Term Project Proposal

Our idea for this project is to discuss whether the notion of intelligent extra-terrestrial life is plausible. Our aim is to shine a light on the age-old question, “Do aliens exist?” However, we won’t directly answer the question. Instead, we will look at the possibilities and probabilities of, intelligent, extra-terrestrial life. We will consider all possible factors and be as thorough as possible. Our idea is not directly defined in the “Guidelines for Term Projects” document. Instead, it is a collaboration of several topics. The topics we will be focusing on are 12, 14, 17, 18, 26, 42, and 43 – a detailed list can be found below. In addition to these topics, we will be focusing on other areas that revolve around extra-terrestrial life. Our goal is to be as thorough as possible. Our benchmark for intelligent life is the human race or something comparable to us. We are looking for a species that is capable of creating civilization and culture.

Since our idea is rooted in theoretical analysis, we will be analyzing probabilities. The probability of the creation of RNA/DNA (i.e. How can it happen), and the conditions that need to be present (i.e. Stable environment, planet, abundance of resources, etc.). Then we will analyze the requirements and probability for survival and continuous evolution. Next, we’ll compute the statistics of threats that are capable of wiping out the species. Threats like natural disasters, celestial bodies, civil wars, etc. Finally, we will conclude with other factors that are not related to survival, but detection and encounters.

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| Topics | |
| 12 | In view of the recent discoveries of real planets around other stars, how well justified are we in thinking that Earth-type planets are common (or rare)? |
| 14 | Discuss the role that the Moon may have played in the origin of life on Earth. A good source for discussion is the book “Rare Earths” by Ward & Brownlee. |
| 17 | What are the chances that a nearby supernova would destroy human civilization in the foreseeable future? |
| 18 | Why would the collision of a large comet with the Earth be catastrophic – what does such an impact actually do to/for the biosphere? |
| 26 | The nearest star to our sun is about 4 light-years away. Will it be possible for humankind to visit this star? |
| 42 | Explore the role of meteorites and comets in bringing organic molecules to Earth. |
| 43 | Life on Mars? What experiments have been sent on spacecraft (or are planned for future missions) that might determine whether there is/was life on Mars? How much have these experiments told us? |