MINUTES OF DRAGON MEETING   6 JULY 04

Present   DO (recorder) DH MT JV MY ML UG CJ DG LB GR
           PM AO CR JP MA

Facility: Railway crossing installed at final focus. Alternate insertion of IC or
           DSSD box now possible without lifting out box.

CR 989 26 Al (p,gamma)

       Recoils are seen to stop in 2nd last anode, but there is noise from false vetoes.

       26Mg beam
       363keV resonance 27Si recoils just barely separated from leaky beam
       188 keV resonance – not resolveable

       Necessary to use TOF to resolve
       expected 2.5 us for 363 resonance
       expected 3.5 us for 188 resonance no recoil events in window, although one
       event is outside time window

       Predicted—one event should have been expected.

       Next run—use only DSSD? Rather than ion chamber?
       Next run is 1 short week, but we need more current.

CR DAQ STUDIES

       One ADC has been failing 20 percent of the time
   MCP/ION trigger switched

       Anode 1 losing data at 95 percent retention
       Anode 0 same problem Still cannot reproduce the 20 percent loss problem

PLANS FOR NEXT RUN --stable beam part 21 Ne

       Run pulser into preamp of strip detector
       Look for possible problems with ADC's
       Stable beam resonance 269 keV/u
       Measure strength of resonance for all different recoil charge states
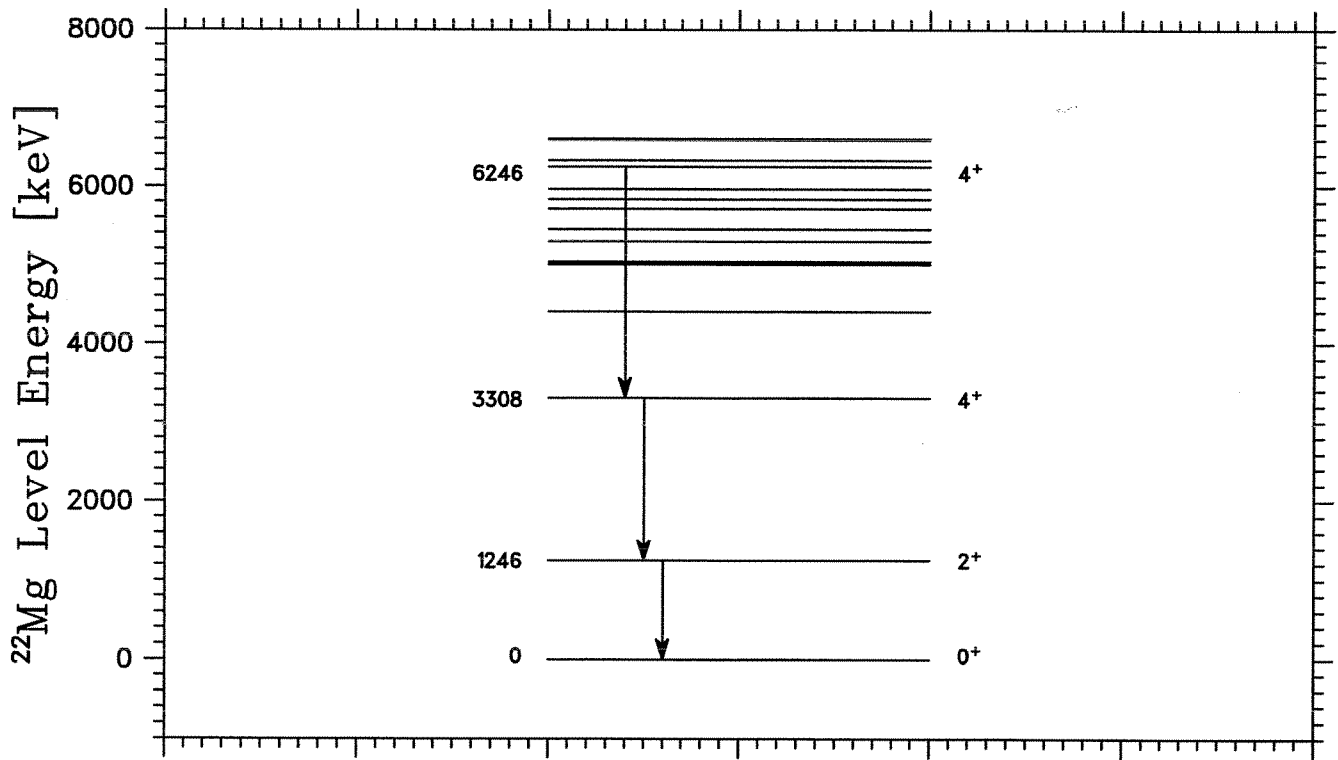
       Calibrate FC vs elastic monitors
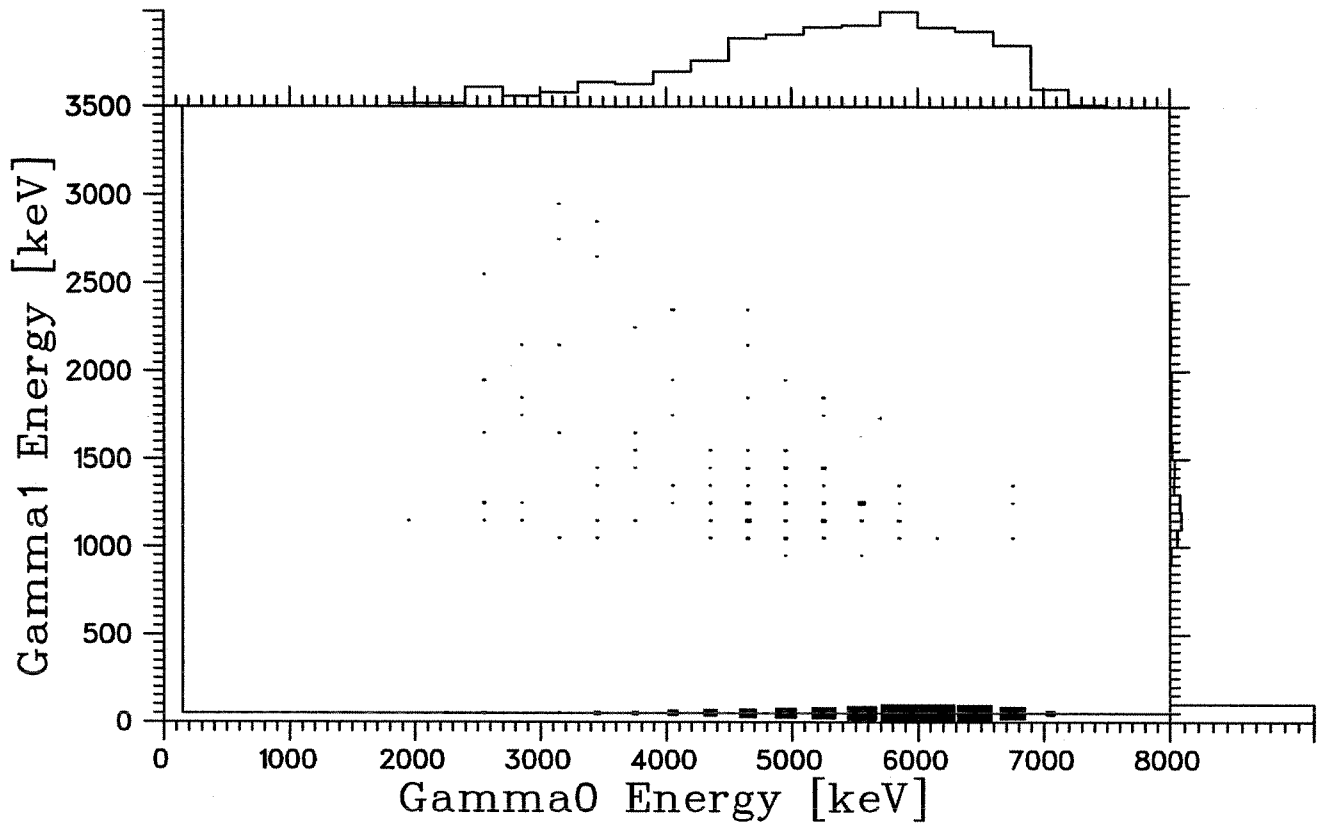   MCP also working

