3.5: In-Text References

1. http://www.space.com/scienceastronom...ay_040524.html ↵
2. http://www.youtube.com/watch?v=th_9Z...W7hkUMVaZz4eDg ↵
3. http://www.astro.ucla.edu/~wright/BBhistory.html ↵
4. In this nomenclature (described more on the web), the first superscript number is the number of proton and neutrons, while the second superscript number is the number of protons; both numbers are always integers. The letter is the symbol of the element, e.g. He for helium or Li for lithium. ↵
5. Nuclear fusion releases huge amounts of energy (some of the mass is transformed into energy). On Earth, controllable nuclear fusion has long been a potential target in the search for new energy sources, but so far the energy required to bring about the initial fusion has not been replaced when the fusion occurs – i.e., nuclear fusion reactors have yet to break even. Uncontrolled nuclear fusion takes place in hydrogen bombs – clearly not a viable option for a useful energy source at the moment. Nuclear fusion does however take place in stars, and is self-sustaining. The reason you can see and feel the energy from the Sun is that is it undergoing nuclear fusion reactions, which supply us with almost all the energy that is used on Earth today. ↵
6. It has been estimated that it takes between 10,000 to 170,000 years for a photon released during a fusion reaction at the Sun's core to reach its surface. http://sunearthday.nasa.gov/2007/loc...t_sunlight.php ↵
7. More physics that we will conveniently pass over, but it is worth noting that this is why the planets all move around the Sun in the same direction. ↵
8. You may want to search the web for "extrasolar planets." ↵
9. For those who want more, rest assured that you will find out if you take more advanced classes either in physics or physical chemistry. ↵
10. This study shows images of bonds forming http://www.sciencemag.org/content/34.../1434.abstract ↵
11. Although perhaps the word orbital is confusing because it implies a circular or elliptical motion, what we mean is the volume in which there is a 90% probability of finding an electron. That said, orbitals are the way chemists (and the occasional physicist) talk, so we have to use it. ↵
12. How much pressure is that exactly in real world terms? ↵
13. http://en.Wikipedia.org/wiki/X-ray_crystallography ↵
14. In fact the sheets in graphite do not slip relative to each other very readily. On Earth graphite is a lubricant, but in space in the absence of small molecules like O_2, N_2 and H_2O, graphite does not lubricate. It is thought that the sheets slip relative to each other as if they were rolling on ball bearings (the small molecules). As you might imagine, this discovery caused some consternation in high-flying airplanes where the engines began to fail because of lack of lubrication. ↵
15. The Nobel Prize in Physics was awarded in 2010 for the discovery of graphene. http://nobelprize.org/nobel_prizes/p...aureates/2010/ ↵
16. In 1996 Smalley, Kroto, and Curl were awarded the Nobel Prize in Chemistry for the discovery of fullerenes. http://nobelprize.org/nobel_prizes/c...aureates/1996/ ↵
17. We need to mentions (at least) what electricity is, i.e. the flow of electrons. ↵
18. Robert Naeye (1998). Through the Eyes of Hubble: Birth, Life and Violent Death of Stars. CRC Press. ISBN 0750304847. Of course this raises the question, is it the same photon? ↵