

Phys619 Supplements : Fortran and Gnuplot

If you have your own computer, you can download a free Fortran compiler and the graphic plotting program Gnuplot.

Fortran

Go to <http://gcc.gnu.org/wiki/GFortranBinaries> and download the "Installer" (in MinGW build) to install Gfortran in your computer. (Better first save the file then run it later.) Read "Readme.html" to get started.

1. To compile Fortran programs, change directory to where your Fortran programs are located, and type in the command
`gfortran kepler.f90`
This produces a default executable file `a.exe`
2. To run the program, just type in
`a.exe`

If you want a distinctive name for your executable file, compile with the command

```
gfortran kepler.f90 -o kepler.exe
and run the program by typing in
kepler.exe
```

That's all there is to it.

Gnuplot

Go to <http://www.gnuplot.info/>

and download the latest version of Gnuplot. After you have installed the program, open the program, change directory to the directory where you have outputted your data.

1. To plot the multi-column data file "ellipse.pl", just type in command
`plot "ellipse.pl"` (plots individual data points)
`plot "ellipse.pl" with lines` (plots data connected with lines)
`plot "ellipse.pl" with linespoints` (plots data points connected with lines)
`plot "ellipse.pl" using 1:4 with linespoints` (plots column 1 and 4)
`replot "trajectory.pl"` (add this to previous graphs)
2. You can also just plot a function
`plot sin(x)/x`
3. To format the graph, type commands
`set xlabel "x"`
`set ylabel "y"`
`set title "Keplerian orbits"`
4. To output your graph as a postscript file, type commands
`set term postscript landscape`
`set output"ellipse.ps"`
`replot`
`set term window` (get back to the window mode)

Read the manual for more info, but this will get you started.