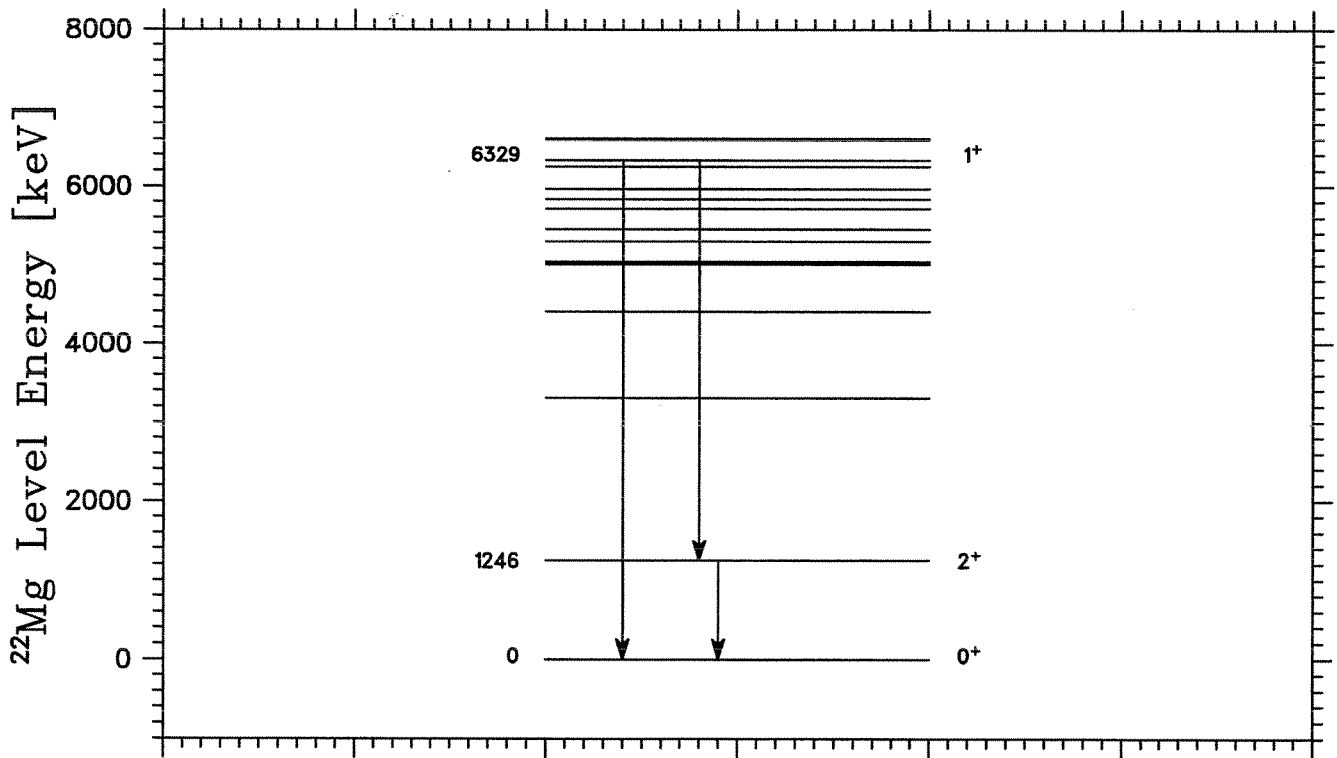MJ   Analysis 22 Mg   --see attachments
