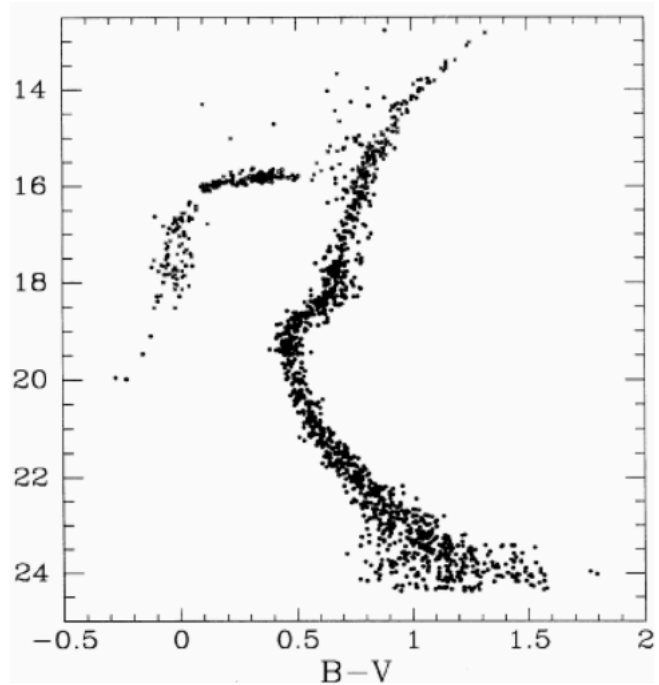
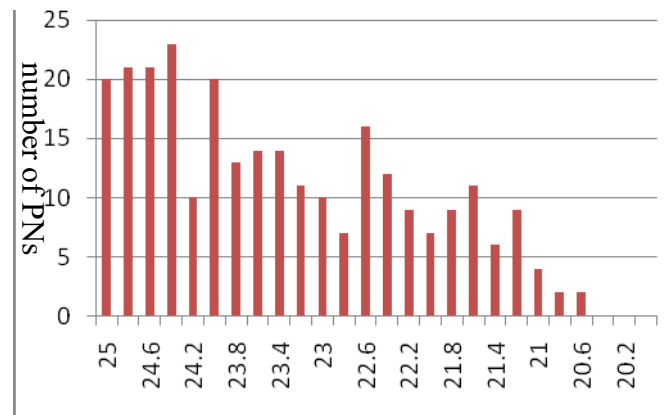


Physics 310/610 – Cosmology
Homework Set G

1. At right is the HR-diagram for a globular cluster showing color/temperature on the horizontal axis, and apparent magnitude m on the vertical axis. Identify approximately the apparent magnitude of the stars on the tip of the red giant branch, and from this, deduce the distance to this cluster. (Comment: because the vertical axis is not labelled on my source, I do not know if the magnitudes are infrared, which they should be for the TRGB method, and the answer is really not that reliable).

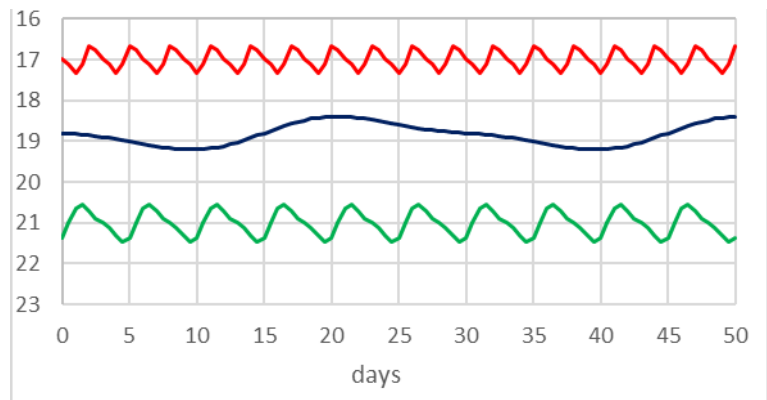


2. A nearby galaxy is studied. The planetary nebulae with $m < 25$ are measured, and the resulting apparent magnitudes are histogrammed. The result is sketched at right. What is the approximate limiting apparent magnitude of the planetary nebulae? What is the distance to this galaxy?



3. Three Cepheid variable stars all in the direction of a nearby galaxy have their apparent magnitude m plotted as a function of time.

- Find the period and absolute magnitude for each of the three stars. Recall that this is the *average* absolute magnitude M .
- Find the distance to each of the three stars.
- In fact, two of the stars are in the galaxy, and one is just coincidentally in the same direction. Which one is not in the galaxy?



PHY 610 – There are no graduate problems on this homework