



Physics MRI Research Centre

T₂DistributionDisplay

VERSION 1.01

User's Guide

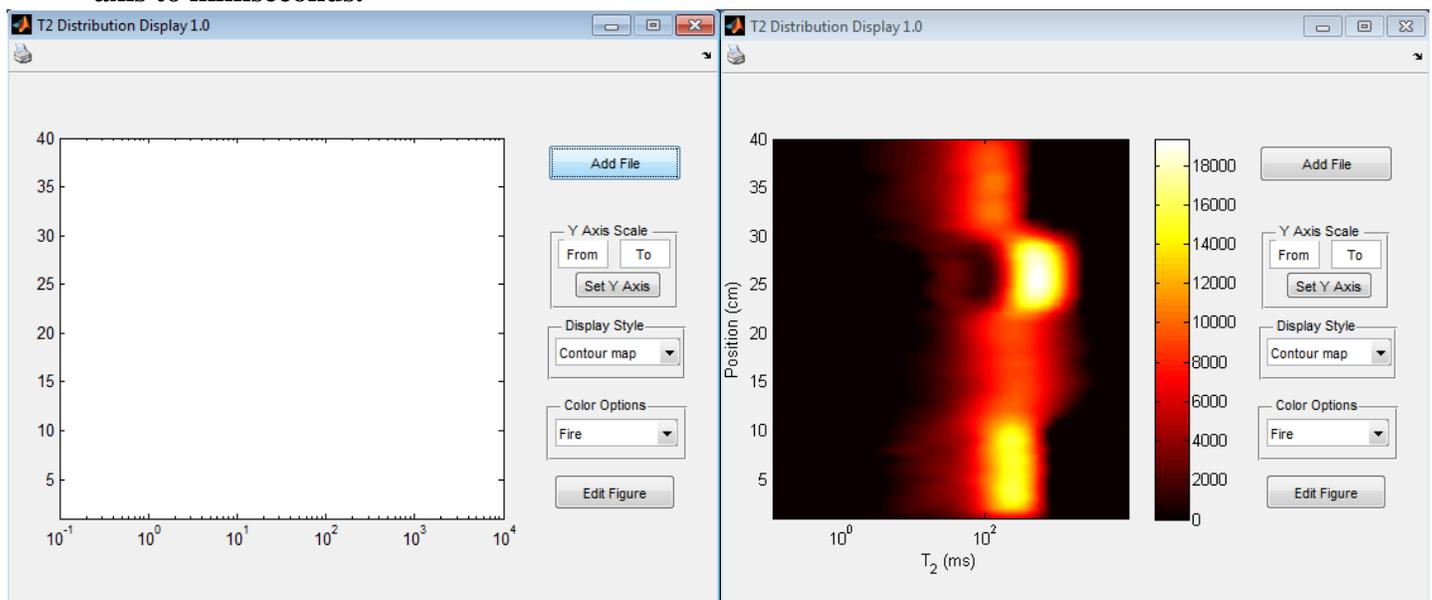
Last Update December 20th, 2013 by Scott Wallace

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Introduction

The purpose of the T₂DistributionDisplay program is to facilitate the creation of plots from T₂ distributions. The T₂DistributionDisplay program takes the output of the DxpExtractor program (a matrix of tab delimited numbers where the first column represents the T_{2eff} in milliseconds, and each column afterwards is the data from specific distances from the starting point) and uses it to create a contour, or waterfall plot, to represent the data. Once the data has been plotted, a couple of options are available. The color scheme of the plot can be varied (the default being Fire), the y axis scale can be set, and the graph can be opened in a separate figure for further editing. **The program assumes the data is in microseconds, and will convert the x axis to milliseconds.**



A contour style plot with the default Fire color

Running T₂DistributionDisplay

In MatLab:

1. Open the file T₂DistributionDisplay.m
2. Select Run.

As T₂DistributionDisplay.exe:

The standalone program (.exe) works but has limited functionality (no plot tools).

