

Some Studies needed. March 15-20, 2001

1. Change the sign of the overshoot segments and check the sign of the distortion in the PSD function for channels 5, 7.

$N_\gamma = 3.22540e+006$ $N_\gamma H = 280250$. $N_\gamma L = 1.19769e+006$

Fit values

P1 +- DP1 = 1.7624271 +- 0.00097743892

P2 +- DP2 = -0.024380824 +- 0.0013823073

Chisq, CL = 69.983257 0.99349364

High channel

P1 +- DP1 = 1.9849683 +- 0.00097743892

P2 +- DP2 = 0.011048922 +- 0.0013823073

Chisq, CL = 414.82067 0.00000000

Low channel

P1L +- DP1L = 1.9064748 +- 0.00097743892

P2L +- DP2L = -0.027355417 +- 0.0013823073

Chisq, CL = 674.42099 0.00000000

Results are as expected with the sign of the distortion in the PSDs flipping (see page 2-4 of this report).

2. Check how change of energy calibration influences results by using Ganya's energy calibration in her thesis. (Continued page 5)

Perfect Amplifier

$N_\gamma = 3.22540e+006$ $N_\gamma H = 378343$. $N_\gamma L = 631817$.

P1 +- DP1 = 1.7624271 +- 0.00097743892

P2 +- DP2 = -0.024380824 +- 0.0013823073

Chisq, CL = 69.983257 0.99349364

High channel

P1 +- DP1 = 1.9726511 +- 0.00097743892

P2 +- DP2 = -0.0045306200 +- 0.0013823073 High channel

Chisq, CL = 85.724639 0.87679521

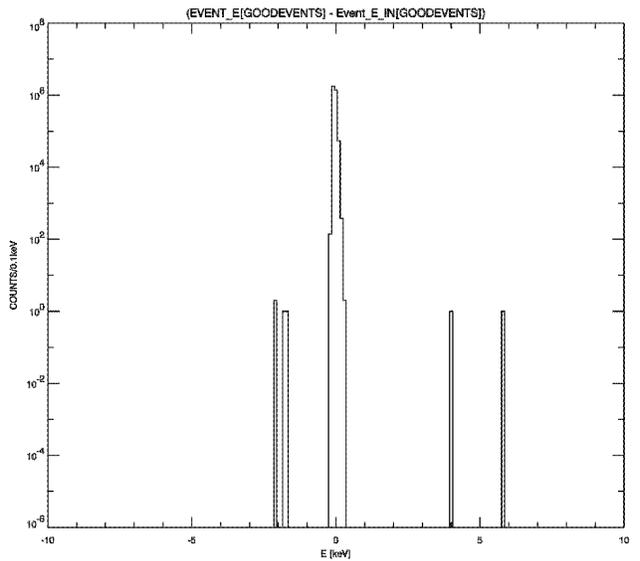
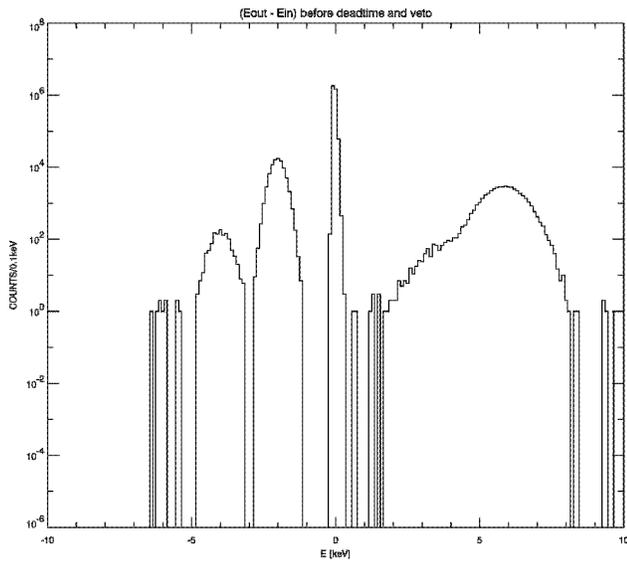
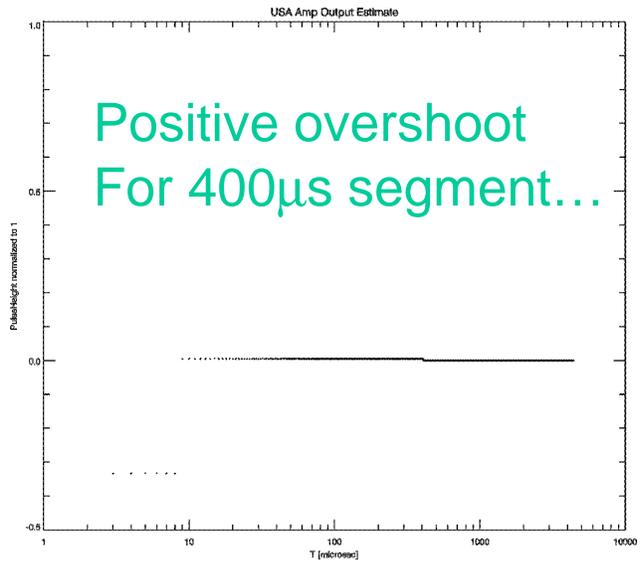
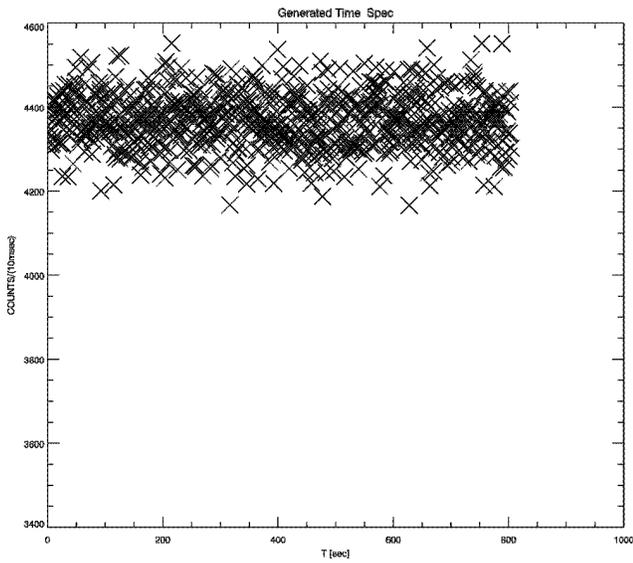
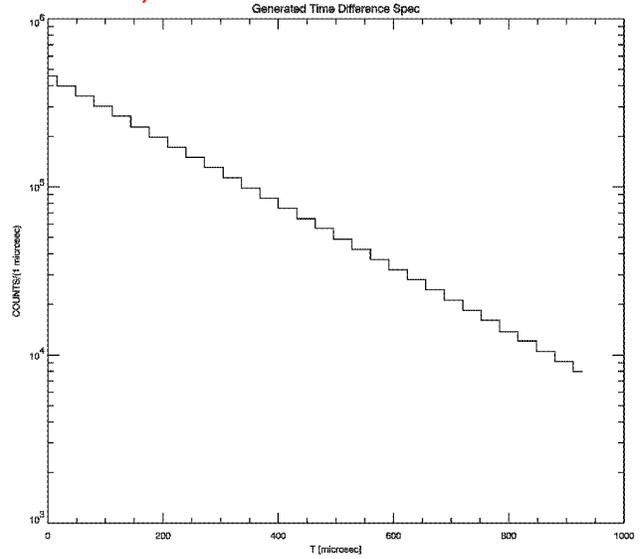
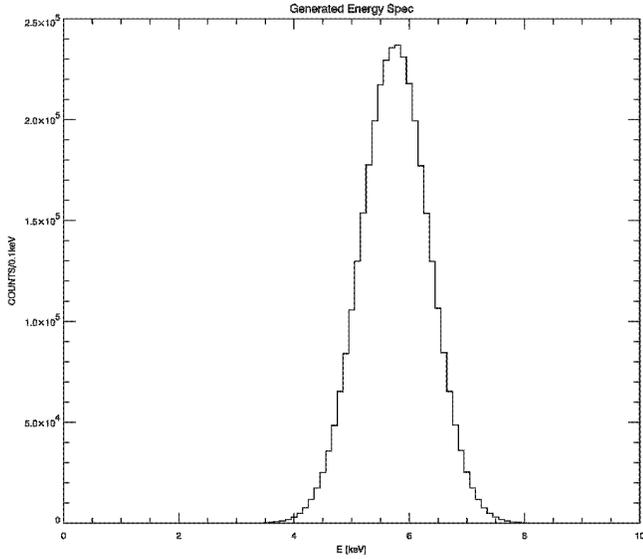
Low channel

