The method below is "general" enough to be applied onto any function one wishes to fit their data with.

Suppose we have n data points (x_i, y_i) each with error in y of dy_i for $0 \leq i \leq n$, to be fitted to a function $y_{calc,i}(x_i)$, then the residual of the function $= y_{calc,i} - y_i$

To fit the function, we aim to minimize the following:

$$S = \sum_i (\frac{y_{calc,i} - y_i}{dy_i})^2$$

Which is the weighted "version" of the residual.

If the the fitting variables are a and b, i.e. $y_{calc} = y_{calc}(x, a, b)$ then S must be quadratic with respect to variation in y_{calc}, and therefore reasonably linearly wrt. variation in a, b.

To find the most suitable value of a and b is to find the minimum value of S wrt. a, b.

$$\frac{\partial S}{\partial a} = 0$$

$$\frac{\partial S}{\partial b} = 0$$

For a,

$$\frac{\partial}{\partial a} \sum_i (\frac{y_{calc,i} - y_i}{dy_i})^2 = 0$$

Simplifying, and removing the i subscripts to minimize the visual complexity of the equation,

$$\sum_i (\frac{y_{calc} - y}{dy})(\frac{\partial y_{calc}}{\partial a}) = 0$$

The equation above can be extended to b (or c, d, etc. if there are more than 2 variables) if we replace all a in the equation with b.

($\frac{\partial y_{calc}}{\partial a}$ is represented as `dDevda` in the code.)