date__/05/05	*Begin:*		*End:*
Target: **Be**	**Br**___ 2.875	dp/p=	Scaler ____ Master.Live/Master___
^{72}Zn ☐	Comments:		
Who's on shift			

Run #	start	stop	Comments
131	13:30		
132	14:12		
133	14:33	~~15:10~~	} Play with plastic OBJ
134			
135		15:10	

Efficiency check:

Track2.X-Y gated by TC.sum = 3936/4178 ≃ 87%




```
A1900 "Print14May05_13h31.txt"  Saturday 13:31:29 2005-05-14  A1900
*** run131 blocking CB, 05% ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00257 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00206 % (3.83022 Tm)
Seg 3:  3.52600 Tm  1.13930 T  3.09502 m    3.09489 m   -0.00407 % (3.52614 Tm)
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09579 m   -0.00103 % (3.52604 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.87500 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37028 T  9.46362 m    9.46170 m   -0.02033 %
I200DS              1.10286 T  3.14194 m    3.14037 m   -0.05012 %
I205DS              1.10276 T  3.14204 m    3.14065 m   -0.04424 %
I223DS              1.11647 T  3.09708 m    3.09469 m   -0.07729 %
I228DS              1.09106 T  3.17034 m    3.16676 m   -0.11294 %
I265DS              1.02788 T  2.80280 m    2.79702 m   -0.20625 %
I269DS              1.02709 T  2.80280 m    2.79917 m   -0.12950 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

```
A1900 "Print14May05_14h33.txt"  Saturday 14:33:24 2005-05-14  A1900
***                                                        run133 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
      A1900 Optics: G19S3V13_30x20Focus60x30.data
      Rigidity        Field     Radius          (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m   -0.00237 % (3.83039 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00200 % (3.83022 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00328 % (3.52612 Tm)
Seg 4:  3.52600 Tm  1.13897 T  3.09582 m    3.09578 m   -0.00151 % (3.52605 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.87500 Tm
Z108DS                0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS                0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS                0.37028 T  9.46362 m    9.46170 m   -0.02033 %
I200DS                1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS                1.10276 T  3.14204 m    3.14065 m   -0.04424 %
I223DS                1.11647 T  3.09708 m    3.09469 m   -0.07729 %
I228DS                1.09107 T  3.17034 m    3.16673 m   -0.11386 %
I265DS                1.02788 T  2.80280 m    2.79702 m   -0.20625 %
I269DS                1.02710 T  2.80280 m    2.79914 m   -0.13047 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:    -4.70,    9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:     0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:     0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110     0.01,    0.69
Slits: I181 XC,G,YC,G:     0.74,  98.98;   0.02,  98.34
```

Put in Scintillator > OBJ_Si

Integrations for spectrum 29

Id	Name	Centroid	FWHM	Area	
Summing regions:					
49	total_E1	744.25	8.12	98705.000000	Trigger
Cuts:					

Integrations for spectrum 34

Id	Name	Centroid	FWHM	Area	
Summing regions:					
51	total_IC	2553.11	1965.65	98149.000000	99.4%
Cuts:					
50	test	2943.92	107.64	66479.000000	
106	icsum	2945.11	102.94	65663.000000	

Integrations for spectrum 53

Id	Name	Centroid	FWHM	Area	
Summing regions:					
48	total_XFP	1826.15	655.78	63038.000000	64 %
Cuts:					

Integrations for spectrum 46

Id	Name	Centroid	FWHM	Area	
Summing regions:					
50	total_OBJ	94.15	60.92	60270.000000	61%
Cuts:					

$$\frac{OBJ}{XFP} = 95\%$$

On scalars $\frac{OBJ}{XFP} = 84\%$

03031 Run Sheet

Run#	137		S800
Date__/05/05	***Begin:*** 17:20		***End:***
Target: **Be**	**Br=** 2875 **Tm**	dp/p=	Scaler ____ Master.Live/Master___
^{72}Zn	Comments: Target scint in		
Who's on shift			

Target scint. is called ~~Si~~ OBJ.Si in the scaler.

$\frac{OBJ.Si}{OBJ.scint} \sim 65\%$.

In spectcl it is called TOF.tar.

03031 Run Sheet

Date__/05/05	***Begin:*** 17:30		***End:***
Target: **Be**	**Br___** 2.875	dp/p=	Scaler ____ Master.Live/Master___
^{72}Zn	Comments: Target saint out,		
Who's on shift			

Run #	**start**	**stop**	**Comments**
138	17:30	17:45	rate ~ 650k obj saint
139	17:45	1850	

total E1 - 7076
IC 7076
XFP 4865 ~~68~~ 69%
TOT.OBJEL_IC.SUM: 4202 59%

