DAVE ASCII Data Reader

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The ASCII Data Reader in the DAVE software package allows users to read in two types of text data: (1) a single group of three-column data (x,z,dz), and (2) data that is a function of two independent variables (x,y,z(x,y),dz(x,y)). The exact format is presented in this documentation as well as instructions on how to use the software.

Data Formats Supported

1. Three-column text files

The three columns must be separated by at least one space or they can be separated by tabs. A hash mark, #, is used to begin a comment line and is ignored upon reading in. A typical three-column data file looks like that shown below:

```
0.000        1.000        1.000
2.000        4.000        2.000
6.000        9.000        3.000
```

Note that in this format, the data consists of the following triples (x,y,dy):
(x = 0.0,y = 1.0, dy = 1.0), (x = 2.0,y = 4.0, dy = 2.0), and (x = 6.0, y = 9.0, dy = 3.0)

2. Grouped data

The grouped data must be formatted in a manner like that shown in the example below:

```
#Number of x-values
5
# Number of y-values
3
# xvalues:
-2.0000000
-1.0000000
0.00000000
1.0000000
2.0000000
# yvalues:
0.250000
1.00000
1.75000
# Group: 0
229.00000 15.132746
451.00000 21.236761
4380.0000 66.181568
455.00000 21.330729
209.00000 14.456832
# Group: 1
200.00000 14.142136
```

```
426.00000 20.639767
3260.0000 57.096410
393.00000 19.824228
219.00000 14.798649
# Group: 2
203.00000 14.247807
320.00000 17.888544
2103.0000 45.858478
333.00000 18.248288
232.00000 15.231546
```

In the example above there are 5 x values and 3 y values. In this arrangement the z and dz values can be obtained depending on the group number and how far down in the group you are located. For instance, the following data points can be extracted from the list above:

$$(x = -1.0, y = 1.75, z = 320.0, dz = 17.9)$$
$$(x = 2.0, y = 0.25, z = 209.0, dz = 14.5)$$

Using the Software

The ASCII data reader can be launched from DAVE under the Data Reduction menu item and selecting ASCII Data→ASCII Data-> DAVE. The interface looks like that shown in figure 1.
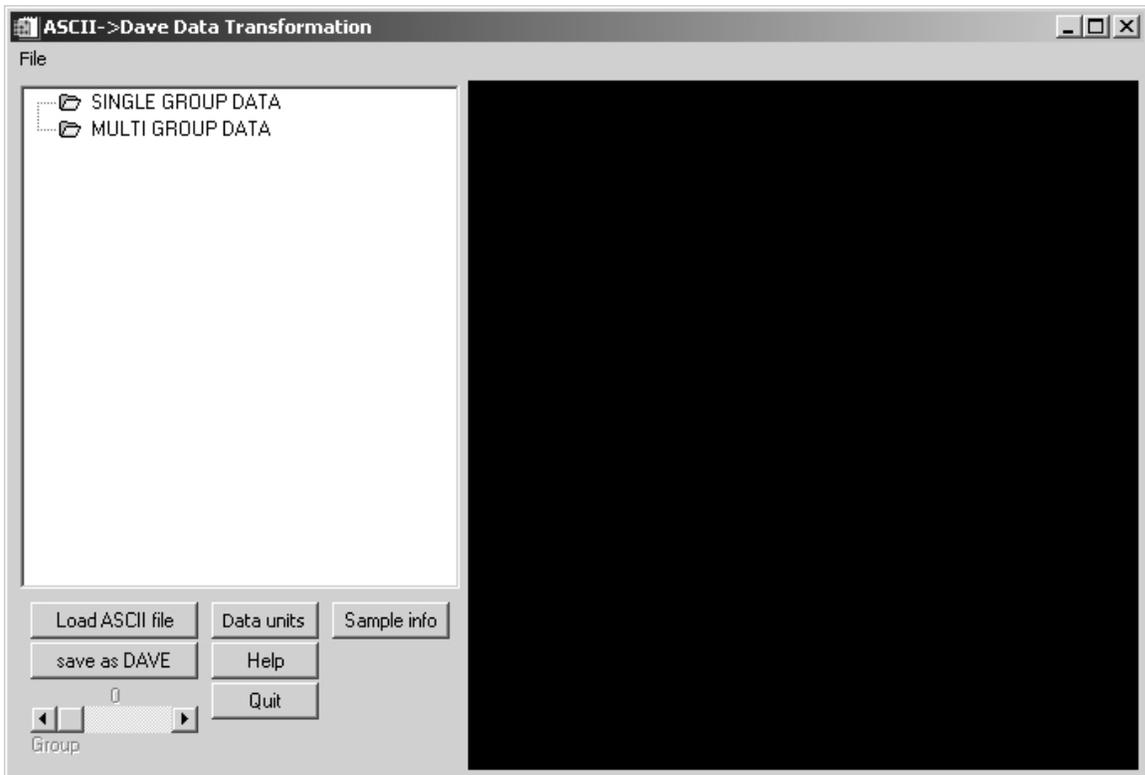
Figure 1. Screen shot of application after launching from DAVE.

