ASTR 121 – Spring 2016

Lab 5 – HI Rotation Curve of the Milky Way: Prelab Questions

Due Monday, [Date TBA]

Answer the following questions on a separate sheet of paper.

1. The data we will be using in this lab is from spectra of neutral hydrogen (HI). Look up the wavelength of this line, express it in terms of a frequency. In what part of the spectrum does the frequency lie?

2. In lecture, we looked at how orbital velocity is dependent on orbital radius and enclosed mass for three different mass distributions: mass increasing with radius, mass increasing with radius cubed, and constant mass. Give the equation for orbital velocity and describe the behavior of the orbital velocity for each of the three mass distributions.

3. The two quantities you will calculate in this lab are orbital speed and orbital radius. Using the equations given in the handout and either the uncertainty reference sheet or error propagation by hand, give an expression for the uncertainty in these values.

4. Look up the article 'The Milky Way is cut back down to size' on Astrobites. Give one similarity and one difference between the rotation curve created in this study and the one you will create in this lab.