```
      // New weighting is square root of the expected Y values from the fit
      sqrtNwave = sqrt(Gauss1D(W_coef, pnt2x(histwave, p)))

      // Do a new fit
      CurveFit/Q gauss  histwave /W=sqrtNwave /I=1
      Wave W_coef

      // Compute the length of the difference between this fit and the last
      MatrixOp/FREE/O delta = sqrt(sum(magSqr(W_coef - lastCoef)))

      // Uncomment these lines if you would like to see the progress
      // Print delta
      // Print W_coef

      // Rather arbitrary stopping criterion
      if (delta[0] < 1e-8*initialLength)
         break
      endif

      lastCoef = W_coef
   while(1)

   Wave W_sigma
   Print "y0\t=\t",W_coef[0], "±", W_sigma[0]
   Print "A\t=\t",W_coef[1], "±", W_sigma[1]
   Print "x0\t=\t",W_coef[2], "±", W_sigma[2]
   Print "width\t=\t",W_coef[3], "±", W_sigma[3]
End
```

To try it, paste the code into the procedure window, compile, and execute this on the command line:

```
FitGaussHistogram(gdata_Hist, W_SqrtN)
```

The result is:

```
y0    =  -0.985823 ± 1.22856
A     =  138.462 ± 5.31568
x0    =  -0.00928052 ± 0.0313763
width =  1.45437 ± 0.0521087
```

This result from this example is within one standard deviation of the weighted fit using the weighting wave generated by the histogram.

Computing an "Integrating" Histogram

In a histogram, each bin of the destination wave contains a count of the number of occurrences of values in the source that fell within the bounds of the bin. In an *integrating* histogram, instead of *counting* the occurrences of a value within the bin, we *add* the value itself to the bin. When we're done, the destination wave contains the sum of all values in the source which fell within the bounds of the bin.

Igor comes with an example experiment called "Integrating Histogram" that illustrates how to do this with a user function. To see the example, choose File→Example Experiments→Analysis→Integrating Histogram.

Sorting

The **Sort** operation (see page V-883) sorts one or more 1D numeric or text waves in ascending or descending order.

The Sort operation is often used to prepare a wave or an XY pair for subsequent analysis. For example, the interp function assumes that the X input wave is monotonic.