1. Open T₂DistributionDisplay.exe

The T₂DistributionDisplay Interface:

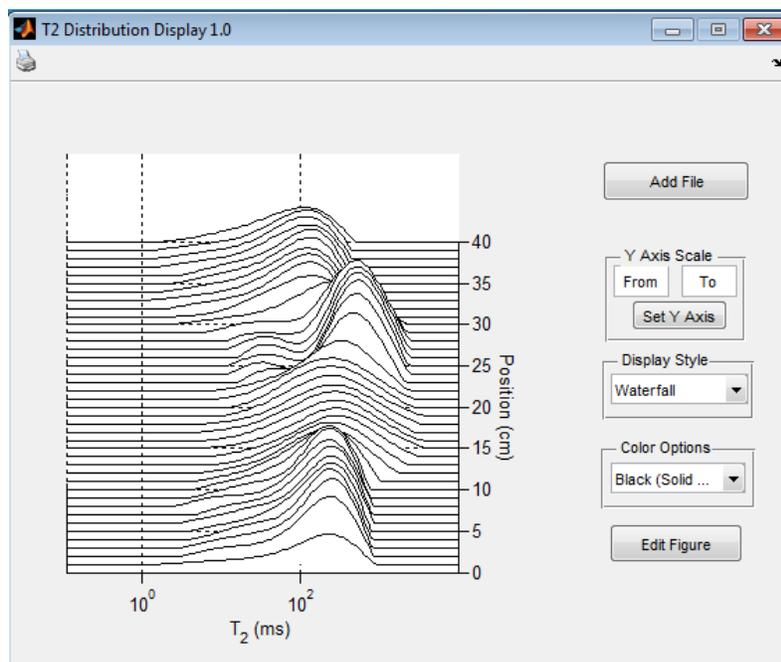
AddFile button: When clicked, a window will pop up prompting you to select a text file. The program accepts text files from dxpExtractor, or in a tab delimited matrix form with the first row being column titles, along with the first column being the X axis and the remaining columns representing individual T₂ distributions.

Y Axis Scale:

The From textbox is where you put the y-min value

The To textbox is where you put the y-max value

The Set Y Axis button changes the y axis from the default (zero to the number of points) to the scale set by From and To.

