Computational Aerodynamics — GNUPLOT HOWTO

x-y plot

First create a post file suitable for gnuplot as follows (data interpolated along $y = 0$):

```
AERO.201325962:~> warp -r test.wrp -i data.01 -op post.01 -pt gnuplot
-py 0.0
```

Open the gnuplot shell:

```
AERO.201325962:~> gnuplot
```

Type the following within the gnuplot shell to plot density (column 7) versus x (column 1):

```
plot 'post.01' using 1:7
```

If you want to compare two (or more post files), enter the following:

```
plot 'post.01' using 1:7, 'post.02' using 1:7
```

Grid plot

First create a post file suitable for gnuplot as follows:

```
AERO.201325962:~> warp -r test.wrp -i data.01 -opg post.01 -pt gnuplot
```

Open the gnuplot shell:

```
AERO.201325962:~> gnuplot
```

Type the following within the gnuplot shell:

```
reset

set view map; set key outside; unset key; set size ratio 0.8; set xlab
el 'x, m'; set ylabel 'y, m'

splot 'post.01' using 1:2:2 with lines
```

Grid plot with contour levels

First create a post file suitable for gnuplot as follows:

```
AERO.201325962:~> warp -r test.wrp -i data.01 -op post.01 -pt gnuplot
```

Open the gnuplot shell:

```
AERO.201325962:~> gnuplot
```

Type the following within the gnuplot shell to plot the grid with the color of the grid lines matching the contour levels of property #7 (density):

```
reset

set view map; set key outside; unset key; set size ratio 0.8; set xlab
el 'x, m'; set ylabel 'y, m'

splot 'post.01' using 1:2:7 with l lc palette
```

Vector plot

First create a post file suitable for gnuplot as follows:

```
AERO.201325962:~> warp -r test.wrp -i data.01 -op post.01 -pt gnuplot
```

Open the gnuplot shell:

```
AERO.201325962:~> gnuplot
```

Type the following within the gnuplot shell to make a plot of the velocity vector (with the vectors scaling with the variable “scale”):

```
reset

set key outside; unset key; set size ratio 0.8; set xlabel 'x, m'; set
ylabel 'y, m'; set macros; with_vectors = "using 1:2:($3*scale):($4*sc
ale) w vectors"; scale = 0.00005

plot 'post.01' @with_vectors
```

Contour plot

First create a post file suitable for gnuplot as follows:

```
AERO.201325962:~> warp -r test.wrp -i data.01 -op post.01 -pt gnuplot
```

Open the gnuplot shell:

```
AERO.201325962:~> gnuplot
```

Type the following within the gnuplot shell to make a filled contour plot of the density (post file column number 7):

```
reset

unset key; unset surf; set view map; set contour base; set size ratio
0.8; set xlabel 'x, m'; set ylabel 'y, m'; set palette rgbformulae 22,
13,10; set cntrparam levels 100

splot 'post.01' using 1:2:7 with l lc palette lw 1.5
```

Filled contour plot

First create a post file suitable for gnuplot as follows:

```
AERO.201325962:~> warp -r test.wrp -i data.01 -op post.01 -pt gnuplot
```

Open the gnuplot shell:

```
AERO.201325962:~> gnuplot
```

Type the following within the gnuplot shell to make a filled contour plot of the density (post file column number 7):

```
reset

set pm3d; unset surface; set view map; set key outside; unset key; set
xlabel 'x, m'; set ylabel 'y, m'; set size ratio 0.8; set palette rgbf
ormulae 22,13,10; set cntrparam linear; set pm3d interpolate 4,4

splot 'post.01' using 1:2:7
```

Color palettes

Traditional PM3D:

```
set palette rgb 7,5,15
```

Rainbow:

```
set palette rgbformulae 22,13,10
```

Hot:

```
set palette rgb 21,22,23;
```

Ocean:

```
set palette rgb 23,28,3
```

Grayscale:

```
set pal gray
```

Large Rainbow:

```
set palette model HSV; set palette rgb 3,2,2;
```