Parameters

cw Coefficient wave. The Gaussian peak shape is defined by the coefficients as follows:

cw[0]: Peak location.
cw[1]: Peak height.
cw[2]: Inverse of the decay constant of one exponential.
cw[3]: Inverse of the decay constant of the other exponential.

cw must be a double precision wave.

yw Y wave into which values are stored.

yw may be either double precision or single precision.

xw X wave containing the X values at which the peak function is to be evaluated.

xw may be either double precision or single precision.

Details

The following equations and discussion use these definitions:

```
c0 = cw[0], c1 = cw[1], c2 = cw[2], c3 = cw[3]
```

The peak location given by c0 is not the actual peak location; it is simply a parameter that offsets the peak in the X direction. The actual location is given by

$$loc = \frac{ln(\frac{c2}{c3})}{c2 - c3} + c0$$

The actual peak height is given by

$$h = \frac{c1 \cdot c2 \left\{ \left(\frac{c2}{c3}\right)^{-\frac{c2}{c2-c3}} - \left(\frac{c2}{c3}\right)^{-\frac{c3}{c2-c3}} \right\}}{c3 - c2}$$

The peak area is given by c1/c3.

We are not aware of an analytic expression for the full width at half maximum (FWHM).

This function is primarily intended to support the Multi-peak Fitting package.

To use MPFXExpConvExpPeak as a fitting function, wrap it in an all-at-once user-defined fitting function:

```
Function FitVoigtPeak(Wave cw, Wave yw, Wave xw) : FitFunc
   Variable dummy = MPFXExpConvExpPeak(cw, yw, xw)
End
```

The assignment to "dummy" is required because you must explicitly do something with the return value of a built-in function.

If the waves do not satisfy the number type requirements, the function returns NaN. A successful invocation returns zero.

See Also

All-At-Once Fitting Functions on page III-256

MPFXGaussPeak

MPFXGaussPeak(cw, yw, xw)

The MPFXGaussPeak function implements a single Gaussian peak with no Y offset in the format of an all-at-once fitting function. It fills the wave *yw* with values defined by a Gaussian peak as if this wave assignment statement was executed:

```
yw = cw[2] * exp( -((xw - cw[0])/cw[1])^2 )
```