

# GNUPlot Cheat Sheet

## Generic Plot-tweaking

- Legend: `set key [left|right] [box|nobox]`. There are a lot more options which we are not specified here.
- Axis Labels: `set xlabel "[x label]"` etc.
- Plot Styles: `plot [function] with [style]`. *Eg:* `plot sin(x) with impulses`
- Line Types: `plot [function] lt [line type number]`. *Eg:* `plot sin(x) lt 6`
- Plot Title: `plot [function] title "[title]"`

## 2-D Plotting

- Basic plotting: `plot [function]`. *Eg:* `plot sin(x)`
- Setting number of Samples: `set samples [samples]`. *Eg:* `set samples 50`
- Real and imaginary parts: `plot real([function])`. *Eg:* `plot real(sin(x)**besj0(x))`
- Plotting data files: `plot [file] using [xcol]:[ycol]`. *Eg:* `plot "foo.dat" using 1:2`
- Spline fit: `plot [file] using [xcol]:[ycol] smooth [method]`. *Eg:* `plot "foo.dat" using 1:2 smooth csplines`
- General nonlinear fitting: `fit [function] [datafile] using [xcol]:[ycol]:[std. devn] via [params]`.  
*Eg:* `plot a*x+b "foo.dat" using 1:2 via a,b`
- Enabling Parametric Mode: `set param` (Use `unset param` to disable)
- Enabling Polar Mode: `set polar` (Use `unset polar` to disable)
- Parametric plots: `plot [xfunc(t)], [yfunc(t)]` *Eg:* `plot cos(t), sin(t)`
- Vector fields: `plot [datafile] using [x]:[y]:[dx]:[dy]` *Eg:* `plot "vectorfoo.dat" using 1:2:3:4`

## Exporting Plot

GNUPlot can export the plot into a file in a variety of formats.

- Setting export format / Terminal type: `set term [termtype]`. Try `set term` for a list.
- Setting output file: `set output [file]`
- Show output status: `show output`

## 3-D Plots

- Surface plots: `splot f(x,y)` *Eg:* `splot [-pi:pi] [-pi:pi] cos(x)*cos(y) title "Ground State"`
- Enabling / Disabling grid: `set grid` and `unset grid`
- Nicely colored plots: `splot f(x,y) with pm3d`
- Samples: `set isosamples [nsamples]`
- Parametric mode: `set param`.  $u$  and  $v$  are the parameters.
- Parametric plots: `splot x(u,v), y(u,v), z(u,v)` *Eg:* `splot sin(u)*cos(v), sin(u)*sin(v), cos(v) title "2-Sphere"`
- Contours: `set contour`
- Contour Levels: `set cntrparam levels [nlevels]`