

PHYS 122: Life in the Universe  
Class Session 15 (last class!), March 3rd, 2011

**LEARNING OBJECTIVES**

- 1) Describe the early history of SETI, the first failed searches (how they were done and why they were unsuccessful). Explain the logic behind why most modern SETI efforts are aimed at listening (searching), rather than transmitting (sending out) signals.
- 2) Describe two typical search methods currently used by SETI and two major problems current SETI searches are faced with. Explain how these problems might be addressed.
- 3) Provide the two statements which Fermi put forth, which are extraordinarily contradictory, and create the Fermi paradox. Describe the three categories of solutions to this paradox given in your book.

Required Textbook readings before class: pp 399-404, 410-418, 456, 462-465 (12.1, first half 12.3, 13.3 Fermi's Paradox & Solutions)

1. The Drake equation provides a number estimate for what exactly?
2. Which of the Drake equation terms listed in your book seem the most difficult to estimate? Why?
3. Marconi & Tesla thought they heard signals from Mars, but the signals they heard could not possibly be coming from Mars. Why?
4. Ideally, we wish to search at ALL frequencies and in ALL Directions and very deeply (high sensitivity). Why can't we achieve that? What frequencies are best? What directions are best?
5. What is the difference between a targeted search and a sky survey?
6. What two things currently constrain current radio surveys and what are SETI's plans to resolve them?
7. What is the simple question put forth by Fermi, now known as his paradox?
8. Assuming there is intelligent life out there, what are two explanations for why intelligent life has not contacted us?