

## 1 Short help on Mesh

The mesh-command generates 3-D animated plots of matrices. The command `mesh(z)` plots the values in matrix `z` over its element coordinates. Figure 1 shows the meshplot of the matrix

$$z = \begin{pmatrix} 0 & 0.5 & 0 \\ 0.5 & 1 & 0.5 \\ 0 & 0.5 & 0 \end{pmatrix}$$

As you can see, the X and Y-coordinates range from 1 to 3 since we have a 3 by 3 matrix.

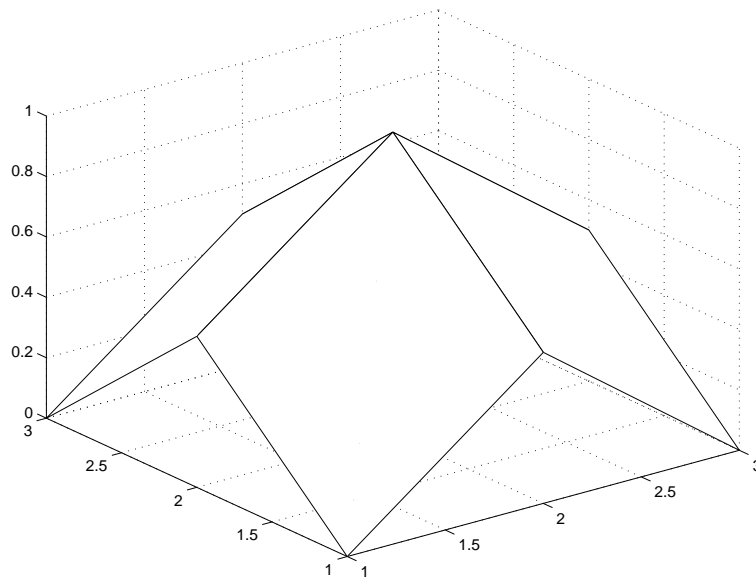


Figure 1: Meshplot `mesh(z)`

The values of `z` are displayed as height over the rectangular `xy`-grid.

If you use `mesh(X,Y,Z)`, you can display the matrix `Z` over the coordinates specified in `X` and `Y`. You can use the [meshgrid](#) command to generate `X` and `Y`.

## 2 Matlab Help on Mesh

**MESH** 3-D mesh surface.

`MESH(X,Y,Z,C)` plots the colored parametric mesh defined by four matrix arguments. The view point is specified by `VIEW`.

The axis labels are determined by the range of `X`, `Y` and `Z`, or by the current setting of `AXIS`. The color scaling is determined by the range of `C`, or by the current setting of `CAXIS`. The scaled

color values are used as indices into the current COLORMAP.

MESH(X,Y,Z) uses  $C = Z$ , so color is proportional to mesh height.

MESH(x,y,Z) and MESH(x,y,Z,C), with two vector arguments replacing the first two matrix arguments, must have  $\text{length}(x) = n$  and  $\text{length}(y) = m$  where  $[m,n] = \text{size}(Z)$ . In this case, the vertices of the mesh lines are the triples  $(x(j), y(i), Z(i,j))$ . Note that  $x$  corresponds to the columns of  $Z$  and  $y$  corresponds to the rows.

MESH(Z) and MESH(Z,C) use  $x = 1:n$  and  $y = 1:m$ . In this case, the height,  $Z$ , is a single-valued function, defined over a geometrically rectangular grid.

MESH(...,'PropertyName',PropertyValue,...) sets the value of the specified surface property. Multiple property values can be set with a single statement.

MESH(AX,...) plots into AX instead of GCA.

MESH returns a handle to a surface plot object.

AXIS, CAXIS, COLORMAP, HOLD, SHADING, HIDDEN and VIEW set figure, axes, and surface properties which affect the display of the mesh.

See also surf, meshc, meshz, waterfall.