```
A1900 "Print14May05_17h51.txt"  Saturday 17:51:16 2005-05-14  A1900
***                        Run 139 brho=2.875 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00244 % (3.83039 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10153 m    0.00165 % (3.83024 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09492 m   -0.00325 % (3.52611 Tm)
Seg 4:  3.52600 Tm  1.13899 T  3.09582 m    3.09574 m   -0.00287 % (3.52610 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.87500 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00000 T  2282.62069 m    0.00000 m  100.00000 %
D165DS              0.37028 T  9.46362 m    9.46170 m   -0.02033 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10274 T  3.14204 m    3.14071 m   -0.04243 %
I223DS              1.11646 T  3.09708 m    3.09471 m   -0.07639 %
I228DS              1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS              1.02791 T  2.80280 m    2.79694 m   -0.20917 %
I269DS              1.02709 T  2.80280 m    2.79917 m   -0.12950 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.36 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -2.99,  10.00 mm F110    0.01,   0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Date__/05/05	*Begin:*		*End:*
Target: **Be**	**Br**___ 3.02	dp/p=	Scaler ____ Master.Live/Master___
^{72}Zn	Comments:		
Who's on shift			

Run #	start	stop	Comments
~~Test~~ 140	19:00	19:15	~~Br~~ NMR not locked
141	19:15	19:17	D1 measured D2 needed. NMR not locked yet
142	19:17	20:00	NMR ~~was~~ locked

Takes ~30 min to lock

Scaler OBS. Scint / XFP. Scint : 470K / 557K ~ 84%.

Spectra XFP / E1 ~ 58%

```
A1900 "Print14May05_19h20.txt"  Saturday 19:20:38 2005-05-14  A1900
***                          Run 142 brho=3.02 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m    0.00000 % (3.83038 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00191 % (3.83023 Tm)
Seg 3:  3.52600 Tm  1.13928 T  3.09502 m    3.09493 m   -0.00266 % (3.52609 Tm)
Seg 4:  3.52600 Tm  1.13898 T  3.09582 m    3.09575 m   -0.00242 % (3.52609 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  3.02000 Tm
Z108DS              0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS              0.00000 T  2282.62069 m    0.00000 m  100.00000 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10286 T  3.14194 m    3.14037 m   -0.05012 %
I205DS              1.10272 T  3.14204 m    3.14076 m   -0.04062 %
I223DS              1.11646 T  3.09708 m    3.09471 m   -0.07639 %
I228DS              1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              1.07717 T  2.80280 m    2.80364 m    0.03007 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:   -4.70,   9.35 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110    0.01,    0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.81,  99.03;   0.07,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Date__/05/05	***Begin:***		***End:***
Target: **Be**	**Br___** 3.970	dp/p= 0.2%	Scaler ___ 97% Master.Live/Master___
^{72}Zn ☐	Comments: Charge states		
Who's on shift			

Run #	**start**	**stop**	**Comments**
#145			
14			

We changed $\Delta p/p$ to 0.2% -1.1

```
A1900 "Print14May05_20h05.txt"  Saturday 20:05:18 2005-05-14  A1900
***                                          run 143 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
        A1900 Optics: G19S3V13_30x20Focus60x30.data
        Rigidity       Field     Radius       (live)  Difference (Field*Radius)

Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09874 m   -0.00250 % (3.83040 Tm)
Seg 2:  3.83030 Tm  1.23497 T  3.10148 m    3.10154 m    0.00193 % (3.83023 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00331 % (3.52612 Tm)
Seg 4:  3.52600 Tm  1.13899 T  3.09582 m    3.09573 m   -0.00307 % (3.52611 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.97500 Tm
Z108DS                0.50040 T  7.04675 m    7.04636 m   -0.00549 %
D140DS                0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS                0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS                1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS                1.10274 T  3.14204 m    3.14071 m   -0.04243 %
I223DS                1.11646 T  3.09708 m    3.09471 m   -0.07639 %
I228DS                1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS                0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS                0.00000 T  2.80280 m    0.00000 m  100.00000 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:    -1.26,    5.32 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,   -0.04 mm; D110   -3.01,    9.88 mm F110   -0.01,    0.6
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,   98.98;   0.02,   98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Date__/05/05	***Begin:***		***End:***
Target: **Be**	**Br___** 3.08	dp/p= 0.5%	Scaler ___ Master.Live/Master 98%
^{72}Zn	Comments:		
Who's on shift			

