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Rare Intelligent Life on Universe

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ABSTRACT

Even though we have advanced tremendously in technology in the 21st century, we still have not been able to contact with any extraterrestrial civilizations. There have been many research and hypothesis on extraterrestrial civilizations such as The Drake Equation, The Fermi Paradox, Rare Earth Hypothesis. With the help of previous research and hypothesis on this subject by others, I have here tried to find out the possible reasons of not been able to contact with any extraterrestrial civilizations till now.

Introduction

Drake Equation

In 1961Dr.Frank Drake was working as a radio astronomer at the National Radio Astronomy Observatory in Green Bank, West Virginia. It was at this time he came up with a equation involving the number of advanced civilizations in our galaxy.
The Drake equation states that:

$$N = R^* \cdot f_p \cdot n_e \cdot f_\ell \cdot f_i \cdot f_c \cdot L$$

where:
N = the number of civilizations in our galaxy with which communication might be possible;
and
R^* = the average rate of star formation per year in our galaxy
f_p = the fraction of those stars that have planets
n_e = the average number of planets that can potentially support life per star that has planets
f_ℓ = the fraction of the above that actually go on to develop life at some point
f_i = the fraction of the above that actually go on to develop intelligent life
f_c = the fraction of civilizations that develop a technology that releases detectable signs of their existence into space
L = the length of time for which such civilizations release detectable signals into space.(1)

When it was originally developed in the 1961 – the number of extraterrestrial civilizations, N, was thought to be about 10,000.

Fermi Paradox

Fermi Paradox states that if there are all these billions of planets in the universe that are capable of supporting life, and millions of intelligent species out there, then how come none has visited earth?(2)
There are several solutions to Fermi Paradox. The important ones are:
1)Extraterrestrial civilizations do not exist.
2)They exist but have not yet communicated
3)Civilizations only have a limited lifetime. They are all dead.

Rare Earth Hypothesis

The Rare Earth Hypothesis proposed by Peter Ward and Don Brownlee in their book Rare Earth: Why Complex Life is Uncommon in the Universe lists a variety of reasons to conclude that advanced life is extremely rare in the Universe.(3)
Broadly, it states:
Microbial life is common in planetary systems.
Advanced life (animals) is rare in the Universe.

Conclusion:

After considering all the above previous based research and hypothesis, I have come up with the following conclusion:
1) They are signaling us through gravitational waves or exotic particles which we are not capable of detecting.
2) The complex life is very rare and has developed too far away from us to contact. And we may be the most advanced civilization with all the other civilizations are very much technologically lagging behind from us.
3) All the complex life civilizations have developed several light years from each other at almost same time. Thus all the civilizations may be equally advanced but cannot contact with each other due to their distance as well as the strength of electromagnetic signals diminishes over large distances as they obey the inverse square law. In free space, doubling the distance from a signal source means the signal strength falls by almost a quarter. Also the signals are prone to disturbance due to various factors.

References

1)"PBS NOVA: Origins - The Drake Equation"
2)abyss.uoregon.edu/~js/cosmo/lectures/lec28.html
3)http://www.astro.washington.edu/rareearth/aboutthebook.html

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