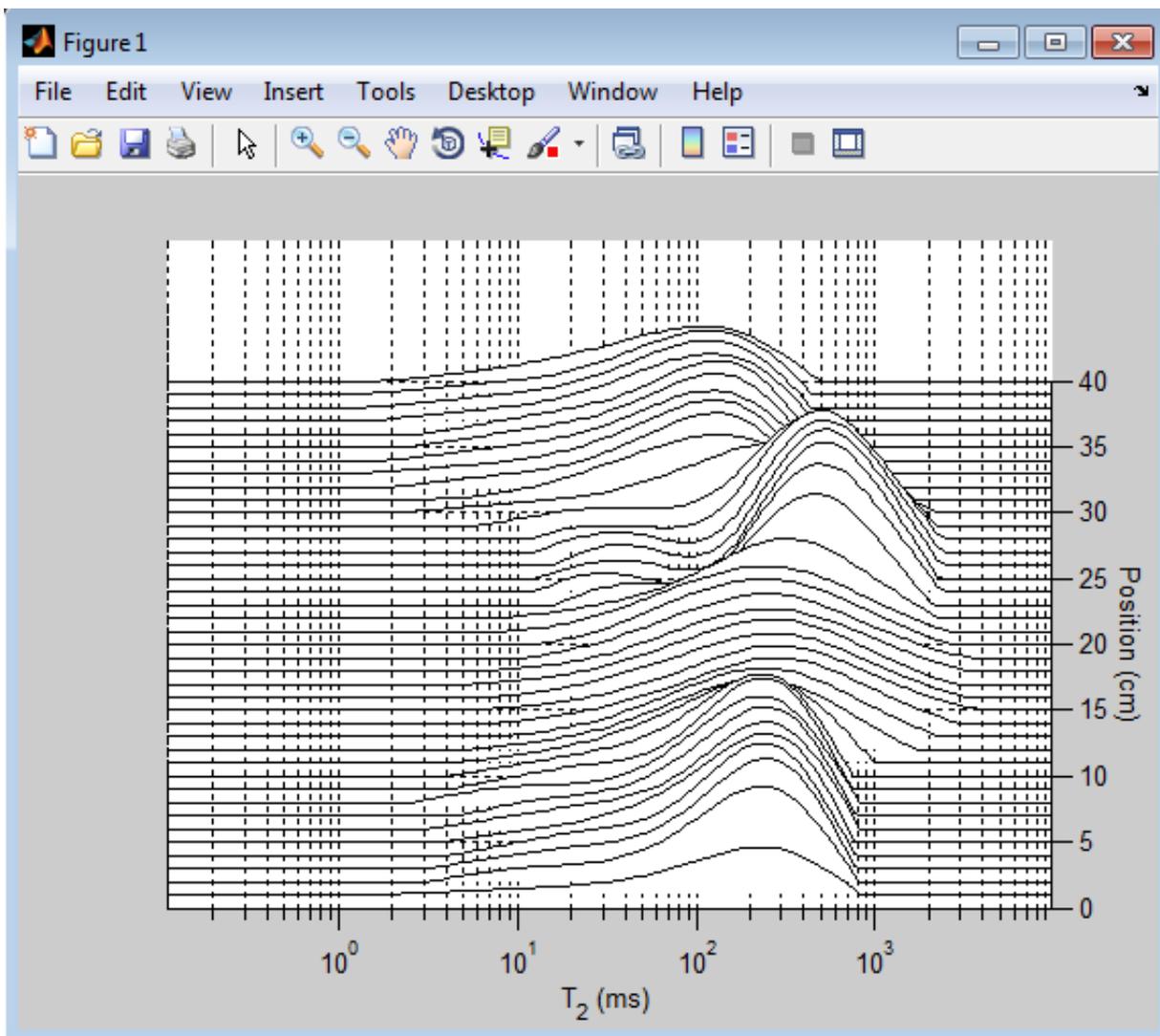


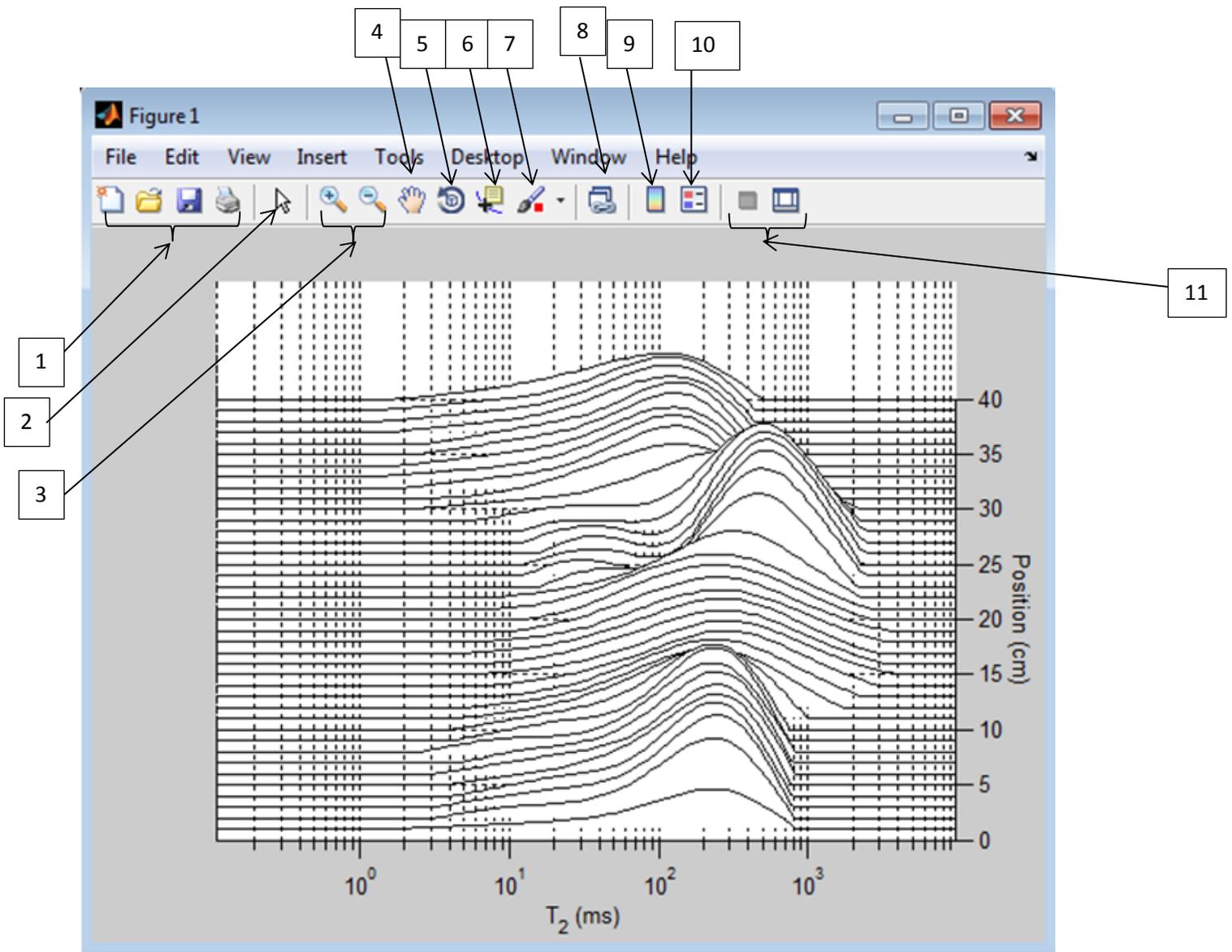
A waterfall plot with the default black color.