P1L +- DP1L = 1.9537611 +- 0.00097743892

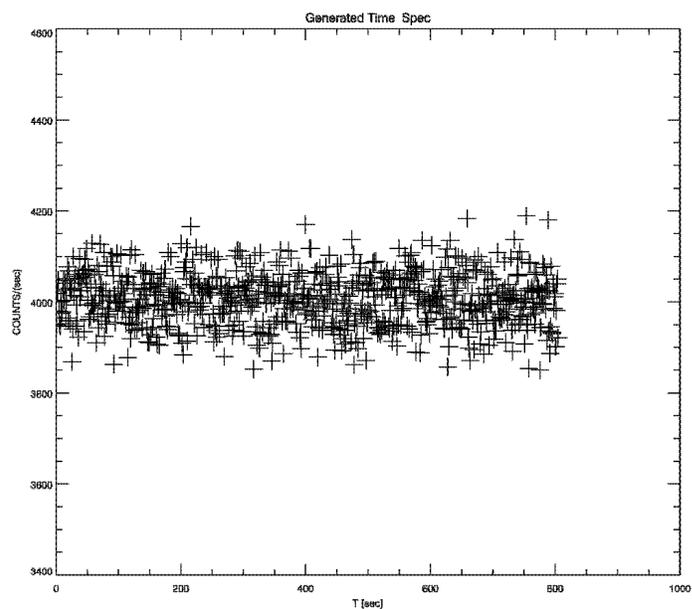
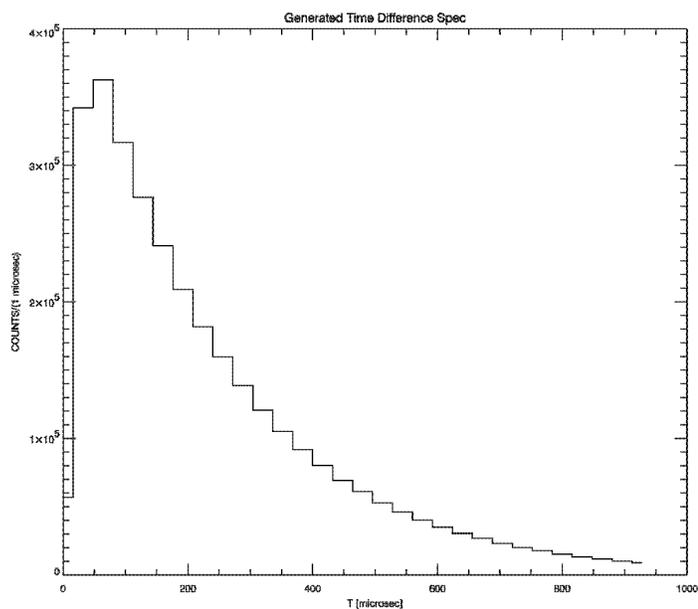
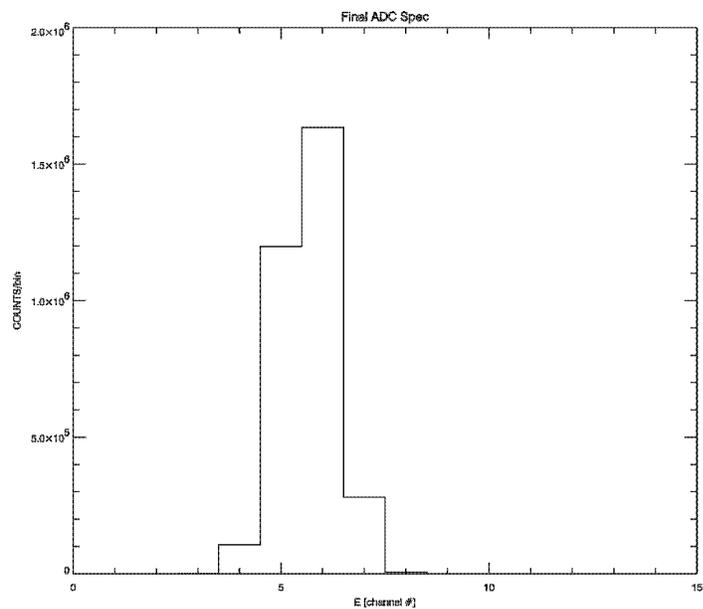
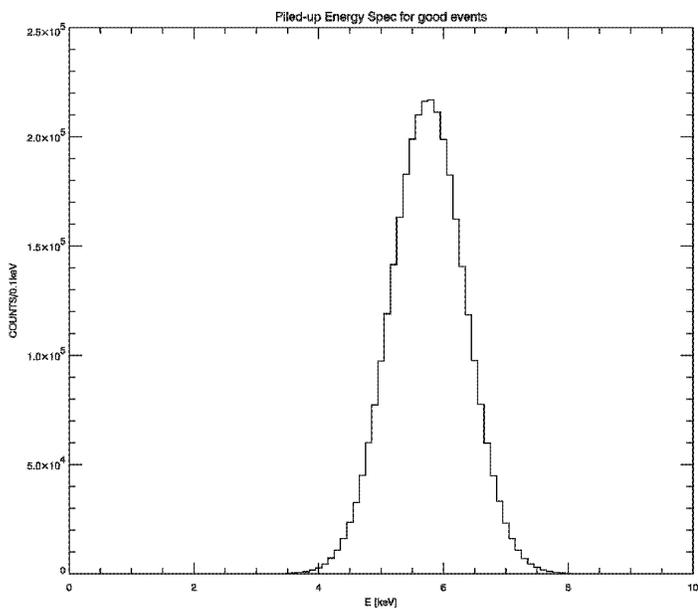
P2L +- DP2L = -0.0062734844 +- 0.0013823073 Low Channel

