Bit 5: Errors Only

When set, just like setting /O flag (Guess only) but for FuncFit also computes the W_sigma wave and optionally the covariance matrix (/M flag) for your set of coefficients. There is the possibility that setting this bit can generate a singular matrix error.

Added in Igor Pro 7.00.

V_chisq

V_chisq is a measure of the goodness of fit. It has absolute meaning only if you've specified a weighting wave. See the discussion in the section **Weighting** on page III-199.

V_q

V_q (straight-line fit only) is a measure of the believability of chi-square. It is valid only if you specified a weighting wave. It represents the quantity q which is computed as follows:

```
q = gammq((N-2)/2, chisq/2)
```

where gammq is the incomplete gamma function 1-P(a,x) and N is number of points. A q of 0.1 or higher indicates that the goodness of fit is believable. A q of 0.001 indicates that the goodness of fit may be believable. A q of less than 0.001 indicates systematic errors in your data or that you are fitting to the wrong function.

V_FitError and V_FitQuitReason

When an error occurs during a curve fit, it normally causes any running user-defined procedure to abort.

This makes it impossible for you to write a procedure that attempts to recover from errors. However, you can prevent an abort in the case of certain types of errors that arise from unpredictable mathematical circumstances. Do this creating a variable named V_FitError and setting it to zero before performing a fit. If an error occurs during the fit, it will set bit 0 of V_FitError. Certain errors will also cause other bits to be set in V_FitError:

Error	Bit Set
Any error	0
Singular matrix	1
Out of memory	2
Function returned NaN or INF	3
Fit function requested stop	4
Reentrant curve fitting	5

Reentrant curve fitting means that somehow a second curve fit started execution when there was already one running. That could happen if your user-defined fit function tried to do a curve fit, or if a button action procedure that does a fit responded too soon to another click.

There is more than one reason for a fit to stop iterating without an error. To obtain more information about the reason that a nonlinear fit stopped iterating, create a variable named V_FitQuitReason. After the fit, V_FitQuitReason is zero if the fit terminated normally, 1 if the iteration limit was reached, 2 if the user stopped the fit, or 3 if the limit of passes without decreasing chi-square was reached.

Other types of errors, such as missing waves or too few data points for the fit, are likely to be programmer errors. V_FitError does not catch those errors, but you can still prevent an abort if you wish, using the special function **AbortOnRTE** and Igor's **try-catch-endtry** construct. Here is an example function that attempts to do a curve fit to a data set that may contain nothing but NaNs:

```
Function PreventCurveFitAbort()
   Make/O test = NaN
```