Display Style: This allows the selection of the plot type. The options are contour map or waterfall (offset stack plot) style plots.

Color Options: Changes the color scheme of the plot.

Edit Figure: Opens the graph with the selected options in a separate MatLab window for further editing. Including the plot tools interface.





1. General purpose buttons:
 - New figure: opens a blank, new figure.
 - Open: opens a previously saved MatLab Figure
 - Save: saves the figure as is with all the changes you have made.
 - Print: prints the figure, as is.
2. Edit plot: this button allows you to select a specific part of the figure to edit (axis, graph, etc.). If you double click any part of the figure with the edit plot tool selected, MatLab will open the plotting tools window.
3. Zoom: allows you to zoom in and out
4. Pan: allows the user to move the plot around.
5. Rotate: Allows the user to rotate the plot. (This is especially effective on the waterfall plot).

6. Data Cursor: click on a point on the plot with this button selected, and the X,Y, and Z coordinates of the point will appear. (To move the point along a specific line, use the left and right arrow keys.)
7. Brush/Select Data: Does not work with the plot styles chosen.
8. Link Plot: Does not work with the style of plot chosen.
9. Insert Color Bar: shows or hides the color bar.
10. Insert Legend: adds a legend.
11. Plot Tools: opens or closes the plot tools window.

Dropdown Menus:

File: has the normal open and save options, as well as an export setup option, which allows you to specify the quality of the figure.

Edit: Has the standard undo, redo, cut, etc. as well as figure and axis properties, and numerous clear options.

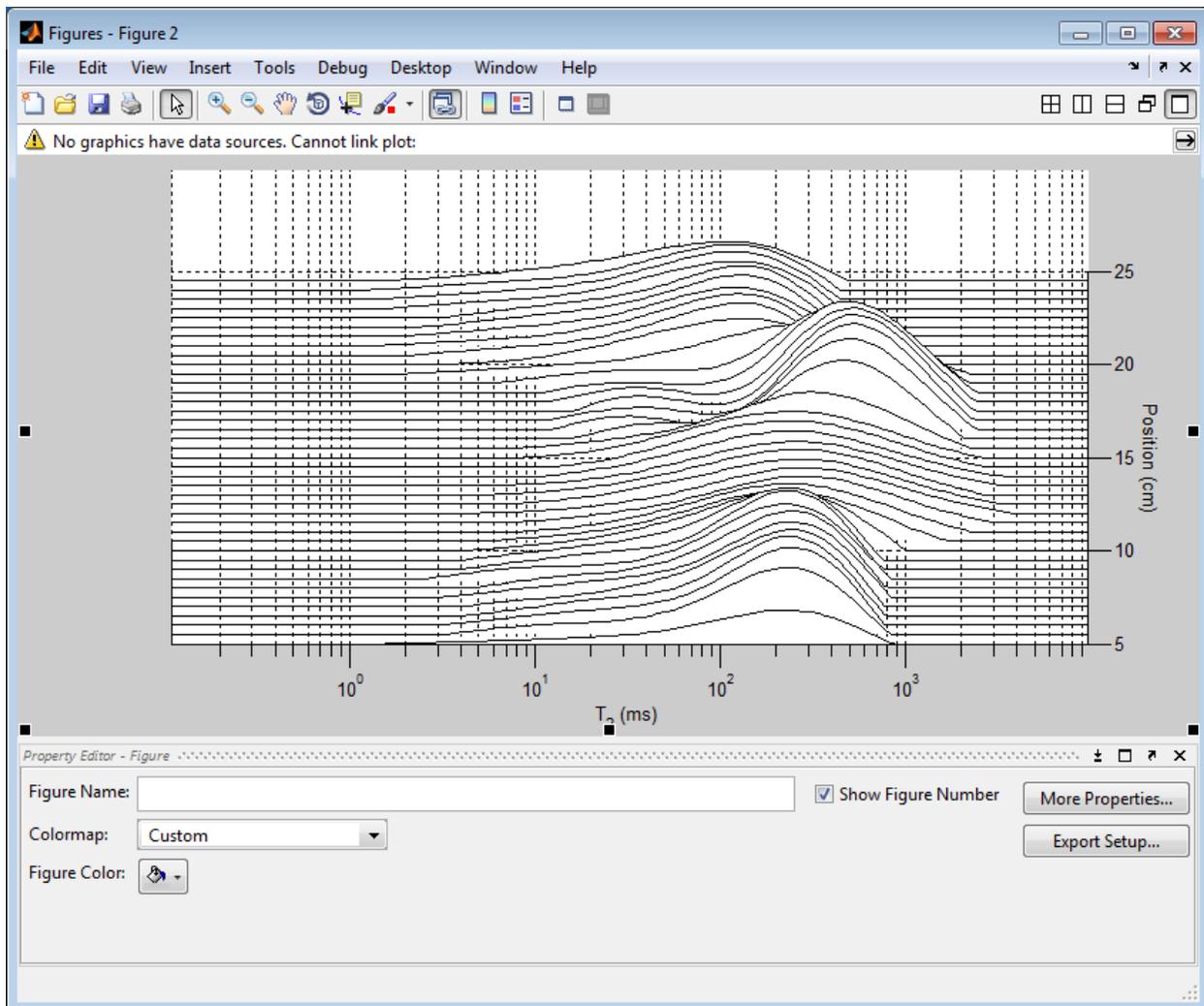
View: Allows you to open the Plot Browser (Plot Tools), and Property Editor.