Run #	**start**	**stop**	**Comments**
144	8:20	8:45	NMR not locked. Needed ; measured
no scaler	~~8:47~~		NMR locked. DAQ crashed !
145	~~8~~ 9:00	9:02	NMR locked scaler problem
146	9:03		
147			attn x10 Bell much around will eff 82K
148			attn x3 140K
149	~~9~~ 10.40	10:	attn 1 · 443K

OBJ. scint / XFP. scint : $\frac{488K}{578K}$ ~ 84.6%

OB~~J. sc~~ Recover scaler : U6pc3 : 03031

>xkill

>goScaler

kill Data acquisition

ssh spdaq20

godaq

If this does not work, restart spdaq20 (outside S800 vault)

```
A1900 "Print14May05_21h01.txt"  Saturday 21:01:17 2005-05-14  A1900
***                              Run 145 Brho=3.08 ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    1>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity        Field      Radius        (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23608 T  3.09882 m    3.09875 m   -0.00224 % (3.83039 Tm
Seg 2:  3.83030 Tm  1.23498 T  3.10148 m    3.10152 m    0.00126 % (3.83025 Tm
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09491 m   -0.00347 % (3.52612 Tm
Seg 4:  3.52600 Tm  1.13898 T  3.09582 m    3.09575 m   -0.00249 % (3.52609 Tm
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  3.08000 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10284 T  3.14194 m    3.14042 m   -0.04831 %
I205DS              1.10275 T  3.14204 m    3.14068 m   -0.04334 %
I223DS              1.11645 T  3.09708 m    3.09474 m   -0.07550 %
I228DS              1.09104 T  3.17034 m    3.16682 m   -0.11111 %
I265DS              1.09875 T  2.80280 m    2.80319 m    0.01375 %