To load in an ascii data file, press the button labeled **Load ASCII file**. Either single- or multiple-group data files can be loaded in. The software will sort out the files by their grouping and they will appear in the tree interface in the left side of the application panel (see figure 2).
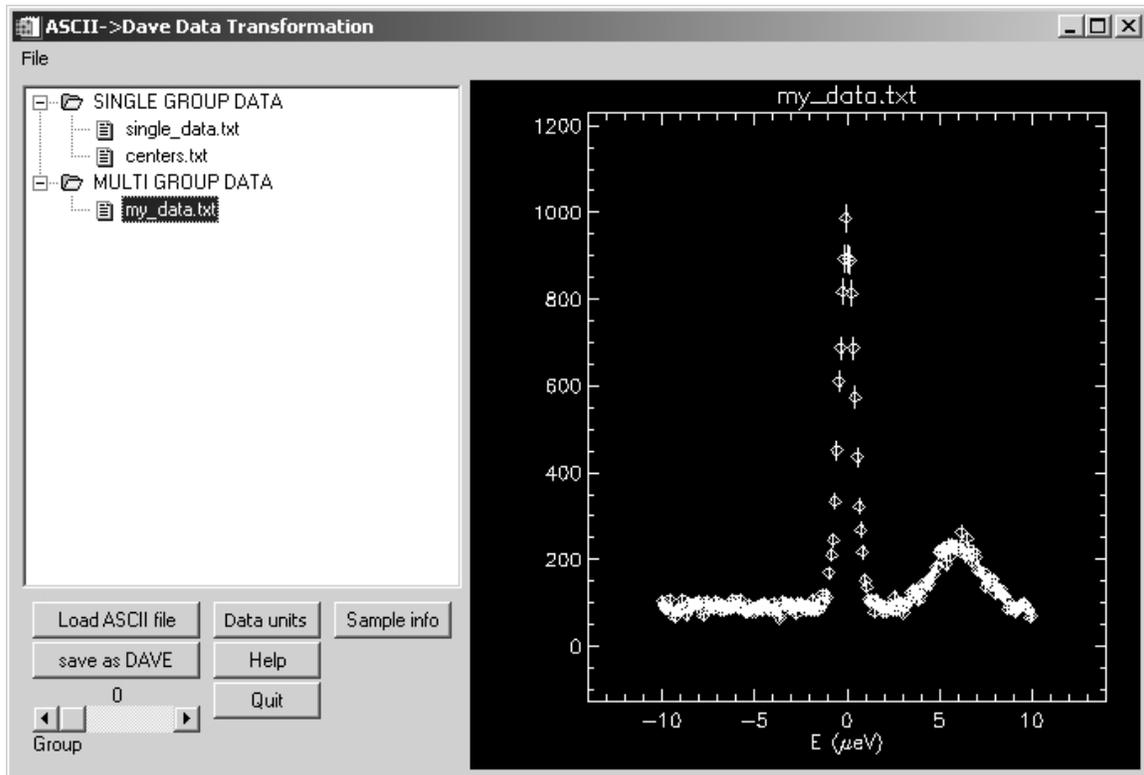
Figure 2. Screen shot of application after loading in single- and multiple-group files.

The user can click on the file with the mouse and the data will be displayed in the plot window as shown in figure 2. The interface is resizable and the plot window is "zoomable." This means that the user can use the mouse to grab a side of the interface and, holding the left mouse button down, stretch the interface to a larger or smaller size. Moreover the user can use a standard rubberband-box type zooming function in the plot window by holding the left mouse button down and dragging the box over the desired range to zoom.

