PHY499: Introduction to Python for Scientists

Homework Assignment 5 (28 Oct, 2016)

(NOTE: This assignment will be graded!)

Send your code to `michael.mommert@nau.edu`.

1 Asteroid Lightcurves

The average asteroid is potato-shaped. That is, asteroids usually have irregular shapes. Since all asteroids also spin, the brightness of an asteroid varies over time, which is called a *lightcurve*. Asteroids can also have little moons, which make their lightcurves even more complicated...

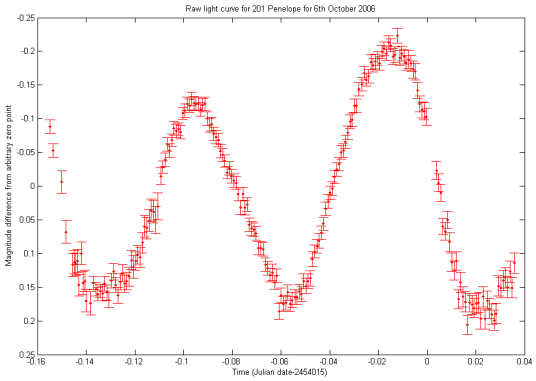

Figure 1: Lightcurve of main belt asteroid (201) Penelope.

Download the file `asteroid_signal.csv` from the *assignments* directory of the `github` course website. Based on the measured (brightness) signal, find the asteroid's period and its signal amplitude (peak-to-peak). Can you detect the signal of a moon in the residuals? If so, what is the rotation period of the moon and its amplitude?

Hints: You can assume a simple sinusoidal lightcurve for the asteroid and use the same tools that we used in the lecture.

If you want this assignment to count into your final grade, please submit it to `michael.mommert@nau.edu` before 4 Nov, 23:59!