

# Assignment 9

Please type your responses into a word document, and submit that on UNM Learn. Show your work for all questions. You can take scans/pictures of your work if you put them in the word document, but don't submit them as images. Be sure to number your responses 1, 2(a), etc. so I know which question you're answering. If you get stuck, post a question on the forums. Chances are you're not the only one!

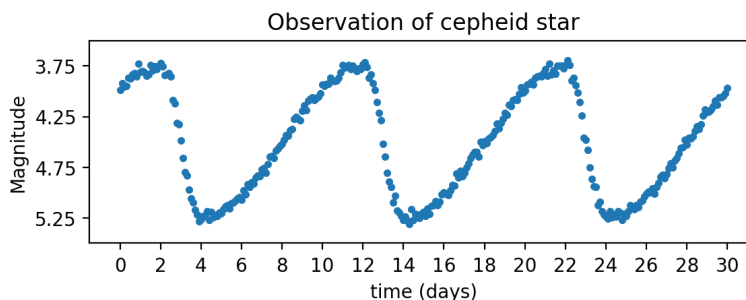


Figure 1: Light curve of a cepheid star.

1. (20 points) You observe and plot the magnitudes of a cepheid over a month to obtain Figure 1,
  - (a) (5 points) Find the average, maximum, and minimum magnitude, along with the period.
  - (b) (15 points) By what factor does the brightness increase between the minimum and maximum brightness?
2. (18 points) Name and briefly describe the three types of binary stars, what information can be found from each, and the method through which this information is found.
3. (9 points) Name and define the three celestial units of distance in increasing length, and give an example of a distance for which each unit would be appropriate.
4. (12 points) Suppose a star were observed at both ends of Earth's orbit to have moved an angle of .05 arcsec (parallax of .025 arcsec). How far away is it?
5. (10 points) A star is observed through a telescope behind a filter. Through a UV-filter, it measures a magnitude of 20. Through a blue filter, 25, and through a yellow filter, 18 (all in arbitrary units). What is the star's  $B-V$  color index?