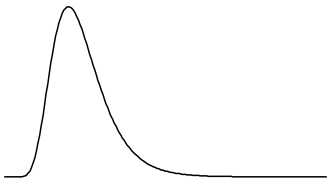
lognormal

Fits a lognormal peak shape. This function is gaussian when plotted on a log X axis.

$$y_0 + A\exp\left[-\left(\frac{\ln(x/x_0)}{width}\right)^2\right]$$



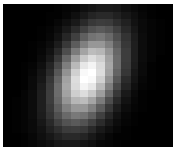
Coefficient y_0 sets the baseline, A sets the amplitude, x_0 sets the peak position in X and *width* sets the peak width.

Note that X values must be greater than 0. Including a data point at $X \le 0$ will cause a singular matrix error and the message, "The fitting function returned NaN for at least one X value."

gauss2D

Fits a Gaussian peak in two dimensions.

$$z_0 + A\exp\left[\frac{-1}{2(1-cor^2)}\left(\left(\frac{x-x_0}{xwidth}\right)^2 + \left(\frac{y-y_0}{ywidth}\right)^2 - \frac{2cor(x-x_0)(y-y_0)}{xwidth \cdot ywidth}\right)\right]$$



Coefficient *cor* is the cross-correlation term; it must be between -1 and 1 (the small illustration was done with *cor* equal to 0.5). A constraint automatically enforces this range. If you know that a value of zero for this term is appropriate, you can hold this coefficient. Holding *cor* at zero usually speeds up the fit quite a bit.

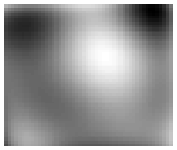
In contrast with the gauss fit function, xWidth and yWidth are standard deviations of the peak.

Note that the Gauss function lacks the cross-correlation parameter *cor*.

poly2D n

Fits a polynomial of order n in two dimensions.

$$(C_0 + C_1x + C_2y + C_3x^2 + C_4xy + C_5y^2 + \ldots)$$



A poly2D fit takes an additional parameter that specifies the order of the polynomial. When you choose poly2D from the Function menu, a box appears where you enter that value.

The minimum value is 1, corresponding to a first-order polynomial, a plane. The coefficient wave for poly2D has the constant term (C_0) in point zero, and following points contain groups of increasing order. There are two first-order terms, C_1*x and C_2*y, then three second-order terms, etc. The total number of terms is (N+1)(N+2)/2, where N is the order.

Poly2d never requires manual guesses.

Inputs and Outputs for Built-In Fits

There are a number of variables and waves that provide various kinds of input and output to a curve fit. Usually you will use the Curve Fitting dialog and the dialog will make it clear what you need, and detailed