Chisq, CL = 99.348837 0.55584858

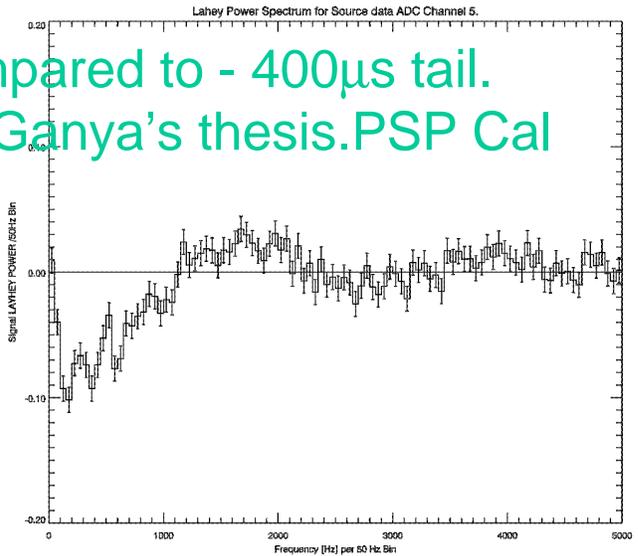
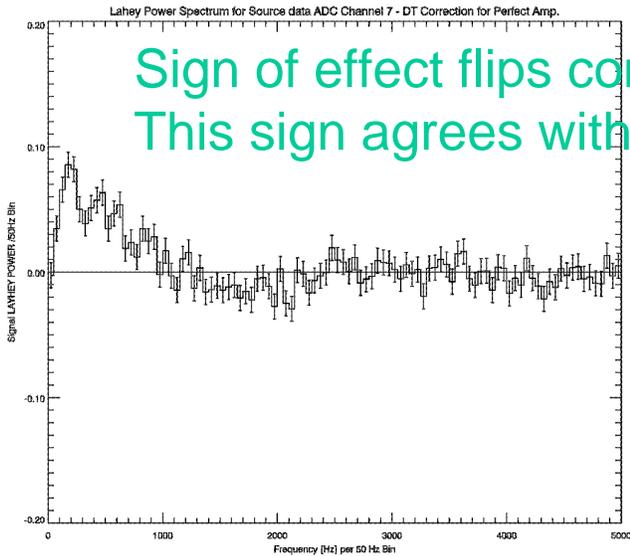
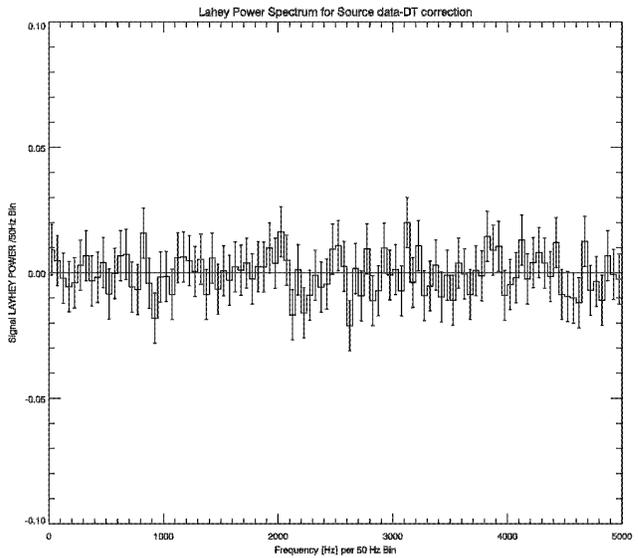
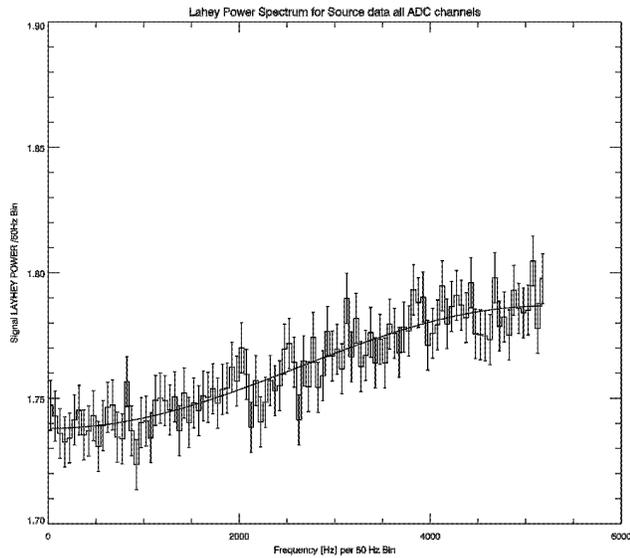
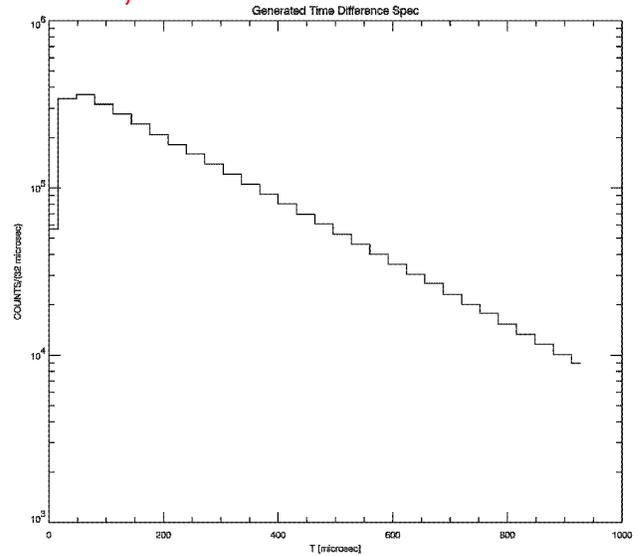
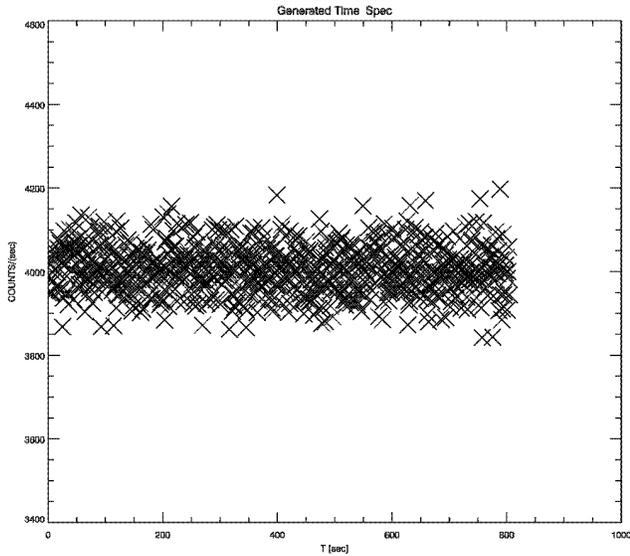
1. Change the sign of the overshoot segments and check the sign of the distortion in the PSD function for channels 5, 7.