I269DS              1.09882 T  2.80280 m    2.80301 m    0.00738 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,   9.35 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.79,  98.98;   0.02,  98.34
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

There is a sporadic problem with the extended FP. Sometimes it ~~stops~~ seems to stop counting.

	high rate		low rate	147 (x10)	148 (x3)	149 (x1)
~~E1E2~~						
E1up vs E1dw	22386		E1	~~8199~~ 1975	~~746~~ 1486	3895
E1	8180		OBJ	1 4888	731 3170	6449
IC			XFB	1564	2467 3171	6274

03031 Run Sheet Beam composition Run

Run# 150	S800		
Date__/05/05	***Begin:*** 22:55		***End:***
Target: **Be** **Ta**	**Br=____ Tm** 2.728	dp/p=	Scaler ____ Master.Live/Master___ 512 OBJ. Scint / XFP. Scint 0.84
^{64}**Ni** ☐ **Intensity_____pps** ^{68}**Ni** ☐ **Intensity_____pps**	Comments: Do not forget to print Barney! check beam composition		
Who's on shift			

Cu71	863
Ga74	1080
Zn72	51889
total	54664

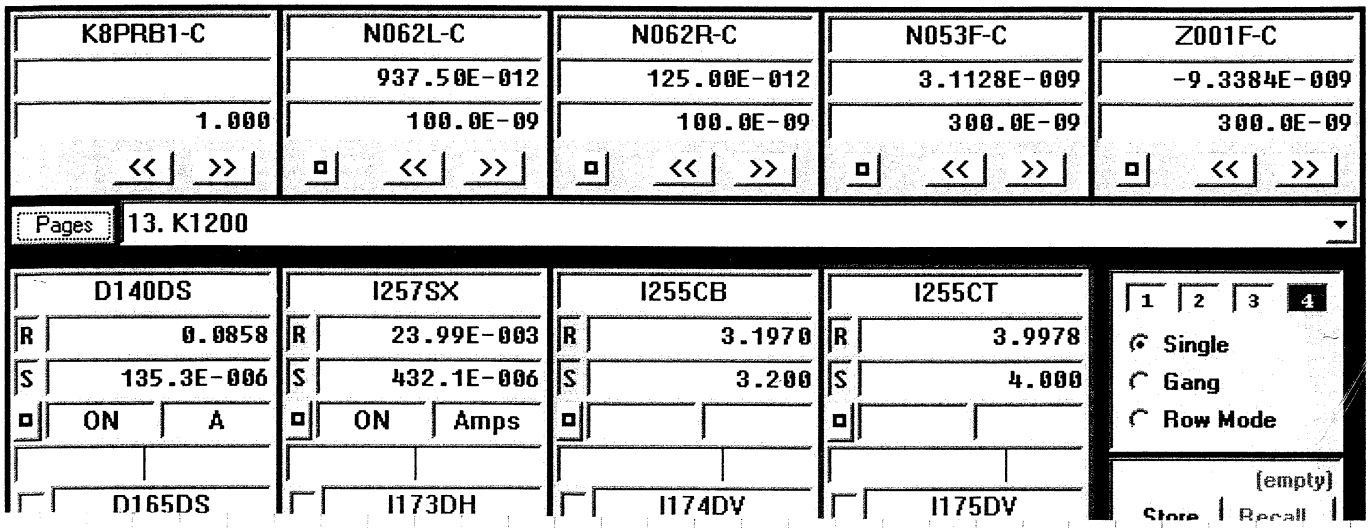
```
A1900 "Print14May05_22h58.txt"  Saturday 22:58:54 2005-05-14  A1900
***                    run 150 beam compos ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att  300>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23607 T  3.09882 m    3.09877 m   -0.00174 % (3.83037 Tm)
Seg 2:  3.83030 Tm  1.23498 T  3.10148 m    3.10150 m    0.00061 % (3.83028 Tm)
Seg 3:  3.52600 Tm  1.13928 T  3.09502 m    3.09493 m   -0.00290 % (3.52610 Tm)
Seg 4:  3.52600 Tm  1.13895 T  3.09582 m    3.09582 m   -0.00000 % (3.52600 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.72800 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37016 T  9.46362 m    9.46477 m    0.01219 %