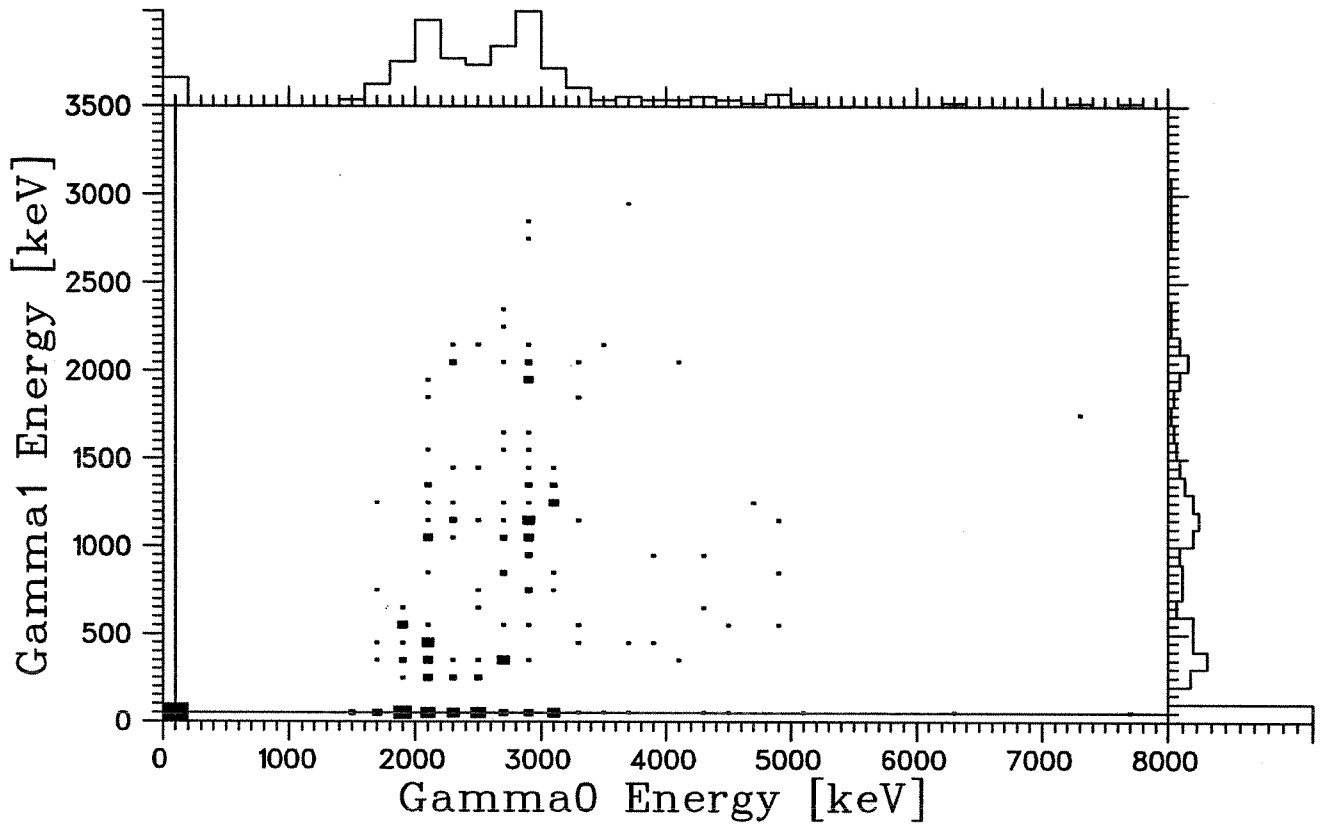
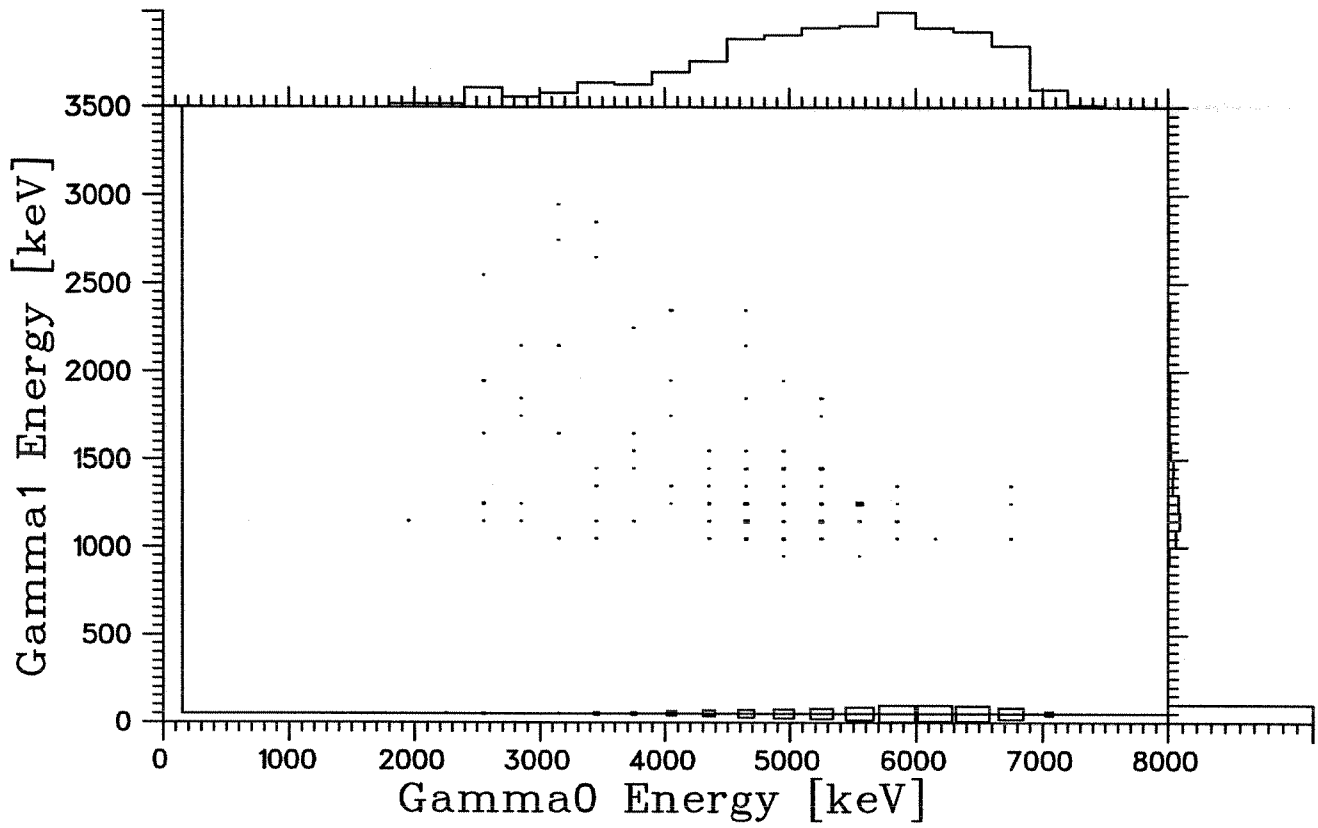06-Jul-2004 15:28:40