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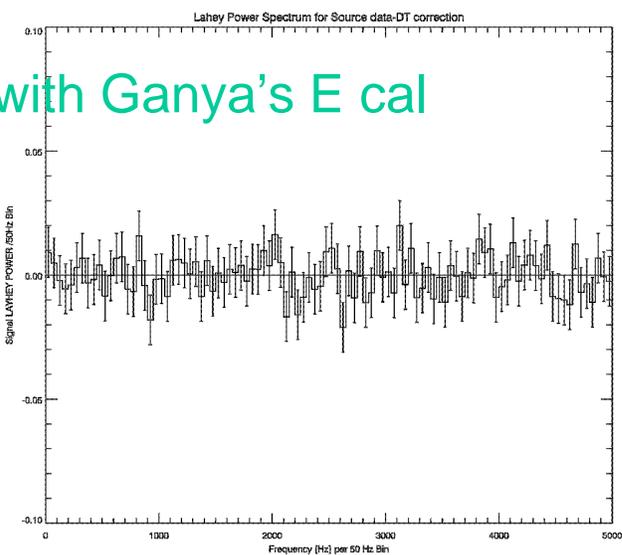
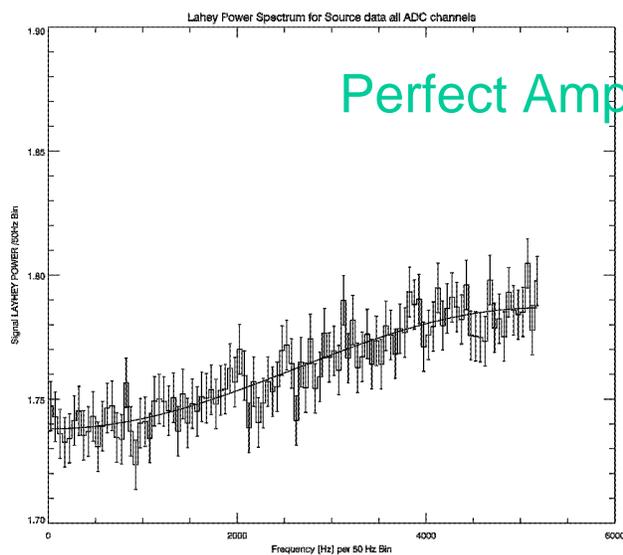
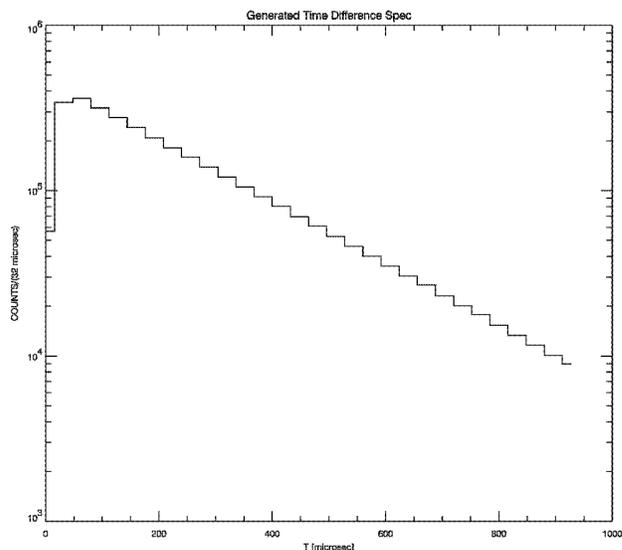
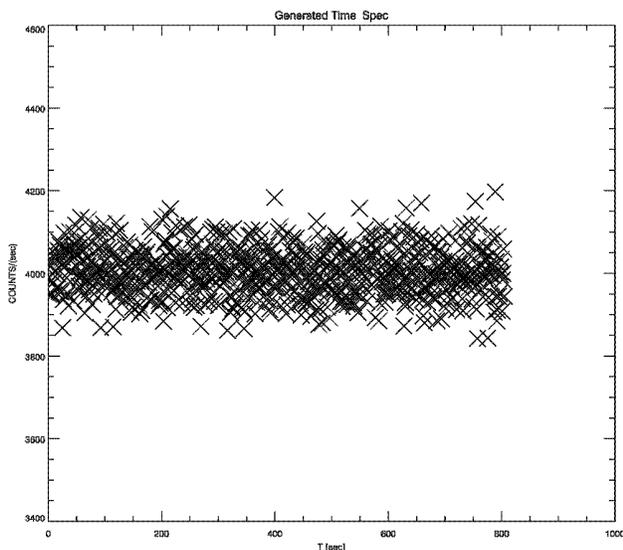


1. Change the sign of the overshoot segments and check the sign of the distortion in the PSD function for channels 5, 7.

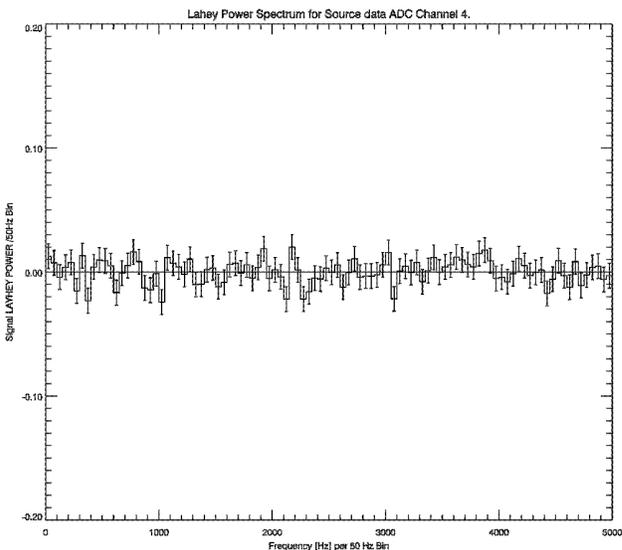
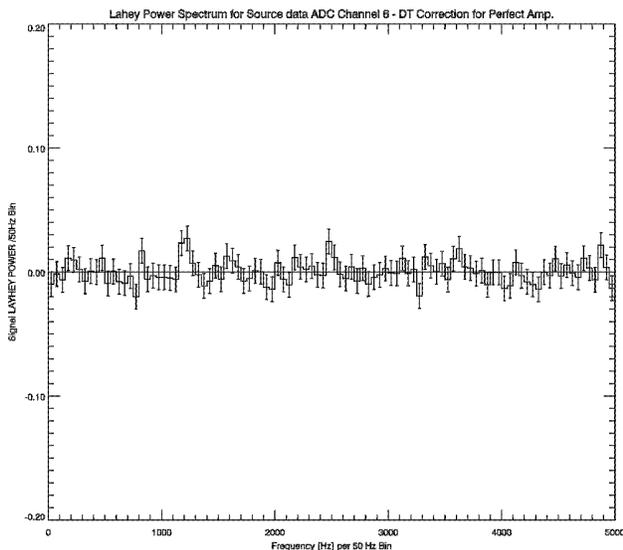


