HW6

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1. Heliocentric Implications

(10 point(s))

We can tell that some stars are relatively close to us in the sky because

- 1. they appear to move periodically back and forth against the background stars because of Earth's movement around the Sun.
- 2. they appear to be extremely bright.
- 3. they are occasionally occulted or eclipsed by our Moon.
- 4. the light from these stars shows only a very small redshift caused by the universal expansion of the universe.
- 5. we can easily see them all with naked eyes.

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2. >1"

(10 point(s))

How many stars (other than the Sun) have a stellar parallax greater than one second of arc?

- 1. over 100
- 2. over 1 million
- 3. 1
- 4. 0
- 5. 50

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3. Smallest Parallax

(10 point(s))

If the Hipparchos satellite measured the parallax motion of a star against the background stars and concluded that the star has a parallax of 0.004 arcseconds, how far is that star from Earth?

- 1. 250 pc or 800 ly
- 2. 0.004 pc or 0.013 ly
- 3. 25 pc or 81 ly
- 4. 400 pc or 1300 ly
- 5. trick question. You need to measure the parallax from the Earth only.

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4. Moving Stars

(10 point(s))

Suppose that the brightness of a star is measured from a certain distance, and then the star is moved to a distance twice as far away. How bright will the star appear compared to the earlier measurement?

- 1. 1/16 as bright
- 2. 1/2 as bright
- 3. 1/8 as bright
- 4. 1/4 as bright
- 5. 1/100 as bright

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5. Apparently

(10 point(s))

The star Alphard has an apparent magnitude of 2.0, and the star Megrez has an apparent magnitude of 3.3. The only thing that can be said with certainty about Alphard is that it

- 1. has a greater luminosity than Megrez.
- 2. is closer than Megrez.
- 3. is brighter than Megrez, as seen in our sky.
- 4. is fainter than Megrez, as seen in our sky.

5. nothing

Save Answer

6. Fomalhaut

(10 point(s))

The star Fomalhaut has an apparent magnitude of 1.15 and an absolute magnitude of 2.0. From this information (assuming that the star has not been dimmed by interstellar clouds), we can say for sure that Fomalhaut is

1. more than 32.6 parsecs away.
2. more than 10 parsecs away.
3. less than 10 parsecs away.
4. less than 32.6 parsecs away
5. nothing

Save Answer

7. Move the Sun

(10 point(s))

The Sun has an absolute magnitude of +4.8. How far away would we have to go in order for the Sun to be just barely visible to the naked eye (6th magnitude)?

Save Answer

8. Class Problems

(10 point(s))

The spectral class of the Sun is G2 and the star Enif is K2. From this information, we know that Enif is

1. intrinsically fainter than the Sun.
2. cooler than the Sun.
3. intrinsically brighter than the Sun.

- 4. hotter than the Sun.
- 5. nothing.

Save Answer

9. Hertzsprung-Russell diagram

(10 point(s))

Which two vital parameters are used to describe the systematics of a group of stars (e.g., cluster) in the Hertzsprung-Russell diagram?

- 1. luminosity and radius
- 2. surface temperature and mass
- 3. luminosity and surface temperature
- 4. mass and apparent magnitude
- 5. spectral class and surface temperature.

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10. Huh?

(10 point(s))

Measurements indicate that a certain star has a very high intrinsic brightness (100,000 times as bright as our Sun) and yet from its color it is relatively cool (3500 K). How can this be?

- 1. There must be an error in observation, since no star like this can exist.
- 2. The star must be quite small.
- 3. The star must belong to the main sequence.
- 4. The star must be very large.
- 5. The star must not obey the Blackbody laws we discussed.

Save Answer

11. Extra Credit

(5 point(s))

Make a new mnemonic for the stellar classes that includes all stars and the two brown dwarf classes, L and T. Do not worry about censoring.

At the end of the semster, prizes will be give for the best replies.

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