Paper 1 Example

The definition of dark matter is any matter that does not emit light. In the last century, dark matter was discovered to be a large part of our universe that has had an interesting effect on the distribution of light and the movement of objects throughout it. These discoveries have become the evidence of the existence of dark matter. One piece of evidence is that contrary to the movement of the planets in the Solar System, the stars in the outer portion of our galaxy do not move slower than the ones closer to the center. The other piece of evidence of dark matter is how light is refracted throughout space to cause something called gravitational lensing.

To begin, it has long been a known fact that the planets orbit around the sun because of the gravitational pull by the sun. It is also known that the planets on the inner portion of our solar system move at a quicker speed than those beyond the asteroid belt due to this gravitational pull. This fact led scientists to believe that the same would apply to the stars in the galaxy as well; however, it has been proven that the stars in the outer parts of the galaxy move just as fast as those near the center. The only way for this to be possible would be that there had to be something scientists could not see interacting with the movement of the stars. Therefore, the way that all the stars move at the same rate is because there is lots of dark matter surrounding them.

The other piece of evidence to the existence of dark matter is that light is refracted throughout space. When observing a star on the other side of the sun, to us it would appear to be off to the side when it is actually behind the sun. The same goes for galaxies. If you were to observe two galaxies from Earth, one in front of the other, then the closer galaxy would appear to have a ring around it. This ring, known as the Einstein Ring, occurs because dark matter bends light throughout space. The inner part of what you see would be the closer galaxy, and the ring you notice around it would be the galaxy that is farther away. Dark matter is able to bend light just like anything else with mass. For example, if you were you take a flashlight and shine it onto the edge of a wall, part of the light would go around the edge while the other part would continue to shine on the wall. The same principle applies in space with dark matter, because the light from the farther galaxy bends around the light given off by the closer galaxy, and this occurrence is called gravitational lensing.

Therefore, dark matter is found all throughout our galaxy and plays an important role in the movement of light through space. These facts are evidence for dark matter because without the existence of dark matter, scientists would not be able to see a star behind the sun and the two galaxies that line up would appear to be a really bright light, rather than the appearance of a ring. Also, without the existence of dark matter the stars in our galaxy would not move at the same speed. Without dark matter, the stars on the outer parts of our galaxy would move at a far slower rate than those near the center, just as the planets in our solar system orbit the sun.

Try grading yourself, then compare with the example below!

Paper 1 Re-grade Example

As a whole, this paper is ok, but there are several points that are explained unclearly or inaccurately. One reviewer was much too harsh while the others were slightly lenient.

TA REVIEW: 95/126 = 75

1. 5 - While it's clear from the introduction that the paper is about dark matter, it's only inferred that the paper is specifically about the evidence for dark matter.
2. 6 - Enumeration is fine, but could probably be worded a little clearer
3. 5 - the conclusion is correct, but the arguments are lacking
8. 4 - the paper defines dark matter as any matter that does not emit light. This simply isn't true
9. 1 - not mentioned
10 1 - not mentioned
12. 5 - the description of how stars orbit is correct, though rather brief
15. 3 - the paper mentions that gravity bends light and how this can create Einstein rings. However, it does not make clear how this phenomenon connects back to dark matter
16. 6 - The first evidence paragraph seems a bit rushed.
17. 6 - The conclusion summarizes the paper nicely. However, there is a glaring inaccuracy where the author claims dark matter causes the distortion we see when observing stars behind the sun. This simply isn't true.
18. 4 - clear and good intentioned, but missing crucial details and there are several inaccuracies

Peer Review 1 60/126
Peer Review 2 105/126
Peer Review 3 100/126