Overview

You can display image data as an image plot in a graph window. The image data can be a 2D wave, a layer of a 3D or 4D wave, a set of three layers containing RGB values, or a set of four layers containing RGBA values where A is "alpha" which represents opacity.

When discussing image plots, we use the term *pixel* to refer to an element of the underlying image data and *rectangle* to refer to the representation of a data element in the image plot.

Each image data value defines a the color of a rectangle in the image plot. The size and position of the rectangles are determined by the range of the graph axes, the graph width and height, and the X and Y coordinates of the pixel edges.

If your image data is a floating point type, you can use NaN to represent missing data. This allows the graph background color to show through.

Images are displayed behind all other objects in a graph except the ProgBack and UserBack drawing layers and the background color.

An image plot can be false color, indexed color or direct color.

False Color Images

In false color images, the data values in the 2D wave or layer of a 3D or 4D wave are mapped to colors using a color table. This is a powerful way to view image data and is often more effective than either surface plots or contour plots. You can superimpose a contour plot on top of a false color image of the same data.

Igor has many built-in color tables as described in **Image Color Tables** on page II-392. You can also define your own color tables using waves as described in **Color Table Waves** on page II-399. You can also create color index waves that define custom color tables as described in **Indexed Color Details** on page II-400.

Indexed Color Images

Indexed color images use the data values stored in a 2D wave or layer of a 3D or 4D wave as indices into an RGB or RGBA wave of color values that you supply. "True color" images, such as those that come from video cameras or scanners generally use indexed color. Indexed color images are more common than direct color because they consume less memory. See **Indexed Color Details** on page II-400.

Direct Color Images

Direct color images use a 3D RGB or RGBA wave. Each layer of the wave represents a color component - red, green, blue, or alpha. A set of component values for a given row and column specifies the color for the corresponding image rectangle. With direct color, you can have a unique color for every rectangle. See **Direct Color Details** on page II-401.

Loading an Image

You can load TIFF, JPEG, PNG, BMP, and Sun Raster image files into matrix waves using the **ImageLoad** or the Load Image dialog via the Data menu.

You can also load images fom plain text files, HDF5 files, GIS files, and from camera hardware.

For details, see **Loading Image Files** on page II-157.

Creating an Image Plot

Image plots are displayed in ordinary graph windows. All the features of graphs apply to image plots: axes, line styles, drawing tools, controls, etc. See Chapter II-13, **Graphs**.