Insert: Allows you to insert various objects (titles, axes, etc.).

Tools: Basically the buttons numbered 2-8.

Debug, Desktop, and Window: Not useful for day to day use.

Help: will open up the MatLab help screen.



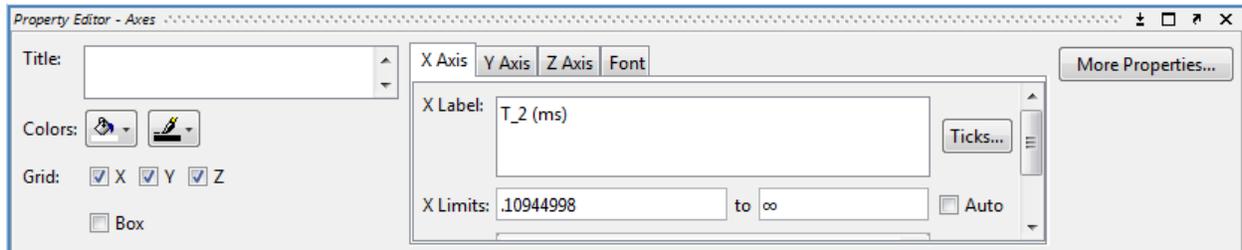
Plot Tools:

When the Plot Tools window is open, clicking on a section of the figure will allow you to make changes to the section.

