

ASTRO 1020 Lab

L7: Tully-Fisher Relationship

Grading

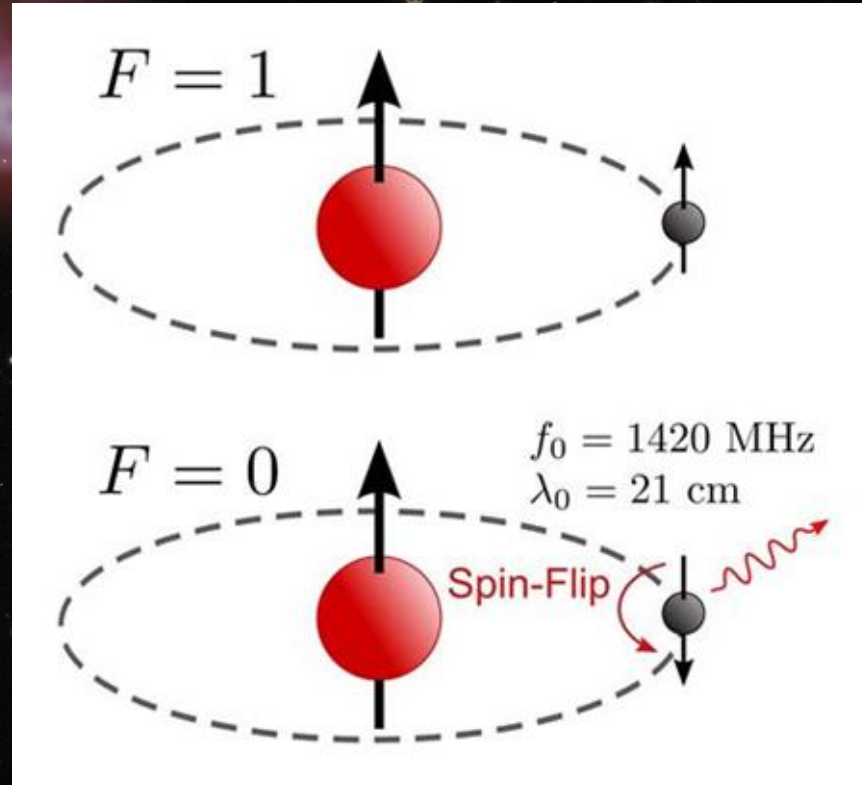
- All labs are scaled to be graded out of 10 points*

Points per question	Description
1.0	A correct answer with units and work shown. Answers that don't require work will be graded on completion
0.8	A correct answer without units or work shown
0.6	An incorrect answer with units and work shown
0.4	An incorrect answer without units or work shown
0.2	Some work shown without an answer
0.0	Not Attempted

Things you need to know for Lab 7

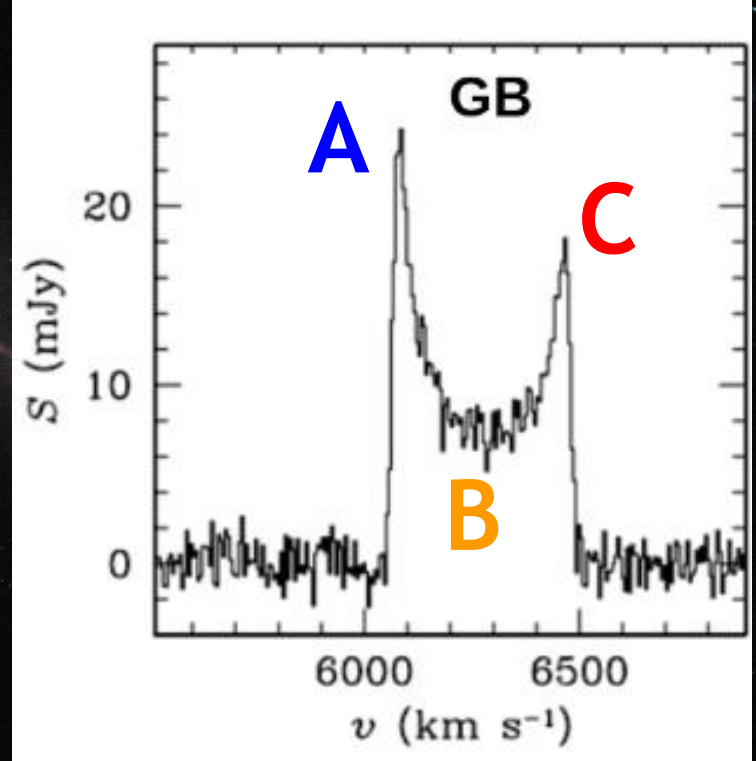
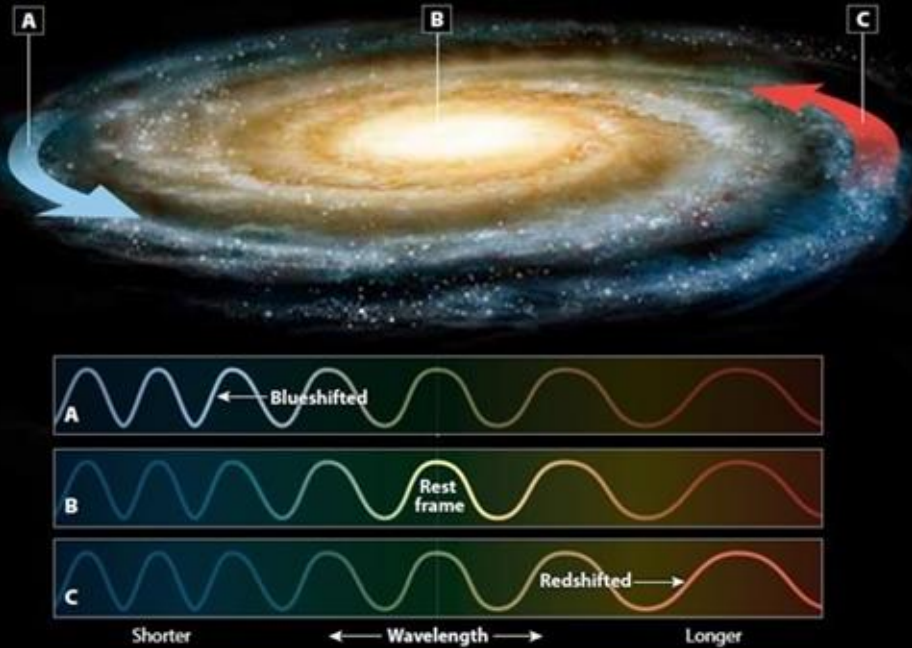
- H I line emission
- Radial velocities
- Galactic inclinations
- Tully-Fisher relationship
- Distance modulus

