

Look-back time



- Students sent out pictures of themselves when they were 12.
- We get their pictures at the same time (a student doesn't send one until they get one from a farther-away-student).
- Roxie's picture had to travel the farthest and thus took the most time.
- Roxie is actually 23.4 years old when we get his picture, but he looks like he is only 12.



Actual age (yrs): 23.4, 23.4, 23.4, 23.4, 23.4, 23.4

Learning goals: Hubble's Law

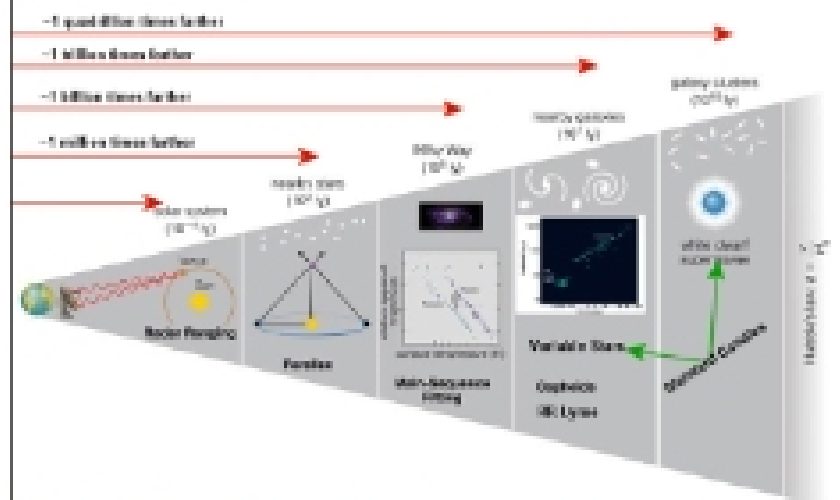
- Summarize the considerations astronomers must make in interpreting the observations of galaxies far, far away
- What kinds of "standard candles" are used to find distances to galaxies?
- What observations are needed in order to find the distance to a galaxy that is too far away to have an observable standard candle?
- What is Hubble's Law and what is Hubble's constant?

- Universe is expanding:
 - distant galaxies receding faster than nearer ones.
- Cosmological redshift
 - light gets redshifted to longer and longer wavelengths
- We are observing UV radiation at IR wavelengths.
- Galaxies were closer together in the past than they are now

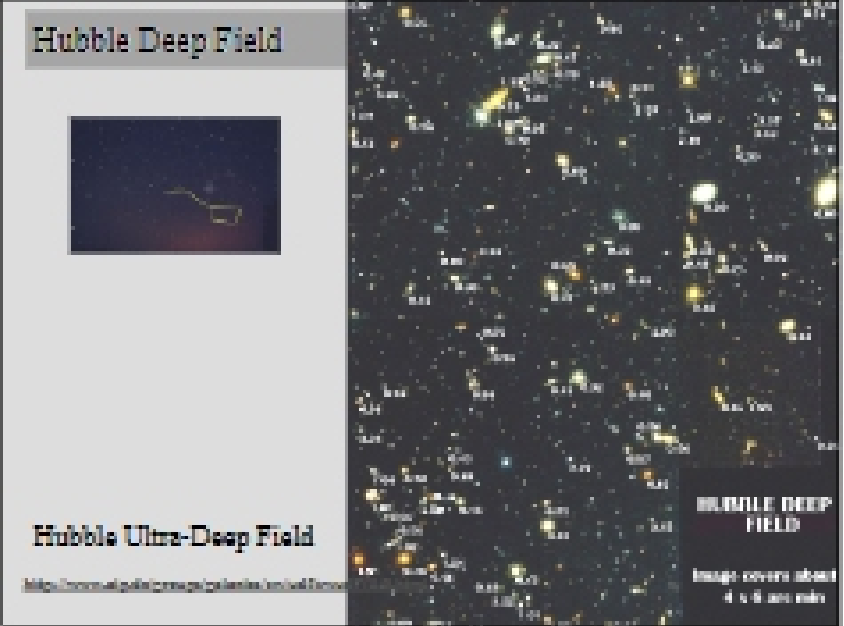
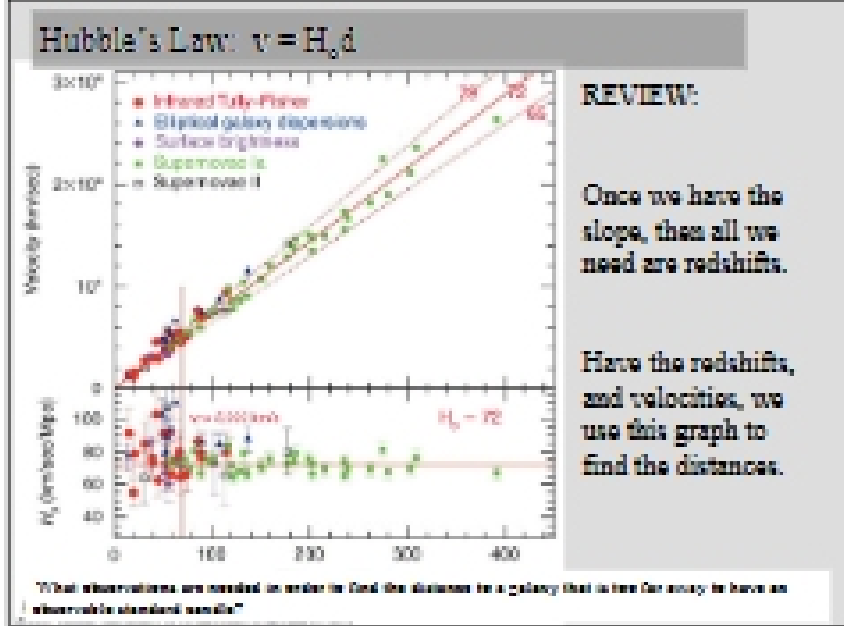


Summarize the considerations astronomers must make in interpreting the observations of galaxies far, far away.

Standard Candles



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