

Hubble's Law Lab

Great Ideas in Science Lab (BIOS 3038)

Lab 2, November 7, 2006

This lab is based on “Laboratory Exercises in Astronomy — Hubble’s Law” from *Sky and Telescope*, April 1978, 299–301. You will be given a handout of this material. Answer each of the six questions and fill in each chart in the handout.

To find the “distance on spectrum from comparison line” (the first two columns in the first table), you need to have the position of the K and H lines (3933.1 Å and 3968.5 Å, respectively). Use the comparison spectrum to find these two positions on each spectrum and then measure from these positions to the red shifted location of the K and H lines.

When finding the line in step 5, would it be a good idea to use a “least squares” regression line? HINT: The velocities are known with a rather high degree of precision, whereas the distances are a bit more questionable.

Search the internet and find the best currently accepted value of Hubble’s constant and the age of the universe. It is currently thought that the universe is not expanding at a constant rate, but instead is actually accelerating. Search the online information about this and explain the evidence for it. What effect does this have on a distance versus velocity graph similar to the one made for this lab? (Use only credible websites; say those with ‘gov’ and ‘edu’ suffices.)