H I line emission



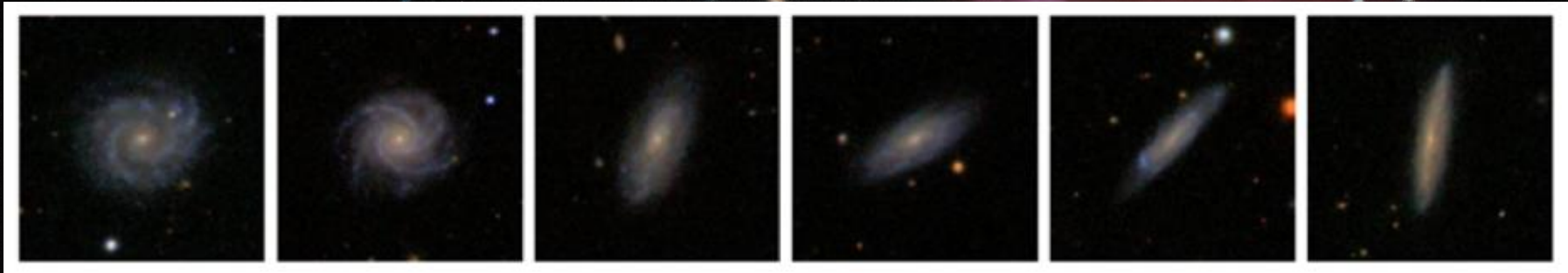
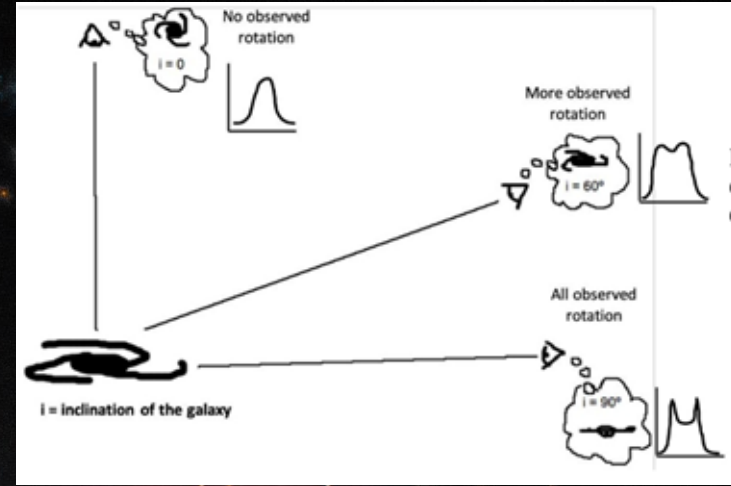
Radial Velocities

Measuring a galaxy's rotation



Galactic Inclinations

- Galaxy's viewing angle
- Measured in degrees
- 0° is face on, 90° is edge on
- Edge on is ideal for radial velocity measurements



Tully-Fisher Relationship

- Relates the radial velocity of a galaxy to its luminosity

$$L = (W_{50} - c)^4$$

Distance Modulus

- Relates the luminosity of a galaxy to its distance

$$M = -2.5 \log_{10}(L) + 4.82$$

$$D = 10^{(m - M + 5)/5}$$

The background of the slide is a deep space image. It features a prominent purple and magenta nebula that curves across the frame. The nebula has a wispy, ethereal texture with some brighter regions. Scattered throughout the dark background are numerous stars of various colors, including white, yellow, and blue. Some stars have prominent diffraction spikes, giving them a sparkling appearance. The overall scene is a rich, multi-colored celestial landscape.

Questions?