



## Exoplanets: 160 Billion and Counting!

### What are Extrasolar planets?

Extrasolar planets or exoplanets are planets outside our Solar System. When we look up in the sky at night, we see millions and billions of stars. It may be that as many as *half* of them have planets orbiting them.

Most exoplanets we know of are giant, resembling our own Jupiter - but this is probably a sampling bias, since these planets are easiest to detect. Earth-like exoplanets have also been discovered. Some of these are found in the 'habitable' zone - close enough to their star so that liquid water and LIFE might be present.

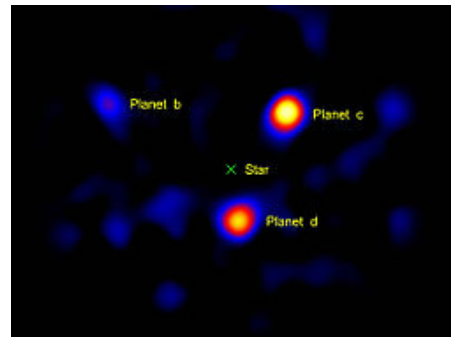


Image of the exoplanets around the star HR8799, courtesy of the Hale Telescope

**How many of them are there?** We are just beginning to understand how many exoplanets are out in there. As of October 1, 2012, [838 planets](#) (in 661 planetary systems) have been identified, but there are clearly many many more. In early 2012, scientists estimated that there were more than [160 billion](#) exoplanets in the Milky Way Galaxy alone.

**How do we know that they are there?** Planets are very faint, compared to the light given off by their stars. This makes it very hard to see exoplanets, though some very large exoplanets have been directly observed. Scientists have developed a number of ways to find exoplanets. One method is called Doppler Spectroscopy has been the most successful at identifying exoplanets. A planet orbiting a star will 'tug' on that star a little bit. That 'tugging' can be detected and monitored and should, if caused by an orbiting planet, have a regularity to it. In addition, larger planets have a larger 'tug', so the degree of 'tugging' can tell us something about the size of the exoplanet. Another method, used by NASA's Kepler mission, is called the Transit Method. When a planet crosses in front of its star, the brightness of the star dims just a bit. If that dimming happens on a regular basis, it suggests that a planet is orbiting the star.

**To learn more, check out these sites:**

- Planet Quest: <http://planetquest.jpl.nasa.gov>
- Exoplanets.org: <http://www.exoplanets.org>
- NASA's Kepler mission: <http://kepler.nasa.gov>