colormap

Set and get the current colormap

Syntax

```
colormap(map)
colormap('default')
cmap = colormap
```

Description

A colormap is an *m*−by−3 matrix of real numbers between 0.0 and 1.0. Each row is an RGB vector that defines one color. The *k*th row of the colormap defines the *k*th color, where `map(k,:) = [r(k) g(k) b(k)]` specifies the intensity of red, green, and blue.

`colormap(map)` sets the colormap to the matrix `map`. If any values in `map` are outside the interval [0 1], MATLAB returns the error `Colormap must have values in [0,1]`.

`colormap('default')` sets the current colormap to the default colormap.

`cmap = colormap` retrieves the current colormap. The values returned are in the interval [0 1].

Specifying Colormaps

M−files in the `color` directory generate a number of colormaps. Each M−file accepts the colormap size as an argument. For example,

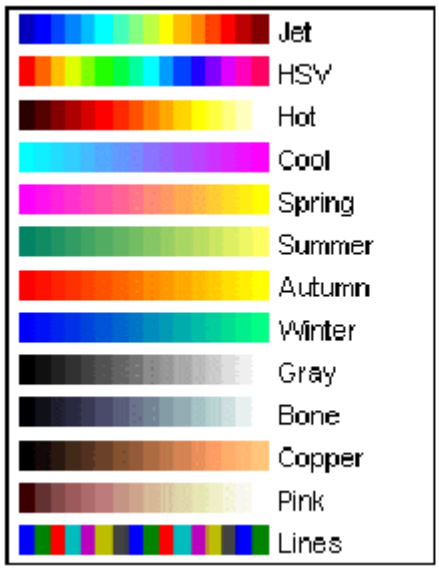
```
colormap(hsv(128))
```

creates an `hsv` colormap with 128 colors. If you do not specify a size, MATLAB creates a colormap the same size as the current colormap.

Supported Colormaps

MATLAB supports a number of built−in colormaps, illustrated and described below. In addition to specifying built−in colormaps programmatically, you can use the **Colormap** menu in the **Figure Properties** pane of the **Plot Tools** GUI to select one interactively.

The named built−in colormaps are the following:



- `autumn` varies smoothly from red, through orange, to yellow.
- `bone` is a grayscale colormap with a higher value for the blue component. This colormap is useful for adding an "electronic" look to grayscale images.
- `colorcube` contains as many regularly spaced colors in RGB colorspace as possible, while attempting to provide more steps of gray, pure red, pure green, and pure blue.
- `cool` consists of colors that are shades of cyan and magenta. It varies smoothly from cyan to magenta.
- `copper` varies smoothly from black to bright copper.
- `flag` consists of the colors red, white, blue, and black. This colormap completely changes color with each index increment.
- `gray` returns a linear grayscale colormap.
- `hot` varies smoothly from black through shades of red, orange, and yellow, to white.
- `hsv` varies the hue component of the hue−saturation−value color model. The colors begin with red, pass through yellow, green, cyan, blue, magenta, and return to red. The colormap is particularly appropriate for displaying periodic functions. `hsv(m)` is the same as `hsv2rgb([h ones(m,2)])` where `h` is the linear ramp, `h = (0:m−1)'/m`.
- `jet` ranges from blue to red, and passes through the colors cyan, yellow, and orange. It is a variation of the `hsv` colormap. The `jet` colormap is associated with an astrophysical fluid jet simulation from the National Center for Supercomputer Applications. See the "Examples" section.
- `lines` produces a colormap of colors specified by the axes `ColorOrder` property and a shade of gray.
- `pink` contains pastel shades of pink. The pink colormap provides sepia tone colorization of grayscale photographs.
- `prism` repeats the six colors red, orange, yellow, green, blue, and violet.
- `spring` consists of colors that are shades of magenta and yellow.
- `summer` consists of colors that are shades of green and yellow.

- `white` is an all white monochrome colormap.
- `winter` consists of colors that are shades of blue and green.

