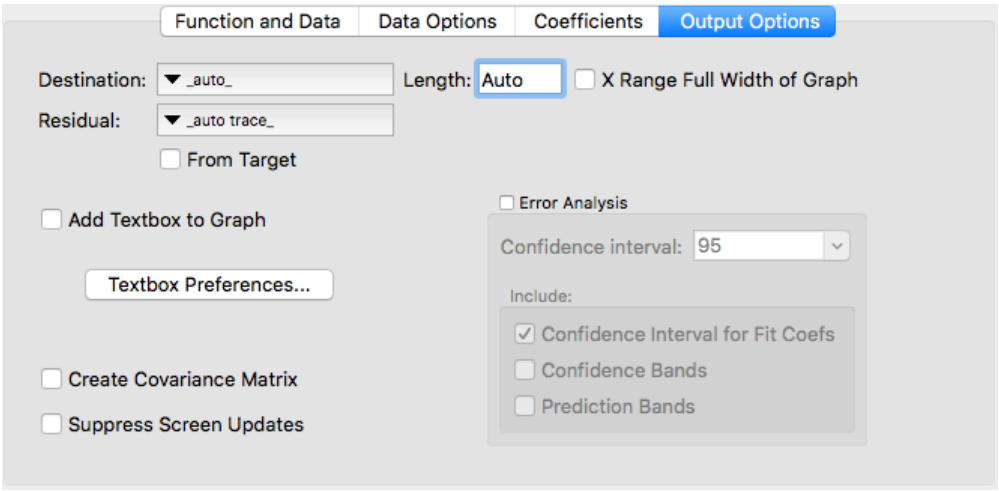


Destination: Select a wave to receive model values from the fit, or select _auto_ to have Igor create an evenly-spaced auto-destination wave for the model values. Updated on each iteration so you can follow the fit progress by the graph display. See **The Destination Wave** on page III-196 for details on the Destination menu, the Length box shown above and on the New Wave box that isn't shown above.

X Range Full Width of Graph: If you have restricted the range of the fit using graph cursors, the auto destination wave will cover only the range selected. Select this checkbox to make the auto destination cover the full width of the graph.

Residual: Select a wave to receive calculated values of residuals, or the differences between the model and the data. See **Computing Residuals** on page III-217 for details on residuals and on the various selections you can make from this menu.

Error Analysis: Selects various kinds of statistical error analysis. See **Confidence Bands and Coefficient Confidence Intervals** on page III-223 for details.

Add Textbox to Graph: When selected, a textbox with information about the fit will be added to the graph containing the Y data. Click the **Textbox Preferences** button to display a dialog in which you can select various bits of information to be included in the text box.

Create Covariance Matrix: When this is selected, the dialog generates the command to create a covariance matrix for the fit. See **Covariance Matrix** on page III-226 for details on the covariance matrix.