test2.dat

06-Jul-2004 15:28:40

738 keV

06–Jul–2004 15:27:21

821_nova_2d.dat

06–Jul–2004 15:27:22

821 keV

Gamma1 Energy [keV] vs Gamma0 Energy [keV]

05–Jul–2004 18:31:25   821_nova_2d.dat

Gamma1 Energy [keV] vs Gamma0 Energy [keV]
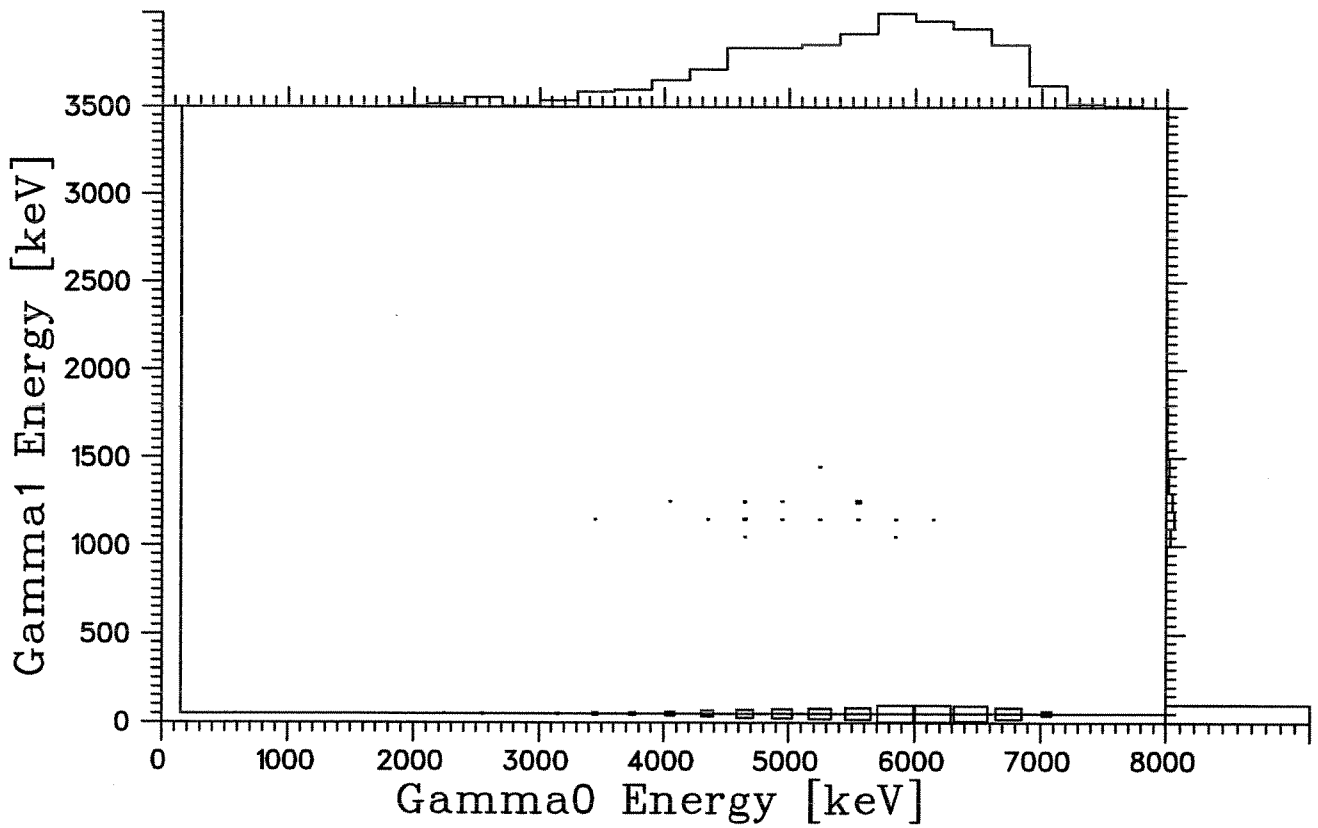
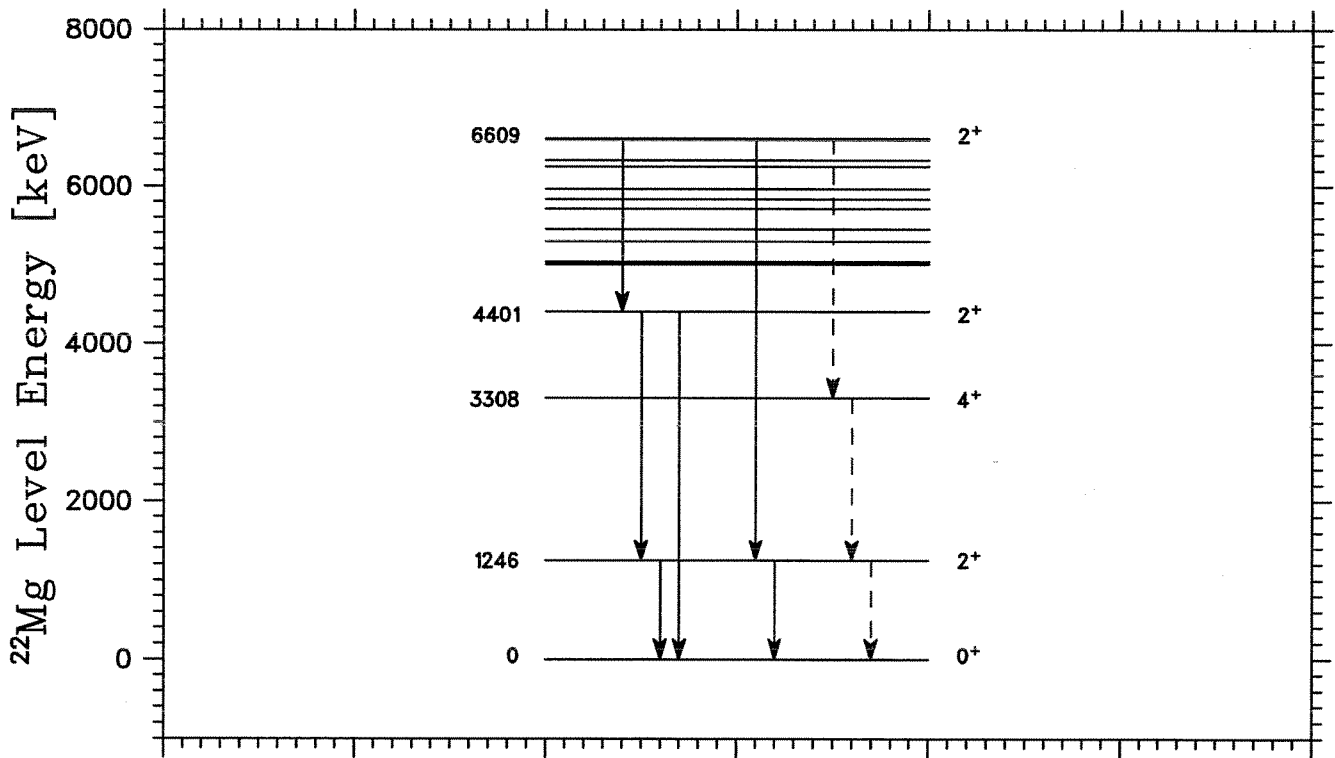05–Jul–2004 18:31:25   821_nova_2d_cl.dat
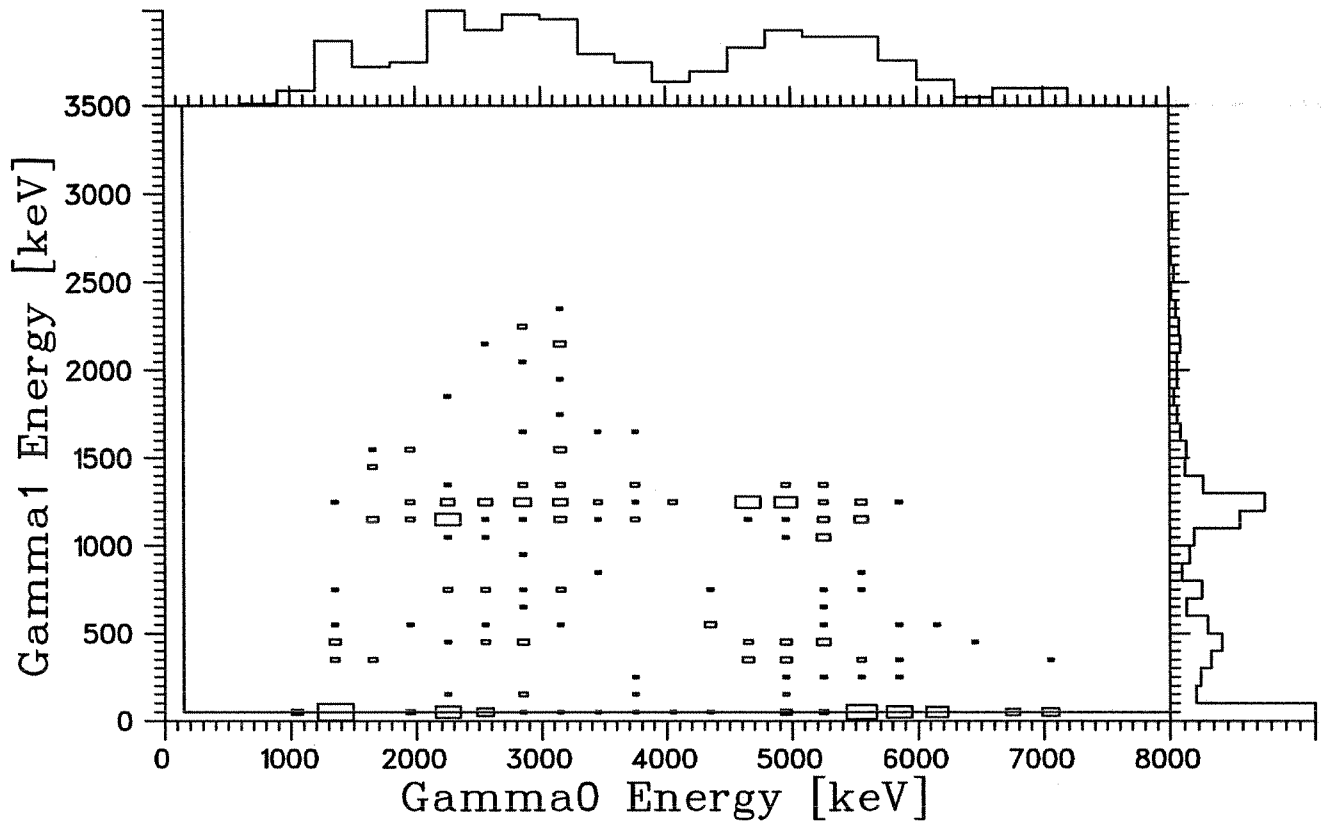
06-Jul-2004 15:26:56

