

The Destination Wave

When performing a curve fit, it will calculate the model curve corresponding to the fit coefficients. As with most results, the model curve is stored as an array of numbers in a wave. This wave is the “destination wave”.

The main purpose of the destination wave is to show what the fit function looks like with various coefficients during the fit operation and with the final fit coefficients when the operation is finished. You can choose no destination wave, an explicit destination wave or you can use the auto-trace feature.

You choose the destination wave option on the Output Options tab of the dialog. Here are the options.

No Destination

You would choose no destination wave if you don't want graphic feedback during the fitting process and you don't need to graphically compare your raw data to the fitting function. This might be the case if you are batch fitting a large number of data sets. Choose `_none_` in the Destination menu.

Auto-Trace

In most cases, auto-trace is recommended; choose `_auto_` from the Destination menu. When you choose this, it automatically creates a new wave, sets its X scaling appropriately, and appends it to the top graph if the Y data wave is displayed in it. The name of the new wave is generated by prepending “`fit_`” to the name of the Y data wave. If a wave of that name already exists, it is overwritten. If the name exceeds the 255 character maximum for a wave, the name is truncated.

The number of points in the destination wave depends on the number of independent variables. For the most common case of a univariate fit, the default is 200 points. The rest of this discussion assumes you are fitting univariate data.

If you want to fit more than one function to the same raw data using auto-trace, you should rename the auto-trace wave after the fit so that it will not be overwritten by a subsequent fit. You can rename it using the Rename item in the Data menu or by executing a Rename command directly from the command line. You may also want to save the `W_coef` and `W_sigma` waves using the same technique.

Usually the auto-trace wave is set up as a waveform even if you are fitting to XY data. The X scaling of the auto-trace wave is set to spread the 200 points evenly over the X range of the raw data. When preferences are on, the auto-trace wave appended to the graph has the preferred line style (color, size, etc.) *except* that the line mode is always set to “lines between points”, which is best suited to showing the curve fitting results.

Evenly-spaced data are not well suited to displaying a curve on a logarithmic axis. If your data are displayed using a log axis, the fit will create an XY pair of waves. The X wave will be named by prepending “`fitX_`” to the name of the Y data wave. This X wave is filled with exponentially-spaced X values spread out over the X range of the fit data. Of course, if you subsequently change the axis to a linear axis, the point spacing will not look right.

With `_auto_` chosen in the Destination menu, the dialog displays a box labelled Length. Use this to change the number of points in the destination wave. You can set this to any number greater than 3. The more points, the smoother the curve (up to a point). More points will also take longer to draw so the fit will be slower.

Explicit Destination

You can specify an explicit destination wave rather than using auto-trace. Use this if you want a model value at the X location of each of your input data points.

An explicit destination wave must have the same number of points as the Y data wave, so you should create it using the Duplicate operation. The Destination menu shows only waves that have the same number of points as the selected Y Data wave.

The explicit destination wave is not automatically appended to the top graph. Therefore, before executing the curve fit operation, you would normally execute commands like:

```
Duplicate/O yData, yDataFit  
AppendToGraph yDataFit vs xData
```