

Homework Assignment #7, Composing Effective Figures and Captions

This assignment consists of two parts: making a figure and writing captions.

Download a table of data about *exoplanets* from here. The data is in plain text, with each entry separated by a comma (it is in CSV format). The table entries correspond to:

Star name

M^* [parent star mass, in solar masses]

R^* [parent star radius, in solar radii]

$m \sin(i)$ [m is planet mass; i orbital inclination, mass is measured in Jupiter masses]

a [orbital semimajor axis in AU]

P [orbital period, days]

e [orbital eccentricity]

i [orbital inclination, degrees]

r [planetary radius, Jupiter radii]

FE [$\log(\text{Fe}/\text{H})$ abundance relative to the sun]

Notice that not all entries are present for all planets.

If you prefer, you can go directly to exoplanets.org and download an appropriate data table directly from their site.

1. Make a figure that illustrates *one* of the following two points:
 - a. Planets that orbit close to their parent star (with small semi major axis) tend to have low eccentricity (close-in planets have strong tidal interactions with their parent star; dissipation of the tides damps the eccentricity).
 - b. Many more planets are found close to their parent star than far away.

A simple line plot, a plot of data points, or a histogram can be used to make these points, but your figure does not need to be in that form. The data set you are using to generate your figure has inspired some beautiful scientific graphics. To see some examples try googling “exoplanet orrery” or “xkcd exoplanet”.

2. Write a caption that explains your figure. The figure caption should explain what you plotted, and any additional lines or regions on your plot that you have used to help make your point.

Combine both your figure and figure caption and submit them as a word or pdf file.

Due: **Friday, April 3, 11:59 p.m.** Email your completed assignment as a PDF file to both Professor Gammie and Celia. Assignments submitted after the deadline will be downgraded and will be ineligible for rewrite points.