1101_nova_2d.dat

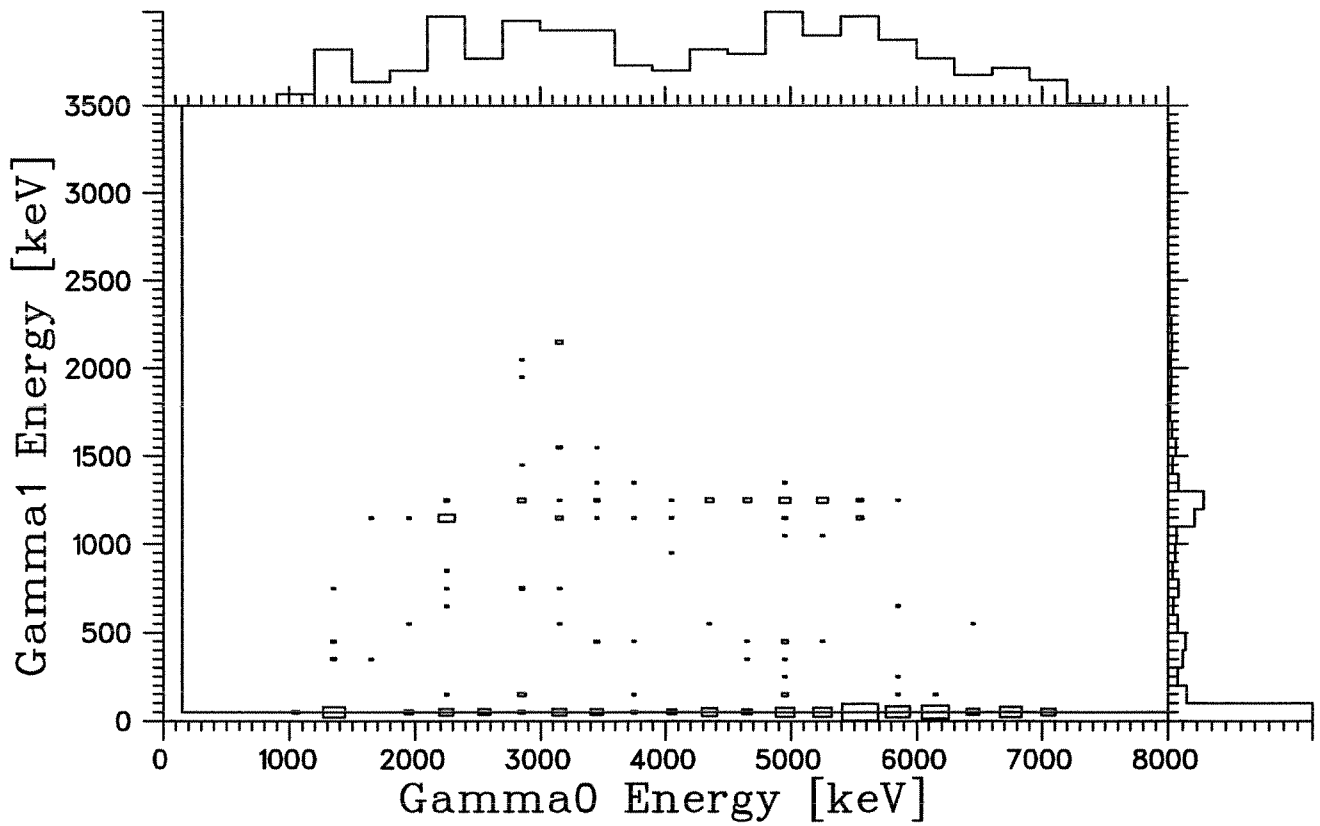06-Jul-2004 15:26:56

1101 keV
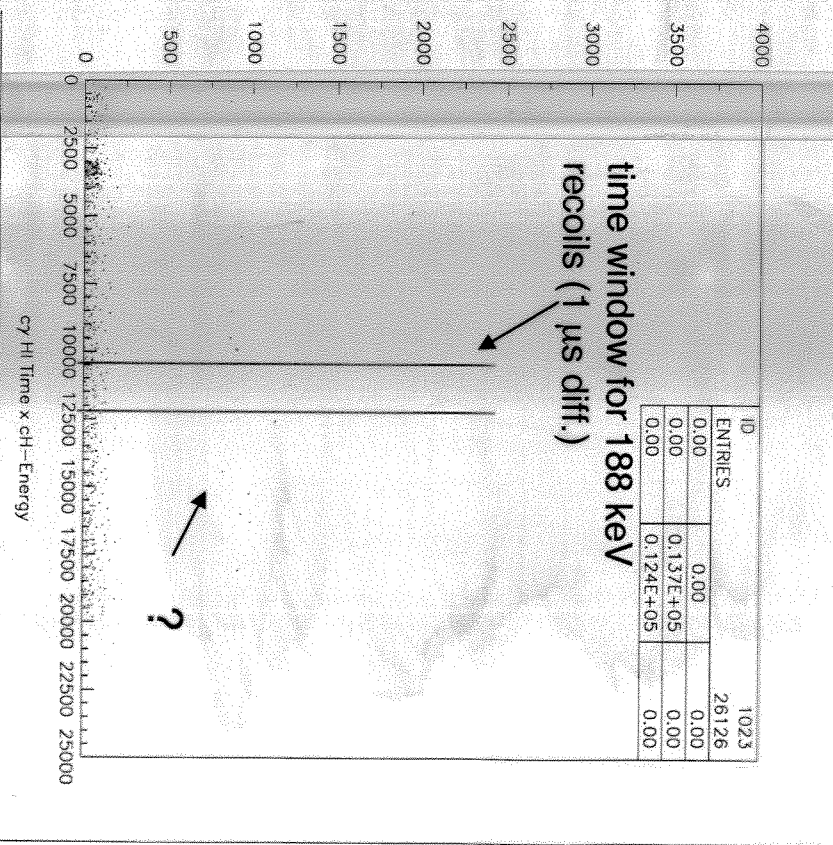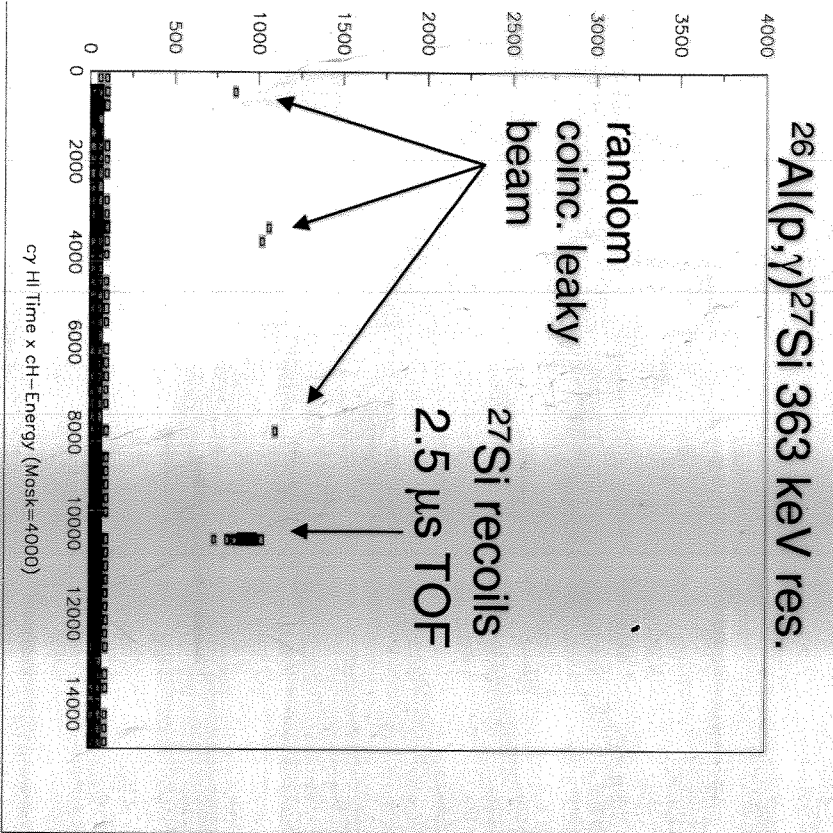
05-Jul-2004 18:29:10   1101_nova_2d.dat

05-Jul-2004 18:29:10   1101_nova_2d_cl.dat

$^{26}Al(p,\gamma)^{27}Si$ 363 keV res.

random
coinc. leaky
beam

^{27}Si recoils
2.5 μs TOF

cγ HI Time x cH-Energy (Mask=4000)

time window for 188 keV
recoils (1 μs diff.)

ID			1023
ENTRIES			26126
0.00	0.00	0.00	0.00
0.00	0.137E+05	0.00	0.00
0.00	0.124E+05	0.00	0.00

?

cγ HI Time x cH-Energy

- γ-coincident TOF easily identifies ^{27}Si recoils for 363 keV resonance
- 188 keV resonance recoils should have 3.5 ms TOF in coincidence (± 2.3%)
- very tentative candidate at ~ 2 μs diff.

- assume the tentative count is real, what is yield and $\omega\gamma$?

