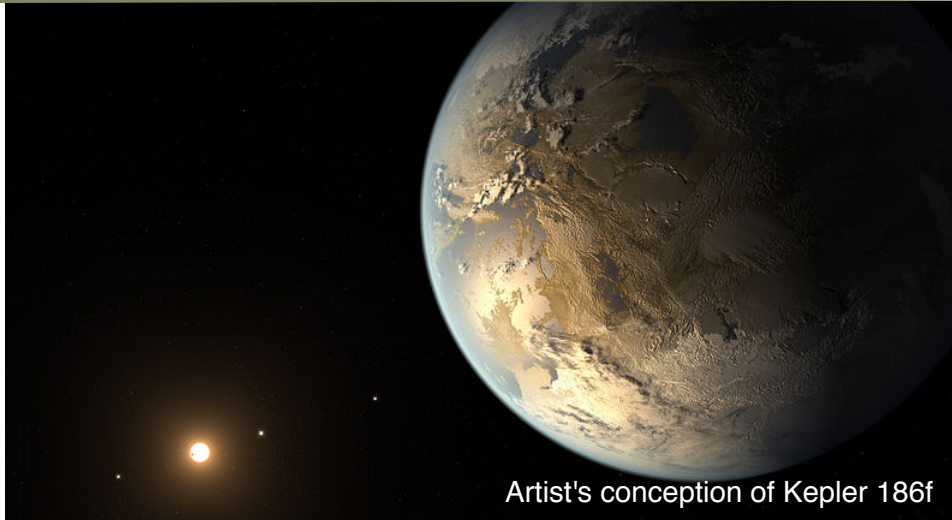


Tessmann Focal Points



Artist's conception of Kepler 186f

Earth-Size Exoplanet Found in a Habitable Zone

Astronomers, using the Kepler Space Telescope, plus other space and ground based telescopes, have so far discovered 1783 confirmed planets, plus an additional 2900 possible planetary candidates. They have discovered several different varieties of these so-called exoplanets, including super-Jupiters, Neptune class planets, super-Earths, sub-Earths, Tatooine worlds (planets orbiting double stars) and even Earth-sized worlds.

But NASA's April 17 announcement of the discovery of Kepler 186f is an historic event—the first discovery of an earth-sized planet orbiting in the habitable zone of another star. The planet may have the potential to harbor life.

The planet circles a red dwarf star in Cygnus, about 500 light years away. The planet is known as Kepler 186f and is about 10% larger than the Earth. It is the outermost planet in the 186 system and takes 130 days to orbit its star.

A red dwarf star of the M class is smaller, less bright and typically much cooler than our Sun. Kepler 186 is one of the hotter red dwarfs known. 186f is about the distance from its star as Mercury is from our Sun. Because Kepler 186 is much smaller than our

sun, 186f is in the habitable or "Goldilocks" zone where water, and perhaps life, can exist. Photosynthesis may be possible on 186f.

The discovery of 186f demonstrates that Earth-sized planets can exist in habitable zones of red dwarf stars. About 7 out of 10 stars in our galaxy, as well as most of our Sun's nearest neighbors, are red dwarfs. Planets around M class stars may be the most common type of habitable worlds in the universe.

It has been speculated that there are at least 100 billion planets in the Milky Way and that every star may have at least one orbiting planet. 40 billion of these planets may be Earth-sized in the habitable zones of Sun-sized and red dwarf stars.

Exoplanets Factoids

The largest exoplanet may be 29 times the mass of Jupiter (although it may be a brown dwarf -- a failed star).

The smallest discovered exoplanet has only twice the mass of our moon.

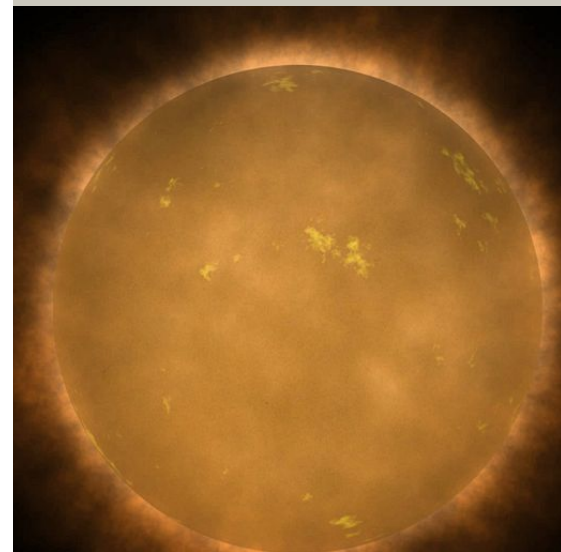
There may be trillions of planets not bound to any stars, floating free in the Milky Way.

Although not confirmed yet, the closest planet our solar system is Alpha Centauri Bb, about 4.3 light years away. It is earth-sized, but is not in Alpha Centauri B's habitable zone. However, its existence has recently been challenged. More research needs to be done to confirm its existence.

Kepler 70 has the shortest orbit – 5.6 hours to complete one orbit (the length of its year).

OPH 116 has the longest orbit – 1000 years.

Two super-Saturns may have been discovered with gigantic ring systems. Their existence has not been fully confirmed yet.



Artist's conception of a red dwarf star