If a multiple-group data set has been loaded then the slider can be used to change the y-value. The plot window will be updated to show the different "cut" or y-value.

Note that the units displayed are assigned to x(arb units) as the default. For a multi-group data set the units are x(arb units) and y(arb units) for both independent variables. The user can override the defaults by performing the following actions:

      (1)   Select the data file from the tree view by left-clicking on the file with the mouse.

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(2)   Choose the x-units by pressing the **Data units** button and selecting from among x (arb units), energy (mev), energy (uev), and temperature (K). See figure 3.

(3)   Choose the x-units by pressing the **Data units** button and selecting from among y (arb units), angle (degrees), and wavevector (A-1). See figure 4.

Upon selecting these the plot will be updated so that the x-axis title will reflect the x-units selected. Furthermore a checkmark will appear next to the x-units and y-units selected.
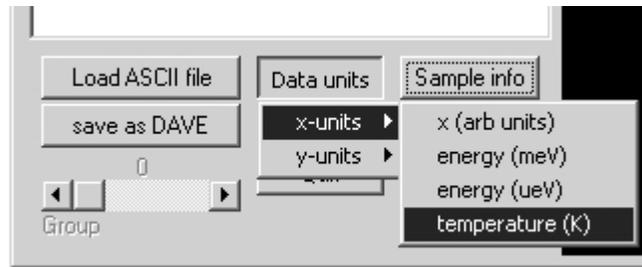
Figure 3. Choices for x-units.
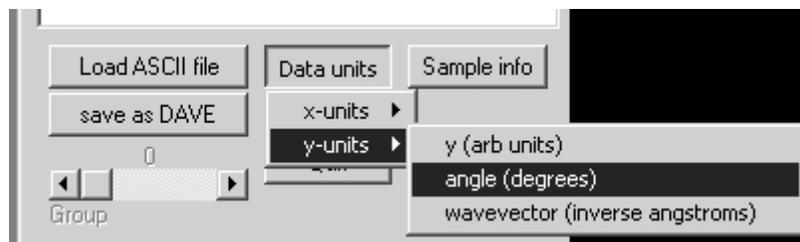
Figure 4. Choices for y-units.

The user also has the option of entering some sample specific information such as temperature, pressure, magnetic field, etc. In order to do so simply press the **Sample info** button and the dialog shown in figure 5 will appear. Fill in the relevant values and press the **Accept** button.
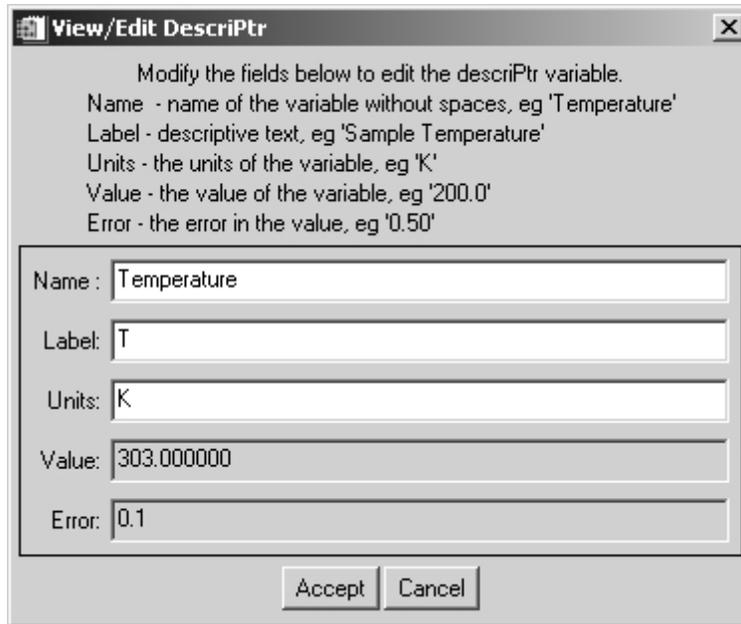
Figure 5. Sample information dialog entry.

The final step in the data conversion is to press the **save as DAVE** button so that all of the other DAVE applications can be used to visualize and analyze the data. If you have multiple ASCII files loaded into the ASCII reader, all of them will be converted to the DAVE format and saved on disk. These can be loaded into any of the other DAVE applications.

When finished press the **Quit** button to exit the program. You will be returned to the main DAVE interface.