Sign of effect flips compared to - 400 μ s tail.
This sign agrees with Ganya's thesis.PSP Cal

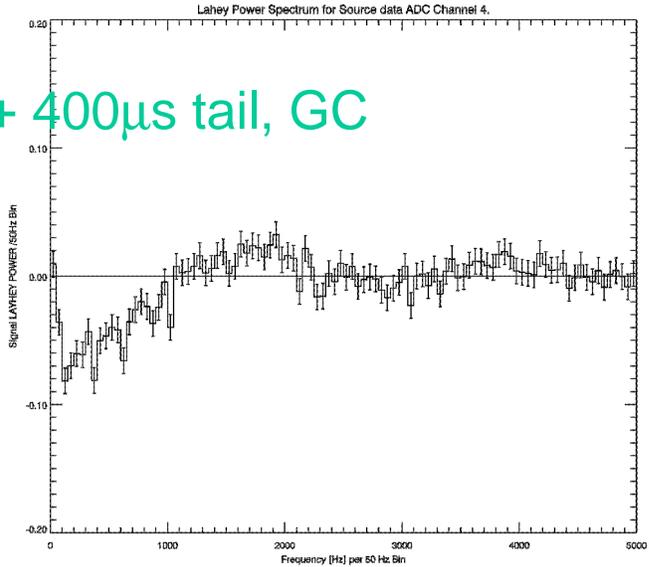
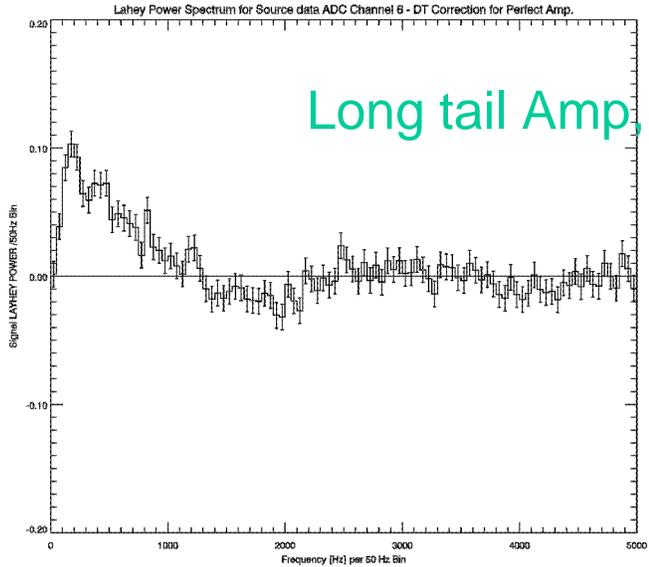
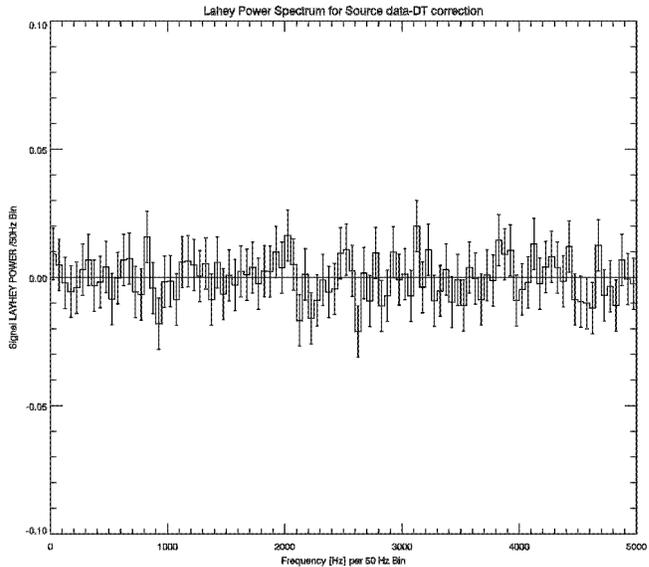
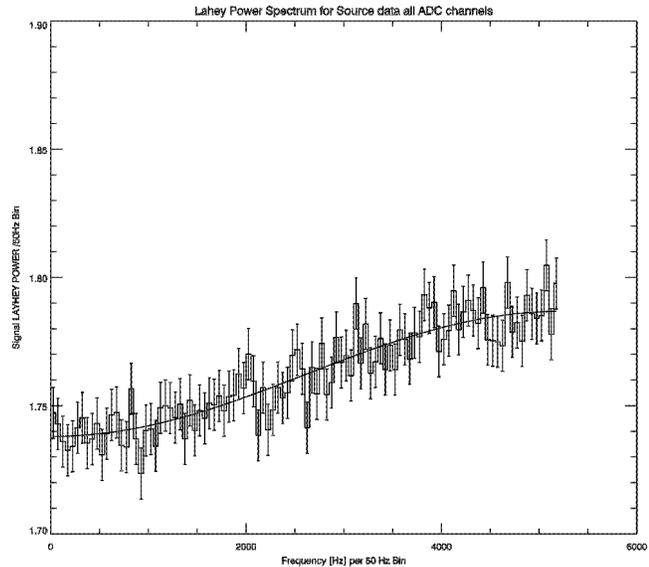
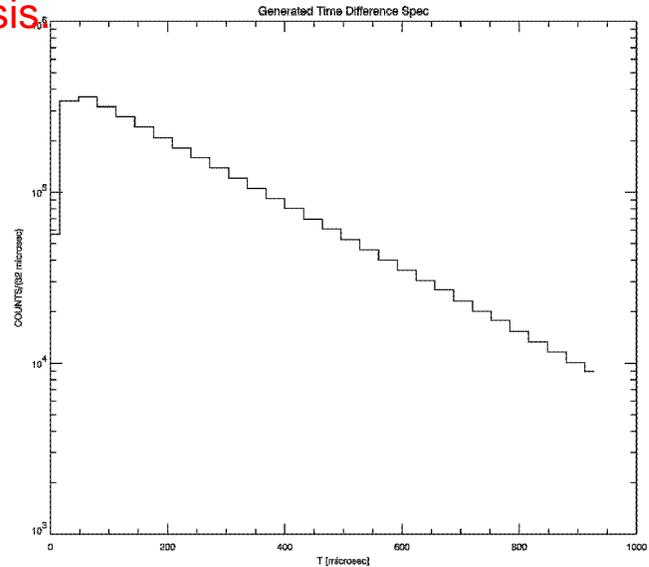
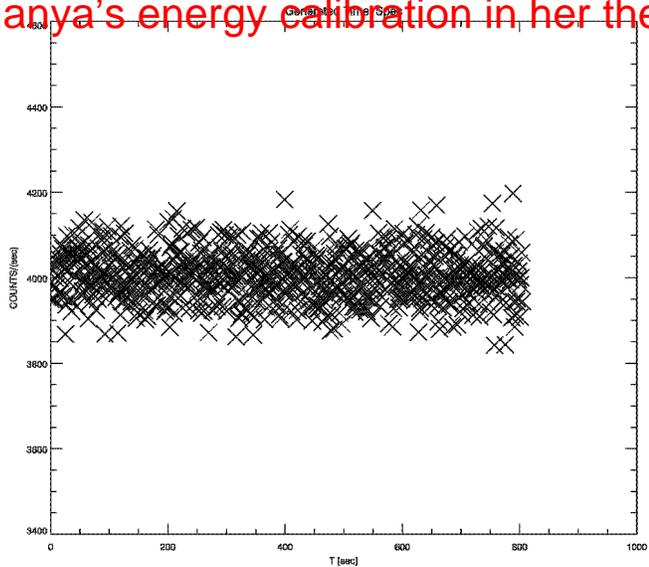
2. Check how change of energy calibration influences results by using Ganya's energy calibration in her thesis.



