



 AHELP for CIAO 3.4

grpBinWidth

Context: group

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Synopsis

Group an array into a set of equal-width groups (by group width).

Syntax

```
grpBinWidth( Integer_Type numChans, Integer_Type grpWidth )
grpBinWidth( Integer_Type numChans, Integer_Type grpWidth, Array_Type
tabStops )
```

```
Returns: ( Array_Type grouping, Array_Type quality )
```

Description

This function returns the grouping and quality arrays that represent an array of numChans elements in which the groups are each grpWidth elements wide. The optional parameter tabStops is an array which lists those elements that should be ignored.

This function provides the same functionality as the BIN_WIDTH option of dmgroup. The grpNumBins() function allows you to fix the number of groups rather than the width of each group.

Example 1

```
chips> (g,q) = grpBinwidth( 10, 2 )
```

This example calculates the grouping and quality arrays that represent an array of 10 elements in which each group has a width of 2 elements.

Example 2

```
chips> x = [0.5:6.0:0.05]
chips> y = 3 + 30 * exp( - (x-2.0)^2 / 0.1 )
chips> (g,q) = grpBinWidth( length(y), 10 )
chips> ysum = grpGetGroupSum( y, g )
```

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```
chips> nchan = grpGetChansPerGroup( g )
chips> i = where( g == 1 )
chips> yavg = ysum[i] / nchan[i]
chips> curve( x, y )
chips> simpleline
chips> curve( x[i], yavg )
chips> symbol square
chips> symbol red
```

Here we take the function

$$y = 3 + 30 * \exp(-(x-2)^2 / 0.1)$$

and group it so that each group contains 10 elements. The plot shows the original data (the solid line and the crosses) and the grouped data (as the red squares); the latter has been normalised by the width of each group and is displayed at the left–edge of each group.

If we had filtered the data array to only contain elements with a quality value – as returned by `grpBinWidth()` – of 0, then we could have avoided the call to `grpGetChansPerGroup()` since this is set to 10 by `grpBinWidth()`.

Bugs

See the [bugs page for the group library](#) on the CIAO website for an up–to–date listing of known bugs.

See Also

group

[grpadaptive](#), [grpadaptivesnr](#), [grpbin](#), [grpbinfile](#), [grpbinwidth](#), [grpgetchanspergroup](#), [grpgetgroupsum](#),
[grpgetgrpnum](#), [grpmaxslope](#), [grpminslope](#), [grpnumbins](#), [grpnumcounts](#), [grpsnr](#)

modules

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URL:
<http://cxc.harvard.edu/ciao3.4/grpbinwidth.html>
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