Intelligent Life and Course Conclusions

12-5-2005

Opening Discussion

- Have you seen anything interesting in the news?

Intelligent Life

- We talked last time about the Drake equation and how we can estimate the possibility of their being intelligent life.
- Discovering intelligent life is easier than finding simple life in many ways and it fits under the title of SETI. The advantage is that intelligent life will be sending out signals that we can detect. It might take some large and sensitive telescopes to detect it, but no bigger than measuring the spectra of terrestrial worlds.
- My personal feeling is that simple life is very common (f_l=1 and 0.01<n_E<0.1). Complex life is rare and intelligent life extremely rare.

Interstellar Travel

- Everything we know about physics tells us that we will never travel to the stars like they do in SciFi. However, it seems inevitable that as long as we survive long enough we will attempt to travel to other stars. Relativity makes the trip possible for those on the ship, but not those back at home if we can travel close to the speed of light.
- Chemical fuel can only get you to about 0.001c. Nuclear propulsion from fusion engines could get you to 0.1c. Matter-antimatter could get 0.9c+. Sail and beam can get to 0.1c-0.5c. Interstellar ramjets can go arbitrarily close to c.

Fermi Paradox

- There is no scientific evidence that Earth has been visited by aliens. This actually raises questions or sets limits on values in the Drake equation because we should be able to colonize our galaxy in several million years if we don't destroy ourselves and we choose to do so.
- We could be the first intelligent species in our galaxy.
- It could be that intersteller travel is harder than we think or that other intelligent species have failed to do it for other reasons.
- Zoo hypothesis – they are watching.

Course in Retrospect

- We have covered a lot of ground in this course. You should understand the motions of objects in the sky and what actual motions produce the motions we see. You should understand some of the basic laws of physics and how they relate to astronomy. You should also have a fairly solid knowledge of the bodies of our Solar System and the general theories about their formation and structure.
- You should be able to bring all of that back to Earth to help you understand the significance of the world we live in.

Key Aspects of the Course

- While we have covered a lot of details and facts (and I hope you'll remember some of them), the most important things for you to know are the broader concepts.
- You should understand what science is and how the scientific method works. You should also be able to spot things that aren't science and see them for what they are.
- You should understand how we know the things that we do.
- You should also have the ability to do some of your own estimation for whether things make sense.

Minute Essay

- For your minute essay, list times when you would want to have a review session. I'll likely have two, one before each of the final times. Leave those on the front table when you leave.
- I also need someone to do the course evals.
- Lauren has her birthday today. Feel free to assist Meagan in throwing her in the fountain.
- Tomorrow is the last Tuesday of the semester.