I200DS              1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS              1.10271 T  3.14204 m    3.14079 m   -0.03971 %
I223DS              1.11649 T  3.09708 m    3.09463 m   -0.07908 %
I228DS              1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS              0.00000 T  2.80280 m    0.00000 m  100.00000 %
I269DS              1.09878 T  2.80280 m    2.48275 m  -11.41881 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.09 mm
Z037L,R:   -4.70,    9.35 mm) Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:    0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
B110DC:  out, D110DC:  out, D111DC: 5 mil BC-404, F110DC:  out
Slits: I181 XC,G,YC,G:    0.74,  98.98;  -0.00,  98.39
I187: [3"]Obj Scint, I188: [0"] out, I189: , I190: [0"] out
I213: [0"] out, I214: [0"] out, I215: [0"] out, I216: [0"] out
I214DC Detector: _PPAC_
Extra Drive: Z059TL.VAL  = (invalid position)
```

03031 Run Sheet

Date__/05/05	***Begin:***		***End:***
Target: **Be**	**Br___** 2.67	dp/p= 0.5%	Scaler ___ Scint ratio 84% Master.Live/Master 58%
^{72}Zn	Comments:		
Who's on shift	Blacker I2SS @B 3.197/3.200 CT 3.997/4.00. ←		

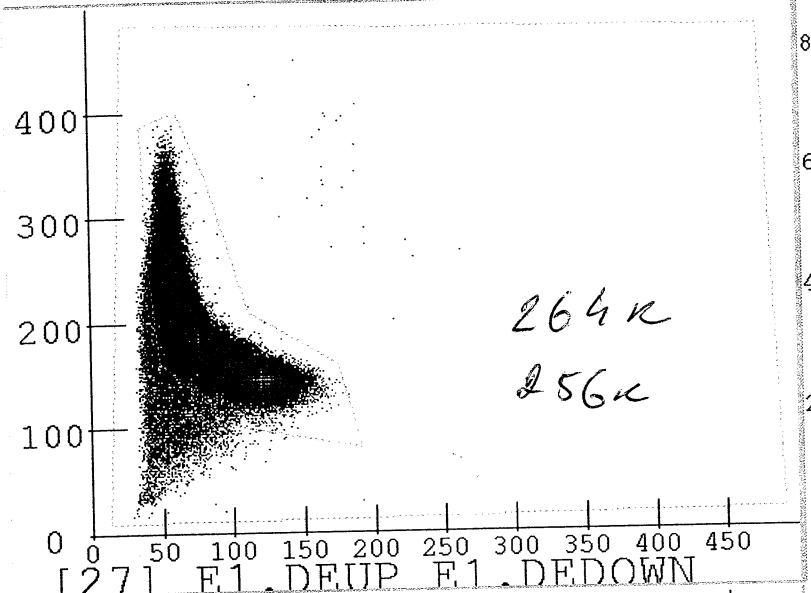
Run #	**start**	**stop**	**Comments**
151	23:13	726B	blocker in obj 115K. attn X3
152	23:55		

Spectra {
E1-DEup v.s. DE down · ~~149 478 / 117108~~ ~~200~~ 383 / 194416
~~IE~~ E1 ~~140676~~ 188579
· OBJ ~~126622~~ 169809 0.90
XFP ~~121230~~ 162515 0.86.

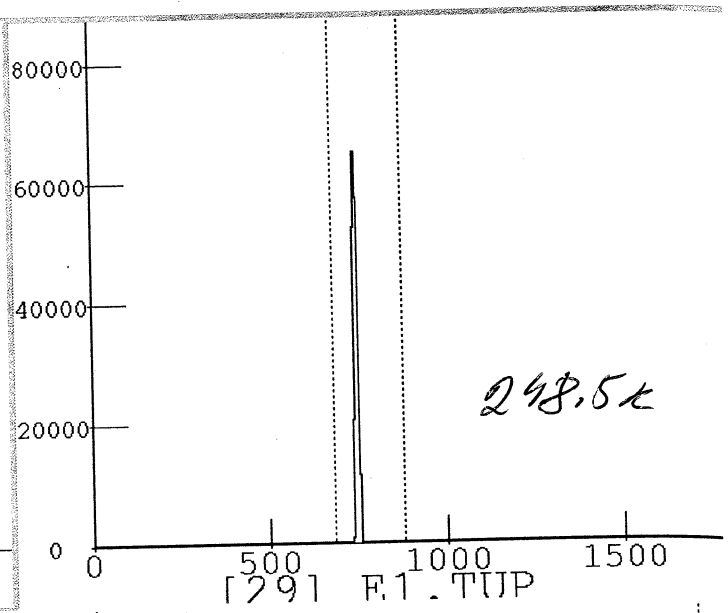