Perfect Amp with Ganya's E cal



2. Check how change of energy calibration influences results by using Ganya's energy calibration in her thesis.



Long tail Amp, + 400 μs tail, GC

2. Check how change of energy calibration influences results by using Ganya's energy calibration in her thesis. (continued)

Long Tail Amplifier

$N_{\gamma} = 3.22540e+006$ $N_{\gamma H} = 379241.$ $N_{\gamma L} = 635037.$

Fit values

P1 +- DP1 = 1.7624271 +- 0.00097743892

P2 +- DP2 = -0.024380824 +- 0.0013823073

Chisq, CL = 69.983257 0.99349364

High channel

P1 +- DP1 = 1.9797249 +- 0.00097743892

P2 +- DP2 = 0.013780398 +- 0.0013823073

Chisq, CL = 544.65015 0.00000000

Low channel

P1L +- DP1L = 1.9487037 +- 0.00097743892

P2L +- DP2L = -0.020369402 +- 0.0013823073

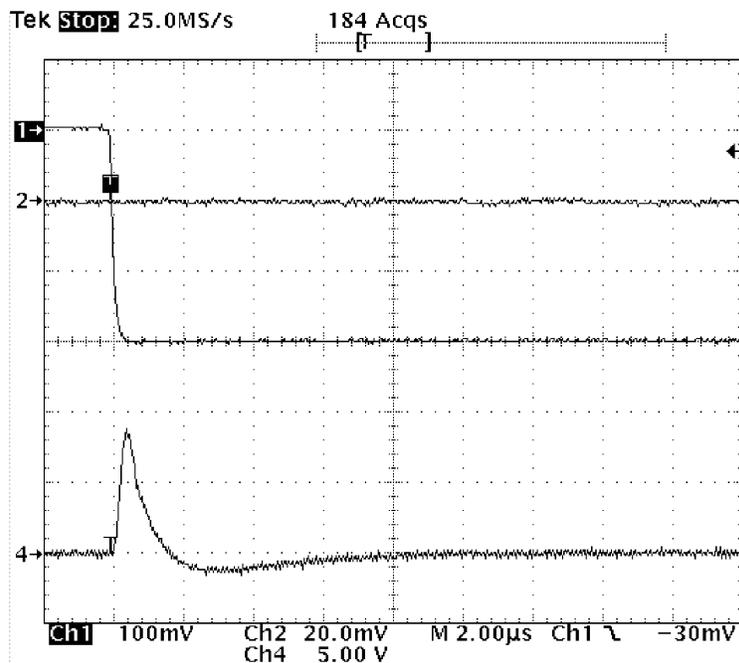
Chisq, CL = 460.92431 0.00000000

3. Drop the last segment of the overshoot and compensate with a smaller overshoot, and bigger first undershoot (Gil's idea).Continued page 8.

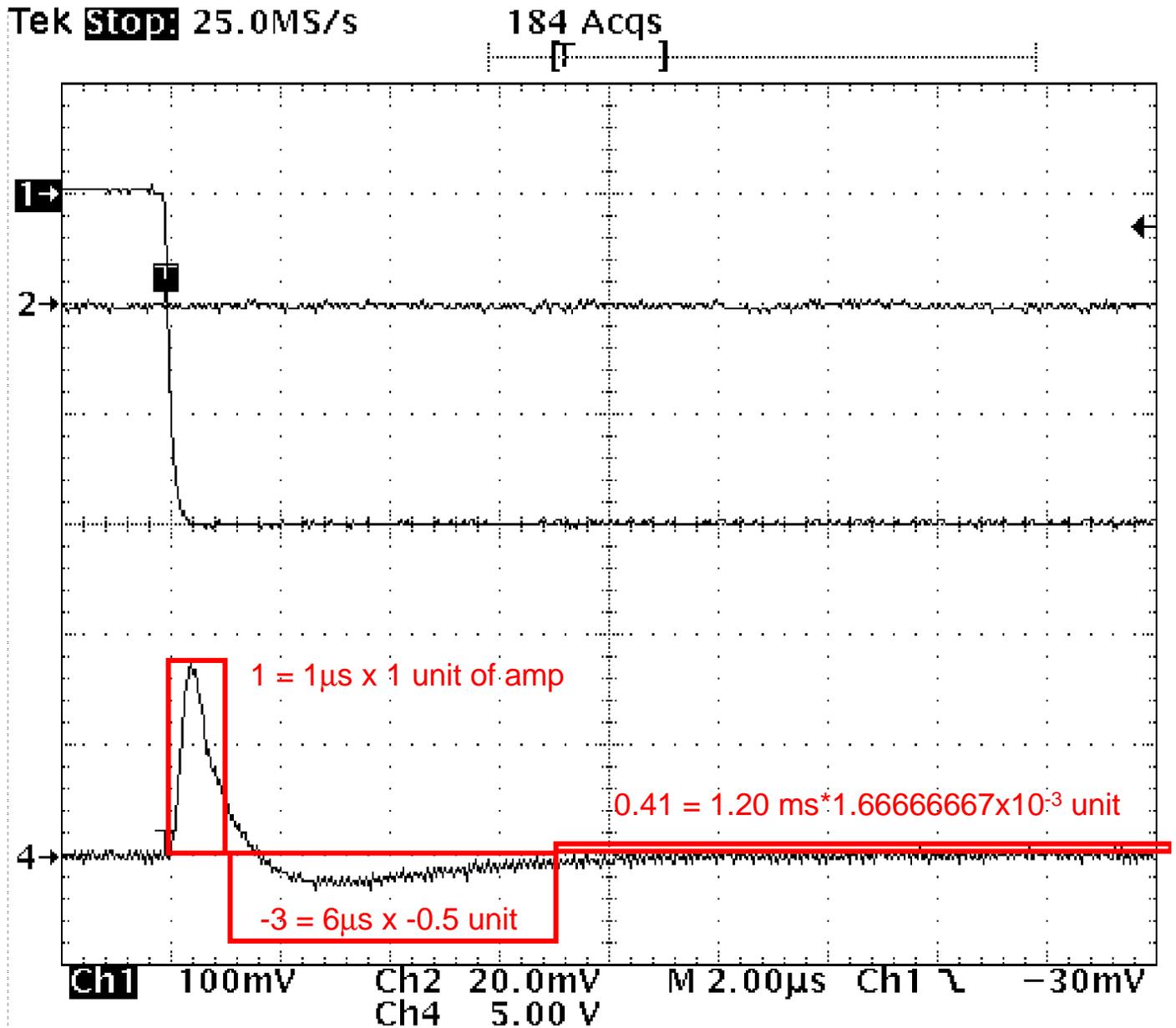
USA amp input and output.
Horizontal time scale is 2 μ s
per division (10 divisions).