$Y = cts/(\ lt \times \varepsilon_{bgo} \times \varepsilon_q \times \varepsilon_{lt}\ ) = 1/(\ 1.95 \times 10^{13} \times 0.4 \times 0.35 \times 0.9\ )$
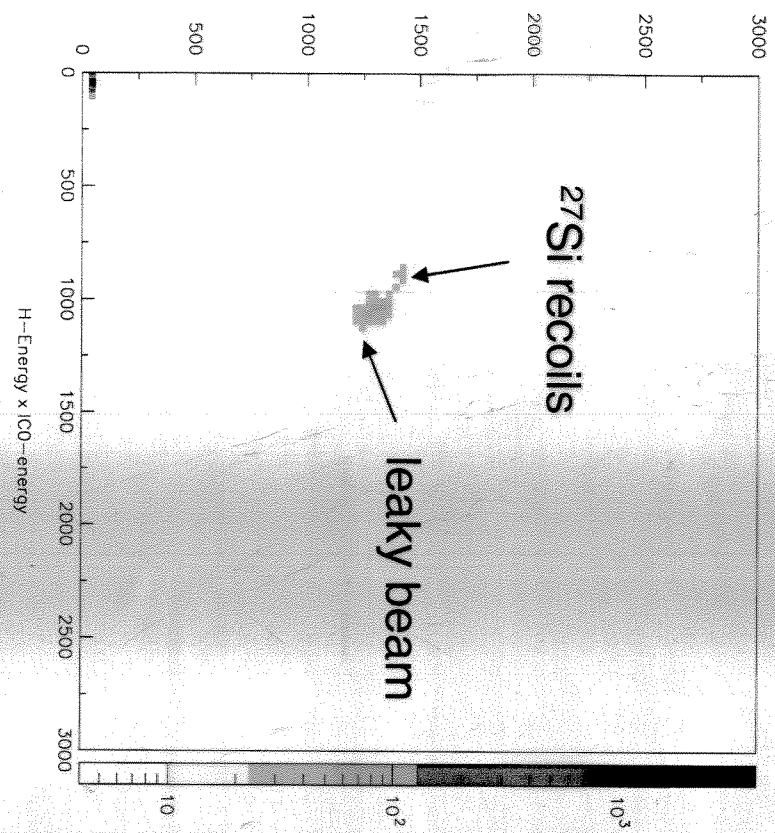
$= 4.1 \times 10^{-13}$

$\omega\gamma = 65\ \mu eV$

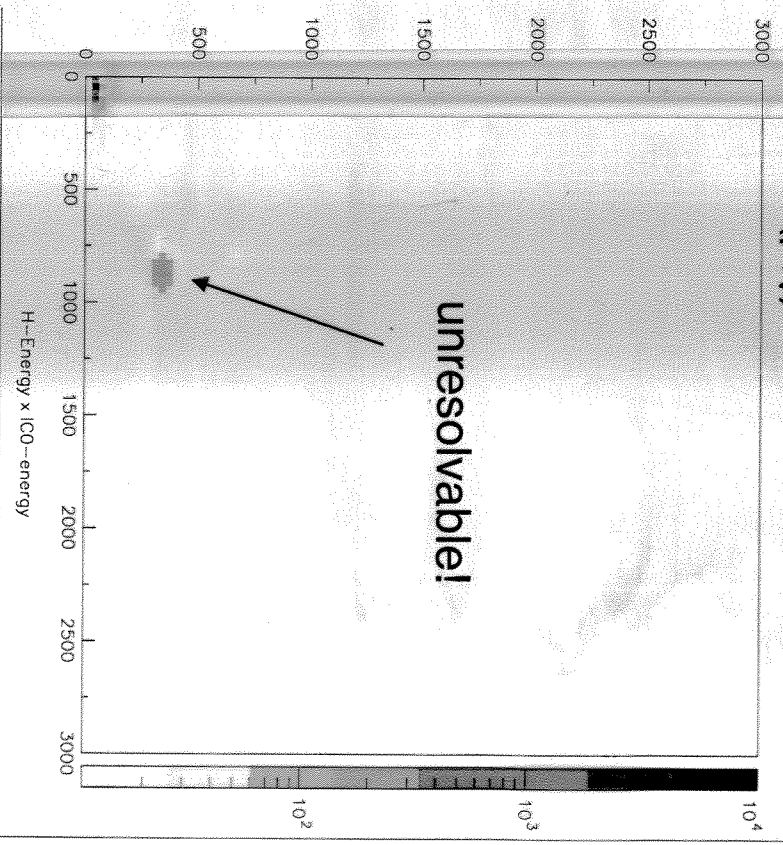Unpublished measured value is 55 μeV, previous adopted value is 65 μeV!

However, perhaps more interesting if the 'one count' is not a recoil.........

$^{26}Al(p,\gamma)^{27}Si$ 363 keV res.

