Astronomy 330

HW#4 due tonight

Next Week Presentations:

Paul Mikols & Jack Sadanowicz

Matt Pest & Tom Doran

Music: *Approaching Pavonis Mons by Balloon* - The Flaming Lips

Questions?

- We've covered exosolar planets to the origin of the Moon. Any questions?

HW #2

- **Adam Musto:** http://www.alien-ufo-pictures.com/absolute_proof_aliens_exist.html
- **Peter Kim:** http://www.anunseenworld.com/do-ufo-exist.html
- **Trent Wright:** http://ufocasebook.conforums.com/index.cgi?action=display&board=general&&num=1263008691&&start=6

Presentations

- **Will Hanhe & Brandon Copp**: ALIENS AND ANCIENT STRUCTURES
- **Manuel Sahagun & Taewoo Kim**: The Search for Extrasolar Planets

What Are We Looking For?

General Predictions of Solar Nebula Theory

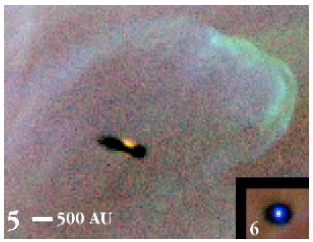
- ☺ Are interstellar dust clouds common? ***Yes!***
- ☺ Do young stars have disks? ***Yes!***
- ? Are the smaller planets near the star?
  - ***Not the ones found so far! Haven't found smaller planets yet!***
- ? Are massive planets farther away?
  - ***Not most of the ones found so far!***

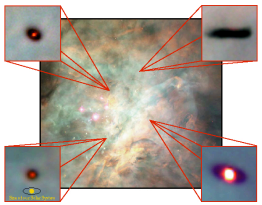
Disks in Binary Systems

- >60% of all stars are in binary or multiple systems.
- We do see circumstellar disks in binary systems
- We do see exoplanets in binary systems.
- But we also see effects of the binary on the disk.
  - Still unclear how large of an effect.

Now, for f_p

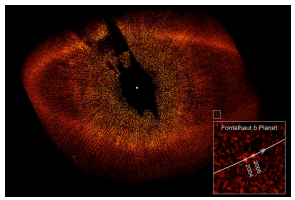
- Disks around stars are very common, even most binary systems have them.
- Hard to think of a formation scenario without a disk at some point– single or binary system.
- Disk formation matches our solar system parameters.
- We know of many brown dwarfs, so maybe some planets do not form around stars.
  - There might be free-floating planets, but…

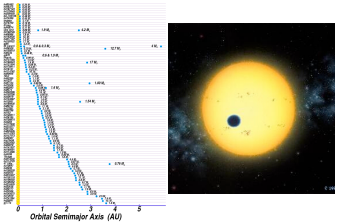




Now, for f_p

- Extrasolar planet searches so far give about $f_p \sim 0.03$, but not sensitive to lower mass systems.
- Maximum is 1 and lower limit is probably around 0.01.
- A high fraction assumes that the disks often form a planet or planets of some kind.
- A low fraction assumes that even if there are disks, planets do not form.
- This is not Earth-like planets, just a planet or many planets.





Group

- In groups of 3-5 people, write a paragraph explaining how exoplanets are discovered? Why haven't we discovered other Earths?