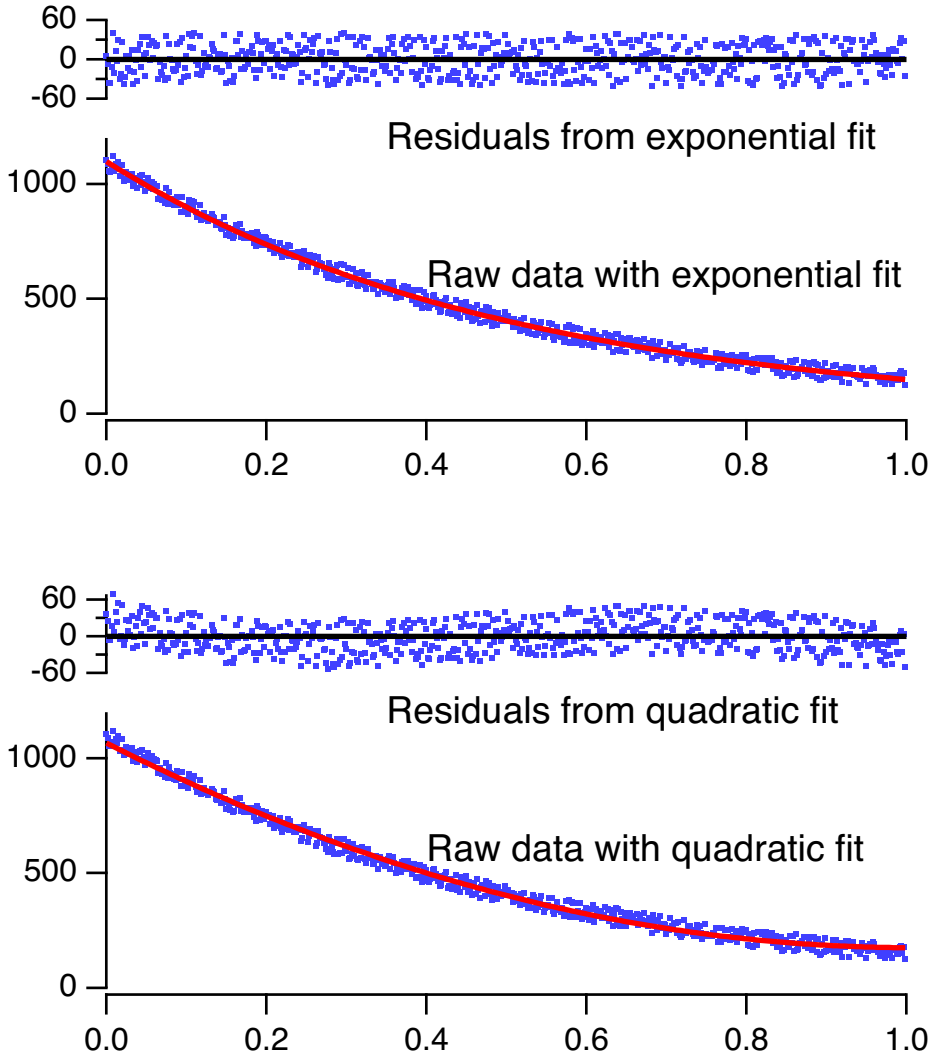
Suppress Screen Updates: When this is selected, graphs and tables are not updated while the fit progresses. This can greatly speed up the fitting process, especially if the fit involves a contour or image plot, but reduces the feedback you get during the fit.

Computing Residuals

A residual is what is left when you subtract your fitting function model from your raw data.

Ideally, your raw data is equal to some known function plus random noise. If you subtract the function from your data, what's left should be noise. If this is not the case, then the function doesn't properly fit your raw data.

The graphs below illustrate some exponential raw data fitted to an exponential function and to a quadratic (3 term polynomial). The residuals from the exponential fit are random whereas the residuals from the quadratic display a trend overlaid on the random scatter. This indicates that the quadratic is not a good fit for the data.



The easiest way to make a graph such as these is to let it proceed automatically using the Residual pop-up menu in the Output Options tab of the Curve Fitting dialog. The graphs above were made this way with some minor tweaks to improve the display.

The residuals are recalculated at every iteration of a fit. If the residuals are displayed on a graph, you can watch the residuals change as the fit proceeds.

In addition to providing an easy way to compute residuals and add the residual plot to a graph, it prints the wave assignment used to create the residuals into the history area as part of the curve fitting process. For instance, this is the result of a line fit to waveform data:

```
•CurveFit line LineYData /X=LineXData /D /R
   fit_LineYData= W_coef[0]+W_coef[1]*x
   Res_LineYData= LineYData[p] - (W_coef[0]+W_coef[1]*LineXData[p])
   W_coef={-0.037971,2.9298}
   V_chisq= 18.25;V_npnts= 20;V_numNaNs= 0;V_numINFs= 0;
   V_startRow= 0;V_endRow= 19;V_q= 1;V_Rab= -0.879789;
   V_Pr= 0.956769;V_r2= 0.915408;
   W_sigma={0.474,0.21}
   Coefficient values ± one standard deviation
      a  =-0.037971 ± 0.474
      b  =2.9298 ± 0.21
```