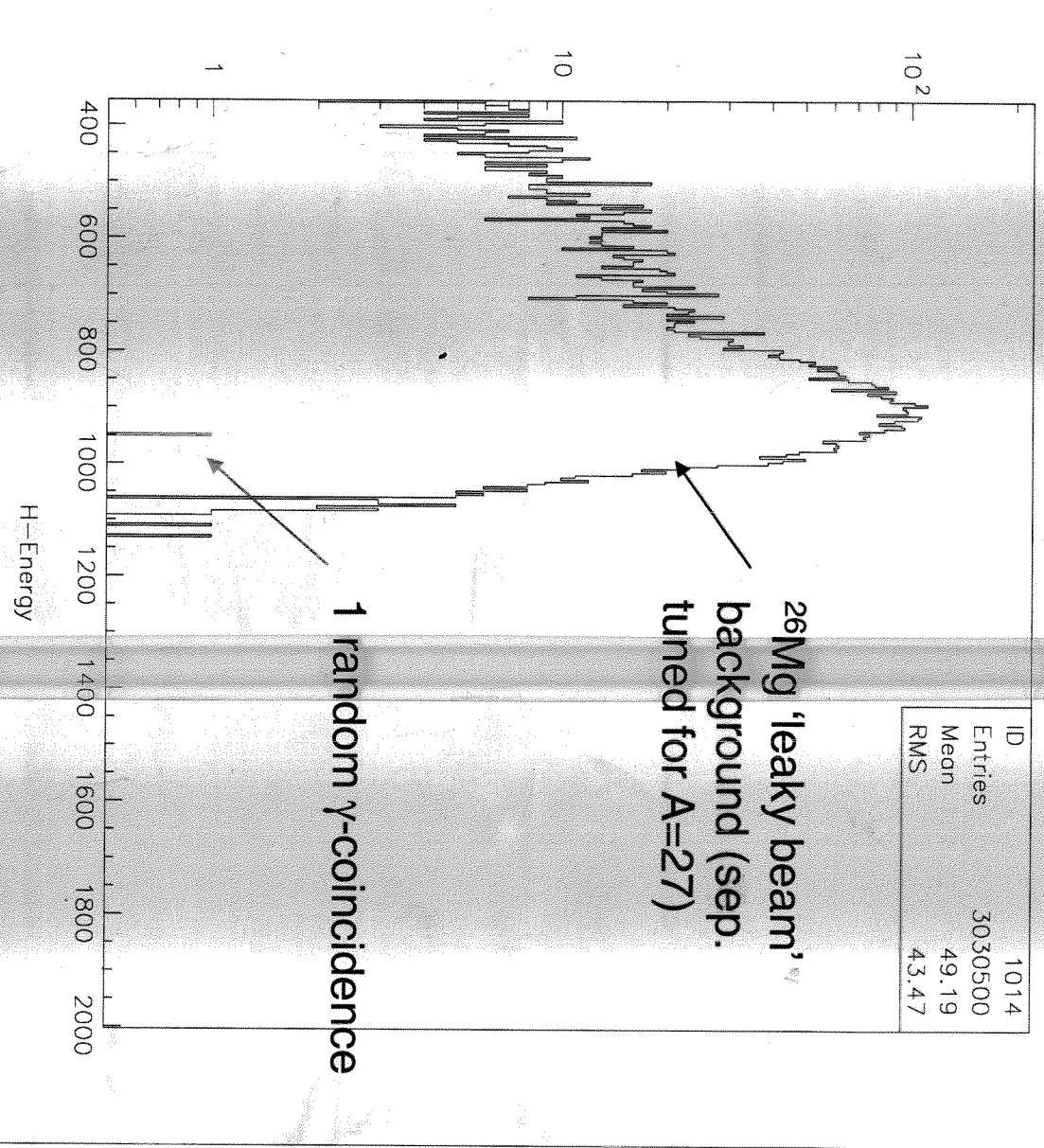^{27}Si recoils

leaky beam

H−Energy x IC0−energy

$^{26}Al(p,\gamma)^{27}Si$ 188 keV res.

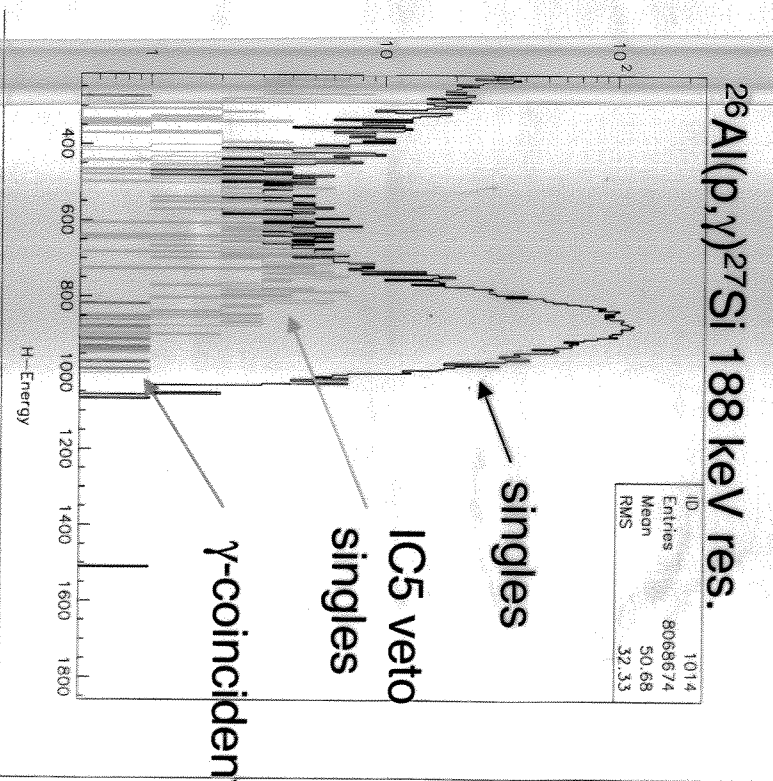unresolvable!
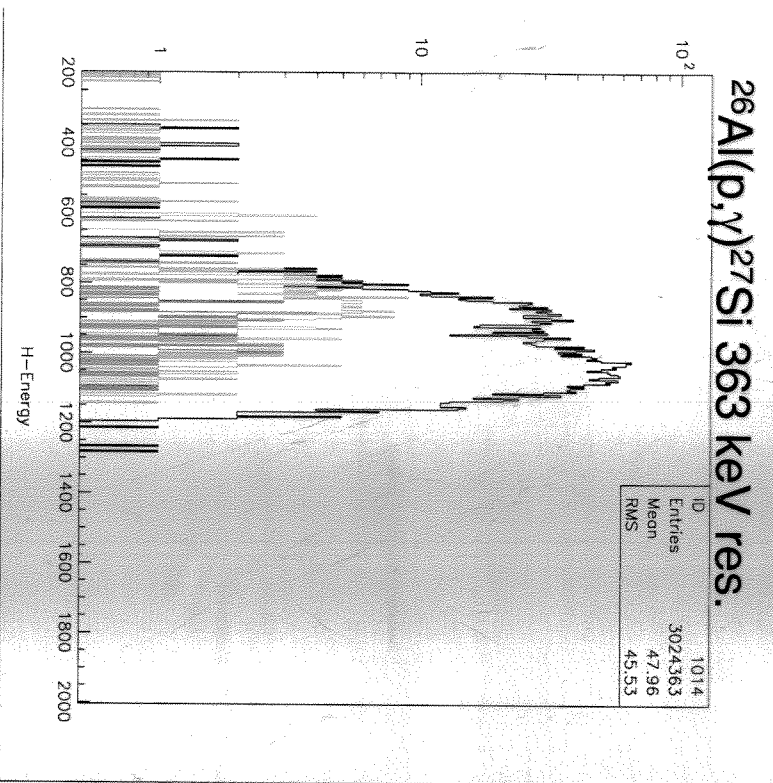
H−Energy x IC0−energy

- ΔE-E method incapable of separating recoils from leaky beam at 188 keV resonance energies.

- recoils just separable at 363 keV resonance energies

^{26}Mg 205 keV/u

ID	1014
Entries	3030500
Mean	49.19
RMS	43.47

^{26}Mg 'leaky beam' background (sep. tuned for A=27)

1 random γ-coincidence

H-Energy

^{26}Al(p,γ)^{27}Si 363 keV res.

^{26}Al(p,γ)^{27}Si 188 keV res.

singles

IC5 veto singles

γ-coincident

- 384 keV/u run: 51148 s (14.2 hrs), I ~ 1 x 10^8/sec, 117 coinc. recoil counts, 5 x 10^{12} ions on target

- 205 keV/u run: 262407 s (72.9 hrs), I ~ 7 x 10^7/sec, 9 coinc. recoil counts, 1.95 x 10^{13} ions on target