under the peak is taken to be $\sqrt{2\pi}\sigma N_{max}$, where N_{max} is the number of counts in the peak channel. The IDL script computes the flux in counts per centimeter squared per second assuming a frame time of 3.34 seconds and an input window size. All of these values are written to a text format file.

Finally, the text format summary files are read by another IDL script which uses the peak location and peak width values at each energy to tabulate and plot the linear energy scale and spectral resolution values. This script also applies a pileup correction and the filter efficiency to the counts under the peak. See Section 4.4 for a description of pileup.

4.3.1.4 Results

The slope, intercept, and RMS deviation of a linear fit of the energy scale of the ACIS flight devices are listed in Table 4.5. Pulse height as a function of energy is fit to the relation $PH(ADU) = Slope \times Energy(eV) + Intercept.$

CCD	Quadrant A			Quadrant B			Quadrant C			Quadrant D		
	Slope ADU/eV	Intercept ADU	RMS eV	Slope ADU/eV	Intercept ADU	RMS eV	Slope ADU/ev	Intercept ADU	RMS eV	Slope ADU/eV	Intercept ADU	RMS eV
i0	0.2636	0.81	3.75	0.2573	0.65	4.03	0.2662	0.77	3.52	0.2582	0.60	4.06
i1	0.2622	0.38	3.50	0.2559	-0.09	3.97	0.2596	0.36	4.34	0.2616	0.07	3.80
i2	0.2731	-0.98	3.10	0.2839	-1.07	3.35	0.2825	0.07	3.59	0.2745	0.43	3.67
i3	0.2582	1.19	4.68	0.2588	1.25	4.65	0.2542	1.25	4.51	0.2592	1.09	4.55
s0	0.2725	-0.12	4.69	0.2677	-0.54	3.35	0.2574	0.13	4.02	0.2565	-0.34	3.40
s1	0.2359	-22.00	14.80	0.2182	-27.07	22.37	0.2234	-24.86	20.23	0.2297	-25.33	18.84
s2	0.2602	0.03	3.75	0.2715	0.15	5.27	0.2640	-0.51	4.25	0.2692	-0.54	6.33
s3	0.2262	-17.33	11.16	0.2158	-19.88	13.99	0.2186	-19.65	13.18	0.2273	-22.80	13.66
s4	0.2328	-1.09	3.80	0.2272	-0.58	6.16	0.2301	-0.72	5.76	0.2391	-0.96	4.55
s5	0.2534	-0.16	3.09	0.2576	-0.13	3.18	0.2601	0.18	2.70	0.2114	0.46	4.32

Table 4.5: Energy Scale for ACIS Flight Devices

The residual errors from the linear energy scale fit for the front illuminated devices are shown in Figure 4.5. The residual errors from the linear energy scale fit for the back illuminated devices are shown in Figure 4.6. Note that Figure 4.5 and Figure 4.6 are on different vertical scales. Random errors for the line center locations are much less than 1 eV.

The FWHM for the ACIS flight devices is shown in Figure 4.7. In Figure 4.7 the points for the front illuminated devices are the average of the four quadrants, while the points for the back illuminated devices show each quadrant separately. The values for the front illuminated devices are listed in Table 4.6. The values for the back illuminated devices are listed in Table 4.7. The "NA" indicates that a data point is not available. The 277 eV measurement was made only for the S-array. Many of the DCM energies were taken with only i3, s1 and s3 on. One of the DCM sets was taken with only the I-array.

The spectral resolution as a function of energy for the front illuminated devices is shown