Voltage value per vertical
division for each channel is
indicated under the plot.
Channel 1: input pulse.
Channel 4: amp output pulse.

See GS Thesis page 47.



3. Drop the last segment of the overshoot and compensate with a smaller overshoot, and bigger first undershoot (Gil's idea).

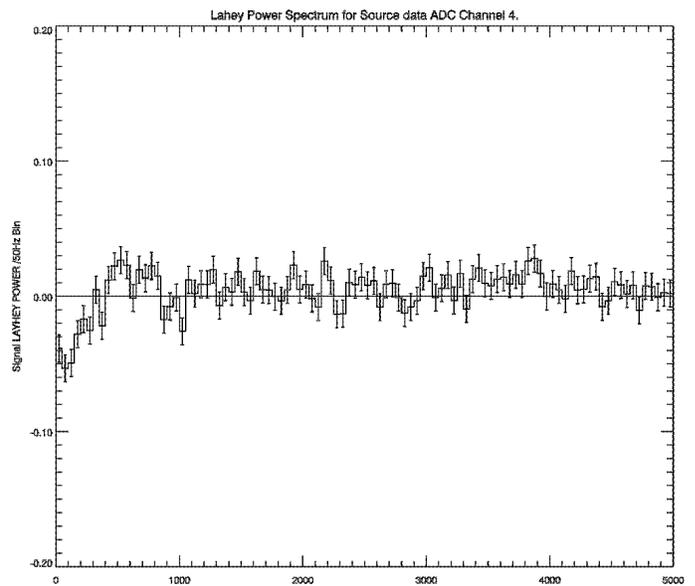
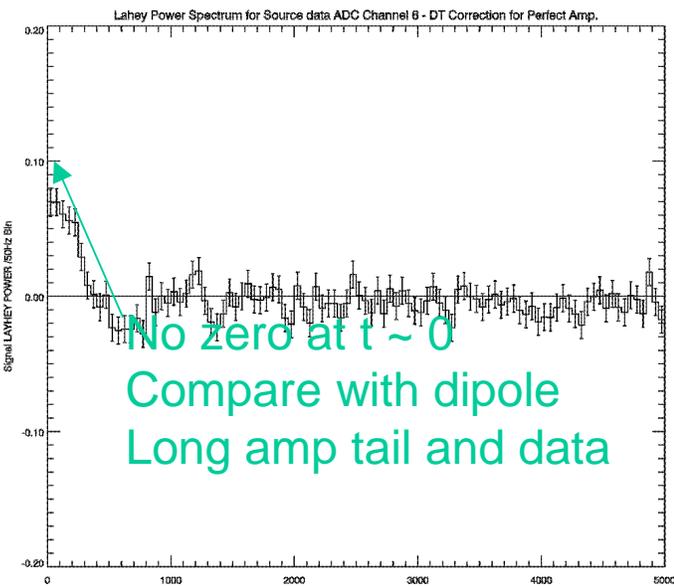
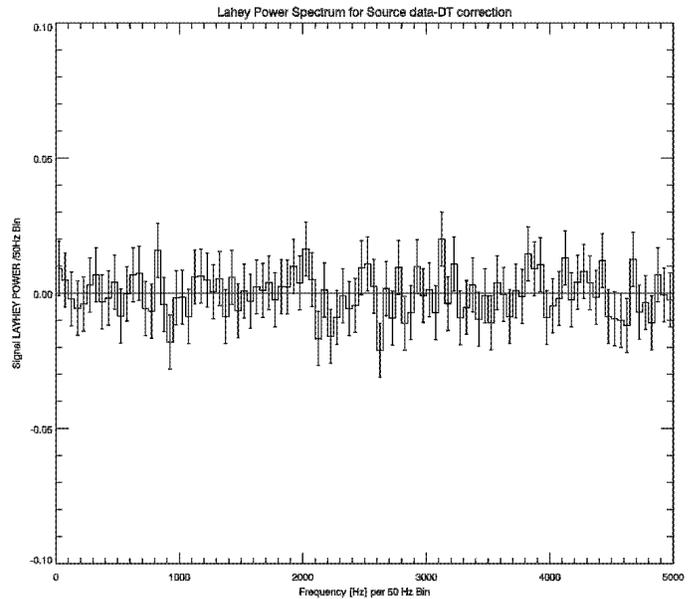
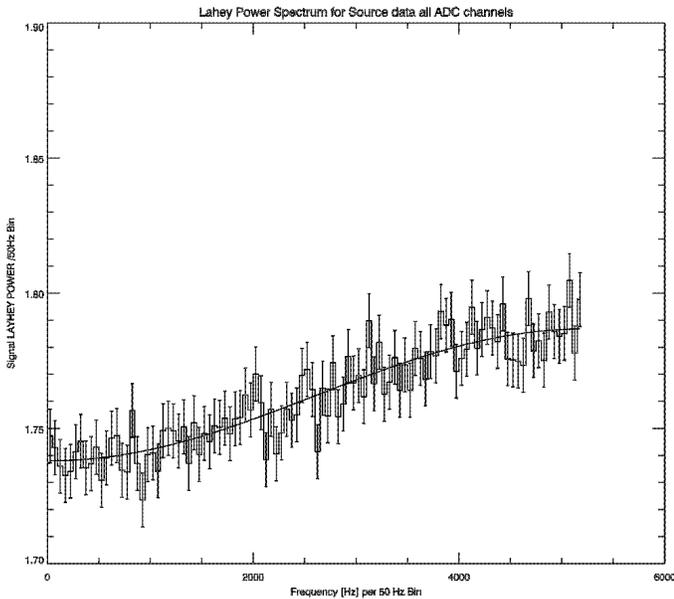


Use the above exaggerated undershoot to produce observed effect in data--BUT no zero at very low frequency as original model shows, and which agrees with the source data! This implies that dipole long tail, positive then negative, is needed to reproduce the data.

3. Drop the last segment of the overshoot and compensate with a smaller overshoot, and bigger first undershoot (Gil's idea). Ganya Cal.

Area check: 0.00000000 Length of Pulse = 1208.0 NEVENTS =
 3516772 #deadtime = 191358 #vetoed_dead = 50182
 #belowthreshold = 808 #sametime = 14567

$N_\gamma = 3.22540e+006$ $N_{\gamma H} = 436229$. $N_{\gamma L} = 558841$.