```
A1900 "Print14May05_23h14.txt"  Saturday 23:14:32 2005-05-14  A1900
***   Run 151 brho=2.67; blocker in data run ***
Expt: 03031 "Fragmentation of Ni-68" [Betty Tsang] Line: S800 [8]
Beam: 76 Ge 12+  11.59 MeV/nuc (K500) 30+ 130.00 MeV/nuc (K1200)
<Att    3>  ECR, Apertures: RTECR 50.0; 15.0; 50.0 mm RHVBI: 25.4900 kV
K500 a,b:    675 A,    650 A K1200:    812 A,     62 A RF:  22.49300 MHz
       A1900 Optics: G19S3V13_30x20Focus60x30.data
       Rigidity       Field     Radius       (live)  Difference (Field*Radius)
Seg 0:  4.32100 Tm
Seg 1:  3.83030 Tm  1.23607 T  3.09882 m    3.09876 m   -0.00186 % (3.83037 Tm)
Seg 2:  3.83030 Tm  1.23499 T  3.10148 m    3.10148 m    0.00007 % (3.83030 Tm)
Seg 3:  3.52600 Tm  1.13929 T  3.09502 m    3.09492 m   -0.00305 % (3.52611 Tm)
Seg 4:  3.52600 Tm  1.13895 T  3.09582 m    3.09583 m    0.00028 % (3.52599 Tm)
Seg 5:  3.50350 Tm
Seg 6:  3.46338 Tm
Seg 7:  3.45512 Tm
Seg 8:  2.67000 Tm
Z108DS              0.00000 T  7.04675 m    0.00000 m  100.00000 %
D140DS              0.00145 T  2282.62069 m 2416.20690 m    5.85232 %
D165DS              0.37028 T  9.46362 m    9.46170 m   -0.02033 %
I200DS              1.10285 T  3.14194 m    3.14039 m   -0.04922 %
I205DS              1.10269 T  3.14204 m    3.14085 m   -0.03790 %
I223DS              1.11648 T  3.09708 m    3.09466 m   -0.07818 %
I228DS              1.09105 T  3.17034 m    3.16679 m   -0.11203 %
I265DS              0.95934 T  2.80280 m    2.78316 m   -0.70061 %
I269DS              0.95655 T  2.80280 m    2.79128 m   -0.41098 %
Z001TL:  out, Z013TL: [0"] out; Z014TL [0"] out
Z015TL: [4"]Be 235, Z016TL [0"] out
Z030BC Beam Stop: -126.22 mm
Z037L,R:   -4.70,    9.35 mm; Z037DC:  out
Z057MS: 1.5 pct, Z061MS:  out
Z059DC:  out, Z062SC:  out, Z057TL: [5"]Al 240
Z082 XC,G,YG:    0.16, 203.50, 202.05 mm Z082Deg:  out
Z101DC: out, Z102DC: out; Z103DC: out, Z105SC: out
B110 Cent,Gap:   -0.01,  -0.04 mm; D110   -3.01,  10.00 mm F110   -0.01,   0.69
```

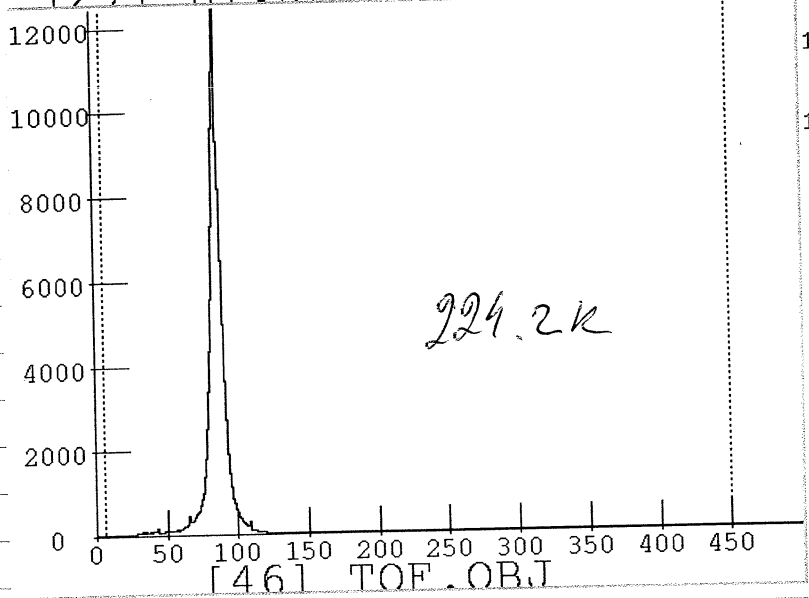
File Window Spectra Options Graph_objects



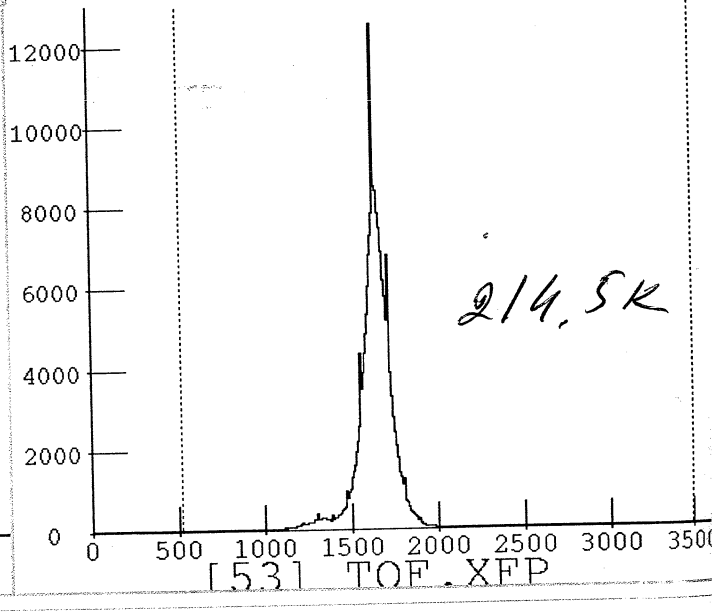
264K
256K



248.5K



224.2K



214.5K

Spectrum 53 X 1330 Y 4692