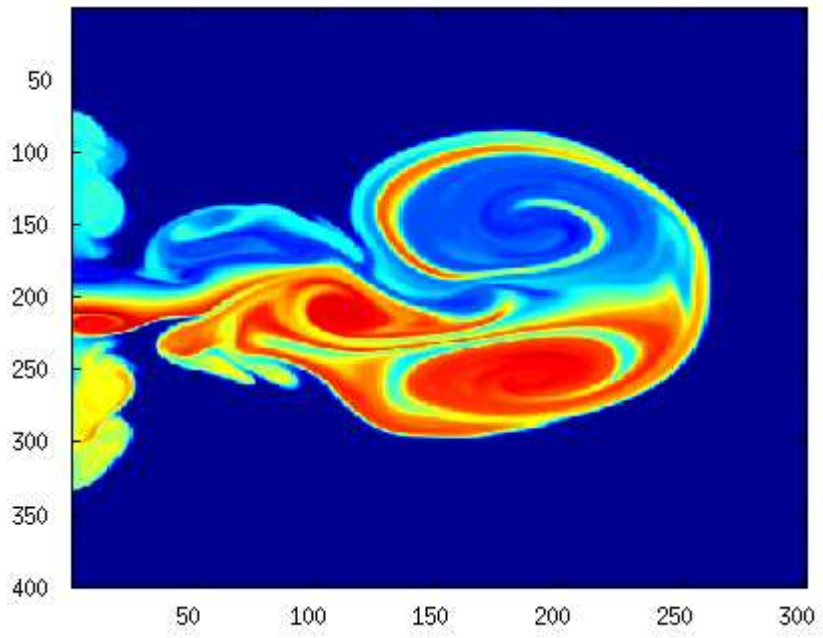
Examples

The images and colormaps demo,`imagedemo`, provides an introduction to colormaps. Select **Color Spiral** from the menu. This uses the `pcolor` function to display a 16−by−16 matrix whose elements vary from 0 to 255 in a rectilinear spiral. The `hsv` colormap starts with red in the center, then passes through yellow, green, cyan, blue, and magenta before returning to red at the outside end of the spiral. Selecting **Colormap Menu** gives access to a number of other colormaps.

The `rgbplot` function plots colormap values. Try `rgbplot(hsv)`, `rgbplot(gray)`, and `rgbplot(hot)`.

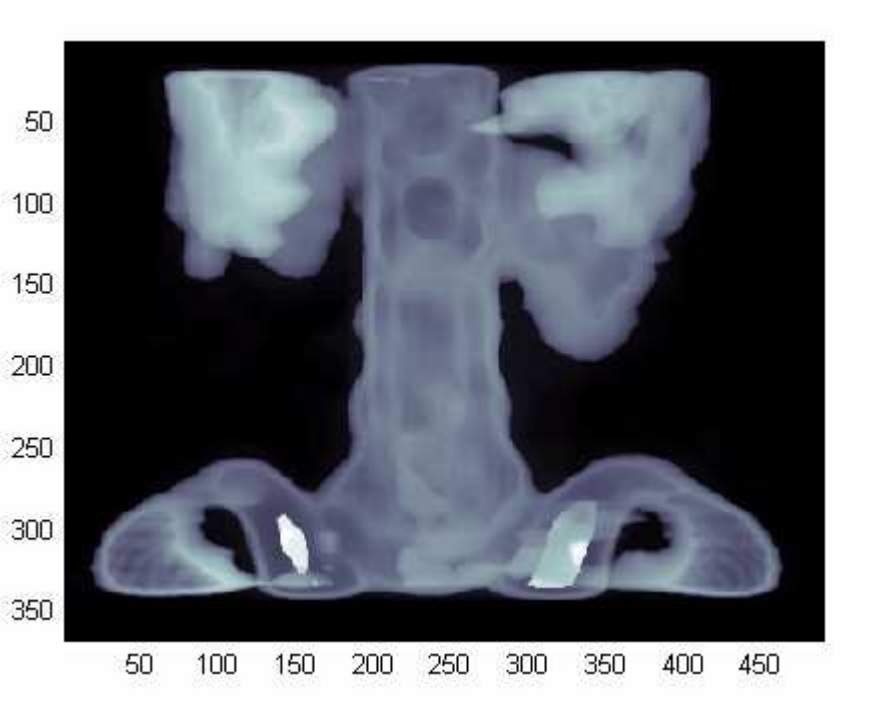
The following commands display the `flujet` data using the `jet` colormap.

```
load flujet
image(X)
colormap(jet)
```



The `demos` directory contains a CAT scan image of a human spine. To view the image, type the following commands:

```
load spine
image(X)
colormap bone
```



Algorithm

Each figure has its own `Colormap` property. `colormap` is an M−file that sets and gets this property.

See Also

`brighten`, `caxis`, `colormapeditor`, `colorbar`, `contrast`, `hsv2rgb`, `pcolor`, `rgb2hsv`, `rgbplot`

The `Colormap` property of figure graphics objects

Color Operations for related functions

Coloring Mesh and Surface Plots for more information about colormaps and other coloring methods

colordef colormapeditor