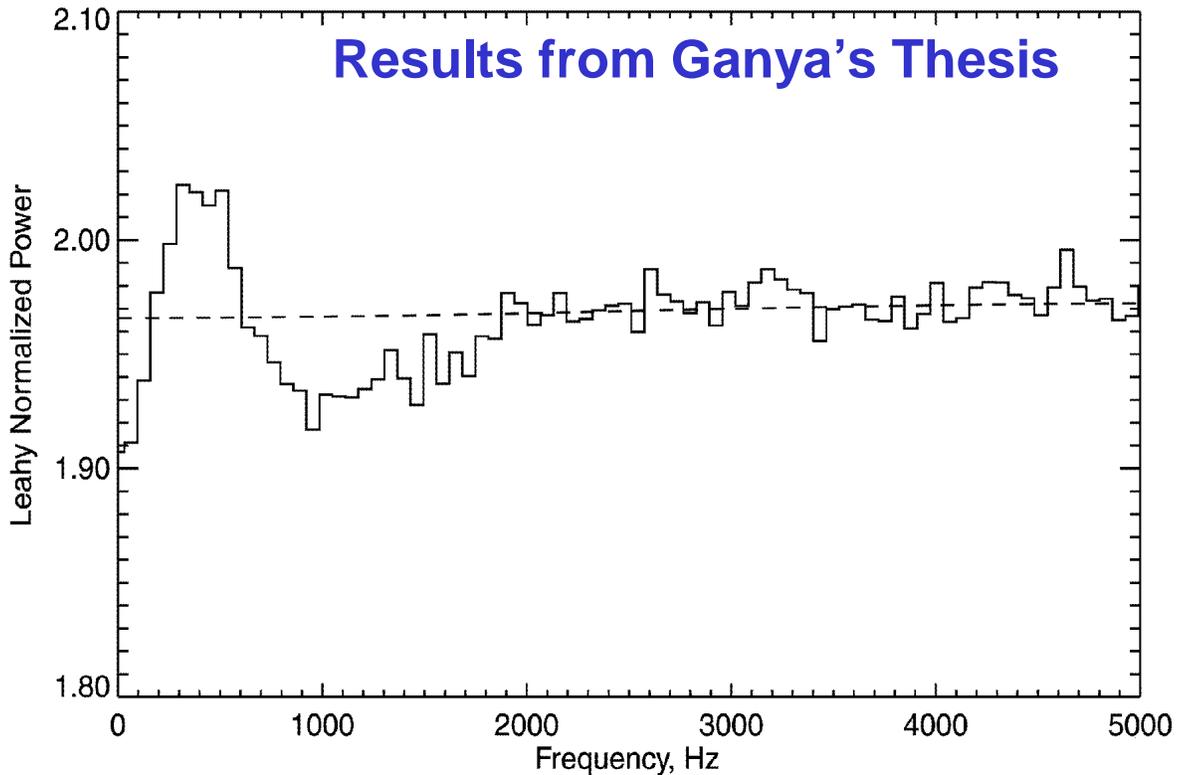


Figure 5.32 Power spectrum of the mode 2, detector 0, **channel 6** ground data, $r_0 = 523$ Hz. $t_b = 96$ μ s. Total exposure time 0.7 ks. Dashed line represents expected power spectrum without the energy-dependent instrumental effect present.

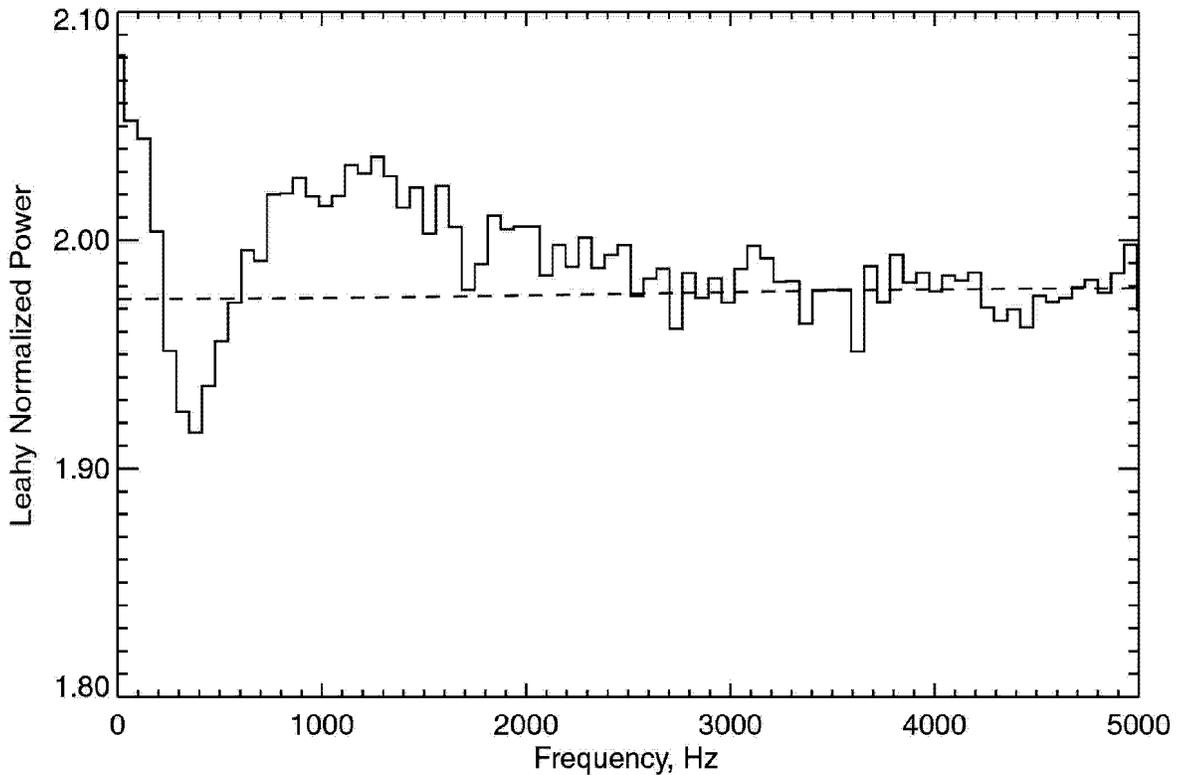


Figure 5.34 Power spectrum of the mode 2, detector 0, **channel 4** ground data, $r_0 = 394$ Hz. $t_b = 96$ μ s. Total exposure time 0.7 ks. Dashed line represents expected power spectrum without the energy-dependent instrumental effect present.

4. Detailed Check of TV data with MC

| Rate channel X | MC(GC) | MC(GC pAmp) | MC(Gil) | MC(PSPC) | data |
|----------------|--------|-------------|---------|----------|------|
| 6 | 471 | 469 | 541 | 348 | 523 |
| 4 | 789 | 785 | 694 | 1487 | 394 |

Low rate in channel 4 in data \Rightarrow width of MC spectrum is too wide.

Put in a more realistic Fe Spectrum!