assigned low weights to the largest deviations, so effectively we are fitting the core of the distribution.

It is evident from these graphs that a substantial unaccounted error exists. In order to calculate this non-formal error for each point, we must account for the fact that the deviations shown in figure 7-5 include the error in the mean within each group. Assuming all points within a group have similar errors, then the deviations should be reduced by $1/\sqrt{(1+1/N)}$ (where N is typically three for our data set.) At the lower-right of figure 7-5 is the distribution of formal errors versus derived non-formal errors. (Note that these numbers have been reduced by $1/\sqrt{(1+1/3)}$ relative to the numbers shown in the distribution histograms.) The number of deviations used in deriving each Gaussian fit is given below each point at the bottom of the graph.

If we idealize the signal from a star as the number of electrons detected ($signal = e^-$) then the formal error is $\sqrt{e}$. If the non-formal errors are both multiplicative and additive, then we can express the true flux as $signal = ae^- + c$, where $\bar{a} = 1$ and $\bar{c} = 0$. Deviations in a would be caused by such things as pixelation errors and flat-fielding problems, while deviations in c are caused by such things as (corrected or uncorrected) radiation events or CCD defects. For small values of the fractional error, the non-formal contribution can be approximated as a linear function of the fractional formal error ($1/\sqrt{e}$). Considering this, we have fit a straight line to the values as shown in figure 7-5 . The apparent slope evident in the lower-right graph of figure 7-5 indicates that $\sigma_c^2 > 0$.

We have recalculated all light curves using the function: $\sigma_{NF} = 0.42 + 0.52\sigma_F$, where the calculated error is now: $\sqrt{(\sigma_F^2 + \sigma_{NF}^2)}$. Due to our approximations, an iterative approach to this correction was necessary. In other words, we adjusted and readjusted the above function until the fits to the distributions matched the calculated errors. We finally arrived at a new function: $\sigma_{NF} = 0.35 + 0.49\sigma_F$. We again recalculated all the light curves and rederived new distributions for the deviations and new Gaussian fits. A final check showed that the differences between the calculated errors and the true errors (from the fit) does not exceed 0.1%.