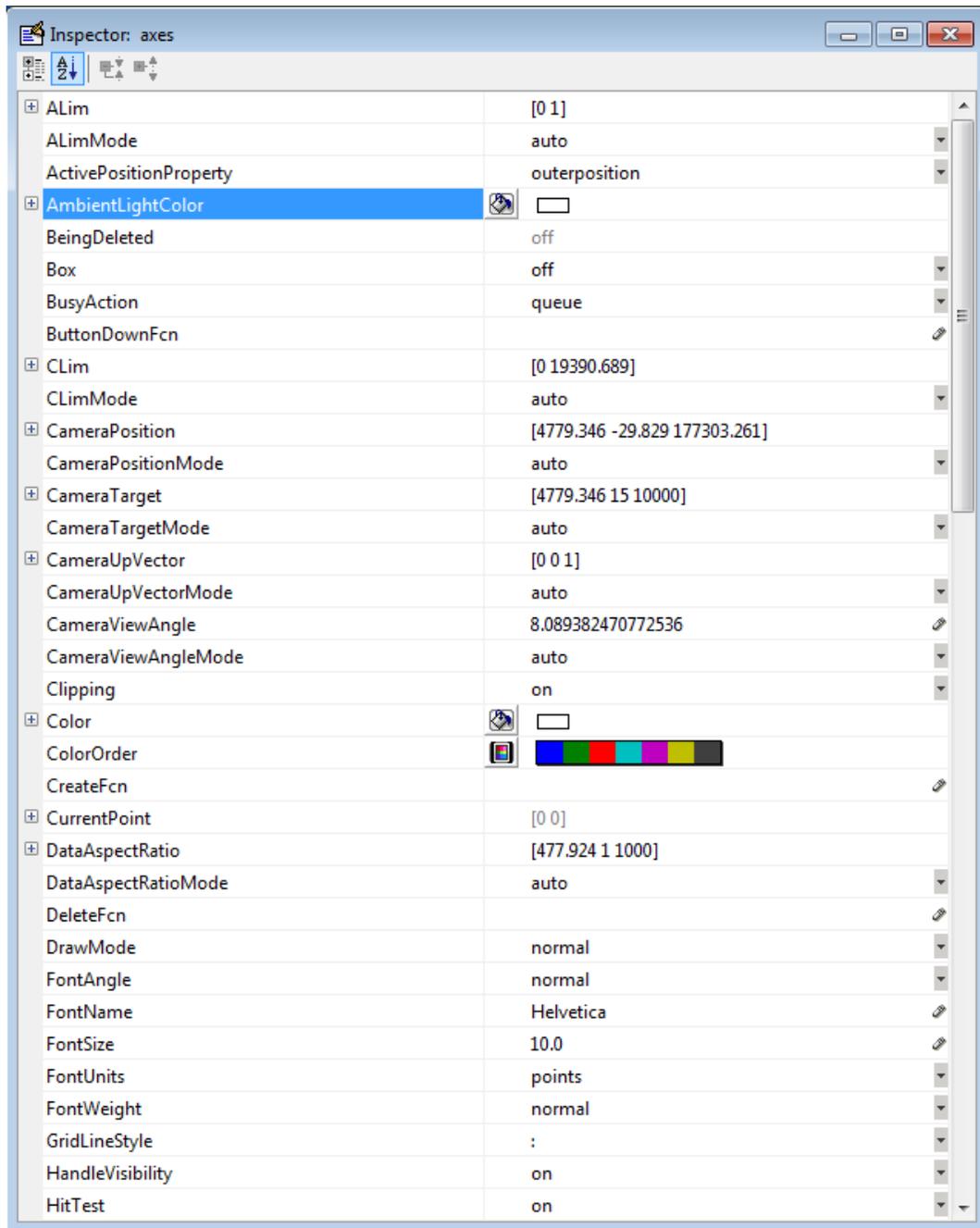
- If the figure is selected, the options of naming the figure, as well as selecting the colormap, or figure color appear. The 'More Properties' and 'Export Setup' buttons also appear. (though the 'More Properties' option is not overly useful unless you wish to change the figure's name)



- Clicking on the plot itself will give you the options:
 - Patch Face: (color the area under the curve)
 - Patch Edge: select the style of line the plot uses
 - Patch Markers: select the style of line marker



- Selecting one of the Axes will give you the most options.
 - Title: allows you to set the title for the plot.
 - Colors: sets the background color of the plot
 - Grid (checkboxes): shows or hides the grid in the X,Y, and Z planes.
 - As for each of the X Axis, Y Axis or Z Axis tabs:
 - Label: lets you change the default axis label.
 - Ticks: allows you to set specific points for MatLab to display on the selected axis.
 - Limit: lets you set the upper and lower bounds (auto lets MatLab automatically select the limits.)
 - Scale: allows you to select either a linear or logarithmic scale.
 - Reverse: reverses the plot on the axis whose tab you are in.
 - Font: lets you change the font.



- More Properties: When selected this button will open the Property Inspector. (This option is really only useful when the axes have been selected.) The Property Inspector will appear showing all the options you have to edit the selected item. In this case the axes.
 - Property Inspector offers all of the options that are available from the Plot Tools window as well as other less common options (like camera angle, and data aspect ratio).
 - **For most people the Property Inspector tool is unnecessary, as the Plot Tools window will have more than enough options.**